IMPACT EVALUATION IN A MULTIPLE PROGRAM WORLD: EXPORT AND INNOVATION PROMOTION

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OUTLINE

- **Introduction**
- **Export and Innovation Promotion in Chile**
- **Empirical Methodology**
- **Data and Descriptive Evidence**
- **Estimation Results**
- **Conclusions**

INTRODUCTION

Export Promotion in a Single Program World

Firms pursuing cross-border economic opportunities must learn about the export process at home, the different ways of shipping the merchandise and their associated costs, the potential markets abroad and their demand profile, the conditions for entering these markets, and channels available to raise awareness of their products and those through which these products can be marketed.

These firms must specifically engage in a costly process of identifying and assessing the reliability, trustworthiness, timeliness, and capabilities of potential trade partners.

Despite the progress of communication technologies, information problems are still one of the most relevant export barriers both in terms of frequency appearance and degree of severity.

These information barriers can motivate public interventions in the form of export promotion actions.

INTRODUCTION

Export Promotion in a Single Program World

Economically, these actions might be justified on the basis of market failures, primarily in the form of information externalities (Notice that, to be warranted, interventions would need to be welfare-improving, so cost need to be factored in…).

Given that it is difficult to exclude third parties from information and that its use is non-rivalrous, there is a potential for free riding on the successful searches of firms for foreign buyers.

Private returns from these exporting activities would be lower than the corresponding social returns, and investment in their development would then be sub-optimally low.

INTRODUCTION

Export Promotion in a Single Program World

Most countries around the world have established trade promotion organizations with the purpose to help firms overcoming information problems.

In performing this function, they offer exporters a wide range of services, from counseling on the export process to sponsoring their participation in trade missions and fairs along with coordination of trade agendas.

Several recent studies have primarily assessed the overall impact of export promotion activities on export outcomes using quasi-experimental methods on firm-level data.

INTRODUCTION

Export Promotion in a Single Program World

Countries case studies using firm-level data include:

- *Argentina* (Volpe Martincus et al., 2012)
- *Belgium* (Schminke and Van Biesebroeck, 2012)
- *Canada* (Chen et al., 2011)
- *Chile* (Álvarez and Crespi, 2000; Álvarez, 2004; Volpe Martincus and Carballo, 2010)
- *Colombia* (Volpe Martincus and Carballo, 2010)
- *Costa Rica* (Volpe Martincus and Carballo, 2012)
- *Denmark* (Hiller, 2012 / Munch and Schaur, *in progress*)
- *Netherlands* (Creusen and Lejour, 2011)
- *Peru* (Volpe Martincus and Carballo, 2008)
- *Sweden* (Fergusson and Forslid, 2011)
- *Tunisia* (Fernandes at al., 2012)
- *Uruguay* (Volpe Martincus and Carballo, 2010)

among others. Many additional studies are currently in preparation.

INTRODUCTION

Export Promotion in a Single Program World

These rigorous studies have substantially improved our understanding of the general effects of trade promotion on the firm export outcomes.

Although with some differences, all these studies conclude that trade promotion contributes to improve firms' export performance.

INTRODUCTION

Export Promotion in a Multiple Trade Program World

Evidence on the relative effectiveness of the different promotion activities is, however, scarce (Álvarez, 2004; Volpe Martincus and Carballo, 2010; Creusen and Lejour, 2011).

Among the few existing studies in this regard, Volpe Martincus and Carballo (2010) compare the impact of various trade promotion programs on the extensive and intensive margin of Colombian firms' exports, both to each other and with respect to no participation.

They find that bundled services combining counseling, trade agenda, and trade missions and fairs, which provide exporters with a comprehensive support throughout the process of starting export businesses and building up buyer-seller relationships with foreign partners, are more effective than isolated assistance actions (e.g., missions).

INTRODUCTION

Export Promotion in a Multiple Intervention World

More importantly, all previous studies implicitly neglect the outside trade dimension.

They specifically assume a single program world, whereby public interventions other than those in trade are ignored.

However, firms actually get assistance from different public and private entities and these alternative assistances can affect export outcomes.

INTRODUCTION

Export Promotion in a Multiple Intervention World

Failure to account for interventions other than trade promotion has direct consequences for the estimated effects.

