ECONOMIC POLICY

BANQUE CENTRALE DU LUXEMBOURG
EUROSYSTEM

Economic Policy
62nd Panel Meeting
Hosted by the Banque Centrale du Luxembourg
Luxembourg, 16-17 October 2015

Did Export Promotion Help Firms Weather the Crisis?

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The organisers would like to thank the Banque Centrale du Luxembourg for their support.

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Did export promotion help firms weather the crisis?*

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September 2015

[Preliminary version of a paper prepared for
the 62nd Panel Meeting of *Economic Policy*, October 2015]

Abstract

In the global recession of 2009, exports declined precipitously in many countries. We illustrate with firm-level data for Belgium and Peru that the decline was very sudden and almost entirely due to lower export sales by existing exporters. After the recession, exports rebounded almost equally quickly and we evaluate whether export promotion programs were an effective tool aiding this recovery. We show that firms taking advantage of this type of support did better during the crisis, controlling flexibly for systematic differences between supported and control firms. The primary mechanism we identify is that supported firms are generally more likely to survive on the export market and, in particular, are more likely to continue exporting to countries hit by the financial crisis.

* Financial support from KU Leuven Program Financing is gratefully acknowledged. We would like to thank Carlos Salamanca Malagón and Victoria Valente for excellent research assistance. The views and interpretations in this paper are strictly those of the authors and should not be attributed to the Inter-American Development Bank, its executive directors, its member countries, PROMPERU, or FIT.

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1. Introduction

The precipitous decline of international trade relative to GDP in the 2008-2009 recession has received quite some attention in the recent academic literature. Shocks to both demand and trade costs have been suggested as important channels (Eaton et al., 2011). Among the most prominent explanations for the great trade collapse are worsening credit conditions (Chor and Manova, 2012), input demand linkages between sectors coupled with trading frictions (Bems, Johnson and Yi, 2011; Bussière et al., 2011) or reduced expenditure on manufactured goods in general (Behrens, Corcos and Mion, 2013). The literature has provided some insights to understand the mechanisms for and explain the magnitude of the trade decline, but there has been less attention on formulating appropriate policy responses. Initially, there was a fear that countries would raise protectionist barriers, but by and large this did not materialize (Bown and Crowley, 2012). There has been surprisingly little discussion how governments could help firms cope with the fallout from foreign demand and the increase in trading frictions.

In this paper we investigate whether a targeted government program of export promotion support can help countries restore their pre-crisis export level. A growing literature has documented the success of such programs in raising exports generally. It is conceivable they are a valuable tool to help the private sector recover from a large trade decline, as experienced by many firms in 2009. The vast majority of countries now run active export promotion programs to facilitate domestic firms' entry into the export market and support subsequent export sales (Lederman, Olarreaga and Payton, 2010; Volpe Martincus, 2010). Rather than provide direct subsidies, these programs work mainly as an information depository or a way to share fixed information acquisition costs between exporters. They help firms to learn about foreign demand for their products, establish relationships with importers, identify promising new distribution channels, and overcome administrative or trade frictions such as customs procedures and differences between domestic and foreign regulations or product standards.

We consider export promotion only playing a role of 'information broker and facilitator.' Many countries operate separate programs that provide direct export subsidies, trade credit and insurance, or state guarantees, which played a role in temporary lifting liquidity constraints or cushion increases in the cost of credit during the crisis. For example, Felbermayr, Heiland and Yalcin (2012) study a program of state credit guarantees in Germany that helped sustain export levels. Effects were higher when market risk was high and at times when refinancing conditions were tight, as during the financial crisis. More generally, exports are sensitive to financial shocks as international trade tends to involve higher default risk and liquidity problems. Thus, Amiti and Weinstein (2011) showed that an important determinant of firm-level exports during a crisis is the health of exporters' financial institutions.

The latter types of interventions tend to distort competition and in that way impose a burden on other countries. Especially in the context of the great recession, subsidy programs or other forms of financial support have more of a 'beggar-thy-neighbor' flavor. They are more likely to raise concerns by trading partners as firms from all countries faced a collapse in global demand.

The export promotion programs we study do not impose costs on other countries as they merely aim to reduce transaction costs by reducing information asymmetries and alleviate uncertainty (Copeland, 2008). Aggregate market uncertainty has been particularly relevant during the great recession compared to milder downturns. In the absence of negative externalities on trading partners, export promotion is less likely to distort international competition and generate objections. Moreover, as all exporters have access to these services, domestic competition is not distorted either.

Theoretical models of international trade provide some insights into the channels through which export promotion can help dampen business cycle effects. In the canonical heterogeneous firm model (see Melitz and Redding, 2014), only firms with a productivity level that exceeds a threshold can profitably enter the export market. The destination-specific productivity thresholds are increasing in bilateral variable costs and fixed costs of trade which export promotion can help lower. For example, international trade involves higher transaction times due to additional paperwork, preparation of goods for international shipping, customs procedures, or simply longer transit times (Djankov, Freund and Pham, 2010; Volpe Martincus, Carballo, and Graziano, 2015). Increased uncertainty about global demand and tighter financial constraints during the crisis are likely to raise these costs further. In addition, lower domestic demand will force firms to operate at lower capacity utilization and sacrifice some scale economies. With lower effective productivity, it is even harder to reach the productivity threshold to operate profitably in foreign markets and some firms will exit, at least temporarily. If some of the fixed costs of exporting are sunk (Roberts and Tybout, 1997), liquidity constraints can induce wasteful export market churn. To the extent that export promotion helps firms, at least temporarily, avoid some fixed costs, they are more likely to survive on the export market. A recent study by Eaton et al. (2015) provides evidence that surviving in a foreign market requires continuous search effort for new clients. As existing partners go bankrupt during a crisis, information provision by export promotion agencies also becomes more valuable.

We make three contributions to the export promotion literature. First, ours is the first paper to analyze the impact of export promotion during the great trade collapse. In line with previous studies, we exploit detailed information on export transactions observed by firm, product and destination market. A second contribution is to evaluate similar export promotion policies for two small open economies: Belgium and Peru. Their different integration in international markets and types of products exported could influence the effectiveness of export promotion activities. Belgian firms are strongly integrated in the EU economy—about 50% of exports go to its immediate neighbors—and they mostly export differentiated, manufacturing goods. In contrast, Peruvian firms export primarily to faraway places—fewer than 20% of exports remain in Latin America or the Caribbean—and the national export portfolio is dominated by mining products, basic manufacturers, and agricultural or food products. Third, we do not only study the impact of export promotion on firms' level of exports, but look specifically whether it helps firms to survive on the export market in general or in destinations affected by a financial crisis in particular.

A first descriptive analysis illustrates that the export decline in both countries during the recession was very sudden, limited mostly to 2009 and 2010, and mostly due to lower firm-level sales on existing export markets. Therefore, we use firm-level total export as our primary dependent variable. Further preliminary evidence also suggests that self-selection into export support cannot be ruled out and has to be taken into account to identify causal effects in the performance regression. We address this by including a rich set of control variables in the regression, but also rely on more sophisticated estimators from the treatment evaluation literature, i.e. a matching estimator and inverse-probability weighting.

We find that export promotion has positive effects on firm-level exports over the crisis and that the magnitude of effects is rather similar for the two countries. The extensive destination margin is the primary channel responsible for the superior firm-level export performance. Supported firms export more because they are significantly more likely to remain active in destinations most affected by the financial crisis, even though their export volumes are not significantly different from those of control firms that manage to survive in the same destinations. On this latter dimension, however, repeated support did make a difference. Firms receiving multiple years of assistance did export more even within destinations hit by the crisis, although highly intensive use of the promotion services within a year did not generate similar benefits.

The remainder of the paper is organized as follows. We start in Section 2 with a review of the existing evidence on the export-boosting success of trade promotion programs, both from a macro and a micro perspective. In Sections 3 and 4, we discuss the data and document the evolution of exports and the use of export support services over the crisis. The empirical framework to study whether the quick recovery of exports is systematically related to export promotion is presented in Section 5, followed by our estimates in Section 6. We conclude in Section 7 with some policy conclusions.

2. What do we know about the effects of export promotion?

2.1 Defining export promotion

Governments around the world use various policy instruments to foster their firms' exports.[1] Leaving aside macroeconomic measures such as exchange rate policy, some of these instruments provide firms directly with financial resources or help them indirectly to cope with a credit crunch. These include direct subsidies associated with export requirements (Helmers and Trofimenko, 2013; Defever and Riaño, 2014) and export credit guarantees (Abraham and Dewin, 2000; Egger and Url, 2006; Moser et al., 2008; Febelmayr and Yacin, 2013). Some other policies that subsidize firms directly do not target exports, but are likely to affect them, for example production subsidies (Wagner, 2009; Girma et al., 2009), support to invest in

[1] Private sector associations may also assist firms in selling abroad (Hiller, 2012).

technology, training, and physical capital (Görg et al., 2008), VAT reimbursement rules (Gourdon et al., 2014), and preferential regulation and taxation in economic development zones (Schminke and Van Biesebroeck, 2013).

In addition, there are "soft" public interventions aimed to stimulate exports. Two important forms are, first, general economic diplomacy, where governments rely on international relations through permanent foreign missions such as embassies and consulates or state visits (Rose, 2007; Nitsch, 2007; Head and Ries, 2009; Veenstra et al., 2011; Creusen and Lejour, 2012; Moons, 2012; Moons and van Bergeijk, 2013; Fergusson and Forslid, 2014), and, second, explicit export promotion programs (Lederman et al., 2010; Volpe Martincus, 2010).[2]

In this paper, we focus on the last instrument: support by export promotion agencies. It can be defined as a set of activities to help firms overcome internationalization obstacles, for example by providing data on the general export process and on specific markets and overseas business contacts, by disseminating information on domestic firms' products and services, by assisting in the preparation and follow-up of firms' participation in international marketing events such as fairs and missions, or by co-financing travel costs through matching grants.

These activities are likely to reduce the fixed costs that firms incur when penetrating a new foreign market and when searching for new customers in existing export markets. They address a market failure in the form of information externalities. As economic transactions resulting from successful searches reveal valuable information for third firms, they generate positive spillovers. If only part of the potential benefits accrue to the firms investing in searches, aggregate investment to explore business opportunities will be sub-optimally low as will be the diversification of exports (Volpe Martincus, 2010).

It is worth mentioning that some support activities are carried out by foreign offices of export promotion agencies which can be located within embassies and consulates or even by the diplomatic representations themselves. This introduces an identification challenge. Note, however, that export promotion organizations are typically highly specialized, often managed according to private sector practices, and employ personnel with a background in international trade. This differs from embassies or consulates which do not always have a trade section and sometimes lack staff with the necessary business expertise or the time and incentives to assist exporters. Especially for developing countries, coordination between export promotion organizations and foreign diplomatic missions that are supposed to assists them in their work is generally weak (Volpe Martincus, 2010).

The effectiveness of export promotion has been evaluated in several ways. Researchers have relied on measures of export promotion at the agency level, in the form of available financial resources or the extent of the network of offices abroad, or at the beneficiary level, by observing which firms take advantage of these programs. Table 1 includes an exhaustive list of

[2] There are several papers that show the importance of access to financing for exporting (e.g., Amiti and Weinstein, 2012; Paravisini et al., 2014; and Niepmann and Schmidt-Eisenlohr, 2014).

empirical evaluations that cover approximately the last two decades. We first review analyses with a macro perspective that relate export promotion organizations' budget and network of offices to export volumes. Next we turn to studies with a micro perspective that evaluate the impact of export promotion support on various dimensions of firm-level export performance.

[Include Table 1 approximately here]

2.2 The macro perspective

2.2.1 Financial resources devoted to export promotion

A few studies examine the effects of trade promotion on trade outcomes by exploiting variation in expenditures. At the regional level, Coughlin and Cartwright (1987) report that exports of US states covary positively with the states' export promotion budget. In particular, each dollar increase in promotion expenditures is associated with $432 additional manufacturing exports. In a similar study for Argentina, Castro and Saslavsky (2009) conclude that each dollar invested in export promotion translates into $240 addition foreign sales for the average province. In contrast, exploiting variation in the export support budget across US states normalized by the number of in-state firms, Bernard and Jensen (2004) find no systematic relationship with the export propensity of firms from each state, once a number of firm-level characteristics are controlled for. They conjecture that the lack of effect is the result of agencies targeting small and medium-sized firms, which rarely export anywhere.

