



## **WORKING PAPER SERIES**

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TRADE: THE CASE OF COLOMBIAN MANUFACTURING EXPORTS**

*Working Paper No.23/2008*

# INNOVATION PROMOTION AND LEARNING IN INTERNATIONAL TRADE: THE CASE OF COLOMBIAN MANUFACTURING EXPORTS

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November 2008

## **Abstract**

Colombian manufacturing exporting firms survey results are analyzed highlighting innovation, promotion, and learning, as well as the influence of factors such as: size, ownership, output objectives, destination of exports, competition and pricing, export incentives, and firm configuration, in their export performance.

Key words: Manufacturing exports, learning, Colombia, export incentives, preferences, industrialization, import substitution, innovation, international trade, industrial organization.

JEL codes: D21, D24, D40, F10, F13, L10, L52, O10, O14, O24.

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Comments by S.Ramani, E. Viotti, and participants at the "Global Network for Economics of Learning, Innovation and Competence Building Systems", (Globelics), Conference, September 22-24, 2008, Mexico City, are appreciated.

## **Introduction**

This paper is a follow up to industry level work on the factor composition of Colombia's manufacturing exports reported in Londero, Teitel, et al. (1998). It relies on results of field work designed to understand the economic behavior and performance of manufacturing exporting enterprises. For this we count with the responses to a detailed questionnaire given by managerial personnel engaged in marketing and international trade, plant production, and the top strategic functions of the interviewed firms.

In this particular analysis we examine the survey results of thirty (30) respondent firms located outside the capital city of Bogota, and representing the following industries: metalworking, (nine), chemicals, (five), clothing, (five), food, (four), cement, (two), and one each from the pharmaceutical, glass, plastics, printing, and shoe industries. The paper reviews some of the key hypotheses underlying the questionnaire followed by an analysis of the results and a final section of conclusions.

### **A. Innovation, Learning and Promotion**

## 1. Exporting as Innovative Behavior in Economic Development

In his Strategy of Economic Development, Hirschman (1958)<sup>1</sup> posited that by growing less developed countries would eventually acquire comparative advantages in products they imported at first; i.e. precisely those where such advantages did not initially reside. Thus he foresaw drastic changes, and even reversals, in comparative advantage based on factor accumulation over time and the learning processes involved in consuming and servicing a given product, first, followed then by starting to produce it for the domestic market, under the protection generally granted to import substituting activities.

Producing to satisfy local demands often led to the introduction of technological adaptations to local conditions (Teitel, 1981) and, in a number of cases, to the gradual attainment of scale economies and productivity improvements. In their study of Argentine and Brazilian manufacturing exports, Teitel and Thoumi (1986) noted that beside food and other products with high natural resource content, and relatively limited value added, manufacturing products being exported by both countries were originally import substitutes that via learning-while-producing had managed to reach international markets. In his study of Colombia's trade regime, Diaz Alejandro (1976) had already called attention to the development of such new, also called, "minor", exports.

Thus it could be argued that within a general process of economic development, moving from production for the domestic market, under commonly well-sheltered conditions, to competition in foreign markets presenting far greater uncertainty and risks, represented for firms in those countries, and Colombia, innovating behavior not unlike those described by Schumpeter (1934, 1950).

In this context, it is interesting to analyze the survey responses about "Initial Output Objectives"

<sup>1</sup> A work coincidentally inspired by his advisory experience in Colombia.

provided by the exporting firms. The output objective refers to the initial purpose when constituting the firm, or setting up the relevant production capacity. Similarly, the existence, or not, of an explicit export-strategy refers to the initiation of activities. Some firms may have run into excess-capacity situations and "discovered" the advantages of sporadic complementary exports which later on become an integral part of their sales plans.

21 out of 30 firms (or 70%) were originally set up for import substitution purposes with exports clearly representing an afterthought. Eight firms had dual (i.e. import substitution plus exports) initial objectives. Thus only one firm was set up for export purposes ab initio, In most cases, (20 out of 30) there was no a priori export strategy formulation.

