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Imports and the Survival of New Exporters

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Abstract

New exporters tend to exit markets more often. Despite significant sunk costs of exporting, the rate of survival in the first year of a product in a new market is very low. In this paper, we use detailed export and import transactions panel data from Colombia to examine whether changes in the volume imported by exporting firms increases export survival. We use the lagged importers' exchange rate index as an instrument for imports and control for different types of synergies and for firm, product and destination/year fixed effects. The main result shows that a one standard deviation increase in imports increases the probability of export survival after the first year by 16.8 percentage points.

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1 Introduction

Export dynamics has been the object of extensive literature, however there is still little consensus as to why exporters exit their export markets prematurely. In developing economies, survival rates are particularly low (Blum et al., 2013; Cadot et al., 2013; Fernandes et al., 2016). In Colombia, for instance, only 30% of new varieties survive after one year. Despite inconclusive evidence in this field of inquiry, research in international economics has made progress and unveiled some determinants of export survival, such as productivity, size or experience (Freund and Pierola, 2010; Görg et al., 2012), inter-organizational synergies and information spill-overs (Cadot et al., 2013), domestic macroeconomic factors (Salomon and Shaver, 2005), or destination-country specific factors (Araujo et al., 2016). While these determinants are certainly important, the export survival literature seems to have nevertheless overlooked that many exporters also import. Since prior research has shown that importing is associated with common export success factors such as product quality and productivity (Bas and Strauss-Kahn, 2015; Kasahara and Lapham, 2013), imports may also positively influence the survival in export markets.

Therefore, in this paper we study the impact of imported inputs on export survival of new entrants in foreign markets. In line with the empirical evidence (especially for developing countries) we observe that a relevant share of varieties does not survive more than a year in a foreign market. We then investigate whether imports of inputs increase the probability of survival of a new variety (a firm-product-market triplet) in a foreign market. Our results suggest that larger volumes of imports of capital and intermediate inputs do increase the likelihood of export survival.

Our empirical analysis uses transactional data of Colombian exporters, at the firm-product-destination-year level, covering the years from 2001 to 2011. Colombian transaction data is well-suited to study export dynamics as previous work has demonstrated (Eaton et al., 2008; Roberts and Tybout, 1997). Our study combines export and import transactional data with accounting data (for a sub-sample of firms), which allows us to control for time-variant firm-specific characteristics, such as firm size, sales volume or profitability measures. Beyond profitability and size, our models also control for a series of other determinants of export market survival, such as firm, product and destination/year fixed effects, that capture demand shocks in export destination countries, export product and firm characteristics. In addition, we control for synergy effects, often resulting from information spill-overs and economies in financial and trade intermediation (Cadot et al., 2013). Our results are robust to the use of these different controls, samples and specifications.

To investigate the role of imports of inputs in affecting the probability of survival of a variety in a foreign market, we used lagged imports as our main variable of interest and apply an instrumental variable strategy, since imports could be correlated with other time-varying firm-specific unobserved variables that also determine export survival. Our instrument for the lagged volume of imports is the lagged firm-specific imports exchange rate index, measured as the weighted average of the countries of origin of imports' exchange rates, with weights given by the firm-specific share of imports from each country in the previous period.

We find that as imports in the previous period increase, exporters are also more likely to survive in export markets. This result suggests that importing seems to

create benefits beyond an initial productivity threshold required to overcome the sunk costs of exporting. The effect of importing on survival is economically significant: all else equal, an increase in the value of imports in the previous year by one standard deviation raises the probability of survival of a new product in a new destination by approximately 16 percentage points.

2 Literature Review

Previous research has found that firms that import inputs have higher productivity and also that productivity is associated with higher rate of survival (Syverson, 2011). The "learning by importing" hypothesis posits that importing intermediate inputs can raise productivity (Kasahara and Rodrigue, 2008). Halpern et al. (2015) have identified two channels through which imports enhance productivity, by increasing price-adjusted product quality and imperfectly substituting inferior domestic inputs. Moreover, several studies have provided empirical evidence for productivity and product variety enhancement through importing (Bas and Strauss-Kahn, 2014; Bernard et al., 2011). Imports of intermediate products can lead to enlarged product scope because increasing access to new intermediate products and cheaper access to existing intermediate products allows firms to expand their product varieties (Goldberg et al., 2010). In addition to broadening the range of intermediate products, improved quality of intermediate imports can also result in new product development (Colantone and Crinò, 2014). Overall, these mechanisms reduce firms' marginal costs or enhance their profit margins respectively. Thus, these mechanisms allow to compen-

sate for the sunk costs of exporting and increase firms' competitiveness in export markets.

