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EXPORTER PERFORMANCE AND PROMOTION INSTRUMENTS: CHILEAN EMPIRICAL EVIDENCE*

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Abstract

During recent decades, the good performance of the export sector has been one of the main sources of fast economic growth in the Chilean economy. In this paper, we evaluate the impact of some public promotion instruments on the export sector. Using plant level data, the econometric evidence shows that these kinds of policies have generated a positive impact on firm performance. We identify qualitative and quantitative effects. In qualitative aspects, we find a positive impact on technological innovation and several aggressive activities in international markets. In quantitative terms, we can infer that promotion instruments are effective for increasing exports and markets. However, there is no evidence of any positive impact on the number of products exported by the firms. In addition, our results suggest that only some instruments, specifically export committees, are effective for opening new markets and for increasing exports.

Resumen

En décadas recientes, los buenos resultados del sector exportador fueron una de las fuentes de crecimiento de la economía chilena. En este documento se evalúa el impacto de algunos instrumentos públicos de fomento al sector exportador. Utilizando datos a nivel de planta, la evidencia econométrica muestra que estas políticas tuvieron buenos resultados. Desde un punto de vista cualitativo, encontramos un efecto positivo en innovación tecnológica. Sin embargo, no existe evidencia de un impacto positivo en el número de productos exportados por las firmas. A su vez, nuestros resultados sugieren que solo algunos instrumentos, específicamente comités de exportación, son efectivos en la apertura de nuevos mercados y el incremento de las exportaciones.

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1. INTRODUCTION

There are several empirical studies that support the idea that outward orientation of an economy contributes positively to higher economic growth (Edwards, 1992 and 1997; Coe and Helpman, 1995 and Sachs and Warner, 1995). This positive effect could be generated by an increase in total factor productivity, higher technical efficiency, and a better utilization of productive capacity and scale economies. Additionally, significant technological externalities could exist from the export sector towards domestic production. In the Chilean case, some evidence indicates that exports stimulate the non-export sector growth, at least in a context of trade opening (García, Meller and Repetto, 1996).

In the area of trade policy there are some reasons for justifying the implementation of export support policies. Among these, we can mention the externalities caused by technological absorption, antiexport bias generated by tariffs and other trade barriers, capital market failures that restrict the financing for socially profitable export projects (Calomiris and Hubbard, 1988), and the presence of externalities generated by firms investing in the introduction of new products or opening new markets towards firms that do not invest, but which receive some benefits from this investment.

Since the trade liberalization of the 70´s and 80´s, the Chilean export sector has grown significantly and has experienced a huge diversification process in exported products and markets. At the same time, the Chilean government has developed several instruments for promoting exports. However, there is scarce evidence about the impact of these instruments and about how much export growth may be explained by their utilization.

The main objective of this paper is to evaluate the impact of a group of instruments on firm export performance. Using a methodology similar to a controlled experiment and data provided by a special survey applied to 365 firms, we evaluate the impact of three instruments managed by The National Agency for Export Promotion (PROCHILE): exporter committees, presence in international fairs, and utilization of a business information system.

This paper is one of the first studies about sources of export growth using microeconomic data. The positive evolution of Chilean export sector has been a result of general policies, as structural reforms, and some more specific policies, for example the institutions and instruments destined to promote exports in international markets and to improve firm performance. How much of the good performance in Chilean exports is a result of the application of specific promotion instruments? What actions and variables are affected by these instruments? How much importance has the impact had? These kinds of questions are answered in the paper.

The results obtained show that promotion policies could generate a positive impact on firm performance. In the specific case of promotion instruments applied in Chile, we identify qualitative and quantitative impacts. In the first aspect, we find a positive impact on technological innovation and several aggressive activities in international markets. In the second aspect, we can infer that promotion instruments are good for increasing exports and markets. However, there is no evidence regarding any positive impact on the number products exported by the firms. In addition, our results suggest that only some of the instru-

ments, specifically exporter committees, are effective for opening new markets and for increasing exports.