If participation in non-trade programs is time invariant over the sample period, its impact will be automatically controlled for by the estimation procedures, which identify the effects of interest based on the time variation.

If firms' participation in other assistance programs is instead a time-varying variable that is overrepresented in the group of trade supported firms and these other assistance programs positively influence export outcomes, then conventional procedures would overestimate the true causal effects of trade promotion on export performance.

INTRODUCTION

Export Promotion in a Multiple Intervention World

Further, ignoring other interventions implies leaving unaddressed relevant policy relevant questions, such as whether there are complementarities among programs that could be explicitly exploited through an adequate design of policy instruments, their coordination and sequencing; and even what would an appropriate institutional organization of public support to the private sector to maximize potential synergies (i.e., single agencies with divisions vs. articulated separated agencies, cross–participation of managers in related agencies, rotation of public officers among entities, etc.).

INTRODUCTION

Export Promotion and Innovation Promotion

This study is a first step towards closing such a gap in the empirical literature and providing answers to those open policy questions.

In making this move forward, we examine the interplay between export and innovation promotion programs.

INTRODUCTION

Why Innovation Promotion?

Product-cycle and endogenous technology models highlight that product differentiation, i.e., introduction of new varieties or improving quality of existing varieties, through innovation is associated with competitive advantages that enable firms to successfully participate in international markets (e.g., Hirsch, 1974; Vernon, 1966; Krugman, 1979; Greenhalgh, 1990; Greenhalgh and Taylor, 1994; Grossman and Helpman, 1995).

Process innovations, in turn, may translate into increased productivity and reduced marginal costs, thus helping firms enter and expand in foreign markets.

INTRODUCTION

Why Innovation Promotion?

While the evidence is mixed, several studies find a positive association between innovation of some form and export (e.g., Basile, 2001; Love and Roper, 2001; Sterlacchini, 2001; Barrios et al., 2003; Lachenmaier and Woessman, 2006; Aw et al., 2007; Casssiman and Martinez-Rios, 2007; Girma et al., 2007; Becker and Egger, 2009; and Bocquet and Musso, 2011).

Admittedly, there may potentially be a two-way relationship between innovation and exports, i.e., innovation may stimulate exports and exports may be associated with learning-by-exporting in the form improved innovation activities (e.g., Crespi et al., 2006; Aw et al., 2007; and Girma et al., 2007; and Aw et al., 2008).

INTRODUCTION

Why Innovation Promotion?

Why to promote innovation? There is potentially a case for innovation public policies when there are projects with high social returns, which due to market failures, do not show up in private returns, thus generating a private investment in innovation that is lower than the socially expected (Steinmueller, 2010).

Innovation public policies aim particularly at:

- mitigating the "imperfect private appropriability" (i.e., spillovers) that characterizes the production of scientific and technical knowledge (Nelson, 1959; Arrow, 1962);
- correcting information asymmetries that affect investment in innovation, which leads to problems in accessing external finance or existent technologies;
- facilitating the coordination of investments in complementary assets (e.g., human capital and infrastructure) by the different actors involved in the innovation process.

INTRODUCTION

Why Innovation Promotion?

A growing number of papers investigate the impacts of innovation programs, both:

- in developed countries (e.g., David et al., 1999; Lerner, 1999; Lach, 2000; Wallsten, 2000; Hall and Van Reenen, 2001; Klette et al., 2001; Czarnitzki, 2002; Jaffe, 2002; Duguet, 2004; Görg and Strobl, 2007; Carboni, 2008; Clausen, 2008;; Gonzalez and Paxo, 2008; Aschoff, 2009; Harris et al., 2009; Mohnen and Berubé, 2009; Lokshin and Mohnen, 2010; Bronzini and Iachini, 2011; and Sissoko, 2012);

- and in LAC (e.g., Binelli and Maffioli, 2006; Chudnovsky et al., 2006; DeNegri, 2006a, 2006b; Benavente et al., 2007; DeNegri et al., 2008; Hall and Maffioli, 2008; Ubfal and Maffioli, 2008; Mercier-Blackman, 2009; Alvarez, 2011; Crespi et al. 2011a; Crespi et al., 2011b; Lopez et al., 2011; and Maffioli et al., 2011).