At the national level, Lederman et al. (2010) use a sample of export promotion organizations from 103 countries and show that their budgets are positively and statistically significantly related to higher national exports. Their benchmark regressions show an elasticity of 12%. In absolute terms, this estimate implies that, for the median agency, each dollar spent on trade promotion raises exports by $40.

While these numbers are useful as a first approximation for the relationship between resources assigned to export promotion and export performance, the exact estimates should be read with extreme caution because the identification of such relationship is subject to major data and methodological difficulties (Volpe Martincus, 2010).

2.2.2 Network of foreign offices

In the spirit of Rose (2007), several studies investigate the effects of the presence or the number of foreign offices operated by export promotion agencies on both country and region-level export outcomes. Volpe Martincus et al. (2010, 2011) utilize bilateral product-level trade data and information on the location of branches of trade promotion organizations for several Latin American and Caribbean countries over the period 1995-2004 to show that the presence of these branches is associated with higher exports primarily along the product extensive margin and particularly of differentiated goods. Using data from Spain for the years 1995-2011, Gil-Pareja et al. (2008, 2014) arrive at a similar conclusion for the export promotion offices established

abroad by Spanish regions. In particular, they find that the export-enhancing effect can mainly be traced to an expansion in the number of products and the number of transactions per product. Interestingly, according to their results, the effect increases with the age of the office, a plausible proxy for its experience in a destination.

In the same vein, Hayakawa et al. (2011) find large effects from bureaus of Japan's and South Korea's trade promotion organizations. The presence of an office in a destination raises exports by a similar amount as the conclusion of a Free Trade Agreement with that country, a remarkable finding. Finally, Cassey (2014) exploits the location of overseas trade-support offices that individual US states have established. In total, his sample contains 228 offices covering 31 countries, with the most active state (Pennsylvania) operating 17 offices. He estimates that an overseas branch lowers the variable export cost by 0.04% to 0.10% which makes them cost-effective if the annual export volume to a country exceeds $850 million.

2.3 The micro perspective: Exploiting information on firm-level support

2.3.1 The impact on export outcomes

A large number of studies have directly evaluated the ability of national export promotion agencies to raise exports of their clients. Researchers working with data from different countries have matched individual firm information on trade transactions to client registries from the aforementioned agencies, making possible impact evaluation studies at the firm level. Various statistical methods from the treatment evaluation literature have been used to construct an appropriate benchmark for treated firms. Following Volpe Martincus and Carballo (2008) many studies have used a matching difference-in-differences estimator, relying on propensity score matching to construct an appropriate control group. Other studies, for example, Van Biesebroeck, Yu and Chen (2015) and Volpe Martincus et al. (2012), use the propensity score to construct weights and implement a double-robust estimator.

Table 1 list all studies using firm-level evidence on export promotion organized by country. In total, 21 studies covering 16 countries are listed, almost all conducted in the last decade. Studying the intensive margin of trade—i.e. the impact on a client's total export level—is easier than studying the effect at the extensive firm margin—i.e. whether support draws new firms into the export market—as the latter requires information on the universe of potential exporters. Most studies only observe outcomes for existing exporters, but even then researchers can look for effects at the product and the destination extensive margins. Helping firms to diversify their destination or product markets is often an explicit goal of the agencies.

It is impossible to summarize all findings, but it is fair to say that almost all studies find a positive and significant effect of firm-level export promotion support on firm-level exports. Further, the size of the estimated effects tend to be larger when the type of firm or the type of trade is likely to face more severe information problems (Volpe Martincus, 2010).

In particular, trade promotion is estimated to have different effects on export activities that are confronted with different degrees of information incompleteness. Estimated effects are particularly large at the extensive firm margin, when firms attempt to venture in foreign markets for the first time (Cruz, 2014; Schminke and Van Biesebroeck, 2015; Lederman, Olarreaga and Zavala, 2015), or when firms try to enter an entirely new country or product market (Volpe Martincus and Carballo, 2008, 2011; Schminke and Van Biesebroeck, 2015). Van Biesebroeck et al. (2015) is one exception in this regard, as they find stronger effects at the intensive margin. Still, even an intensive margin change might originate from an extensive margin expansion of a firm's customer base (Bernard et al., 2013; Carballo et al., 2013).

As different firms are likely to require different forms of assistance, it does not come as a surprise that many studies document heterogeneous effects by firm and product types. For example, more complex goods are likely to face more severe information barriers, consistent with larger estimated gains for differentiated goods (Volpe Martincus and Carballo, 2012). Smaller firms with less exposure to international markets are also likely to face greater difficulties obtaining the necessary trading information, consistent with higher estimated benefits of export assistance to small firms (Munch and Schaur, 2015). Finally, some evidence suggests that bundled support services provided throughout the exporting process, e.g. accompany firms from the early business contacts to the establishment of commercial relationships, are more effective than isolated actions, e.g. only providing a matching grants to participate in an international mission (Volpe Martincus and Carballo, 2010).

A recent study by Fernandes et al. (2015) suggests that export promotion effects may be not durable. They show that previously supported and control firms achieve the same export performance after a number of years. It should be noted, however, that this result is so far based on a single application and the Tunisian FAMEX initiative differed in some respects from the operations of traditional export promotion agencies.[3] Further research is needed to establish external validity.[4] Our results below show that export promotion helps firms survive on the export market, a necessary condition for long-term effects.

2.3.2 Beyond export outcomes and beyond export promotion

Mainly due to data limitations, several relevant policy questions are still unanswered. It is important to keep in mind that these programs aim to facilitate economic activities believed to

[3] Contrary to most programs, export promotion was outsourced to third parties selected by the participating firms themselves. It is not obvious that firms with no or little export experience would be able to select an appropriate service provider. Moreover, quality differences in these providers' services could translate into heterogeneity in the trade promotion treatment and reduce estimated persistence.

[4] In fact, there is already evidence on the contrary (Carballo, 2012).

generate productivity growth and employment expansion.[5] By increasing foreign sales, trade promotion might improve firms' performance more broadly. Munch and Schaur (2015) make a first step towards assessing whether or not this is the case. Using firm-level data from Denmark, they show that export promotion positively affects sales, employment, and worker productivity, particularly in smaller firms and after an adjustment period.

Evaluations of export promotion have focused on a single program, while firms often receive assistance in several domains. These other forms of assistance can also affect export outcomes and interact with trade promotion. For instance, innovation subsidies might lead to improved production processes and higher productivity or to new product varieties that facilitate entry in foreign markets. Álvarez et al. (2013) investigate the existence of complementarities between export and innovation promotion programs in shaping Chilean firms' export performance over the 2002-2010 period. They find that firms which previously participated in the innovation promotion program were able to benefit more from subsequent trade promotion help than firms only using trade support or using both programs simultaneously (thus not allowing innovation to mature). In other words, the sequencing of these programs mattered to maximize their synergies.

In closing this section, we should mention that, albeit there are some knowledge gaps, there is a substantial amount of research on the effects of export promotion on export outcomes. Similarly, there is an emerging literature explaining the great trade collapse following the global financial crisis (Baldwin, 2009; Levchenko et al., 2010; Ahn et al., 2011; and Bems et al., 2013). However, there is no connection yet between these two literatures. We do not know whether and, if so, to what extent trade promotion contributed to firms' adjustment to the financial turmoil. This is precisely the link that the next analysis aims to explore.

3. Export support agencies

3.1 PROMPERU

PROMPERU is Peru's national public export promotion organization and is headquartered in Lima.[6] Its highest governing body is the Board of Directors Directive Board, which is chaired by the minister of foreign trade and tourism and is composed of representatives from entities of the public and private sector, such as the Ministry of Foreign Relations, the Ministry of Economy and Finance, the Exporters Association and Peru's Society of Foreign Trade. In

[5] In particular, the empirical literature has clearly established that productivity leads to exports, and there might even be feedback effects from exporting (e.g., Castellani, 2002; Baldwin and Gu, 2003; Van Biesebroeck, 2005; De Loecker, 2007).

[6] PROMPERU employees manage six regional offices within Peru which provide local companies with basic training and general information on the export process and foreign markets. In addition, it has regional information centers that are staffed and managed by employees of local governments or business associations, which provide information on marketing, prices of products with overseas demand, profiles of products with greater demand abroad, and export procedures and tax regimes; and organize training activities (Volpe Martincus, 2010).

addition to the board, PROMPERU's organizational structure consists of a general secretary and two divisions, one for promoting exports and one for tourism.

Currently, the agency's budget is $76.8 million. Annual resources available for the export promotion division are $18.6 million as promoting tourism absorbs a large fraction of the total budget. Most of the budget is provided directly by the government. As of September 2015 PROMPERU had 380 employees of which 94 are with the export division. This division has units responsible for market intelligence, capacity building (export development), and trade promotion. Many employees have previous experience in foreign trade.[7]

PROMPERU's main goal is to contribute to the internationalization of Peruvian firms by fostering their penetration of foreign markets and consolidating their positions in these markets. In pursuing this goal, the organization provides firms with multiple services. It trains inexperienced firms on the export process, marketing, and negotiations; performs and disseminates analyses on country and product market trends; provides specific information on trade opportunities abroad as well as specialized counseling and technical assistance on how to take advantage of these opportunities; coordinates and supports (and sometimes co-finances) firms' participation in international trade missions or fairs and, importantly, arranges meetings with potential foreign buyers; organizes these kind of trade events; and sponsors the creation of consortia of firms aiming to strengthen their competitive position in external markets.

3.2 Flanders Investment and Trade (FIT)

In Belgium, export promotion is organized in three regional, government-funded agencies. We use information from the Flemish agency, *Flanders Investment & Trade* (FIT). They serve firms located in Flanders and Brussels which account for more than 80% of Belgian goods trade. If some firms in our sample receive support from one of the other two agencies, it will mitigate the effects we estimate.[8]

FIT has its headquarters in Brussels, regional offices in the five provincial capitals and field offices in approximately 90 locations abroad. Its total budget in 2009 was €56.3 million. Most of it, 86 per cent, came directly from the Flemish government, with fee income from services covering around €3 million. Its largest expense is maintaining the network of offices in Belgium and abroad with the corresponding personnel costs. Almost one quarter of the budget, €13.5 million in 2009, is directed towards subsidies directly linked to a business trip or participation in a fair. The average subsidy is quite limited, at approximately €2,000 per request.

[7] We thank Carlos Diaz from PROMPERU for providing up-to-date budget and employment figures.

[8] We obtained comparable support information from *Brussels Invest & Export*, the agency only serving firms from the Brussels-Capital region. We did not use it in the analysis as the sample period is shorter and they focus primarily on trade in services for which we lack detailed information. We did exclude firms working with both agencies, as described in the data section.

FIT has provided us with detailed information on the intensity and the nature of interactions with each of its clients, potential or current exporters located in Flanders or Brussels. It breaks down the support it provides to firms into four types of promotion instruments. In order of importance, as considered by FIT itself, they interact with firms on actions, questions, subsidies, and communications.

The category 'actions' comprises activities outside day to day support. They mainly include events that FIT organizes to help firms access markets abroad, such as organizing information seminars in Brussels, helping firms to participate in a trade fair, organize a meeting with foreign buyers, or themselves organize prospection tours or trade missions. 'Questions' are requests for information that involve some research by FIT employees (located domestically or abroad). They cover a range of interactions where companies need information about markets or potential partners, ask for help setting up an appointment schedule on a business trip or when prospecting a foreign market. Questions are generally transmitted to the field office in the concerned country.

'Subsidies' are all forms of financial incentives given to individual companies, mostly co-payments to support foreign trips. They also include capital good subsidies and feasibility studies which used to be in the realm of development aid. This category is targeted to small and medium-sized firms. Finally, 'communication' is the leftover category covering the remainder of interactions between FIT and client firms. It is chosen in the system when the other three categories do not fit. Examples are confirmations of a lunch appointment with the CEO, a reference to a local consultant, or submission of a transcript of a FIT lecture about international entrepreneurship.

For each of the four promotion instruments we observe the frequency that each firm used FIT services between 2002 and 2011, but not which export destination the firm was targeting. PROMPERU provides similar types of support, distinguishing between three categories: missions, questions, and other. Unfortunately, the PROMPERU data we received only indicates whether a firm is supported, not the type of support it received. Trade missions and participation in trade fairs tend to play a much larger role than in the operations of FIT.

4. Data

The literature has only analyzed the average impact of export promotion services, irrespective of the business cycle. It seems plausible, however, that the demand for these services and perhaps even their usefulness are enhanced during cyclical downturns. To investigate this possibility, we use information on the export performance and the incidence of support at the firm level for Belgium and Peru. Both countries are small open economies with a relatively high share of exports in GDP, respectively 80% and 27% in 2008, the year before the crisis.