Prior research has found evidence that lower input tariffs increase total factor productivity (TFP) more strongly than output tariffs, indicating that productivity improvements through imported manufacturing input seem to be a stronger mechanism than productivity improvements through enhanced competition by finished products (Amiti and Konings, 2007; Kim et al., 2011; Topalova and Khandelwal, 2011).

Imports of capital goods can also enhance productivity, by making production processes more efficient. Specifically, imports of capital goods help diffusing technological knowledge across borders, so that firms in less technologically advanced countries can benefit from R&D conducted overseas. Indeed, total factor productivity (TFP) and R&D investments seem to particularly benefit from importing (Goldberg et al., 2010). Developing countries typically import capital goods that were engineered and produced in a small number of advanced economies, allowing capital goods importers to absorb advanced technology through learning-by-doing (Alfaro and Hammel, 2007).

Using country-level data, Eaton and Kortum (2001) find that lower relative equipment prices raise productivity by up to 25%. Similarly, Caselli and Wilson (2004) show that capital goods imports result in rising productivity at the country level. On the firm level, imports of capital goods are likely to raise productivity within the first two years after the transaction (Habiyaremye, 2013).

Since firm productivity, product scale, scope, variety and quality can increase a

firms' competitiveness, they may also be associated with higher export survival levels. Hinting at such relationship, Görg et al. (2012) uses Hungarian firm-transaction level export data to examine what determines the survival of products that are part of a firm's export mix. They find that firm productivity, product scale and tenure are associated with higher export survival levels. However, some studies have also indicated that productivity explains export survival only to a limited extent (Eaton et al., 2011; Nguyen, 2012). Therefore, we need to consider additional determinants of export survival.

Freund and Pierola (2010) use Peruvian international transactions data to reveal substantial entry, exit and re-entry behavior. While entry into new markets is costly for an existing export product, the amount of trials suggests that entry costs cannot be too high. For instance, they find that firms start exporting small quantities. Additionally, they find that exporters of new products tend to be bigger, export more products, and are more experienced. Entrants into new product-market combinations are relatively large exporters and experience in the same product is positively related and significantly correlated with pioneering new product-markets. Hence, the high relevance of firm characteristics, such as size and experience, to explain export success.

Regarding inter-firm synergies, the paper most related to ours is Cadot et al. (2013) that studies how relevant synergies are in explaining the first year of export success for firms from four African countries. Synergies, i.e., positive externalities or information spill-overs from industry peers or trade intermediators as well as economies of scope in product markets, are measured as the number of firms selling

the same product to the same destination; the number of destinations in which a firm is selling the same product; and the number of products being sold by a firm in the same destination market. Consistent with their findings, we also obtain that synergies are relevant for high turnover of varieties from Colombia in export markets.

Synergies from export pioneers to followers might explain export survival because export pioneers can transmit information and knowledge on viable export markets, logistics and transportation links to followers (Artopoulos et al., 2013; Wagner and Zahler, 2015). For instance, it seems that a higher number of exporters in the same export market makes it more profitable and less risky for financial services, logistics and export consultants to provide supporting services (Cadot et al., 2013). Consistent with Cadot et al. (2013) and Koenig (2009), Albornoz et al. (2012) argue that positive spill-overs from pioneers to followers hold particularly after initial small scale market entries. Conversely, a city level study finds that spill-over effects from neighboring exporters incentivize weaker firms to follow; being less productive, however, these firms are less likely to survive (Fernandes and Tang, 2014).

With respect to country-level characteristics, complementary explanations for the high turnover of varieties suggest that firms experience uncertainty and therefore test new markets first to learn about foreign market demand (Iacovone and Javorcik, 2010; Nguyen, 2012; Albornoz et al., 2012). In this vein, Békés and Muraközy (2012) explore both theoretically and empirically the existence of temporary trade, addressing its determinants including destination country and some firm characteristics (productivity and financial stability). They use Hungarian firm-transaction level export data to show that about one third of firm-destination and about one half of firm-

product-destination export spells are short-lived, or temporary. They find that the likelihood of permanent trade rises with geographic proximity, destination countries' GDP as well as firm productivity and financial stability.