Findings primarily suggest that innovation promotion programs have been effective in increasing firm-level investment in innovation without full crowding out. However, very few studies have focused on exports as a performance indicator and those that did it ignored any potential interplay with export promotion programs.

INTRODUCTION

What Do We Do?

We address two main questions:

- What are the effects of trade and innovation promotion programs on firm exports?
- Does it make a difference if these two programs are combined?

INTRODUCTION

What Do We Do?

In answering these questions,

- We make use of a purposely built dataset that unifies for the first time the lists of all beneficiaries of export promotion programs and all beneficiaries of innovation promotion programs in Chile from 2002 to 2010.

- We exploit highly disaggregated firm-level export data for the entire universe of exporters over the same period.

- We apply a series of microeconometric techniques ("OLS-based matching", FE, Matching Difference-in-Differences) to identify the effects of export promotion, innovation promotion, and *their combination*.

INTRODUCTION

What Do We Find?

We find that innovation promotion programs seem to complement export promotion programs in affecting firms export performance.

Evidence seems to suggest that firms that receive assistance for both export and innovation have better export outcomes than comparable counterparts that are not supported or that are supported in just one of those activities.

In particular, the combination of these programs appears to help firms expand their exports, primarily along the country extensive margin.

INTRODUCTION

Our Contribution

Our study therefore contributes to two different literatures.

- The analysis adds to the series of recent papers that assess the effects of export and innovation promotion programs by explicitly considering their interplay.

- The analysis also contributes to the multiple treatment literature (e.g., Imbens, 2000; Lechner, 2001) and its limited empirical applications, which are mostly concentrated on labor market policies (e.g., Lechner, 2002; Sianesi, 2005).

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EXPORT AND INNOVATION PROMOTION IN CHILE

Export Promotion: PROCHILE

PROCHILE is a well established export promotion agency with a long trajectory and has offices and commercial representation in over 40 countries as well as 13 regional directorates within Chile.

According to the agency's own definition, PROCHILE's labor is based on four fundamental concepts:

- supporting small and medium-sized firms in their internationalization process;
- taking advantage of the opportunities created by the country's trade agreements;
- public-private associations; and
- positioning Chile's image in other markets.

EXPORT AND INNOVATION PROMOTION IN CHILE

Export Promotion: PROCHILE

PROCHILE offers Chilean exporters a wide variety of services, either individually or in association with other organizations:

- training programs for inexperienced exporters;
- collection and distribution of relevant trade statistics and generation of analyses on country and product market trends, both standard and customer-tailored;
- specialized counseling and technical assistance on how to take advantage of business opportunities abroad and on how to access specific markets;
- updated online exporter directory with detailed contact information;
- coordination and co-financing of firms' participation in trade missions fairs; and
- support to exporter committees and inter-firm coaching for entrepreneurs seeking to internationalize their companies.

EXPORT AND INNOVATION PROMOTION IN CHILE

Innovation Promotion: FONTEC/INNOVA

The FONTEC (National Productivity and Technological Development Fund) was a program managed by the Chilean National Development Agency (CORFO) that provided financing for innovation projects carried out by private firms.

FONTEC operated as a matching-grant, subsidizing a percentage of the total costs of the private projects. The private co-funding varied between 40% and 65% and it increased over time.

EXPORT AND INNOVATION PROMOTION IN CHILE

Innovation Promotion: FONTEC/INNOVA

The main objectives of this program were:

- to promote R&D, scientific technical services and other activities that contribute to technological development, thereby helping enhance the ability of private business to compete and increase their output;

- to expand the national technology supply and use of technology either generated or adapted in Chile; and

- to promote interaction and cooperation between the country's public research organizations and its businesses encouraging them to undertake joint projects.

EXPORT AND INNOVATION PROMOTION IN CHILE

Innovation Promotion: FONTEC/INNOVA

FONTEC operated five financing lines:

- technological innovation (new products and improved production processes);
- technological infrastructure (installation, equipment and training of firm staff involved in the development of this infrastructure);
- group transfer (at least 5 firms, technological missions, and technical assistance);
- technology transfer organizations (at least 5 firms, set up a technology transfer center to study, develop, diffuse and adapt technology); and
- pre-investment studies (evaluations and studies of technological investment).