## 2. Learning

To explain trade patterns for manufacturing products, Linder (1961) emphasized demand considerations rather than factor endowments. He argued that countries with similar income per capita will share common patterns of tastes and preferences thus leading to demands for manufacturing products with similar characteristics. Application of this theory to Colombia's exports of manufactures would lead us to predict that the country's best customers would be other Latin American countries at similar levels of development. Moreover, factoring in transport costs, it would follow that neighboring South-American countries will be expected to be Colombia's most important initial customers.

Allowing for the accumulation of experience in the production for, and servicing of, foreign customers, might lead to attempts to also serve consumers that because of their higher levels of income per capita differ in their tastes and preferences--even though reaching them might entail higher transport costs. Such new markets might be enticing because of their potential magnitude and greater stability. Enhanced demand requirements in highly developed countries will generally translate in the need for

more frequent updating of fashion and styles as well as the provision of products with higher quality, improved presentation, and better packaging.

In a number of cases, exports resulted from the need to confront excess capacity situations and initial exports were in practically all cases to bordering countries such as Ecuador, Peru and Venezuela. Then usually followed exports to other South-American countries and to countries in Central America and the Caribbean. Reaching developed country markets was commonly part of a second stage and the main market amongst them was the USA.

Export destinations for subsidiaries of MNCs were determined by headquarters policy and in a number of cases they were restricted to intra-firma transactions, i.e., shipments to subsidiaries of the same firm in other countries.

As a rule, the main destination of Colombian manufacturing exports have been other countries in Latin America, with little exported to developed countries (specially the USA and then Europe), as well as to developing countries in other regions.

### 3. Export Promotion

Greater uncertainty and higher risks are both implicit in servicing markets abroad and costly new investments might be required for firms attempting to enter unknown markets (Roberts and Tybout, 1997). Recognizing such obstacles to export, Colombia's government introduced in 1967 export promotion policies that with some modifications still prevail today. They included the application of a panoply of instruments that had the effect of significantly changing the relative prices (costs) of producing for export or the domestic market. The most important such instruments were: i) elimination of custom duties for imports to be used in exports (Plan Vallejo and Free Trade Zones), ii) subsidized financing for

a variety of export transactions provided by PROEXPO<sup>2</sup>, and iii) tax rebates for exporters.

Thus the government took the initiative in recognizing the need to bridge the gap faced by manufacturers between the costs involved in attempting to export compared to just serving the domestic market. It was also a way of compensating for the disadvantages imposed on local producers by failings in infrastructure and services, as well as a generally lower level of labor productivity in manufacturing.

While the development motivation of the government cannot be ignored, and the obstacles to export noted were certainly quite real, it is still valid to ask whether all firms faced similar levels of risk, uncertainty, and the need to carry out important additional investments before being able to export, or if, some firms were better prepared than others to undertake the steps required to reach export markets. Indeed, if significant disparities among the firms making use of the export incentives obtain, then the possibilities for engaging in opportunistic behavior, i.e., taking advantage of export incentives even if not strictly needed, ought to be considered. Also, while the government's development objective of diversifying exports and generating additional foreign exchange seems legitimate, it must be recognized that if the subsidies are given to all manufacturing exporters and maintained indefinitely, such help could become wholly unjustified in some cases and excessive in others. Moreover, the cost per unit of foreign exchange earned might end up being so high as to make the promotional policies a development hindrance instead of a benefit.

Our results show that export incentives were quite popular among the firms in the sample: i) all of them made use of the tax rebate program (CERT), ii) 2/3 took advantage of the Plan Vallejo<sup>3</sup>, iii)

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<sup>2</sup> Export financing government agency .

<sup>3</sup> Three exporting firms were located in Free Trade Zones thus did not need the Plan Vallejo to obtain tax-free raw material imports.

18/30 or 60%, utilized Proexpo's subsidized lines of credit. Our firms also reported benefitting from a variety of other preferential arrangements: i) 19/30 or 63.3% enjoyed Andean Pact preferences, ii) four firms received special treatment due to bilateral agreements with neighboring countries, iii) other two firms ibid from USA preference programs, and iv) other three had special, within the firm, export arrangements.

It follows then that whatever entrepreneurial innovative efforts may have been required to start exporting in an environment of largely protected import-substituting industries they were strongly supported by government policies eager to overcome export impediments at almost any cost.