Relatedly, Araujo et al. (2016) find export survival to be more likely when export market institutions are stronger. Foreign market institutions encompass the regulatory framework, such as the rule of law, especially contract law, and market access regulations, i.e., tariff and non-tariff barriers to trade. Stronger regulatory institutions make foreign market distributor opportunism and contract infringements less frequent. Hence, exporter-distributor relationships last longer (Araujo et al., 2016). In the same vein, export survival becomes more likely for those exporters who face more favorable market access conditions relative to their competitors (Fugazza and McLaren, 2014).

Foreign market opportunities may not last long, but if they are appealing, they make it optimal for the firms to export even for one or two periods. The opposite also holds true: firms may invest in temporary trade because of negative demand shocks in their domestic market. To compensate for sluggish domestic demand, firms often start exporting, be it only for a single period (Békés and Muraközy, 2012). Other studies have also suggested that domestic and international sales can be interrelated (Salomon and Shaver, 2005). Particularly, positive domestic demand shocks can lead to export market exit especially of smaller, less efficient occasional exporters (Blum et al., 2013). Specifically, positive domestic demand shocks may lead to market exit if export intensity is low, export markets serve merely as a valve for excess capacity.

To summarize, the export dynamics literature has yet to examine the relation-

ship between imports and export survival. Yet, prior research supports our argument that imports can raise export market survival by several complementary effects resulting from intermediate and capital goods imports. Intermediate goods imports may enhance export product quality through higher quality raw materials or components. Likewise, intermediate goods imports can increase export product variety by realizing new combinations among imported and existing components or raw materials. In addition, intermediate goods imports can make exporters more resilient to exchange rate fluctuations (Alvarez and López, 2008; Greenaway et al., 2012), e.g., through cheaper import prices that compensate higher export prices. Capital goods imports can increase firm productivity, particularly by means of machinery imports (relevant for process improvements), but also through R&D equipment imports (relevant for product improvements and innovation). Depending on the type of capital goods, raising product varieties and quality can further increase and make firms more competitive in their export markets.

In terms of our econometric methodology, Bastos et al. (forthcoming) have (independently) devised a similar strategy for identification, using exchange-rate movements (interacted with indicators for initial exports) as instruments for the destination of exports to identify its effect on the prices of inputs used by Portuguese firms.

3 Data

Our data come from the Colombian tax and customs authority (DIAN), which provides monthly records of all Colombian exports and imports. These records identify the exporter (importer), the date of the transaction, the destination country (country of origin), the 10-digit product code, the dollar FOB value and the kilo-weight of each transaction, among other variables. We consolidated monthly import and export transaction data into a database covering the 12 years from 2000-2011, consisting of firm, product and destination country triplets.

In addition, we built a unique database using the Colombian tax identification number (NIT) to match customs data with accounting data obtained from the Superintendency of Corporations, a Colombian regulatory agency. Firms with assets or sales larger than US$ 5,2 mi as of 2006 (at least 30,000 minimum wages) are required to report their balance sheets to the superintendency. Thus, approximately 10,000 corporations in Colombia are legally required to report their balance sheets on an annual basis. The Superintendency of Corporations makes accounting data available to the general public and the government. As not all exporters are covered, merging accounting with export and import transaction data reduces the actual size of our database to 3,000-4,000 exporters per year. This unique database allows us to directly control for specific firm characteristics, such as size, firm performance, among others. We used this smaller combined database for robustness checks.