In 2005 FONTEC was formally terminated and merged with FDI (Innovation Development Fund) into INNOVA. Many FONTEC lines remained active under INNOVA, particularly the first one.

EXPORT AND INNOVATION PROMOTION IN CHILE

Innovation Promotion: FONDEF

FONDEF (Science and Technology Development Fund) is a program managed by the National Commission on Scientific and Technological Research (CONICYT) that funds pre-competitive R&D and technology projects organized jointly by universities, technology institutes, and the private sector.

The supports consist of a matching grant covering part of the total costs of the project.

The objective of this program is to contribute to improve the competitiveness of the national economy, through the association between research institutions and private companies to carry out applied research, precompetitive development, and technology transfer.

EXPORT AND INNOVATION PROMOTION IN CHILE

Innovation Promotion: FONTEC and FONDEF

Both FONTEC/INNOVA and FONDEF, by co-financing private initiatives, have the primary objective of improving firm innovation capabilities and productivity.

In particular, FONTEC focuses on alleviating the financial constraint that harm business innovation, whereas FONDEF operates to mitigate coordination failures that hinder collaboration and interaction between public research organizations and firms.

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EMPIRICAL METHODOLOGY

Single Dynamic Treatments
Step Up (two statuses, two periods)

$$Y_{i1}^{obs} = Y_{i1}(W_{i1}) = \begin{cases} Y_i(0) \; if \; W_{i1} = 0 \\ Y_i(1) \; otherwise \end{cases}$$

$$Y_{i2}^{obs} = Y_{i2}(W_{i1}, W_{i2}) = \begin{cases} Y_i(0,0) \; if \; W_{i1} = 0, W_{i2} = 0 \\ Y_i(0,1) \; if \; W_{i1} = 0, W_{i2} = 1 \\ Y_i(1,0) \; if \; W_{i1} = 1, W_{i2} = 0 \\ Y_i(1,1) \qquad\qquad otherwise \end{cases}$$

$$W_{i2}^{obs} = W_{i2}(W_{i1}) = \begin{cases} W_{i2}(0) \; if \; W_{i1} = 0 \\ W_{i2}(1) \; otherwise \end{cases}$$

where W is a binary indicator for participation in the program, i represents firm, and Y denotes potential outcomes. Our outcome variables will be total exports, number of products, and number of destinations. For each firm there is a vector of covariates X.

EMPIRICAL METHODOLOGY

Identifying Assumption 1: Sequential Unconfoundedness

$$W_{i1} \perp \left(Y_{i2}(0,0), Y_{i2}(0,1), Y_{i2}(1,0), Y_{i2}(1,1), Y_{i1}(0), Y_{i1}(1), W_{i2}(0), W_{i2}(1)\right) \mid X_i$$

$$W_{i2} \perp \left(Y_{i2}(0,0), Y_{i2}(0,1), Y_{i2}(1,0), Y_{i2}(1,1), Y_{i1}(0), Y_{i1}(1)\right) \mid X_i, W_{i1}, Y_{i1}^{obs}$$

The first part of the assumption requires that, within subpopulations homogeneous in covariates, the assignment to the initial treatment is random, i.e., independent of the subsequent potential outcomes.

The second part of the assumption requires that, within subpopulation homogeneous in covariates, initial treatment, and initial outcome, the assignment to the second treatment is random.

EMPIRICAL METHODOLOGY

Estimation Under Sequential Unconfoundedness and Linearity

$$Y_{i2}(w_1, w_2)|X_i = x, Y_{i1}(w_1) = y_1 \sim \mathcal{N}\left(\beta_{w_1 w_2 0} + \beta_{w_1 w_2 1} x + \beta_{w_1 w_2 2} y_1, \sigma^2_{w_1 w_2 y}\right)$$

$$for\ (w_1, w_2) \epsilon \{(0,0), (0,1), (1,0), (1,1)\}$$

$$Y_{i1}(w_1)|X_i = x \sim \mathcal{N}(\alpha_{w0} + \alpha_{w1} x, \sigma^2_{wx})$$