The article is structured as follows. Section 2 presents an overview of the Chilean export performance and describes the instruments under evaluation. Section 3 discusses the methodological aspects involved in impact evaluation. Section 4 presents data sources and some characteristics of the firms surveyed. Section 5 presents and discusses the econometric results. Finally, section 6 summarises the main findings and conclusions.

2. EXPORT PERFORMANCE AND PROMOTION INSTRUMENTS

Over several decades, Latin American economies followed protectionist trade policies. The objective of this strategy was to allow the industrialisation of economies, through a higher specialization on manufactured goods. This development model, named import substitution, was based on an hypotheses related to permanent deterioration of terms of trade, because these economies had comparative advantages in primary products. For this reason, it was considered that the development of the Latin American countries was only possible with the acquisition of new comparative advantages in industrial goods. In order to do that, a previous period of protection was necessary for national industries, that would allow them to take advantage of scale economies and to reach conditions capable of competing successfully in international markets.

In the case of Chile, import substitution policy began to be dropped in 1973 with the beginning of a deep process of structural reform carried out by military government. One of the central aspects of this process was trade liberalization, based on the unilateral opening of the economy. In a short period of five years (1974-1979), the import substitution model was dismantled and replaced by an export orientated regime. The main characteristics of trade liberalization were the elimination of all non-tariff barriers in 1976 and the establishment of an uniform tariff of 10 percent in 1979. Even when a severe crisis in balance of payments forced the increase of tariffs to 20% in 1983 and 35% in 1984, liberalization did not stop and the tariff decreased again to 20% in 1985, falling to 15% in 1988, then to 11% in 1991, and finally to its current level of 9% in 2000 (Graph 1).

One of the main benefits of unilateral liberalization was the rationalization of the complex structure of trade barriers that had generated large costs in efficiency and had damaged the growth possibilities of the export sector. So, trade reform allowed a more efficient assignment of resources and exports began to grow significantly. As shown in graph 2, during the decades prior to trade reform, exports grew very slowly. Nevertheless, starting from the second half of the 80´s, exports began to grow very quickly. In fact, between 1960 and 1973, the average export growth rate was 3.5%. During the period 1973-1983, exports increased at a similar rate of 3.6%. Between 1983 and 1999, annual rate of export growth increased to 5.9%. Even without including the last two years, characterized by a deep international crisis, the annual increment of the exports has been 6.9%.

GRAPH 1
AVERAGE TARIFF: 1973-2000
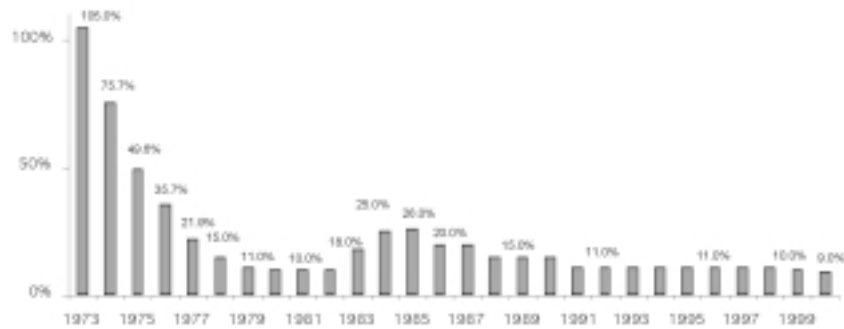
Source: For the period 1973-1990, Meller, P. (1992).

GRAPH 2
EXPORTS 1960-1999
Index: 1960 = 100

This export growth has been accompanied by a significant increase in the degree of diversification of Chilean exports. As can be seen in table 1, during the period 1960-1973, the mining sector represented more than 80% of total exports; however, at the end of 1970´s and 1980´s its participation decreased to 66.8% and 55.4%, respectively. In the last decade, the importance of the mining has been lower than 50%. On the contrary, other sectors linked to natural resources have experienced a strong increase in exports. Between the initial and final periods, agricultural exports increased their participation from 3.2% to 10.1%. The fishing sector rose from 1.8% to 3.9%. The forestry sector increased its participation from 1.9% to 7.9%. That notwithstanding, the most dramatic increase has been experienced by the manufacturing sector, whose participation has increased from 10% to more than 40%.