For both countries we have access to information on all trade transactions for individual firms, broken down by country destination and 8-digit product. For Belgium, we aggregate the

monthly information to the annual level; for Peru, the information is only available at the yearly interval. In the case of Belgium, the reporting threshold on export flows differs by destination. Exports to destinations outside the EU are recorded at the firm-product-month level for all export flows that exceed a value of €1,000 or a weight of 1,000 kg—in practice even lower trade flows are often observed. In contrast, firms are only required to report their within-EU exports if the combined value across all EU countries exceeds a threshold, which was €250,000 until 2005 but raised to €1 million in 2006. If this is the case, firms report their exports separately for all product-country pairs.

We also observe which firms benefit from support activities of the respective national export promotion agencies, FIT which covers firms in Flanders, the largest region in Belgium, and PROMPERU in Peru. This type of support activities takes many forms, such as providing local market information, subsidies for foreign market prospecting, helping firms resolve specific transaction problems, or facilitating participation in industry events. We provided more detailed information on the type of services in the previous section and will describe how their use evolved over the recession below.

The information from these two data sources is readily matched at the firm-year level using a unique firm identifier. For Belgium we observe the trade information over the entire 1998-2013 period and export support over 2001-2011. For Peru, the data covers the 2000-2012 period. To concentrate on the same time period in both countries and work with a sample that had consistent reporting thresholds, most of the analysis is limited to 2006-2011. This period is also ideal to focus on the effectiveness of export support specifically during the economic crisis, which reduced trade flows primarily in 2009 and 2010.[9]

After merging the two data sources for each country, we obtain an unbalanced panel of firms. For Belgium, there are 50,581 unique firms and 144,045 firm-year observations in the 2006-2011 period. For Peru the corresponding statistics are 22,747 and 49,197. Table 2 shows the breakdown by export and support status. For Belgium, 13% of exporters receive support, while 55% of firms that receive support are exporters. While the number of exporters declined slightly over the sample period, we do see an uptick in the number of firms receiving support during the crisis years 2009 and 2010. For Peru, a slightly smaller fraction of exporters (10%) receive support, but many fewer firms that receive support are exporters (only 29%). The vast majority of these unsuccessful clients only receive support in a single year.

[Include Table 2 approximately here]

[9] The datasets used in this paper extend the sample periods used in the work of Schminke and Van Biesebroeck (2015) for Belgium and Volpe Martincus and Carballo (2008) for Peru.

5. Exports and export support over the crisis

5.1 Evolution of exports over the crisis

Before we explore the relationship between export promotion activities and exports, we document the evolution of exports over the crisis and show which dimensions of export performance were most affected. This will provide some insight into the type of firms that were affected most and for which firms support might be particularly valuable.

Figure 1 shows the sudden export collapse in both countries, relative to the trend rate of growth. In all figures and tables, we show results for Belgium on the left and for Peru on the right. Equally remarkable as the sudden reduction in exports at the onset of the recession in 2009 is the rapid recovery back to trend afterwards. In Belgium the export decline in 2009, relative to trend growth, was 0.22 log-points and in Peru it was 0.24. While GDP was mostly flat after the recession, barely re-starting growth from the lower level, aggregate exports experienced two years of far above trend growth rates to make up the lost ground. In both countries, exports were back at their 2008 level by 2010 and by 2011 they were even ahead of the quadratic trend, as if the recession never happened. Our objective is to investigate what role export promotion played in this recovery.

[Include Figure 1 approximately here]

To further illustrate the evolution over the crisis, we plot for a number of variables the residual from a regression (in logarithms) on a linear time trend over the 2006-2013 (Belgium) or 2006-2012 (Peru) periods. The two crisis years, 2009 and 2010, are omitted when determining the trend. When relevant, we report the average growth rate of the variable over the period, but the lines in the different panels of Figure 2 are always normalized by the trend. They show the deviation and illustrate the depth and duration of the trade collapse. In the different panels, the change in aggregate exports is decomposed into separate adjustment margins.

In the top panel of Figure 2, we separately show the change in the number of exporters (dashed line) and the evolution of average exports per firm (solid line). In both countries, the trade reduction was primarily due to lower exports per firm rather than fewer firms exporting. In Belgium, the number of exporters was falling by an average of 2.5% per year over the full 2006-2013 period and this downward trend did become somewhat more pronounced between 2008 and 2011. Exports per firm, in contrast, switched from an average annual growth rate of 7.5% to a sudden drop of 22% in 2009. In Peru, the different evolution of the two lines is even more pronounced. The number of exporters was growing gradually over the entire period, while the strong growth in average exports per firm contracted briefly in 2009, but recovered very quickly.

[Include Figure 2 approximately here]

The second panel separately shows the evolution of the number of product markets, export destinations and the average firm-level sales within each product-destination market. Each variable is aggregated across firms and then purged from the time trend as described earlier. The trade reduction is primarily due to a within-firm adjustment on the intensive margin: lower exports by market. Only in Peru is there a reduction as well in the number of products exported, but the decline is much less pronounced than the intensive margin change. This is consistent with the evidence in Haddad, Harrison and Hausman (2010) for a broader range of countries.

Alternatively, one could trace the evolution of the same three variables—number of markets, number of products, and exports per market—at the firm level without aggregating. Using a full set of year dummies in a regression that includes firm-fixed effects captures these growth rates. In Belgium, the average firm-level patterns we obtain with this alternative procedure mimic the aggregate evolutions almost perfectly. In Peru, however, the firm-level regressions show a less pronounced drop in exports by market for individual firms, although the within-market change is still the primary adjustment mechanism. The export reduction to individual markets was less uniformly shared by all Peruvian firms.

The third panel shows the difference in trade adjustment by exporter size. In Belgium, firms that export on average less than €1 million per year experienced a longer crisis. Their exports bottom out at the same level as for larger exporters, a fall of 0.22 log-points in both cases, but this only happens by 2011. Larger exporters experience the entire decline in a single year, 2009, and by 2011 they are back at trend. For small exporters, the export decline is more gradual, but the bounce back is somewhat stronger.

In the case of Peru, where the threshold for small exporters is set at US$1 million per year, the trade decline and bounce-back is also more sudden for larger exporters, while small exporters still show below trend exports in 2010 and 2011. In contrast with the Belgian situation, the maximum export decline for small Peruvian exporters is notably less pronounced, at 0.15 log-points compared with a 0.24 decline for large exporters.[10] Note, however, that small and large firms in Peru appear to have a similar export experience if we use employment to define the two groups (we do not observe employment in the Belgian dataset). It could simply be that the lesser decline for low-volume exporters reflects their lower export market exposure.

In Belgium, the different experience of small and large exporters could also be related to different export destinations. Exports for the vast majority of small exporters only cover destinations outside the EU, due to the high reporting threshold within the EU. The graphs in the bottom panel of Figure 2, however, suggest that extra-EU exports start declining slightly earlier, bottom out slightly lower, but recover at the same rate as within-EU exports. Similarly

[10] A comparable analysis for Chilean firms also shows a more gradual and less pronounced export decline for small exporters. The difference is even larger with the average small exporter experiencing only one third of the decline of a typical large exporter.

for Peru, small exporters export more within the Latin American and Caribbean region, but regional exports declined more pronouncedly.

While the crisis was concentrated in 2009 and the recovery was very swift, the severity of the export decline did vary across sectors and destinations. It is useful to keep in mind that the economies of Belgium and Peru and their average export portfolios do differ. In particular, Peruvian exports contain much less finished manufactured products and are rather concentrated. Mining products and non-metal basic manufactures account for more than half of all Peruvian exports. Its top 5 sectors, out of a total of 17, cover 82% of aggregate exports. Belgian exports are dominated by finished manufactured goods and less concentrated, with its 5 most important sectors only accounting for 47% of aggregate exports.[11]

On the destination side, the reverse pattern holds. Belgium is strongly embedded in a broader EU production network, which accounts for 76% of its total exports over this period. 48% of the total is even confined to its four immediate neighbors. The fast-growing BRICs countries and other large developing economies receive less than 8% of Belgian exports. In contrast, Peruvian export markets are highly diversified with approximately 19% of exports going to Latin America and the Caribbean, 17% to the United States, 18% to the EU, 15% to China, and 8% to Japan and South Korea combined.

5.2 Export support over the crisis: some facts

We next show how the use of export promotion support from the two agencies has evolved over the crisis in Figure 3.[12] The black solid line shows the number of firms that draw on these services in each year. In Belgium, the number of individual firms supported rose from 3,752 in 2006 to 4,577 in 2011. It increased gradually as the crisis hit and topped out in 2010, 22% above the level of 2006. The general pattern is similar for Peru, but the 50% increase from 2006 to 2009 is much more pronounced and largely predates the observed export decline.

[Include Figure 3 approximately here]

The dashed line shows the number of new firms that receive support. It only counts firms not supported in 2006 in the first year we observe them using these services. From 2007 to 2008, the number of new clients declined in Belgium, but it is likely that some of the "new clients" in 2007 were existing clients that simply skipped using the service in 2006, the first year of our data. The slight increase in new FIT clients from 2008 to 2010 is likely to be more reliable, but the 7% increase from 1,681 to 1,797 is rather modest. For Peru, the number of new clients increased in 2008 and similar over-counting in 2007 is likely to understate the increase.

[11] The most important export categories for Belgium are mineral fuel and four types of finished manufactured goods: pharmaceuticals, transportation equipment, plastic products, and metal articles.

[12] For Belgium, information for 2011 only covers the first three quarters. Annual use statistics are scaled up to reflect the entire year.

From 2008 onwards, the number of new clients unambiguously declined. The adverse international trade environment in 2008-2010 seems to have convinced many firms to postpone their foreign expansion plans.

For Belgium, we observe not only whether a firm uses the service in a particular year, but also the total number of activities it participated in. Firms can draw on each type of services more than once a year and most clients do. The solid grey line in Figure 3 shows the evolution for the sum of activities across all firms. This total usage was 6% higher in 2009 than in 2006, but declined quickly as the crisis subsided. The average number of support instances over the sample period was 5.5 times per firm, falling gradually from 6.0 in 2006 and 2007 to 4.7 in 2010 and 2011. As FIT attracted more marginal, low-use clients, the number of unique firms supported (in black) increased more strongly than the total number of support instances (in grey).

Again only for Belgium we even observe the date of support and the dotted line shows the evolution of total support at a quarterly frequency. It reveals that the use of export promotion services is rather seasonal, with a peak in the first quarter of the year. It also reveals that the increase over the crisis is somewhat masked in the annual data. The peaks of the dotted line rise more rapidly than the solid grey line. The same is true for the number of new FIT clients, where the barely noticeable upswing during the recession is more pronounced at the quarterly frequency. Comparing the same quarter, the number of new clients rose by 38% from 490 in 2008Q1 to 676 in 2010Q1 or by 18% from 349 in 2008Q3 to 413 in 2010Q3. From the fourth quarter in 2010 the number of new firms starts declining again.

The composition of firms asking for export promotion support also shows a number of patterns over the crisis. Firms that are not (yet) exporting account for an increasing share of total support. This fraction rises from 41% to 49% of all clients in Belgium and from 64% to 71% in Peru. From 2009 onwards, this share declines again. Among Belgian exporters, the use of export support services shifted slightly towards low-volume exporters, firms only serving extra-EU destinations, and firms only exporting a single product or serving only a single destination.

6. Empirical model

After providing background information on the evolution of exports and the use of export promotion services during the 2009 crisis, we now evaluate whether export promotion can be linked to the rapid recovery in export sales that we documented. In principle, three avenues are possible to make causal inferences. One could assume firms select into treatment at least partially based on unobservables. Consistent estimation of the treatment effect is then possible with an instrumental variable that is correlated with this selection, but not with the residual in the performance regression. Alternatively, and the predominant strategy followed by the existing literature in this area, one can rely on the selection-on-observables assumption. Simple

controls, matching techniques or probability-weighted regressions are then used to construct an appropriate benchmark for supported firms.[13]

A third identification strategy is to conduct a randomized control trial. Atkin, Khandelwal, and Osman (2014) used this to study the impact of exporting on firm performance. They split a large order from a foreign buyer into smaller orders which they offered to a random subset of small rug manufacturers in Egypt. As the researchers themselves control the assignment, they generate random variation in export opportunities which guarantees exogenous variation in treatment. While this approach achieves clean identification, it is not without its own problems. It is inherently difficult to generalize from a single experimental study conducted in one specific environment. For example, out of the 149 firms they approached, only 28 agreed to participate and, in a way, enter the export market. Given the very low ex-ante export propensity of the sample population, it is unclear whether this take-up rate is high or low. To keep the costs of the study manageable, micro firms were targeted, but they are quite different from the majority of firms that export promotion agencies work with. Finally, contacting a producer with a one-time offer to fulfill an export order differs from a typical export promotion intervention aimed at establishing international relationships and opening up avenues for future expansion.[14] Given the challenges in carrying out a program like this, which are well documented in the paper, statistical assumptions are likely to remain our main source of identification.