$$for\ w \epsilon \{0,1\}$$

Imposing standard restrictions and taking into account sequential unconfoundedness:

$$Y_{it}^{obs}\,|X_{it-1}^{obs}, \dots, X_{i0}, Y_{it-1}^{obs}, \dots Y_{i0}, W_{it}, \dots, W_{i1} \sim \mathcal{N}(\alpha_1 W_{it} + \alpha_2 X_{it-1} + \alpha_3 Y_{it-1} + \alpha_t, \sigma^2)$$

which leads to the following estimating equation:

$$Y_{it} = \alpha_1 W_{it} + \alpha_2 X_{it-1} + \alpha_3 Y_{it-1} + \alpha_t + \varepsilon_{it}$$

EMPIRICAL METHODOLOGY

Sequential Unconfoundedness and Selection on (Time Invariant) Unobservables (in Addition to Observables)

In general, due to data limitations, there may be several characteristics that are not observed by the econometrician and, as a consequence, systematic differences between assisted and non-assisted firms may persist after conditioning on observables.

Assuming that there is no selection on unobservables can therefore be very restrictive.

However, selection on an unobservable determinant can be allowed for as long as we assume that this determinant lies on a separable individual specific component of the error term (Blundell and Costa Dias, 2002).

EMPIRICAL METHODOLOGY

Estimation Under Selection on (Time Invariant) Unobservables and Linearity

$$Y_{it} = \alpha_1 W_{it} + \alpha_2 X_{it-1} + \alpha_i + \alpha_t + \varepsilon_{it}$$

Notice also that estimating:

$$Y_{it} = \alpha_1 W_{it} + \alpha_2 X_{it-1} + \alpha_3 Y_{it-1} + \alpha_t + \varepsilon_{it}$$

for our purposes is equivalent to estimating:

$$\Delta Y_{it} = \alpha_1 W_{it} + \alpha_2 X_{it-1} + \alpha_3 Y_{it-1} + \alpha_t + \varepsilon_{it}$$

EMPIRICAL METHODOLOGY

Estimation Under Selection on (Time Invariant) Unobservables

$$\alpha_w^{MDID} = \sum_{i\epsilon\{I^1 \cap S^*\}} \left\{ \Delta Y_{it} - \sum_{j\epsilon\{I^0 \cap S^*\}} \Omega_{ij}\, \Delta Y_{jt} \right\} \omega_i$$

Firms are matched according to their propensity scores (i.e., propensity to participate in export promotion given the set of observable characteristics). These propensity scores are estimated considering: lagged export age, lagged exports, lagged number of products, lagged number of destinations, lagged share of differentiated products, and lagged share of exports to OECD countries.

The matching quality is assessed using the stratification test; the standardized differences test; the t-test for equality of means in the matched sample; the test for joint equality of means in the matched sample (Hotelling test); and the pseudo R^2 and the joint significance test .

Significance of the effects are assessed using bootstrapped standard errors.

EMPIRICAL METHODOLOGY

Multiple Dynamic Treatments

$$Y_{it} = \sum_{j} \alpha_{1j} W_{ijt} + \alpha_2 X_{it-1} + \alpha_3 Y_{it-1} + \alpha_t + \varepsilon_{it}$$

$$Y_{it} = \sum_{j} \alpha_{1j} W_{ijt} + \alpha_2 X_{it-1} + \alpha_i + \alpha_t + \varepsilon_{it}$$

$$\alpha^{MDID}_{w_r, w_s} = \sum_{i \epsilon \{I^{w_r} \cap S^*\}} \left\{ \Delta Y_{it} - \sum_{j \epsilon \{I^{w_s} \cap S^*\}} \Omega_{ij} \Delta Y_{jt} \right\} \omega_i$$

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DATA AND DESCRIPTIVE EVIDENCE

The Dataset

Our dataset consists of three main databases.

First, we have access to a comprehensive list of beneficiaries of export promotion programs (PROCHILE) over the period 2002-2010 kindly provided by PROCHILE.

Second, we obtained similar information for innovation promotion programs (FONTEC/INNOVA and FONDEF) kindly provided by CORFO and CONYCIT.

Third, we have highly disaggregated export data for the period 1999-2010 from the Chilean customs. Each record includes a firm's ID, the product code (8-digit HS), the destination country, and the export value in US dollars.