TABLE 1
EXPORTS BY SECTOR
(Selected Periods)

Period	Mining	Agricultural	Fishing	Forestry	Manufacturing
1960-1973	86.5%	3.2%	1.8%	1.9%	10.1%
1974-1980	66.8%	5.5%	4.0%	7.3%	27.0%
1981-1990	55.4%	10.2%	7.4%	7.9%	32.3%
1991-1999	45.9%	10.1%	3.9%	7.9%	41.9%

Source: Elaboration of authors based on figures of Central Bank.

If we consider only the last decade, we can appreciate the diversification process in terms of a huge increase of destination markets, exported products, and number of exporting firms. Between 1990 and 1999, exported products increased from 2.300 to 3.788, markets from 129 to 174, and exporting firms from 4,100 to 6,022 (table 2). Indeed, these performance indicators are better than those of past decades (Ffrench-Davis, R. and R. Sáez, 1995)

TABLE 2
EXPORT PERFORMANCE INDICATORS: 1990-1999

Indicator	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Firms	4,100	5,384	5,453	5,469	5,844	5,817	5,839	5,841	5,847	6,022
Products	2,300	3,257	3,433	3,507	3,622	3,647	3,890	3,771	3,828	3,788
Markets	129	143	155	151	141	157	168	166	172	174

Source: DIRECON (1999) and PROCHILE (2000).

There is some evidence that growth and diversification of the Chilean exports have been affected positively by several factors, among them exchange rate appreciation and adverse external shocks (Amin Gutiérrez de Piñeres and Ferrantino, 1997), but there is no empirical analysis related to the impact of export promotion instruments on this process of growth and diversification. In the public system these promotion instruments may be classified in three groups: customers, financial, and tributary (Gligo, 1997). Also, there is a government agency, the National Agency for Export Promotion, named PROCHILE, that it was established in 1975. Its objective is to promote Chilean exports, improving the insertion of the exporting firms into international markets.

The main efforts of PROCHILE are guided towards diversifying exported products, destination markets and exporting firms; towards increasing export value, and towards enabling a more competitive position in the commercialisation process of the firms. With that in mind, the agency has organised its programs in the following three areas:

- *Economic Positioning Campaign:* Its objective is to diffuse, to strengthen and to position the country image in external markets. In this activity, firms don't participate individually, moreover the program is structured and financed jointly by PROCHILE and other organizations like union associations.

- *Export Promotion Program:* Established in order to obtain quantitative impacts on export performance, this program operates fundamentally through the opening of new markets and the introduction of new goods. The activities that make up in this area are also carried out jointly with the private sector, which participates actively throughout the financing, operation, design, and implementation of the international promotion campaigns. The typical, although not the only, manner in which this program functions is through the implementation of promotion and commercialisation programs by the naming of export committees.
  The committees are a group of firms with common objectives in international business. These are constituted by no less than four firms which begin their common activities at the request of union associations or by the efforts of PROCHILE.
  The main activities carried out by the committees exporters are: commercial missions, market research, promotion products, participation in international fairs and events, market studies, and invitations to clients, authorities, and experts. However, individual companies may participate in international fairs without necessarily belonging to an export committee.

- *Commercial Information System (CIS):* PROCHILE manages a system that provides information to firms. It is used by companies interested in obtaining specific information about international markets, for example: external prices, transport costs, entrance regulations and trade barriers.

3. METHODOLOGICAL ASPECTS

The methodology used in this paper is a variant of the classic method of experimental design applied to one "quasi-experimental design" (QES). The QES assess the impact of one project by measuring the changes that have taken place in the performance of program target groups and by systematically isolating the effects of other factors that might have contributed to the observed changes. QES allows identifying the impact of a program using a control group. Pre and past observations are taken in both groups, participating and control. In a well designed evaluation, the control group detects and adjusts for changes that are unrelated to the program, while the participating group identifies changes due to the program. In this way, the changes in the participating group minus those of the control group should reveal the effect attributable to the program (Valadez y Bamberger, 1997).