A generic performance regression would look something like this:

$$y_{it} = \alpha\, S_{it} + Z_{it}\beta + \gamma_i + \gamma_t + \epsilon_{it}. \qquad (1)$$

The α coefficient will inform us whether firms that receive support ($S = 1$) achieve higher exports (y), conditional on a set of time-varying control variables (Z) and fixed effects (γ). The main challenge to infer causality from this regression is self-selection into treatment by firms with better export potential even in the absence of support. With non-random selection, the support dummy will be correlated with the error term.

As mentioned, the standard solution in the export promotion literature (which we follow) is to assume that conditional on a set of covariates, selection into treatment is random. More specifically, we assume that *conditional on a set of observables* the export performance of client and other firms would have been the same in the absence of support (Imbens and Wooldridge, 2009). In the potential outcome notation, we assume that $E[y^0|Z,\ S = 1] = E[y^0|Z, S = 0]$.

[13] Another statistical tool from the treatment evaluation literature, regression discontinuity design, has not been used in this particular literature because in most countries all firms qualify for support.

[14] It should be noted that this study was not designed to learn about export promotion. While informative about the specific setting and the small firms' reluctance to enter the export market, the broader relevance for the success of export promotion is limited.

Combined with the law of iterated expectations, $E[\cdot] = E_Z\{E[\cdot\,|Z]\}$, this is all we need to estimate the average treatment effect on treated firms, defined as $E[y^1 - y^0|\, S = 1]$. [15]

Imbens and Wooldridge (2009) provide an overview of the state of the art how to perform the crucial conditioning. The simplest way is to include the appropriate set of control variables directly in equation (1). They also discuss more sophisticated estimators which often involve estimating a treatment selection model in a first step and calculating the propensity score, i.e. the predicted probability of treatment, for all firms. To investigate which firm-level observables are correlated with support, we estimate the following selection model:

$$S_{it} = \rho S_{it-1} + \delta y_{it-1} + Z_{it}\beta + \gamma_i + \gamma_t + \epsilon_{it}. \tag{2}$$

We estimate equation (2) using a linear probability model which allows the inclusion of firm-fixed effects (γ_i), in addition to firm-level observed covariates (Z) and a time fixed effect. We also estimate a variant of this model replacing the firm-fixed effects with additional firm-level covariates and sector-fixed effects. The estimates provide direct insights whether the firms that ask for support are systematically different and whether the timing of support can be linked to observables, including the past export performance.[16]

The equations we estimate to identify the effect of export promotion on export performance differs from generic equation (1) in several respects. They take the following form:

$$\mathrm{I}(\mathrm{Exports}_{it} > 0) = \alpha_1\, \mathrm{Any\_Support}_{it} + Z_{i06}\beta + \gamma_S + \epsilon_{it}, \tag{3}$$

$$\ln(\mathrm{Exports}_{it}) = \alpha_2\, \mathrm{Any\_Support}_{it} + Z_{i06}\beta + \gamma_S + \epsilon_{it}. \tag{4}$$

Some adjustments are motivated by our specific objectives, others reflect insights from the preliminary estimates of equations (1) and (2). We discuss them in turn.

We only observe the performance of existing exporters and are only interested in the effectiveness of export promotion during the crisis. Therefore, our sample only includes firms that were exporting in 2006 and we evaluate how they perform in the following years. We consider two dependent variables: a dummy variable for the export status of firm *i* in year *t* and, on the subset of export market survivors, the logarithm of a firm's export level in year *t*. If supported firms are more likely to survive on the export market, the α_1 coefficient will be positive. Conditioning on export market survival, the α_2 coefficient measures whether client firms are able export a higher volume than firms not receiving support.

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[15] $E[\mathrm{y}]$ is the expected export performance and the superscripts 0 and 1 indicate the potential outcomes under either treatment regime *for a given firm*. Naturally, if a firm is supported we do not observe y^0 and we need to estimate it from a group of control firms (which have $S = 0$).

[16] We later use a comparable specification, without the firm-fixed effects, to predict the propensity score.

We run separate regressions for years $t \in \{2008, 2009, 2010\}$ which makes it straightforward to analyze changes at the extensive and intensive margin in a symmetric way. The treatment variable of interest only focuses on support during the crisis. It indicates whether firm *i* benefitted from export promotion support at any time between 2007, the year before the start of the global crisis, and year *t*: $\text{Any\_Support}_{it} = \max(\text{Support}_{i07}, \ldots, \text{Support}_{it})$.[17]

We first estimate equations (3) and (4) with ordinary least squares, but to verify robustness we also implemented a matching estimator that selects a comparison firm from the non-clients based on the propensity score. This is estimated using the following treatment model:

$$\text{Any\_Support}_{it} = Z_{i06}\beta + \gamma_S + \epsilon_{it}. \qquad (2')$$

As a further robustness check we also use the inverse of the propensity score directly as weights in the regression, an estimator that has a double-robust property (Imbens and Wooldridge, 2009). It yields consistent estimates if either the selection model or the treatment model is correctly specified. As the optimal weighting scheme is derived for the linear case, we estimate equation (3) as a linear probability model, assuming a mean-zero and i.i.d., but otherwise unrestricted error term.

As each regression uses a cross-section of firms, we can only use a limited number of control variables. At the same time, conditioning on positive exports in 2006 makes supported and control firms already more alike than a random selection of firms would be. Variables included in the *Z* vector are the value of exports, number of products, and number of destinations, all from 2006, and other firm characteristics like an import dummy, size, and age (for Peru).

Researchers often include firm-fixed effects in the performance regression which gives the comparison between treated and other firms a difference-in-differences interpretation (e.g. Görg, Henry and Strobl, 2008; Volpe Martincus and Carballo, 2008). It is then only necessary to make the selection-on-observables assumption conditional on the firm-specific unobservable. However, the evidence for Canada in Van Biesebroeck et al. (2015) suggests that firms often turn to export promotion agencies after they have experienced a negative export shock. If this is the case, including a firm-fixed effect by itself will not suffice to control for unobservables that lead firms to self-select into treatment and additional conditioning is necessary. Our estimates of the generic performance equation (1), reported in Figure 4, indicate that it is particularly important to control for a pre-treatment (and pre-crisis) growth rate in exports.

A final specification is estimated on the same set of firms active on the export market in 2006, but it includes separate observations for each export destinations a firm served in 2006. We again investigate whether supported firms are more likely to survive and export more, but now evaluate this on each export-destination separately. In this formulation, we can again

[17] Berman et al. (2012) provides evidence that time-to-ship plays an important role during financial crises, making more distant trading relationships more vulnerable. Hence, we look at treatment up to year *t*, the year as the performance variable, rather than only looking for effects of lagged treatment.

include a firm-fixed effect, but only if we observe some variation across destinations in the explanatory variable of interest. This is generated by interacting the Any_Support_{it} variable with an indicator whether a particular destination experienced a financial crisis (FinC) over the same period that we measure export promotion support.[18]

Equations (3) and (4) thus become

$$\text{I}[\text{Exports}_{idt} > 0] = \tilde{\alpha}_1 \, \text{Any\_Support}_{it} \times \text{FinC}_{d(2007,t)} + \gamma_i + \gamma_d + \epsilon_{idt}, \qquad (5)$$

$$\ln(\text{Exports}_{idt}) = \tilde{\alpha}_2 \, \text{Any\_Support}_{it} \times \text{FinC}_{d(2007,t)} + \gamma_i + \gamma_d + \epsilon_{idt}, \qquad (6)$$

The firm and destination fixed effects absorb the uninteracted effects of both variables as well as the earlier control variables *Z*. The coefficient on the interaction between the two indicators will be positive if support is particularly effective in destinations hit by a financial crisis.

7. Results

7.1 Control for self-selection

To investigate which firms ask for export promotion support, we first show results for the linear probability model (2) with a time-varying support dummy as dependent variable. In the first two columns (for each country) in Table 3 we include several dimensions of firms' average export market engagement in the regression, but no firm-fixed effects. As these variables are highly collinear, we do not find consistent patterns for the two countries, although many variables are statistically significant. In Belgium the number of years exported and the number of destinations are particularly important, while in Peru a high export volume or number of products is associated with support. If only a single dimension is included, for example the average export value, its coefficient is positive and highly significant in both countries.

[Include Table 3 approximately here]

One consistent pattern for the two countries is that firms that receive support in one year are also more likely to receive support in the next year. In the regressions without firm-fixed effects, the coefficient on lagged support is positive, rather high, and very precisely estimated. If the average probability a firm asks for support is absorbed by the fixed effect, results in the next two columns, the sign reverses in both countries. Conditional on receiving support more than once, firms prefer to space them out and not receive support in successive years.[19]

[18] We use the union of the country-year specific indicators from Reinhart and Rogoff (2011) and Laeven and Valencia (2012) to measure incidences of banking or financial crises in the 2007-2010 period.

[19] To control for a downward bias in the estimate of the lagged dependent variable, see Nickell (1981), we also estimated the equation with the xtlsdvc procedure in Stata which confirmed the negative point estimates.

We included both lagged levels and lagged growth rates of export market attachment, but most of these do not have any predictive power for firms' support status. Point estimates tend to be very small and few are statistically significant. The one variable that shows a consistent positive effect for both countries and across specifications is the number of lagged destinations. Firms exporting to many countries are significantly more likely to ask for support. Even when a firm-fixed effect absorbs the average number of destinations, firms are more likely to request support if they served an above average number of destinations the previous year. In contrast, we do not find any evidence that a decline in export levels, number of products or destinations is followed by a request for support to recover the lost ground. Self-selection into support based on past performance seems to be rare.

The few firm characteristics we observe do not yield any surprises. Belgian firms that export both within and outside the EU are more likely to ask for support, as do firms that import goods as well. Large Belgian firms are more likely to ask for support, but a firm-fixed effect accounts entirely for this effect. In contrast, in Peru only the time-varying dimension of firm size is correlated with support implying that firms hire more workers at the same time as they turn to PROMPERU for assistance to expand abroad.[20]

The relatively high R-squared statistics indicates that there are indeed observable differences between supported and other firms and some of these factors are likely to be related to subsequent export performance. We will include the different dimensions of export market attachment as well as other firm characteristics in all performance regressions. Moreover, we estimate a probit model on the subset of firms included in the performance regressions to calculate the propensity score for each firm. These estimates are reported in Table A.1 in the Appendix.

A second set of results that informed our preferred performance specification is reported in Figure 4.[21] We estimated equation (2), regressing export volume on support, additionally including interactions between the support indicator and leads and lags from the moment of support (time *t*). By including firm-fixed effects in the regression, exports are normalized to zero in the treatment year. As the sample includes firms that never receive support and the equation includes calendar year dummies, the estimates represent the difference in the evolution of exports for clients relative to non-clients leading up to and following export support.

[Include Figure 4 approximately here]

The black markers with solid lines are for new clients, i.e. firms that receive export support for the first time at some point in the 2006-2011 period. While they record higher exports following their first support in both countries, the export trajectory leading up to year *t* was

[20] Because of data limitations we measure firm size by the value of fixed assets in Belgium and by total employment in Peru, both in logarithms.

[21] The exact coefficient estimates with standard errors are reported in Table A.2 in the Appendix.

already significantly different for new clients. The low level of exports in years *t*-4 to *t*-1, both for Belgian and Peruvian firms, suggests that firms do not show up randomly at the export promotion agencies. Even though the point estimates on the first two lags are often insignificant, consistent with the evidence in Table 3, the longer time trend is informative.

We observe higher exports after *t* and lower exports before *t*, but in the short sample period we cannot rule out that exports merely return to their 'normal' level and support in year *t* was motivated by a temporary export slump. When we estimate these evolutions year by year, we do find particularly low export levels in year *t*-1 for firms supported in 2008 and 2009 at the onset of the global trade collapse. The patterns are similar in both countries, but less pronounced in Peru, both on the negative side ex-ante and on the positive side ex-post.