DATA AND DESCRIPTIVE EVIDENCE

Descriptive Evidence

Number of Firms and Export and Innovation Promotion Statuses
Sample: Exporting Firms, 2002-2010

Year	Firms	Export	Innovation	Both
2002	6,041	308	88	13
2003	6,356	947	112	84
2004	6,566	1,747	64	120
2005	6,800	1,715	93	149
2006	6,895	1,945	103	144
2007	7,833	1,692	87	168
2008	8,164	1,903	58	187
2009	7,432	2,093	63	172
2010	7,380	2,036	71	149

DATA AND DESCRIPTIVE EVIDENCE

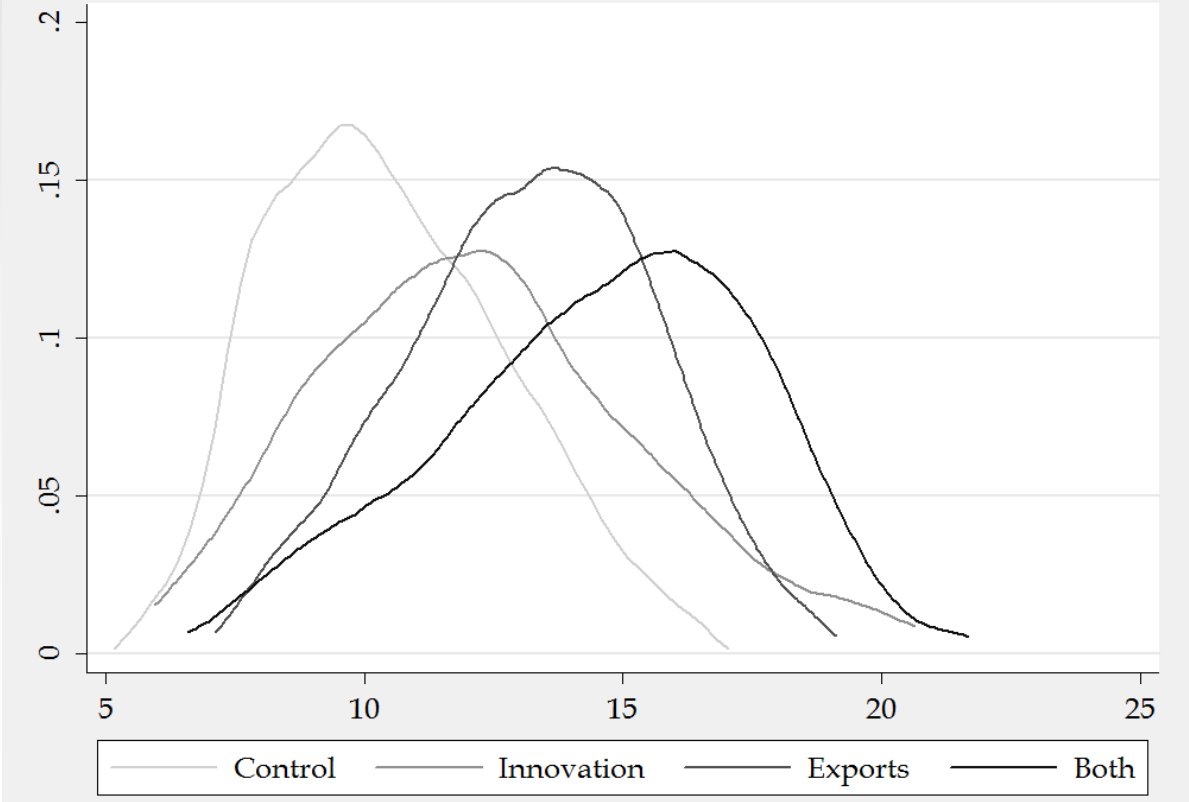
Descriptive Evidence

Average Exporter Sample: Exporting Firms, 2002-2010			
Year	**Exports**	**Products**	**Destinations**
2002	2,824	6.377	3.217
2003	3,093	6.223	3.310
2004	4,637	6.164	3.459
2005	5,584	5.943	3.477
2006	7,983	5.989	3.610
2007	8,279	5.809	3.436
2008	8,304	5.579	3.429
2009	6,636	5.689	3.616
2010	9,025	5.614	3.698