In the context of an experimental design, consider a typical case in the medical sciences, where a researcher is evaluating the impact of a drug designed to eliminate the habit of smoking. The standard procedure consists of obtaining a sample of $m = 2n$ smokers and to randomly assign a treatment (T) to half of the

sample. The other half receives a "placebo", something similar to the treatment, but that is in fact inert.

In this context, the classical experimental design suggests that a good estimator of the treatment effectiveness is the difference between the proportion of smokers in the two groups at the end of the program. So, the impact of the treatment is measured as:

$$(1) \qquad T = \bar{y}^t - \bar{y}^c$$

Where "c" refers to the group that receives "a placebo ", called the control group, and "t" to the group that receives treatment, the participating group.

$$(2) \qquad \bar{y}^t = \frac{\sum_{j=1}^{n} y_j^t}{n} \qquad \bar{y}^c = \frac{\sum_{j=n+1}^{m} y_j^c}{n}$$

An alternative way of obtaining this result is the econometric estimation of the following equation:

$$(3) \qquad y_i = \alpha + \beta\, x_i + \varepsilon_i$$

Where x_i is a dummy variable equal to 1 if an individual receives treatment, and 0 if not, and y_i is some variable that measures the results of the treatment.

However, there are some problems for estimating this econometric model: (i) errors are not normally distributed, and (ii) there are omitted variables that affect the impact of treatment. This last does not affect obtaining a consistent estimator of the treatment impact, since a classical experimental design assures that relevant omitted variables are not correlated with variable treatment (x_i). This is accomplished by assigning treatment randomly. In other words, it assures that:

$$(4) \qquad E(x'\, \varepsilon) = 0$$

In the evaluation of promotion instruments, we can not assume that omitted variables and treatment are not correlated, because this is not a natural experiment and the selection of participating firms would be not random. In this case, some observable and non-observable characteristics of firms could affect the treatment results and probability of using the instruments. To solve these problems, we estimate the following equation:

$$(5) \qquad (y_{1i} - y_{0i}) = \alpha + \beta\, x_i + \gamma\, z_i + \varepsilon_i$$

Z_i incorporates all those variable where we find out significant initial differences between the groups of firms. This estimation technique has the advantage that it allows "cleaning up" the impact measurement of any non-observed factor that may be correlated with a participant's status and/or the impact of participation.

4. Source Data and Characteristics of the Firms

The data used in this paper were obtained on a special survey applied to 365 firms. The sample was chosen from a universe of 7,479 exporting firms, which were obtained in the Central Bank of Chile export statistics for the period 1992-1996. The samples for both groups are 187 and 178 for control and participating firms, respectively. These were chosen by applying stratified random sampling[1].

Some characteristics of the firms surveyed are shown in table 3. Firms in the sample have an average of 1.5 production plants which is very similar for both groups. The year of foundation of the companies and the year of beginning exports is approximately the same for both the control and participating firms. At the moment of the survey, companies are approximately 22 years old and have 7 years of export experience.

In terms of sales and employment, firms that used instruments of PROCHILE were 50% larger than the control group in 1992, nevertheless they have a significantly lower stock of capital. In 1996, the differential of sales and employment had decreased. In addition, participating firms become more intensive in the use of capital than those of the control group.

In relation to export performance, at the beginning of the period, firms exported on average to three markets, around 2 products, and approximately 1 million two hundred thousand dollars. If we compare the two groups, PROCHILE's firms show a better performance in markets, but lower results in products and exports. At the end of the period, the total sample shows an increase in products, markets and export values. However, this growth is larger for the companies of PROCHILE than the increase in the difference in markets for the control group, and thus they end up being relatively similar in products and export values. Initially, in these two last indicators, participating firms were outperformed by the control group.