The dashed lines show comparable estimates on a sample of continuous exporters. The standard errors are lower as mature exporters see less pronounced swings in foreign sales. The lower export levels leading up to treatment are also less notable for Belgian firms and entirely absent for Peruvian firms. Finally, for Belgium we also observe the intensity that firms use export promotion services within each year. The grey markers shows the evolution of exports leading up to and following a spike in support, defined as a doubling in annual support instances (or a tripling in case the firm used the services only once in the preceding year). We now measure the relative export evolution for existing clients that decided to work more intensively with the export promotion agency. The evolution, including the pre-treatment export growth, is highly similar to that of new clients.

Our takeaway from these graphs is that merely including firm-fixed effects in the performance regression may not adequately control for self-selection. There is a systematic trend in supported firms' exports even prior to treatment. At a minimum, we need to include export growth in the pre-support period as an explicit control in the performance regressions, in addition to the firm characteristics and export market attachment discussed earlier.

7.2 Effects of export promotion on export level and export status

Following the initial evidence that motivated our preferred specification, we now report our estimates for the impact of export promotion on firms' export performance in Tables 4 to 6. In each table we show results for both export status and export volumes as dependent variables (in the top and bottom panel) and for both Belgium and Peru (left and right). The sample is limited throughout to firms that were exporting already in 2006.

The baseline results, in Table 4, are estimated with ordinary least squares and include control variables for firms' export market attachment in 2006, the growth rate of exports between 2006 and 2007, and several firm characteristics. Of the twelve coefficients on the support variable, eleven are estimated positive and statistically significantly different from zero. The uniformly positive estimates indicate that firms receiving support are indeed more likely to continue exporting over the crisis, in panel (a), and that their export values are also higher than for control firms, in panel (b).

[Include Table 4 approximately here]

For Belgium, the unconditional probability of export market survival is 65% in 2008 and 55% in 2010. Receiving export promotion raises this probability on average by one twentieth in 2008, but almost by one sixth in 2010.[22] These effects are economically large and for Peru they are estimated even larger, at one seventh in 2008 and one third in 2010. The control variables, especially prior export growth, indicate that a stronger initial export intensity raises the likelihood of survival on the export market, as expected. Without the firm characteristics the point estimates on the support variable were approximately twice as high, but export promotion has a strong positive effect even after conditioning on observables.

To accommodate the different reporting thresholds for exports within and outside the EU for Belgian firms, we added an interaction term between the support dummy and an indicator for firms that report some EU exports. These firms are by definition a lot larger. The results indicate that the benefits of export support for firm survival come almost entirely from the extra-EU activities of smaller exporters. The interaction term is always strongly negative and in the first two years it negates the entire baseline effect. Only for the estimates in 2010 is there a significantly positive effect for intra-EU exporters, estimated at 5%—the sum of the point estimates on the uninteracted and interacted support indicators.

The boost to the level of exports, reported in panel (b), is equally impressive. Relative to control firms that did not receive support, export levels are approximately 20% higher. Only in 2008 for Peru is the coefficient markedly lower and insignificant. Except for this one outlier all point estimates are estimated remarkably similar and they are never significantly different. The persistence in export performance is even more pronounced, as can be seen from the control variables, but support was very important as well.

As the earlier results indicated that treated firms are systematically different from control firms (in Table 3) and that treated firms already experienced systematically higher export growth leading up to support (in Figure 4), we also used two estimators that control more flexibly for potential endogeneity in treatment. Estimates in Table 5 use propensity score matching and inverse probability weighting to control for self-selection. These results confirm the earlier estimates. Supported firms record stronger export performance during the crisis, although in most cases the absolute performance differences are estimated slightly lower with the more sophisticated estimators. We included the same set of control variables in the regressions underlying Table 5 as in Table 4, but we do not report them as the estimates are very similar.

[Include Table 5 approximately here]

[22] We obtained these probability increases combining the effect for intra-EU and extra-EU exporters. The average point estimates in the three years are 0.033, 0.048, and 0.080, which are reported in Table 5 where we pool all supported firms.

The nature of the analysis in Tables 4 and 5 did not allow the inclusion of firm-fixed effects in the specification. We next exploit export performance differences by destination which makes it possible to control for an unobservable firm effect when investigating the effects of export promotion support. In particular, we investigate whether supported firms are more likely to survive than control firms particularly in destinations that are hit by the financial crisis. These estimates control more flexibly for each firm's average performance and identify the effect of export promotion solely from better than average performance in destinations hit by the crisis.

The results in Table 6 suggest that supported firms indeed export more to crisis-destinations. In panel (a) we follow a standard approach to keep zero-trade observations in the sample, using the logarithm of total exports plus one as dependent variable.[23] Firm-destinations thus remain in the analysis even if a firm exits a particular export market. The implicit assumption is that the marginal effects of support (in percentage) is the same on the extensive and the intensive margins. The average effect is estimated to be strongly positive in both countries in all three time periods we consider.

[Include Table 6 approximately here]

These results are based on a specification with a full set of firm and country fixed effects to control flexibly for unobservable differences that are time invariant. Using the earlier firm characteristics as controls, the point estimates were extremely similar to the firm-level intensive margin estimates in Table 4(b), which is intuitive. In the next two panels of Table 6, we investigate whether the superior performance of supported firms is due to a higher survival probability in destinations hit by the financial crisis or to higher export volumes in relative terms—in practice, this is likely to mean a smaller reduction in export volumes in those destinations.

The results unequivocally pinpoint the extensive destination margin as the primary channel responsible for the superior firm-level performance. Supported firms are significantly more likely to remain active in affected destinations, even though their export volumes are not significantly different from control firms that survive there are well. We estimate the strongest effect, both for Belgium and for Peru, in 2009, when the financial crisis and the trade collapse was most pronounced. In Peru, the point estimates at the intensive margin are large as well, but the high standard errors makes two of the three estimates statistically indistinguishable from zero.

We report briefly on a number of variations we estimated, but which generated few noteworthy results. We interacted the support indicator in equations (3) and (4) with firm characteristics to investigate heterogeneous effects of export promotion. These estimates

[23] In practice, we add €100 to Belgian exports (the minimum threshold we used for a trade flow to be included in the sample) and $100 to Peruvian exports before taking logarithms.

indicate that small exporters benefit by far the most, especially at the extensive margin. In the case of Belgium, the extensive margin results are driven by firms that experienced below-average export growth prior to the crisis, while the intensive margin estimates are significantly higher for firms exposed more strongly to the trade collapse based on their pre-crisis export portfolio.[24] Except for a heightened effect at the extensive margin for small exporters, firm heterogeneity did not seem to play much of a role in Peru. Even the crisis-exposure indicator yielded a highly insignificant, albeit positive, point estimate.

The final results illustrate the value of repeated support. The support dummy in the performance equations is replaced by or supplemented with several variables to measure the intensity of support. We only report the most significant findings in Table 7. The three variations we considered are, first, to replace the dummy variable for "any" export promotion support with "the number of years" a firm received support. Second, to allow for different effects for firms that received support only once in the period considered and firms receiving support multiple times. Third, for Belgium we included as an additional explanatory variable the number of times each client received support.

Results for the first variation, the number of times firms are supported in the different [2007, *t*] intervals, are highly similar to the benchmark results in Tables 4 and 6. The point estimates are lower, but given that the average for the explanatory variable is higher, they imply similar average effects of support. At the firm-destination level, the statistical significance of the point estimates is strongly enhanced. At the extensive margin, five of the six estimates are now statistically different from zero at a 1% significance level and even the effect for *t*=2008 for Peru becomes marginally significant. The same is true for the intensive margin estimates which all turn positive and all but one becomes statistically significant.

[Include Table 7 approximately here]

In the second variation we include two dummy variables. At the extensive margin the results are striking and highly robust. Firms that receive support more than once see a much more pronounced increase in their export market survival probability. For Belgium some of the single-support dummies even turn negative. Few clients of FIT, approximately only one in six, receive support in only a single year and these are clearly not the most promising exporters. At the intensive margin, repeated support also provides a stronger boost to export volumes, but the results are not as consistent as at the extensive margin. For Belgium results are very strong at

[24] This average exposure is calculated as follows. In each of 323 cells, defined by 17 broad sectors and 19 regions, we regress log-exports over 2000-2013 on a time trend and dummies for the years 2009 and 2010. The minimum of these two dummies measures the maximum decline from trend and is our estimate for the depth of the crisis in that sector-region. When both dummies are positive, we use 0. To avoid reverse causality we use the export evolution for, respectively, the Netherlands and Chile to estimate these export declines relative to the trend. The estimated declines are aggregated separately for each firm using each exporter's 2006 export shares to the different sector-region cells.

the firm level, but not at the firm-destination level. For Peru the pattern is reversed, with extremely high and robust estimates at the firm-destination level.

The third variation, adding the number of times clients are supported as an explanatory variable (in logs), can only be estimated on the Belgian sample. The observed support intensity ranged from 1 to 200 times within a period (almost once a day). At the intensive margin and the firm level, we found positive and significant coefficients indicating that the export boost for clients increases with the intensity they receive support. Results in the other specifications are mostly positive as well, but point estimates tend to be small in magnitude and only rarely statistically significant.

Overall, the results suggest that repeated support helps to solidify the positive effects on exports. But increased support intensity seems most useful when received consistently in successive years, rather than in large burst within a year.

8. Policy discussion

Our estimates provide rather consistent evidence that firms receiving export promotion support during the crisis performed better. They were more likely to remain active on export markets and exported higher volumes relative to control firms. The most robust channel for this better relative performance was a higher likelihood to remain active exporters in export destinations that were directly affected by the financial crisis.

In this last section, we take a step back and consider the policy relevance of these findings. In particular, we address the following two questions. Is it likely that systematically scaling up these programs during a cyclical downturn would provide additional beneficial? Are the net benefits of these programs, taking also their costs into account, also positive?

A priori, it is unlikely that these types of programs could become one of the major policy tools to cushion the business cycle fluctuations that exporters face. The existing programs are minuscule in comparison to aggregate export sales. The activities they perform are also not easily adapted to provide rapid interventions or adjust with the business cycles. The primary role of these agencies is to act as information broker and help firms deal with problems of asymmetric information or transaction costs. To accomplish this they invest in accumulating internal knowledge and a foreign network of support offices that is permanently available.

Moreover, most support is initiated by client firms and pushing support to potential or current exporters is unlikely to generate positive effects of a similar magnitudes as those we estimated from the current operations. It is notable, however, that the type of activity that saw the second strongest increase over the crisis period are actions, which is the category where the

agency is most able to take initiatives itself, e.g. organizing seminars or trade missions (this breakdown is only available for Belgium).[25]

Another caveat is that in the 2009 recession, government deficits soared and budgets for existing government services were tightened. Without dedicated funds to adjust their activities, the agencies were limited in their responses to the crisis. The effects we estimated relied on information from a time period where the agencies were especially constrained to engage in additional activities, given that they still had to cover their fixed costs.

Having said that, a number of patterns we documented are encouraging for the countercyclical potential of this type of programs. First, effects were stronger for exports outside the EU for Belgium, while most exports for Peru leave the region. As business cycles tend to be less synchronized for countries that are farther apart it provides an opportunity to tap into markets where demand is not depressed during a domestic recession.

Second, effects were particularly strong at the extensive margin. As exporting involves sunk entry costs and fixed costs to remain active overseas, providing export promotion support especially when firms' budgets to cover recurring fixed costs is tight, it can avoid inefficient export market churn. The especially robust results at the destination-extensive margin further underscore the benefit of export promotion as a way to diversify sales and help hedge against local business cycle fluctuations.

Third, the evidence also showed that export promotion in particular helps firms survive in export markets that experienced a financial crisis. This is not surprising as exporting tends to be a capital and credit intensive activity. We expected export promotion to be effective as well to help firms navigate protectionist measures that often become more popular during cyclical downturns. In the last recession, countries have been remarkably restrained in this area and we did not find sufficient such instances to test this prediction.

Finally, the results on treatment intensity do provide suggestive evidence that providing more support could also raise benefits. The results (only for Belgium) using the intensity of support within a year were somewhat ambivalent, but receiving support year-after-year did generate especially strong benefits. This cannot be dismissed as simply picking up unobserved exporter quality, as it also held in the firm-destination level estimates that included firm-fixed effects.

While our results provide strong evidence for a positive impact on export performance at the micro level, it is possible that the costs associated with these programs still outweigh the benefits. Obviously, to carry out a complete cost-benefit analysis one would require detailed information on the variable and fixed costs involved in providing these services, especially on the marginal support provided. It would also require an assessment to what extent provided

[25] The category that increased the most were "subsidies," which is not surprising giving the tightening credit constraints.

services merely crowd out private expenses and to what extent a public program permits firms to avoid duplicating costs. At the benefit side, it would matter greatly whether supported firms are able to reap long-term benefits or not. Perhaps most importantly, the net welfare benefit to society of an extra dollar or euro of export sales is hard to know, especially given that it is likely to be higher during recessions.