DATA AND DESCRIPTIVE EVIDENCE

Descriptive Evidence

Firm Total Exports (2002-2010)



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ESTIMATION RESULTS

Baseline Estimates

The Impact of Export and Innovation Promotion Programs on Export Outcomes
OLS Estimates
Sample: Exporting Firms, 2002-2010

Total Export			
Export Promotion	0.285***	0.173***	0.135***
	(0.016)	(0.016)	(0.016)
Innovation Promotion	0.278***	0.208***	0.173***
	(0.051)	(0.048)	(0.048)
Export and Innovation Promotion	0.538***	0.322***	0.251***
	(0.038)	(0.033)	(0.032)
Number of Products			
Export Promotion	0.094***	0.074***	0.074***
	(0.008)	(0.008)	(0.008)
Innovation Promotion	0.075***	0.065***	0.065**
	(0.026)	(0.025)	(0.026)
Export and Innovation Promotion	0.203***	0.139***	0.120***
	(0.019)	(0.017)	(0.017)
Number of Destinations			
Export Promotion	0.117***	0.085***	0.073***
	(0.006)	(0.006)	(0.007)
Innovation Promotion	0.073***	0.045**	0.041**
	(0.018)	(0.019)	(0.020)
Export and Innovation Promotion	0.240***	0.169***	0.143***
	(0.016)	(0.015)	(0.015)
1 Lag Export Outcome	Yes	No	No
2 Lags Export Outcome	No	Yes	No
3 Lags Export Outcome	No	No	Yes
Additional Controls	No	No	No
Year Fixed Effects	Yes	Yes	Yes
Observations	40,613	32,007	26,564

ESTIMATION RESULTS

Robustness Checks: Controlling for Other Covariates (Export Age, Sector, Destination)

The Impact of Export and Innovation Promotion Programs on Export Outcomes
OLS Estimates
Sample: Exporting Firms, 2002-2010

Total Export			
Export Promotion	0.231***	0.175***	0.153***
	(0.017)	(0.018)	(0.019)
Innovation Promotion	0.282***	0.201***	0.165***
	(0.053)	(0.048)	(0.049)
Export and Innovation Promotion	0.482***	0.327***	0.266***
	(0.040)	(0.035)	(0.034)
Number of Products			
Export Promotion	0.119***	0.106***	0.107***
	(0.009)	(0.009)	(0.010)
Innovation Promotion	0.118***	0.101***	0.102***
	(0.028)	(0.026)	(0.027)
Export and Innovation Promotion	0.239***	0.182***	0.161***
	(0.021)	(0.019)	(0.019)
Number of Destinations			
Export Promotion	0.105***	0.086***	0.078***
	(0.007)	(0.007)	(0.008)
Innovation Promotion	0.082***	0.048**	0.041**
	(0.019)	(0.019)	(0.020)
Export and Innovation Promotion	0.240***	0.182***	0.156***
	(0.016)	(0.016)	(0.017)
1 Lag Export Outcome	Yes	No	No
2 Lags Export Outcome	No	Yes	No
3 Lags Export Outcome	No	No	Yes
Additional Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	40,613	32,007	26,564

ESTIMATION RESULTS

Robustness Checks: Estimation Method

The Impact of Export and Innovation Promotion Programs on Export Outcomes
LS and MDID Estimates
Sample: Exporting Firms, 2002-2010