TABLE 3
FIRM CHARACTERISTICS

Variable	Total	PROCHILE	Control	(1)/(2)
Plants	1.5	1.7	1.4	1.2
Year of Foundation	1974.7	1975.3	1974.2	1.0
Years of Export Experience	89.8	89.2	90.3	1.0
Sales, 1992	4,028.6	4,897.3	3,201.6	1.5
Capital stock, 1992	2,424.2	1,862.9	2,958.4	0.6
Employment, 1992	100.3	122.4	79.3	1.5
Markets, 1992	2.6	3.1	2.0	1.5
No. of Products Exported, 1992	1.7	1.6	1.7	0.9
Exports, 1992	1,156.8	1,062.1	1,247.0	0.9
Sales, 1996	6,282.3	6,229.5	6,332.6	1.0
Capital stock, 1996	3,806.5	4,320.2	3,317.5	1.3
Employment, 1996	130.6	142.0	119.7	1.2
Markets, 1996	4.5	5.8	3.4	1.7
No. of Products Exported, 1996	3.0	3.0	2.9	1.0
Exports, 1996	2,833.0	2,791.4	2,872.5	1.0

[1]   For more specific details about sample selection, see Alvarez and Crespi (1999).

5. Impact Evaluation of Promotion Instruments on Export Performance

As section 3 suggests, before estimating the impact of promotion instruments, it is necessary to verify if there some differences between participating and control groups, before they received "treatment", in this case the year 1992. In order to do that, we estimate a model in order to explain the probability of using the promotion instruments. The participation decision is explained by a group of initial firm characteristics. The results of this estimation, shown in table 5, indicate that the hypothesis of model global significance is not rejected (Chi^2 = 40.5). This evidence allows us to infer that the participation of firms is not random and some firm characteristics affect the probability of using PROCHILE instruments.

The explicative variables used in the estimation are: number of plants (Plants), Year of Foundation (Found), exports (Exp), employment (Emp), exported products (Prod), export markets (Market), sales (Sales), skilled labor (Skill), dummies by geographical localization (Region), and dummies by sector (Sector).

The results indicate that, at least, it is necessary to control for a reduced number of variables, these being export markets and localization of firms in the capital of the country (Region 13). We found that companies which exported to more markets have a higher probability of using PROCHILE instruments. This would reflect that firms with a greater export experience use the promotion instruments. On the other hand, we could infer that firms located in the capital of the country have a lower probability of participating. This may be consistent with the efforts of PROCHILE for incorporating companies of the other regions, or may be due to the nature of the comparative advantages of Chile, which are relatively abundant natural resources, not located in the capital.

TABLE 4
LOGIT MODEL: PROBABILITY OF PARTICIPATING IN PROCHILE

Variable	Coefficient
Plants	0.015
	(0.18)
Found	0.000
	(–0.930)
Exp	0.000
	(–1.57)
Emp	0.001
	(1.13)
Prod	–0.035
	(–0.89)
Market	0.082
	(2.26)*
Sales	0.000
	(1.6)
Skill	–0.002
	(–0.286)
Region 13	–1.931
	(–1.72)**
Constant	1.620
	(1.40)
Observations	365
Chi^2(22)	40.51*
Pseudo R2	0.08

Notes: Non significant dummies by sector and by geographical location not reported.
* Significant at 5%, ** Significant at 10%.

To estimate the impact in a quasi-experimental design, the equation used is:

$$(y_{1i} - y_{0i}) = \alpha + \beta \, x_i + \gamma \, z_i + \varepsilon_i$$

Where y is some qualitative or quantitative variable. The subindexes 1 and 0 reflect the final year (1996) and initial (1992), respectively. Therefore, the dependent variable is the change in each one of performance indicators between the years. The variable x is a dummy equal to 1 if firm used any promotion instruments during the period 1992-1996, and 0 if not. Hereinafter, this variable is denominated PROCHILE. The z vector is a group of variables to control for differences in firms at the beginning of the period.