We can make two observations, though. If we trust the point estimates, the potential gain from these programs could be huge. Aggregate export sales are in the range of €300 billion for Belgium and US$50 billion for Peru. Boosting this aggregate by 20%, the average estimate on the intensive margin from Table 4, would translate into an enormous amount. Even if only a tiny fraction of these additional sales are counted as a welfare benefits, the programs will pay for themselves multiple times over. Especially in a cyclical downturn, anything that stimulates effective demand is valuable. It is, however, impossible to know how the efficiency of the program would evolve if it were rolled out to all exporters.

A more limited approach to assess the net benefits, would be to make some reasonable assumptions and perform a simple 'back of the envelope' calculation based on our estimates and the export promotion budget of these agencies. For example, we can focus on the return on investment purely from the government's perspective. The narrow question we ask here is: Does the additional tax revenue on corporate profits from exporters cover at least the budget of the export promotion agency?

The numbers we use in this calculation are (i) the unconditional probability that firms surviving on the export markets, (ii) the percentage gain in exports for supported firms from Table 4(b), and (iii) the exports from firms additionally surviving on the export market thanks to the support they received from Table 4(a). As a conservative estimate, we only consider the additional business income tax as personal income tax gains would require assumptions on exports per employee and which jobs would be net additions in the economy. We apply the profit margin that we observe in the annual accounts of exporting firms, which varies between 3.5% in 2008 and 2010 and 2.1% in 2009, and the effective corporate tax rates we use are 24% for Belgium and 20% for Peru.

In this narrow sense, we find a positive net benefit of the export promotion program on government revenues for Peru in the years 2009 and 2010 and for Belgium in all years. In particular, when we use the most conservative point estimates from Table 5, we find that the net gain in government revenue (corporate tax revenues minus cost of the export promotion program) varies in Belgium between €5.1 million in 2008 and €41.6 million in 2010. For Peru, the net return is largest in 2010, with a net revenue of €2.7 million.[26] While this simple cost-benefit calculation indicates that export promotion is covering its own costs, the net gain in government revenue remains modest, which is what we would expect.

[26] Given the negative or very low point estimates at the intensive margin for 2008, the net effect in 2008 cannot be positive.

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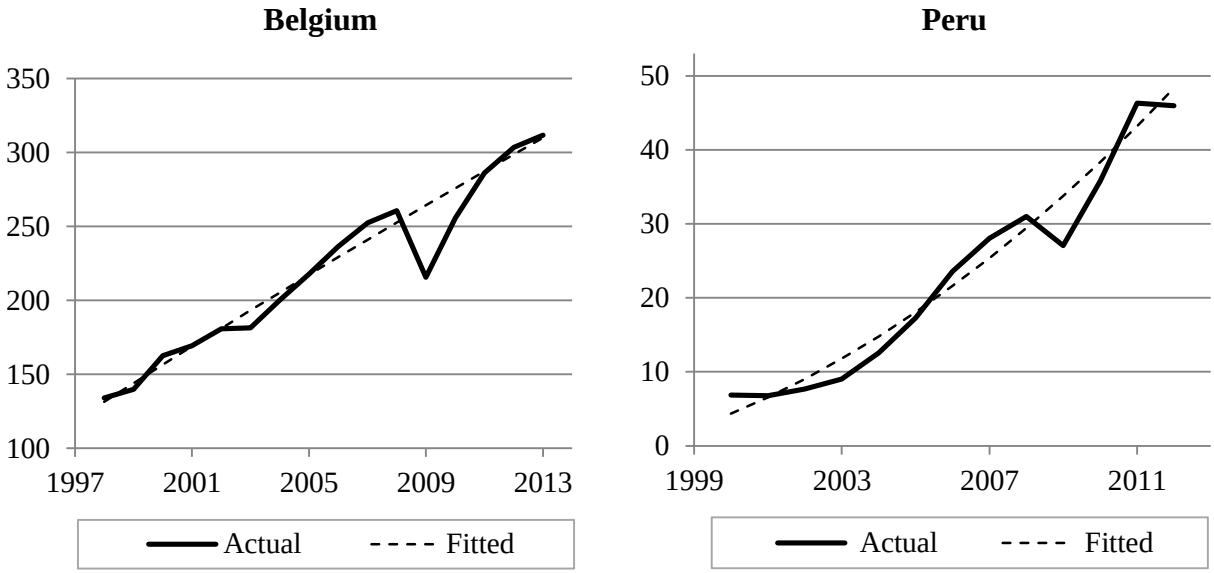
Figure 1: Long-term evolution of aggregate exports

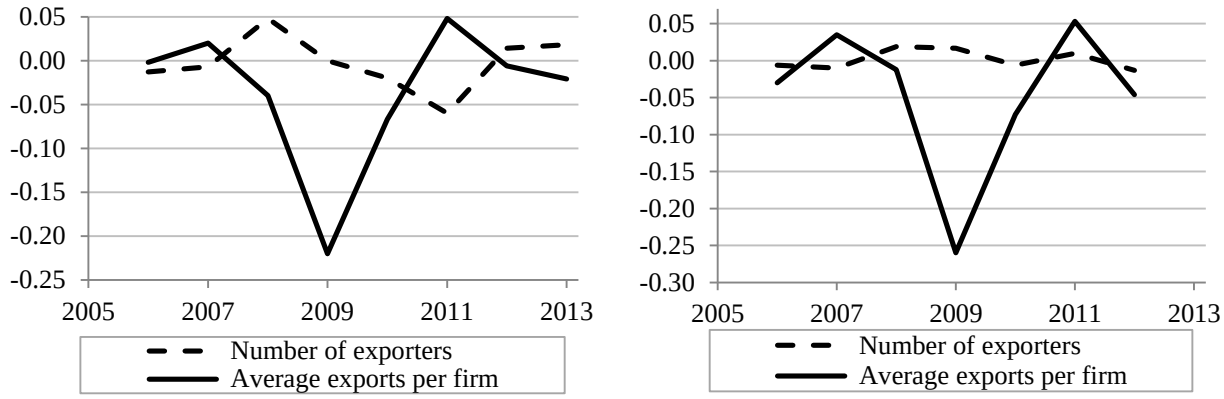


Note: Belgium: 1998-2013, in billions of EUR; Peru 2000-2012, in billions of USD.

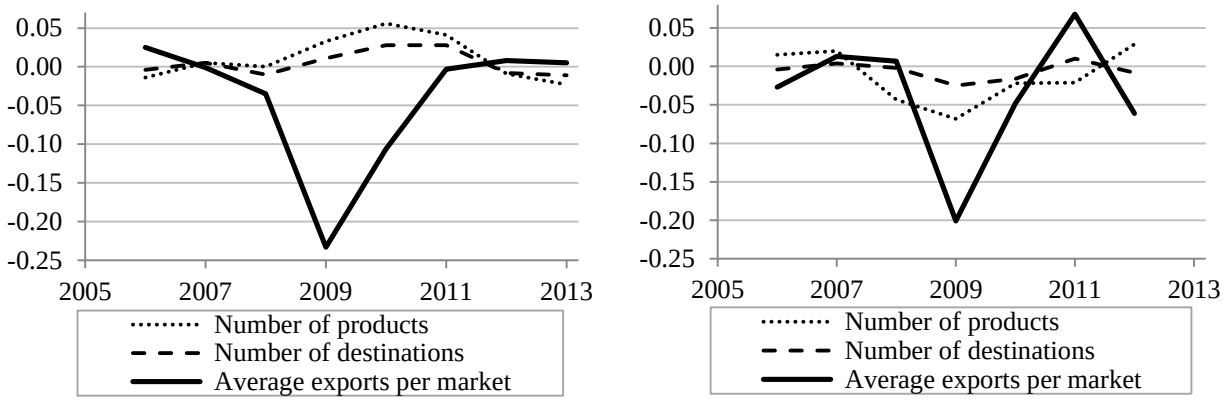
Figure 2: Evolution of exports over the crisis by adjustment margin, firm size or destination

Belgium **Peru**

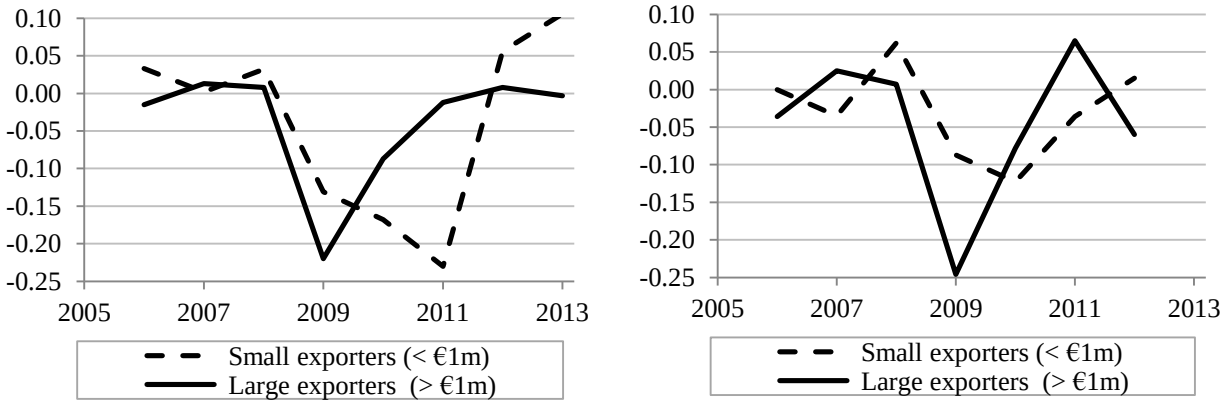
(a) Extensive versus intensive firm margin



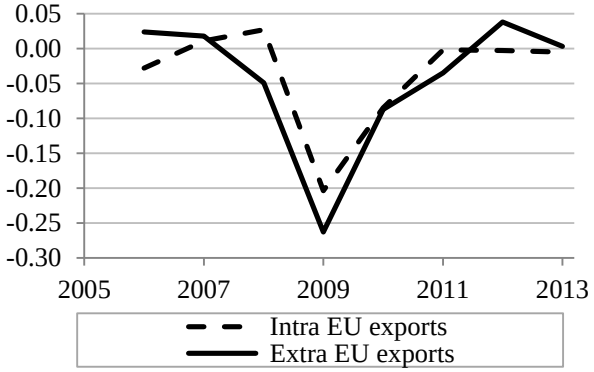
(b) Extensive versus intensive product or destination margin