	FE	OLS (3)	FE	MDID-K	OLS (3L)
Total Exports					
Export Promotion	0.230***	0.135***	0.112***	0.132***	0.153***
	(0.022)	(0.016)	(0.021)	(0.016)	(0.019)
Innovation Promotion	0.159*	0.173***	0.108	0.116**	0.165***
	(0.091)	(0.048)	(0.084)	(0.054)	(0.049)
Export and Innovation Promotion	0.356***	0.251***	0.219***	0.120**	0.266***
	(0.070)	(0.032)	(0.065)	(0.060)	(0.034)
Number of Products					
Export Promotion	0.099***	0.074***	0.060***	0.049***	0.107***
	(0.011)	(0.008)	(0.011)	(0.010)	(0.010)
Innovation Promotion	0.044	0.065**	0.032	0.026	0.102***
	(0.042)	(0.026)	(0.040)	(0.035)	(0.027)
Export and Innovation Promotion	0.143***	0.120***	0.104***	0.047*	0.161***
	(0.037)	(0.017)	(0.035)	(0.027)	(0.019)
Number of Destinations					
Export Promotion	0.103***	0.073***	0.058***	0.081***	0.078***
	(0.009)	(0.007)	(0.009)	(0.008)	(0.008)
Innovation Promotion	0.040	0.041**	0.017	0.012	0.041**
	(0.038)	(0.020)	(0.037)	(0.019)	(0.020)
Export and Innovation Promotion	0.180***	0.143***	0.138***	0.106***	0.156***
	(0.033)	(0.015)	(0.031)	(0.022)	(0.017)
Additional Controls	No	No	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	63,467	26,554	40,571	Pair Specific	26,564

ESTIMATION RESULTS

Export and Innovation Promotion vs. Export Promotion

The Relative Impact of Export and Innovation Promotion Programs on Export Outcomes MDID Estimates Sample: Exporting Firms, 2002-2010	
	MDID-K
Total Exports	
Export and Innovation Promotion vs. Export Promotion	0.060** (0.030)
Number of Products	
Export and Innovation Promotion vs. Export Promotion	0.020 (0.020)
Number of Destinations	
Export and Innovation Promotion vs. Export Promotion	0.047*** (0.016)
Observations	13,675

ESTIMATION RESULTS

Lagged Programs

The Impact of Export and Innovation Promotion Programs on Export Outcomes
OLS Estimates
Sample: Exporting Firms, 2002-2010

	LI	LI	LE	LE
Total Exports				
Export Promotion	0.138***	0.113***	0.089***	0.047**
	(0.019)	(0.022)	(0.019)	(0.022)
Innovation Promotion	0.116**	0.125	0.138***	0.063
	(0.056)	(0.099)	(0.048)	(0.081)
Export Promotion and Innovation Promotion	0.288***	0.245***	0.217***	0.146**
	(0.034)	(0.070)	(0.035)	(0.066)
Number of Products				
Export Promotion	0.104***	0.064***	0.051***	0.021*
	(0.010)	(0.011)	(0.010)	(0.011)
Innovation Promotion	0.085***	0.004	0.093***	0.008
	(0.031)	(0.043)	(0.028)	(0.040)
Export Promotion and Innovation Promotion	0.148***	0.079**	0.118***	0.076**
	(0.020)	(0.038)	(0.019)	(0.035)
Number of Destinations				
Export Promotion	0.073***	0.051***	0.043***	0.037***
	(0.008)	(0.009)	(0.008)	(0.009)
Innovation Promotion	0.017	-0.005	0.042**	-0.007
	(0.023)	(0.041)	(0.021)	(0.036)
Export Promotion and Innovation Promotion	0.151***	0.122***	0.119***	0.094***
	(0.017)	(0.034)	(0.017)	(0.032)
3 Lags Export Outcome	Yes	No	Yes	No
Additional Controls	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	24,027	36,682	24,027	36,682

OUTLINE

- **Introduction**
- **Export and Innovation Promotion in Chile**
- **Empirical Methodology**
- **Data and Descriptive Evidence**
- **Estimation Results**
- **Conclusions**

CONCLUSIONS

What Did We Learn?

So far there has been limited evidence on how export promotion programs interact with other public programs supporting firms economic activities in shaping export outcomes.

This study addressed this relevant policy question, thereby filling a gap in the literature.

It assessed the effects of trade and innovation promotion programs on Chilean firms' export outcomes over the period 2002-2010.

Results suggest that firms that participate in both export and innovation promotion programs have a better export performance, overall and along the destination extensive margin in particular, than their comparable peers that do not participate or participate in only one of those programs.

A limitation of the current analysis is that, by focusing on exporting firms, we are not estimating the impacts of the programs on the entry to international markets. Access to the entire business register would allow us to explore this extensive margin dimension.

As a next step we plan to fully embed a dynamic specification into a fixed effects model and estimating it with dynamic panel data estimators (underway).