## **B. Industrial Organization**

### **1. Are Export Firms Different?**

Manufacturing census data for the period 1981-1989 showed that only between 10.7% (in 1984) and 13.5% (in 1989) of manufacturing firms in 19 Colombian industries participated in exports. (cited in Roberts and Tybout, op cit.)

It has been argued in the literature that exporting firms are different. Exporting firms might be larger or include a high proportion of foreign subsidiaries. Why would that be important? Having recognized that learning seems to play a significant role in the process of reaching sustainable exports,



first, to closely located developing countries and later on to developed countries, it must be asked if all firms face the same cost and knowledge disadvantages when attempting to move from production exclusively for the domestic market to servicing markets abroad.

While some firms might have already acquired some exporting experience, for others the first export attempts might be quite onerous. Larger firms enjoy greater division of labor and the possibility, generally not available to smaller-size firms, to undertake various research activities to bridge the knowledge gap between supplying domestic and foreign demands. They will also generally have the financial means necessary to engage in export operations. Larger firms also have a greater chance to reach the extra benefits of economies of scale by exporting. Similarly, foreign subsidiaries might be less disadvantaged because of the export knowledge and financing resources available at their headquarters that could be made available to them.

With only two firms employing less than 100 workers, and an average size of employment of 714 (median 500), our sample of exporting firms is clearly constituted by fairly large firms for Colombia. Additionally, 27% of the firms were fully foreign-owned and another 20% were joint ventures. Thus almost half of all the exporting firms include foreign ownership in their capital stock structure. Clearly, our exporting firms tend to be large and foreign-controlled to a significant extent.

The above data calls once more our attention to some of the questions raised before: i) should the benefits of export incentives be granted to all firms, or restricted to those at a real initial disadvantage?, and ii) should the incentives be granted permanently or phased out gradually as firms learn to overcome export obstacles?.

## 2. The Complementarity of Domestic and Export Markets

If as noted above (see A.1), most exporting firms in our sample supply both the domestic and

export markets, their output prices might not be independent and discrimination obtain whenever markets are well-segregated and present different degrees of competition. Domestic prices will generally tend to be higher than export prices for similar products in both markets (see Teitel, 1991).

Six firms (20%) enjoyed monopoly situations in their domestic markets, two (7%) operated in duopoly controlled markets, 19 (63%) were part of oligopolistic markets, and only 3 (10%) claimed to operate in contested markets. The data on ratios between domestic (PD) and export (PX) prices breaks down as follows: i) similar prices (ratio = 1): 4/29 cases, (13.7%), ii) unspecified value but PD>PX: 11/29 cases (37.9%), and iii) 14/29 cases (48.2%) with PD>PX and an average 28.6% price differential<sup>4</sup>.

Thus price discrimination was present in approximately 86% of the cases, with the average price gap between the domestic and export markets averaging over 28%. This result underlines the need to fully understand the dynamics of interaction between the domestic and export markets in assessing the performance of these firms, and in determining the appropriateness of granting across the board export incentives.

### 3. Exporting and Globalization

According to Londero, Teitel et al, op cit. Colombia's factor-based comparative advantage resides in its labor endowment. Its export success has been also due to very favorable export incentives. Industries studied in the referred work were only those meeting a statistical test of consistent export performance over a period of time. Colombian firms investigated for the present study were all part of industries that passed such test. However, neither countries nor industries export, --firms do, and,

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<sup>4</sup> No comparison was of course possible in the case of a firm that only exports.

conceivably, some of the firms included may not pass the test of consistent export performance.

Increased competition due to globalization phenomena of recent years (Teitel, 2005), may have affected exporting firms in different ways<sup>5</sup>. Thus firm configurations might have been altered due to changes in the nature and scope of their contribution to the value-added chain of production. Reactions to increased international competition seem to have run the gamut from greater backwards integration up to the disintegration of full production lines into mere "maquila" operations.

Our data on firm configuration and organizational structure show that the most significant changes took place in firms belonging to the metalworking and clothing industries. Obviously, given the small number of firms in each industry our observations cannot be interpreted as denoting any trends.