In this paper, we evaluate the impact of promotion instruments on qualitative variables such as technological innovation and firms efforts destined to improve export performance. In quantitative aspects, we estimate impact on five variables: number of products exported, market of destination of the exports, export value, diversification of markets, and products.

In table 5, estimation results for the technological innovation variables are shown. The dependent variable takes a value between 0 and 4, depending on the answer to the following question: "During the last four years, to what level has the firm introduced innovation? The alternatives are 0 (null), 1 (low); moderately low (2), moderately high (3) and high (4). We include as independent control variables others measured at the beginning of the period: export markets (Markets), localization in the capital of the country (Region), Number of products exported (Prod), value of the exports (Exp), total employment (Emp), and plants (Plants). Dummies by sector are included but are not reported in table 5.

The results show that, in most the cases, the PROCHILE variable is positive and significant. This evidence allows us to infer that utilization of promotion instruments has generated higher technological innovation in the firms. This improved performance on innovation has been experienced mainly in three aspects: product technological improvement, introduction of new products, and innovation on organizational management. We have not found any positive effect on innovation in the productive process. In respect to this, the evidence shows that utilization of promotion instruments not only would directly affect the variable of export performance, but also previous actions, such as technological innovations, destined to improve productivity and competitiveness of the firms.

In table 6, we show impact of promotion instruments on a group of variables related to firm efforts in order to improve export capability. These qualitative measurements are intermediate actions that would result in quantitative and concrete achievements in the performance of the firms. In order to identify the impact of the instruments, we define a dependent variable that takes values between 0 and 4, depending on the answer to the following question: During the last four years, to what level has the firm taken the following actions for exporting? The alternatives for answer are: 0 (null), 1 (low), moderately low (2), moderately high (3) and high (4).

TABLE 5

TOBIT MODEL: IMPACT ON TECHNOLOGICAL INNOVATION

Variable	Technological improvement in Products	Introduction of New Products	Innovation on Productive Process	Innovation on Organizational Management
Prochile	1.05*	0.77**	0.11	0.31**
	(2.69)	(1.90)	(0.73)	(1.72)
Market	0.06	–0.009	0.04	0.01
	(1.23)	(–0.20)	(2.22)	(0.50)
Prod	0.04	0.10	–0.02	–0.02
	(0.55)	(1.42)	(–0.61)	(–0.65)
Exp	0.00	–0.00	0.00	0.00007
	(0.24)	(–1.15)	(0.54)	(2.44)
Emp	0.002	0.003	0.0007	0.004
	(1.61)	(2.07)	(2.00)	(0.90)
Plants	0.14	0.29	0.12	0.08
	(0.96)	(2.01)	(2.17)	(0.42)
Region	–0.04	0.42	–0.04	0.09
	(–0.09)	(0.86)	(–0.02)	(0.42)
Constant	1.17	–0.76	1.58	1.43
	(1.90)	(1.90)	(6.65)	(5.25)
R2	0.03	0.03	0.04	0.03
Observations	365	365	365	365

Notes: t-test in parenthesis. Dummies by sector not reported.
* Significant at 5%, ** Significant at 10%.

As can be seen in table 6, in almost of actions analyzed, with exception of access to external credit, the PROCHILE variable is positive and statistically significant. Based on this evidence, we can conclude that utilization of promotion instruments has generated positive changes in firm behaviour. In fact, participation in PROCHILE programs positively affects: strategic alliances or agreements with other firms and providers; the hiring and training of specialized staff; higher investment in promotion of the firms; improvements in the export department, commercial information system, negotiation capacity and external distribution network; obtaining technological information from external clients; and the increase in differentiation of exported products.

TABLE 6

TOBIT MODEL: IMPACT ON FIRMS ACTIVITIES

Variable	Prochile Parameter (t- test)
Strategic alliances with other firms	2.01 (3.84)
Strategic alliances with providers	1.21 (2.76)
Hiring of skilled staff	1.86 (4.27)
Training of staff	1.17 (3.45)
External investment in promotion	1.64 (3.63)
Improvements in export department	1.14 (2.92)
Improvements in commercial information system	1.28 (3.89)
Improvements in negotiation capacity	1.26 (3.70)
Improvements in external distribution network	1.57 (3.67)
Obtaining technological information from external clients	0.81 (2.07)
Increase in differentiation of exported products	1.45 (3.41)
Access to external credit	–0.45 (–0.76)

Note: Control variables and dummies by sector not reported.