3.1 Colombian exports and imports

Despite its known domestic political and military conflicts, Colombia has shown a solid economic performance with an average GDP growth rate of 4.3% over the 11-year period covered by our database. This growth performance is higher than that of several South American peers, such as Brazil (3.6%) and Chile (4.08%). Between the years from 2000 to 2011, Colombian exports experienced a remarkable growth from US$ 13.1 bi in 2000 to US$ 56.9 bi in 2011. Similarly, imports rose from US$ 10.9 bi to US$ 51.5 bi in the same period. These growth trajectories, briefly interrupted during the crises of 2001-2002 and 2009, can be tracked back to the commodity price boom cycle, among other factors. For instance, the main export products, coal, crude oil, coal, lubricating oils, coffee, bananas and flowers together accounted for more than 56% of total exports in 2000 and more than 65% of total exports in 2011. Overall, mining exports expanded from 37.2% of total exports in 2000 to 55.7% in 2011, while the share of agricultural exports diminished from 8.9% to 4% during the same period. Manufactured exports dropped from 53.8% to 40% between 2000 and 2011. The decrease of non-mining exports manifests itself after 2003/2004 and goes along with a significant appreciation of Colombia's real effective exchange rate starting in 2004.

Over the period covered by our data, the importance of the United States as an export destination country has decreased from 49.6% in 2000 to 38.6% in 2011, while exports to the European Union slightly increased from 13.8% in 2000 to 15.7% in 2011. Other traditionally important export partner countries such as Venezuela and the Mercosur countries became less important export destinations. China and India,

in turn, increased their importance in Colombian exports achieving shares of 4.4% and 1.5% respectively in 2011.

The composition of imports remained stable for consumption products (around 19% of total imports) and capital goods (around 20% of total imports). However, the share of intermediate products and raw materials over total imports shrank from 50.3% in 2000 to 41.7% in 2011. Imports from traditional partners such as the United States also lost ground between 2000 (33%) and 2011 (25%), whereas imports from China rose from around 3% to 15% over the same period.

3.2 Descriptive statistics on export and import behavior

We now describe the exporting behavior of firms and varieties in our sample. Table 1 shows that our sample consists of an average of 54,634 new varieties –defined as firm-product-destination triplets. A new variety corresponds to any product-firm entering a new country of destination, or any product being added by the same firm in a new destination or a new firm entering any market (product or export destination). The number of varieties experiences a discrete growth in 2004 of 19%, caused by an increase in the number of firms by 13% in that year as well as an increase in the number of countries of destinations, which surged from 175 to 191. The average number of firms per year is 9,789 firms, reaching a peak in the years 2005-2007 and suffering a drop during the global financial crisis, from 2008 onwards. On average, Colombian exporters sell 5.6 different products in each export destination country, whereas a typical firm sells 2 products per destination, which indicates that most firms in our database tend to be small exporters.

Table 2 displays the summary statistics for all 491,705 cases of new varieties over the 9 years covered by our data. The table shows that on average only 29% of the new varieties introduced in a market survive more than one year. In 20% of the cases the new varieties mean that firms are introducing new products in their export markets ("Add Product Only'), whereas in 12% of the cases the firms are exporting to a country they did not export before ("Add Destination only') and in 11% of the observations firms are exporting a new product to a new destination country ("Add both Prod. and Dest."). Table 2 further tells us that on average 6.3 firms already export the same product to the same destination country. An average firm exports the same product to 2 different destination countries, while the most internationally diversified exporters ship the same product to a maximum of 55 countries. Roughly in line with the yearly averages in Table 1, each firm ships on average 6.2 products to the same destination country , while the firms that have most strongly diversified their product range export over 300 different products to the same destination country. The average value of exported products is US$ 1,085 and the last row shows that the average share of a product per destination country is 12.6%, which indicates the importance of particular products for an exporter.

Table 3 displays survival rates of new varieties over time. On average 15.4% of the new varieties survive for 3 consecutive years, 10% for 4 years and 7% for 5 years. Therefore, the survival rate increases substantially with the export tenure. In the first year, the survival rate of exporting corresponds to almost 29% on average; in the second year, approximately 53% of the surviving varieties survive an additional period; which increases to 64% in the third year and to 74%, 82%, 85% and 88% in the

following periods. These numbers indicate that the survival in the first year is crucial for future survival. For this reason, the emphasis of this paper is on the survival after the first year. This overall pattern is similar to other countries. Survival after the first year in Colombia seems to be higher than Africa (10-22%) (Cadot et al., 2013), but lower than the in Chile (53%) (Blum et al., 2013). As anticipated, survival rates dropped during the global financial crisis from 29.5% in 2007 to 26.5% 2008.