One metalworking firm that started out assembling machine tools ended up after a few years of operation with a multi-plant system specialized in manufacturing and exporting clothing, in two of those plants, and metalworking operations in another plant. A local subsidiary of a French auto-maker started out assembling automobiles, from imported parts, for the local market and to satisfy government export requirements managed to export some locally processed automotive parts.

The greatest impact of international competition was among clothing exporting firms. One firm rearranged its operations so that it could out-source some stages, or the whole process, according to need. Another clothing firm created a multi-plant system with each of the plants specializing in one or more stages of the production process. A third firm integrated backwards to the textile industry and with a multi-plant system covering both, clothing and textile operations, had plants specializing by products or

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<sup>5</sup> See Helpman (2006), for a review of theories attempting to model some of these changes in the organization of firms.

processes.

Finally, the local subsidiary of a major Canadian MNC shifted the production of its multi-plant system from originally exporting only shoe parts to the export of finished shoes, all to subsidiaries of the same firm in other countries.

## *Conclusions*

1. The principal original objective of Colombian manufacturing exporting firms interviewed was to supply domestic, not foreign, markets. Most firms had no a priori export strategy but ended up supplying both the domestic and exports markets.

2. As a rule, the main destination of Colombian manufacturing exports have been other countries in Latin America, with little exported to developed countries (USA and Europe), as well as to developing countries in other regions. In practically all cases, initial exports were to bordering countries such as Ecuador, Peru and Venezuela.

3. All firms took advantage of one or more export incentives. 100% made use of the CERT tax rebate, 2/3 got duty-free imports via the Plan Vallejo, and 60% utilized Proexpo's subsidized financing. Additionally, exporting firms benefitted from preferential treatment granted by: Andean Pact, bilateral agreements, and USA preference programs. It follows that the entrepreneurial innovation required to start exporting in largely protected import substituting industries was strongly supported by government policies.

4. Exporting firms in our sample tend to be large (average employment 714 and median 500), and foreign controlled to a significant extent since almost half of all exporting firms include partial (joint venture) or total foreign ownership.

5. Firms in our sample largely operated in little contested domestic markets and price discrimination was present in 86% of the cases. The price differential between the domestic and export markets averaged over 28%.

6. Firms in the clothing and metalworking industries were the most affected by increased international competition. Among clothing exporting firms reactions run the gamut from greater backwards integration (to textiles), to the disintegration of full production lines into "maquila". In metalworking and shoes there were some drastic changes in the products exported as well as moves from specialization in parts to concentration in the export of the whole product.

7. Our brief review of results in selected areas of the survey clearly points to the need to reexamine if the benefits of export incentives should be granted indiscriminately, or be restricted to those exporting firms starting with real disadvantages. Additionally, when granted, should the incentives remain indefinitely or be gradually phased out as firms learn to overcome export obstacles?

## References

**Diaz Alejandro, C.F., 1976.** Colombia: Foreign Trade Regimes and Economic Development, National Bureau of Economic Research, New York: Columbia University Press.

**Helpman, E. 2006.** "Trade, FDI and the Organization of Firms", Journal of Economic Literature, September, Volume XLIV, Number 3, pp. 589-630.

**Hirschman, A.O., 1958.** The Strategy of Economic Development, New Haven, Conn.:Yale University Press.

**Linder, S., 1961.** An Essay on Trade and Transformation, New York:John Wiley

**Londero, E., and S. Teitel, et al, 1998.** Resources, Industrialization and Exports in Latin America, London and New York:Macmillan Press and St. Martin's Press.

**Roberts, M. J. and J.R. Tybout, 1997.** "The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs", The American Economic Review, September, Volume 87, Number 4, pp. 545-564.

**Teitel, S., and F. Thoumi, 1986.** "From Import Substitution to Exports: The Manufacturing Export Experience of Argentina and Brazil", Economic Development and Cultural Change, 34(3), pp.455-490.

**Teitel, S., 1981.** "Towards an Understanding of Technical Change in Semi-Industrialized Countries", Research Policy, 10(2), pp. 127-147.

\_\_\_\_\_, **1991.** "The Determinants of Manufacturing Exports from Latin America", in P. Dasgupta (ed.), Issues in Contemporary Economics , vol.3, London:Macmillan.

-----, **2005.** "Globalization and Its Disconnects", The Journal of Socio-Economics, 34, pp. 444-470