The econometric estimation results for quantitative variables are shown in table 7. The dependent variables are change in markets, change in exported products, change in exports, change in product diversification, and change in market diversification. All changes are measured between initial year (1992) and final year (1996). Product and market diversification variables are defined as the standard deviation in participation of three main products (and markets) on total exports. In this sense, we mean that a lower (higher) standard deviation implies a lower (higher) concentration in a few products or markets.

We present two estimations by variables. Equation 1 considers only the variables that were significant in the estimation of the participation equation: export markets and location in the capital of the country. In equation 2, some other variables, as defined above, are added. The estimation results indicate that the utilization of promotion instruments generates a positive and significant impact only on number of export markets. According to the estimation, the participation in PROCHILE allows the firms, in comparison with control group, to increase their participation in export markets by approximately one. In relation with other performance variables, such as introduction of new products, export change, diversification of products, and diversification of markets, we did not find any significant impact.

Nevertheless, the results indicate that the promotion instruments generate an indirect and positive impact on exports, diversification by markets and diversification by products. In fact, as shown in table 7, these three performance variables are related with the number of markets at the beginning of the period. This variable (Market) positively and significantly affects the change in exports. One additional market increases exports by approximately 200 thousand dollars. Additionally, a higher number of markets negatively and significantly affects the standard deviation of the participation of main products and markets in total exports of the firms, generating an increase in the degree of firm diversification .

From this evidence, we can infer that promotion instruments generate both a short and long term effect. In the short run, its utilization allows an increase in export markets and, after a period of four years, they generate more exports and a higher diversification by markets and products. This is consistent with the fact that PROCHILE helps to introduce firms into new markets, but does not have instruments designed to develop new products.

In addition to estimating the general impact of the promotion instruments, we proceed to carry out a comparative analysis of the different instruments. To do that, we compare firm export performance separating those that have participated in export committees from the rest of the companies that have only used the other instruments (fairs and commercial information system). We define a variable dummy named Committee that is equal to 1 if a firm participated in export committees, 0 if not, and other named Nocomitte, that is equal to 1 if a firm used fairs and/or the commercial information system, 0 if not.

The results of these estimates are presented in table 8. We can infer that, independently of the type of instrument used, participation in PROCHILE has a positive impact on the number of markets, but we did not find any positive impact on the rest of the performance indicators. As in the last estimation, they indirectly affect the future growth of exports. In addition, we found that the impact of participation in committees is larger than the effect of other types of instruments. Committees generate an increment on average of approximately 1.5 markets. On the other hand, participation in fairs and use of the system of commercial information generated an increase of about one export market.