(c) Small versus large exporters



(d) Intra-region versus distant exports



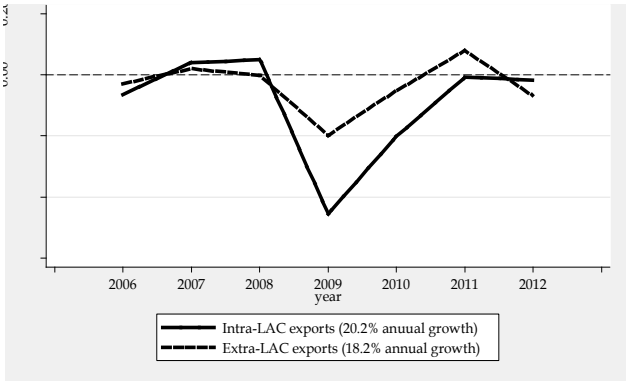


Figure 3: Evolution of export promotion activities over the crisis

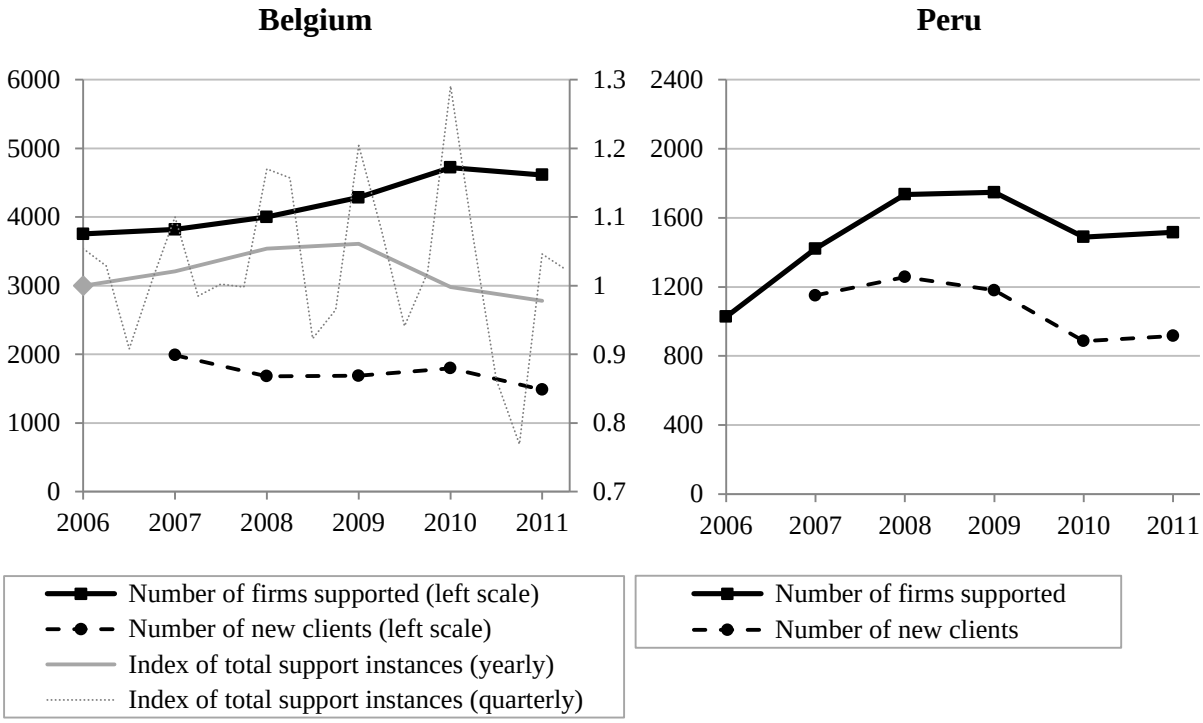
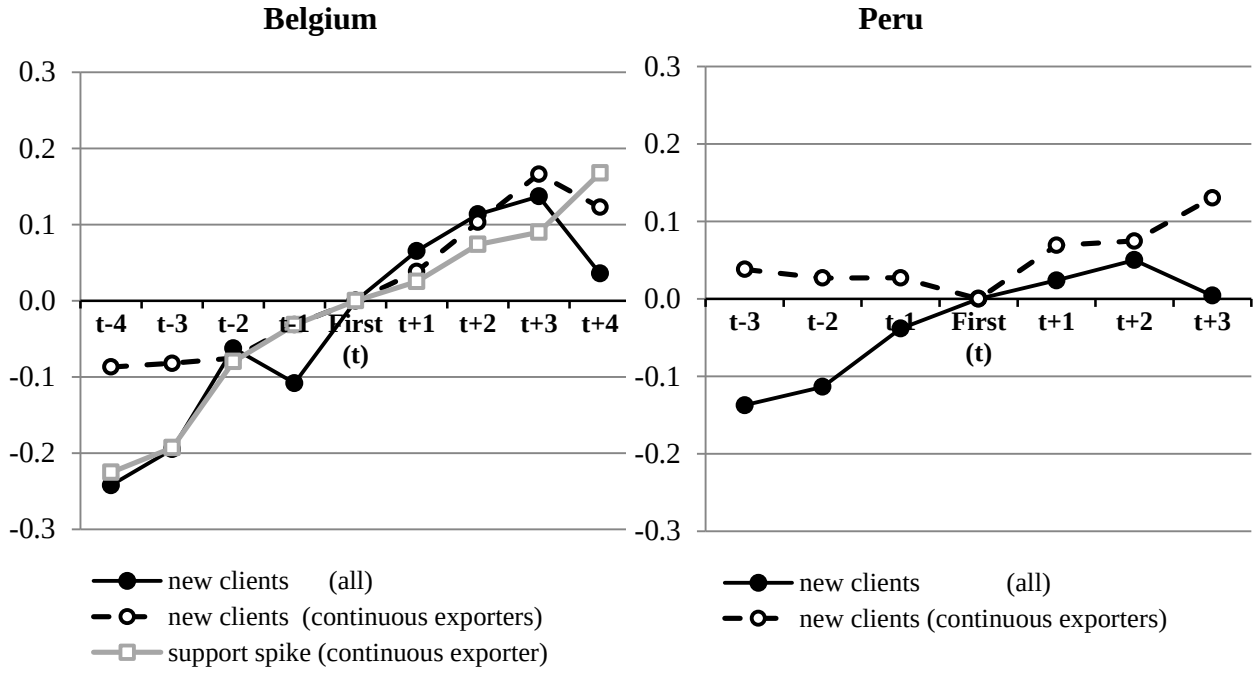


Figure 4: Evolution of exports prior and following export promotion instances



Source: Own calculations based on matched firm-level information from administrative trade-transactions datasets from each country and supported-client datasets from each export promotion agency.

Note: New clients refer to support instances that are a firm's first in the 2006-2011 period. A support spike is a doubling of support instances in a year; for firms only receiving support once, a spike is only registered if support at least triples. Regressions include firm, sector, year-fixed effects and other controls. Coefficient errors and standard errors are reported in Table A.2 in the Appendix.

Table 1: Summary of the literature evaluating the impact of export promotion programs

Country	Study
Macro Perspective	
Export Promotion Measure: Financial Resources Devoted to Export Promotion	
Argentina	Castro and Saslavsky (2010)
United States	Coughlin and Cartwright (1987)
United States	Bernard and Jensen (2004)
Cross-country	Lederman, Olarreaga and Payton (2010)
Export Promotion Measure: Network of Foreign Offices	
Japan	Hayakawa, Lee and Park (2011)
Netherlands	Creusen and Lejour (2012)
South Korea	Hayakawa, Lee and Park (2011)
Spain	Gil-Pareja, Llorca-Vivero, Martínez-Serrano, and Requena-Silvente (2008)
Spain	Gil-Pareja, Llorca-Vivero, Martínez-Serrano, and Requena-Silvente (2014)
Cross-country	Volpe Martincus, Estevadeordal, Gallo, and Luna (2010)
Cross-country	Volpe Martincus, Carballo, and Gallo (2011)
Micro Perspective	
The Impact of Firm-Level Export Promotion on Firms Export Outcomes	
Argentina	Volpe Martincus, Carballo and Garcia (2012)
Austria	Seringhaus and Botschen (1991)[1]
Belgium	Schminke and Van Biesebroeck (2014)
Brazil	Cruz (2014)
Canada	Seringhaus and Botschen (1991)
Canada	Francis and Collins-Dodd (2004)[1]
Canada	Van Biesebroeck, Yu, and Chen (2014)
Chile	Álvarez and Crespi (2000)
Chile	Álvarez (2004)
Chile	Volpe Martincus and Carballo (2010b)
Colombia	Volpe Martincus and Carballo (2010a)
Costa Rica	Volpe Martincus and Carballo (2012)
France	Crozet, Mayer, Mayneris, and Mirza (2013)
Peru	Volpe Martincus and Carballo (2008)
Spain	Cansino, Lopez-Melendo, Pablo-Romero, and Sanchez-Braza (2013)
Tunisia	Cadot, Fernandes, Gourdon, and Mattoo (2015)
Uruguay	Volpe Martincus and Carballo (2010c)
Cross-country	Volpe Martincus (2010)
Cross-country	Lederman, Olarreaga and Zavala (2015)
The Impact of Firm-Level Export Promotion: New Dimensions	
Denmark	Schaur and Munch (2015)
Chile	Álvarez, Crespi, and Volpe Martincus (2014)

Notes: [1] Effectiveness is gauged from firms' responses to a survey.

Table 2: Composition of the sample

	Belgium			Peru		
	Number of firms that			Number of firms that		
	Only export	Only receive support	Export & support	Only export	Only receive support	Export & support
Observations:						
2006	20,824	1,552	2,200	6,101	656	371
2007	20,535	1,609	2,210	6,252	1,001	420
2008	21,384	1,752	2,249	6,639	1,228	508
2009	19,819	1,983	2,302	6,862	1,188	560
2010	18,878	2,288	2,432	7,033	999	490
2011	18,034	1,919	2,075	7,373	937	579
2006-2011	119,474	11,103	13,468	40,260	6,009	2,928
Firms						
2006-2011	40,027	4,761	5,793	16,330	4,586	1,831

Source: Own calculations based on matched firm-level information from administrative trade-transactions datasets from each country and supported-client datasets from each export promotion agency.

Table 3: Which firms select into treatment

	dependent variable is a time-varying dummy variable for export promotion support							
	Belgium				**Peru**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged support	0.608***	0.606***	-0.085***	-0.156***	0.441***	0.461***	-0.044***	-0.026
	(0.003)	(0.003)	(0.004)	(0.005)	(0.011)	(0.012)	(0.016)	(0.019)
Lagged export level (log)	-0.0014*	-0.001	0.001	0.002	-0.000	0.001	0.001	0.006*
	(0.0008)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.004)
Lagged export growth		0.0009		-0.001		-0.000		-0.003
		(0.001)		(0.001)		(0.002)		(0.002)
Lagged products (no.)	-0.0001**	-0.0001**	0.0002*	0.0001	-0.000***	-0.000***	-0.000	-0.000
	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged products growth		0.0002*		0.0001		-0.000		-0.000
		(0.0001)		(0.0001)		(0.000)		(0.000)
Lagged destinations (no.)	0.0008***	0.0007***	0.0005**	0.001	0.002***	0.002**	0.007***	0.010***
	(0.0001)	(0.0001)	(0.0003)	(0.0004)	(0.001)	(0.001)	(0.002)	(0.003)
Lagged destinations growth		0.0002		-0.0000		-0.001		-0.006***
		(0.0003)		(0.0004)		(0.001)		(0.002)
Export intra & extra region	0.010***	0.010***	0.008**	0.009**				
	(0.003)	(0.003)	(0.004)	(0.004)				
Importer dummy	0.009***	0.008***	0.012***	0.009*				
	(0.002)	(0.003)	(0.004)	(0.005)				
Size	0.003***	0.003***	0.001	-0.0004	0.002	0.002	0.015***	0.018***
	(0.0003)	(0.0004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.006)
Age					0.004	-0.003	0.015	-0.040
					(0.004)	(0.006)	(0.016)	(0.030)
No. of export years (log)	0.021***	0.040***			-0.001	-0.003*		
	(0.003)	(0.007)			(0.001)	(0.002)		
Mean export value (log)	-0.004***	-0.004***			0.015***	0.015***		
	(0.001)	(0.002)			(0.002)	(0.002)		
Mean no. of products (log)	-0.003**	-0.003**			0.030***	0.031***		
	(0.001)	(0.002)			(0.003)	(0.004)		
Mean no. of destinations (log)	0.025***	0.027***			-0.003	-0.005		
	(0.002)	(0.002)			(0.003)	(0.005)		
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	No	No	Yes	Yes
R-squared	0.448	0.449	0.720	0.745	0.224	0.271	0.558	0.582
No. of observations	80,477	54,619	80,477	54,619	26,905	16,966	26,905	16,966

Source: Own calculations based on matched firm-level information from administrative trade-transactions datasets from each country and supported-client datasets from each export promotion agency.