TABLE 7
GENERAL IMPACT OF INSTRUMENTS ON MARKETS, PRODUCTS AND EXPORTS

Variable	Change in Markets		Change in Products		Change in Exports		Change in Product Diversification		Change in Market Diversification	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Prochile	1.29 (3.17)	1.03 (2.64)	0.26 (0.54)	0.31 (0.66)	-117,8 (-0,16)	-513,4 (-0,75)	2.52 (1.09)	2.66 (1.09)	0.05 (0.03)	0.22 (0.10)
Market	0.05 (0.64)	0.03 (0.32)	-0.076 (-2.39)	-0.084 (-2.76)	188,8 (2,12)	187,5 (1,67)	-1.34 (-5.36)	-1.14 (-4.65)	-0.94 (-4.54)	-0.66 (-3.27)
Prod		-0.11 (-1.57)		0.093 (0.63)		56,2 (0,47)		-0.77 (-1.88)		-1.04 (-4.08)
Exp		0.00 (0.16)	-0.00007 (-1.82)			-0,38 (-1,17)		0.00 (0.97)		0.0006 (2.16)
Emp		0.001 (1.67)	0.0007 (0.61)			2,11 (0,90)		-0.004 (-1.16)		-0.005 (-0.79)
Plants		0.43 (2.19)		0.18 (1.30)		583,6 (1,72)		-0.83 (-1.05)		-1.27 (-1.32)
Region	0.28 (0.64)	0.82 (1.56)		-0.49 (-0.65)	-81,2 (-0,12)	465,1 (0,56)	1.94 (0.74)	2.4 (0.84)	-0.44 (-0.18)	-1.24 (-0.47)
Constant	1.01 (2.32)	0.53 (0.86)	1.62 (2.64)	1.31 (2.12)	1309,2 (1,67)	1900,7 (1,56)	7.31 (2.72)	7.38 (1.78)	10.2 (3.92)	10.6 (3.05)
R2	0.033	0.12	0.0095	0.045	0,015	0,10	0.076	0.099	0.087	0.093
N	365	365	365	365	365	365	365	365	365	365

Notes: Errors corrected by heterocedasticity.
Dummies by sector not reported.
t-test in parenthesis.

TABLE 8

IMPACT BY TYPE OF INSTRUMENT

Variable	Change in Markets	Change in Products	Change in Exports
Committee	1.43 (2.77)	0.94 (1.18)	–971.5 (–1.26)
Nocomitte	0.79 (1.58)	–0.08 (–0.18)	–235.3 (–0.30)
Merc	0.02 (0.22)	–0.095 (–3.05)	195.4 (1.74)
Prod	–0.11 (–1.48)	0.10 (0.69)	49.2 (0.41)
Exp	0.00 (0.24)	–0.00007 (–1.69)	–0.39 (–1.18)
Employment	0.001 (0.69)	0.0007 (0.65)	2.08 (0.88)
Plants	0.43 (2.22)	0.19 (1.33)	581.6 (1.71)
Region	0.86 (1.66)	–0.42 (–0.56)	416.9 (0.52)
Constant	0.53 (0.85)	1.29 (2.08)	1910.9 (1.57)
R2	0.12	0.052	0.10
Observations	365	365	365

Notes: Errors corrected by heterocedasticity.
Dummies by sector not reported.
t-test between parenthesis.

6. CONCLUSIONS

This paper is one of the first studies about sources of export growth using microeconomic data. There is some evidence about the positive evolution of the Chilean export sector has been a result of general policies, such as structural reforms, and some more specific ones, but there are no studies related to the impact of institutions and instruments destined to promote exports and to improve firm performance. How much of the good performance of Chilean exports is a result of application of specific promotion instruments? What actions and variables are affected by these instruments? How important has the impact been? These kinds of questions have been answered in this paper.

Firstly, we found that promotion instruments generate a positive impact on firm technological innovation, specifically on technological improvement in products, introduction of new products, and innovation in organisational management. In addition, the results indicate that utilization of PROCHILE instruments incentives positive actions in improving the competitiveness of firms in external markets. Among these actions, we found an increase in agreements of strategic alliances with other firms and providers, the hiring and training of specialized staff, investments in promotion, improvements in export departments, use of the commercial information system, negotiation capacity, improving the external distribution network, obtaining technological information from external clients, and finally an increase in the differentiation of exported products.

In quantitative terms, we estimate the impact of instruments on markets, products, exports, and diversification by markets and products. The results obtained allow us to conclude that instruments managed by PROCHILE have had a positive and direct impact on the number of markets, and indirectly on exports and diversification. In other words, initially, promotion instruments increase the number of firm export markets and, after a period of four years, they generate more exports and a higher diversification by markets and products. This is consistent with the fact that PROCHILE helps to introduce firms in new markets, but does not have instruments for developing new products.

Finally, regarding the impact of the various instruments considered in this analysis, we can conclude that these do not all affect export performance the same way. Participation in export committees generates a higher positive impact than participation in fairs, or the utilization of the commercial information system.

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