Table 4: Effect of export promotion on export status during the crisis

(a) Firm extensive margin effect

	dependent variable is a binary export status indicator (0/1) at the firm level for year *t*					
	Belgium			**Peru**		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
Supported at least once in 2007-2008	0.116***			0.074***		
	(0.015)			(0.014)		
Supported at least once in 2007-2009		0.113***			0.133***	
		(0.007)			(0.015)	
Supported at least once in 2007-2010			0.130***			0.154***
			(0.013)			(0.016)
Supported * some exports within-EU	-0.121***	-0.093***	-0.080***			
	(0.022)	(0.016)	(0.015)			
Export value in 2006 (log)	0.033***	0.028***	0.022***	0.034***	0.026***	0.018***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Export growth in 2006-2007	0.188***	0.171***	0.156***	0.179***	0.137***	0.113***
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)
Number of products in 2006 (log)	0.028***	0.026***	0.029***	0.032***	0.030***	0.027***
	(0.006)	(0.006)	(0.008)	(0.004)	(0.005)	(0.005)
Number of destination in 2006 (log)	0.035*	0.038***	0.039***	0.004	0.004	0.009
	(0.019)	(0.018)	(0.015)	(0.007)	(0.009)	(0.009)
Export intra & extra region	0.008	0.047***	0.054***			
	(0.018)	(0.018)	(0.018)			
Importer dummy	0.065***	0.090***	0.096***			
	(0.021)	(0.021)	(0.021)			
Size in 2006 (log)	-0.006**	-0.001	0.004**	0.003	0.021***	0.031***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Age in 2006 (log)				0.169***	0.184***	0.188***
				(0.007)	(0.007)	(0.007)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	No	No	No	Yes	Yes	Yes
Number of observations	23,024	23,024	23,024	6,268	6,268	6,268

Table 4 (continued)

(b) Firm intensive margin effect

	dependent variable is log of firm-level exports for export market survivors in year *t*					
	Belgium			**Peru**		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
Supported at least once in 2007-2008	0.184***			0.033		
	(0.027)			(0.055)		
Supported at least once in 2007-2009		0.249***			0.185***	
		(0.034)			(0.058)	
Supported at least once in 2007-2010			0.172***			0.206***
			(0.041)			(0.064)
Export value in 2006 (log)	0.881***	0.816***	0.795***	0.770***	0.711***	0.696***
	(0.011)	(0.013)	(0.017)	(0.020)	(0.022)	(0.024)
Export growth in 2006-2007	1.152***	0.966***	0.915***	0.697***	0.565***	0.463***
	(0.026)	(0.031)	(0.037)	(0.034)	(0.038)	(0.040)
Number of products in 2006 (log)	-0.008	0.003	0.023	-0.097***	-0.149***	-0.168***
	(0.016)	(0.020)	(0.022)	(0.020)	(0.023)	(0.027)
Number of destination in 2006 (log)	-0.014	-0.069***	-0.106***	0.113***	0.112***	0.151***
	(0.019)	(0.022)	(0.026)	(0.036)	(0.041)	(0.051)
Export intra & extra region	0.429***	0.703***	0.666***			
	(0.047)	(0.063)	(0.055)			
Importer dummy	0.188***	0.245***	0.319***			
	(0.042)	(0.064)	(0.061)			
Size	0.019***	0.042***	0.058***	0.127***	0.197***	0.236***
	(0.005)	(0.009)	(0.011)	(0.018)	(0.019)	(0.022)
Age				0.044	-0.107	-0.143*
				(0.057)	(0.066)	(0.082)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	No	No	No	Yes	Yes	Yes
Number of observations	14,958	13,743	12,742	3,495	3,015	2,658

Source: Own calculations based on matched firm-level information from administrative trade-transactions datasets from each country and supported-client datasets from each export promotion agency.

Note: (a) Sample of exporters in 2006, linear probability model. (b) Sample of 2006 exporters that still export in year *t*.

Table 5: Preferred estimates: effects using matching or propensity score weighting

(a) Firm extensive margin effect

	dependent variable is a binary export status indicator (0/1) at the firm level for year t					
	Belgium			**Peru**		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
Coefficient on "Supported at least once in [2007, *t*]"						
- Benchmark (OLS) estimates	0.033***	0.048***	0.080***	0.074***	0.133***	0.154***
	(0.010)	(0.010)	(0.008)	(0.014)	(0.015)	(0.016)
- Propensity score matching	0.041***	0.066***	0.086***	0.068***	0.113***	0.131***
	(0.009)	(0.009)	(0.010)	(0.013)	(0.015)	(0.016)
- Inverse probability weighting with	0.042***	0.052***	0.078***	0.082***	0.126***	0.141***
regression adjustment	(0.005)	(0.006)	(0.007)	(0.013)	(0.014)	(0.015)
Number of observations	23,024	23,024	23,024	6,268	6,268	6,268

(b) Firm intensive margin effect

	dependent variable is log of firm-level exports for export market survivors in year t					
	Belgium			**Peru**		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
Coefficient on "Supported at least once in [2007, *t*]"						
- Benchmark (OLS) estimates	0.184***	0.249***	0.172***	0.033	0.185***	0.206***
	(0.027)	(0.034)	(0.041)	(0.055)	(0.058)	(0.064)
- Propensity score matching	0.208***	0.195***	0.242***	-0.044	0.225***	0.134*
	(0.071)	(0.067)	(0.073)	(0.078)	(0.063)	(0.081)
- Inverse probability weighting with	0.166***	0.237***	0.172***	0.000	0.148***	0.163***
regression adjustment	(0.028)	(0.032)	(0.038)	(0.051)	(0.054)	(0.062)
Number of observations	14,958	13,743	12,742	3,495	3,015	2,658

Source: Own calculations based on matched firm-level information from administrative trade-transactions datasets from each country and supported-client datasets from each export promotion agency.

Note: (a) Sample of exporters in 2006, linear probability model. (b) Sample of 2006 exporters that still export in year *t* . We always report the effect of treatment on the treated. The same control variables as in Table 4 are included but not reported. The propensity score used in these estimators is calculated based on the probit regressions reported in Table A.1 in the Appendix.

Table 6: Effect of export promotion at the firm-destination level during the crisis

(a) Firm-destination total margin

	Belgium			Peru		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	dependent variable is log(exports$_{dt}$ +1)					
	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
Interaction: Firm *i* supported at least once	0.347***	0.500***	0.344***	0.690**	0.801***	0.874***
& country *d* financial crisis in [2007, *t*]	(0.084)	(0.084)	(0.091)	(0.329)	(0.281)	(0.269)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Destination-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	141,189	141,189	141,189	16,092	16,092	16,092

(b) Firm-destination extensive margin

	dependent variable is a binary export status indicator (0/1) at the firm-destination level (*dt*)					
	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
Interaction: Firm *i* supported at least once	0.014**	0.024***	0.007	0.037	0.044**	0.053**
& country *d* financial crisis in [2007, *t*]	(0.007)	(0.007)	(0.007)	(0.026)	(0.021)	(0.021)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Destination-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	141,189	141,189	141,189	16,092	16,092	16,092

(c) Firm-destination intensive margin

	dependent variable is log of firm-destination level (*dt*) of exports for export market survivors					
	(1c)	(2c)	(3c)	(4c)	(5c)	(6c)
Interaction: Firm *i* supported at least once	-0.015	-0.020	-0.036	0.168	0.262*	0.128
& country *d* financial crisis in [2007, *t*]	(0.047)	(0.047)	(0.048)	(0.161)	(0.152)	(0.170)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Destination-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	91,207	83,062	76,538	8,182	7,049	6,333

Table 7: Heterogeneous effects of export promotion by intensity of use

(a) Firm or firm-destination extensive margin effect

	dependent variable is a binary export status indicator (0/1)					
	Belgium			**Peru**		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
Estimated at the firm level						
One year of assistance in [2007, *t*]	0.006	-0.016	-0.054***	0.040**	0.077***	0.105***
	(0.015)	(0.012)	(0.012)	(0.017)	(0.018)	(0.020)
Multiple years of assistance in [2007, *t*]	0.030**	0.054***	0.100***	0.024	0.082***	0.122***
	(0.014)	(0.011)	(0.010)	(0.020)	(0.020)	(0.021)
Number of observations	23,024	23,024	23,024	6,268	6,268	6,268
Estimated at the firm-destination level						
Interaction: Number of years supported & Financial crisis in [2007, *t*]	0.027***	0.034***	0.035***	0.031*	0.029***	0.033***
	(0.001)	(0.001)	(0.001)	(0.017)	(0.011)	(0.009)
Interaction: One year of assistance & Fininancial crisis in [2007, *t*]	-0.505***	-0.540***	-0.485***	-0.005	0.017	-0.002
	(0.015)	(0.015)	(0.015)	(0.033)	(0.028)	(0.026)
Interaction: Multiple years of assistance & Financial crisis in [2007, *t*]	0.203***	0.175***	0.131***	0.074**	0.077***	0.099***
	(0.008)	(0.007)	(0.008)	(0.036)	(0.028)	(0.026)
Number of observations	141,189	141,189	141,189	16,092	16,092	16,092

(b) Firm or firm-destination intensive margin effect

	dependent variable is log of firm or firm-destination exports for export market survivors in year t					
	Belgium			**Peru**		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
Estimated at the firm level						
One year of assistance in [2007, *t*]	-0.076*	-0.079	-0.185***	0.031	0.230***	0.192**
	(0.041)	(0.053)	(0.059)	(0.072)	(0.067)	(0.078)
Multiple years of assistance in [2007, *t*]	0.220***	0.278***	0.232***	0.056	0.122	0.216***
	(0.032)	(0.035)	(0.047)	(0.068)	(0.081)	(0.080)
Number of observations	14,958	13,743	12,742	3,495	3,015	2,658
Estimated at the firm-destination level						
Interaction: Number of years supported & Financial crisis in [2007, *t*]	0.050***	0.043***	0.035***	0.146	0.149**	0.121**
	(0.008)	(0.008)	(0.008)	(0.089)	(0.069)	(0.061)
Interaction: One year of assistance & Fininancial crisis in [2007, *t*]	-2.117***	-1.956***	-1.886***	-0.083	0.163	-0.109
	(0.098)	(0.157)	(0.197)	(0.251)	(0.195)	(0.230)
Interaction: Multiple years of assistance & Financial crisis in [2007, *t*]	0.049	0.001	-0.023	0.353**	0.378**	0.311*
	(0.046)	(0.047)	(0.048)	(0.177)	(0.179)	(0.184)
Number of observations	91,207	83,062	76,538	8,182	7,049	6,333

Table A.1: Probit estimate of the selection regression used to calculate the propensity score

	dependent variable is a binary support indicator at the firm level for any export support in the [2007, *t*] interval					
	Belgium			**Peru**		
	t=2008	t=2009	t=2010	t=2008	t=2009	t=2010
	(1)	(2)	(3)	(4a)	(5a)	(6a)
Export value in 2006 (log)	-0.043***	-0.039***	-0.035***	0.025*	0.021*	0.029**
	(0.007)	(0.007)	(0.007)	(0.013)	(0.012)	(0.012)
Export growth in 2006-2007	0.051***	0.053***	0.052***	0.308***	0.308***	0.312***
	(0.013)	(0.012)	(0.011)	(0.026)	(0.023)	(0.022)
Number of products in 2006 (log)	-0.056***	-0.059***	-0.061***	0.110***	0.133***	0.127***
	(0.014)	(0.013)	(0.013)	(0.024)	(0.022)	(0.022)
Number of destination in 2006 (log)	0.396***	0.379***	0.357***	0.139***	0.206***	0.232***
	(0.019)	(0.018)	(0.018)	(0.041)	(0.038)	(0.037)
Export intra & extra region	0.120***	0.135***	0.165***			
	(0.034)	(0.033)	(0.032)			
Importer dummy	0.352***	0.375***	0.389***			
	(0.043)	(0.040)	(0.038)			
Size	0.055***	0.056***	0.053***	0.021	0.029**	0.030**
	(0.006)	(0.005)	(0.005)	(0.016)	(0.015)	(0.014)
Age				0.125**	0.185***	0.219***
				(0.049)	(0.046)	(0.045)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	No	No	No	Yes	Yes	Yes
Number of observations	23,024	23,024	23,024	6,268	6,268	6,268

Table A.2: Coefficient estimates underlying Figure 4

Year relative to first support instance	Belgium						Peru			
	new clients (all)		new clients (continuous exporters)		support spike (continuous exporter)		new clients (all)		new clients (continuous exporters)	
	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.
t-4	-0.242	0.072	-0.087	0.065	-0.225	0.077				
t-3	-0.195	0.055	-0.082	0.052	-0.193	0.057	-0.137	0.067	0.038	0.058
t-2	-0.062	0.045	-0.075	0.044	-0.080	0.048	-0.114	0.055	0.027	0.047
t-1	-0.108	0.038	-0.032	0.038	-0.031	0.043	-0.038	0.050	0.027	0.046
First (t)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
t+1	0.065	0.038	0.038	0.040	0.025	0.044	0.024	0.050	0.069	0.044
t+2	0.113	0.043	0.103	0.043	0.074	0.047	0.050	0.060	0.075	0.048
t+3	0.137	0.050	0.166	0.048	0.090	0.054	0.004	0.084	0.130	0.071
t+4	0.036	0.064	0.123	0.058	0.168	0.070				

Source: Own calculations based on matched firm-level information from administrative trade-transactions datasets from each country and supported-client datasets from each export promotion agency.

Note: New clients refer to support instances that are a firm's first in the 2006-2011 period. A support spike is a doubling of support instances in a year (not observed in Peru); for firms only receiving support once, a spike is only registered if support at least triples. Dependent variable is log(exports) and all regressions include firm, sector, year fixed effects and controls for size, importer dummy, dummy for exports within and outside the region.