This pattern of survival varies little with destination markets or export values. Similar rates are found for firms exporting to OECD or to other Latin American countries. Analogously, survival rates are similar when we split the sample by the value of exports: for firms exporting between $10,000 and $100,000, we find slightly larger survival rates, in the range of 33-34%. Hence, although the volume of exports does impact survival rates, the magnitude is not as expressive as one would have expected.

Since our aim is to examine the impact of imports on the survival rate, we now examine the importing behavior of the exporting firms. Tables 4 and 5 report classifications of importers. Over the period considered, the share of importers among exporters consisted of 30-40% (Table 4). Among exporters, on average 24% imported capital goods and 31% intermediate goods. Among importers, 10% on average only imported capital goods over the 2002-2010 period, whereas 29% on average only imported intermediate products; thus, 61% of all importers purchased both capital and intermediate goods from abroad.

Table 5 classifies firms by import values, origin, and type of imported products. Note the gradually decreasing share of OECD countries as an origin of capital and

intermediate goods imports by Colombian firms. This trend may be due to the rise of non-OECD countries such as China as global suppliers. Capital goods account for 35.4% of total imports while intermediate goods account for 64.6%.

Table 6 describes the exporting behavior of firms and varieties in our sample for the subsample of firms covered by the Superintendency of Corporations database, which adds accounting data for a smaller sample of larger firms. Accordingly, the average number of firms drops to 2,618 or 27% of the average for the entire sample. On average, the number of varieties drops much less, to 25,827 firm-product-destination varieties (47% of the average in the total sample). With 10 products per destination country, the average number of products per destinations per firm is nearly twice as high as in the full data. Interestingly, this average declines over time and so does the median, which drops from 4 products to 3 products per destination.

4 Empirical strategy

To examine survival we select only the observations corresponding to the first year of a new variety in a market. Our sample then consists of single year observations of each new variety, our dependent variable is whether the variety lasts for only one year (failure), or if the variety survives for at least two consecutive years (success). The explanatory variables are a combination of product, firm and export destination market characteristics. We also include variables to capture spillovers among products, firms and destinations (see Cadot et al., 2013). We use variables that correspond to the number of firms selling the same product to the same destination, the

number of destinations in which a firm is selling the same product and the number of products being sold by a firm in the same destination market. While the former reflects possible information spillovers, the latter two indicators seek to capture the exporter's previous experience, which has been found to be an important alternative predictor of export market survival (Araujo et al., 2016). To control for the size of the firm we include the (log) value of total exports. This control is important since smaller exporters tend to disproportionately contribute to export market and within-firm churning (Berthou and Vicard, 2015). Because experience and size are correlated, previous research has recommended controlling for size and experience in the same regressions (Berthou and Vicard, 2015). To capture how relevant a product is for a firm (in the spirit of "core competencies") we include the share of the product in the destination by firm.

Our main variable of interest is the lagged value of imports (by firm) in constant Colombian pesos of 2010. Since the firm's imports could be endogenous to export decisions, we instrument the value of imports using a firm-level exchange rate index. For those firms that import, this index corresponds to a weighted average of exchange rates of the countries of origin of imports, with weights given by each country's share in the firms' imports in the previous period. Following Campa (2004), for those firms that do not import (either in the current period or in the last period) we impute a product level exchange rate index using the average of the firms that export this same product. Therefore, for non-importers, variation of the exchange rate index within firms is due to product variation[1].

[1]Bastos et al. (forthcoming) have devised a similar strategy using exchange-rate movements (interacted with indicators for initial exports) as instruments for the destination of exports to

We estimate the following linear probability model:

$$\begin{aligned} S_{fpdt} &= \beta_0 + \beta_1 Imports_{f,t-1} + \beta_2 AddProd + \beta_3 AddDest + \beta_4 AddProdDest \\ &+ \beta_5 \log NFirms_{pdt} + \beta_6 \log NDest_{fpt} + \beta_7 \log NProd_{fdt} \\ &+ \beta_8 \log(ExportValue)_{fpdt} + \gamma_p + \delta_f + \Theta_{dt} + \varepsilon_{fpdt} \end{aligned}$$

where S_{fpdt} is the survival after the first year, $Imports_{f,t-1}$ measures imports at the firm level[2] in the previous year; $AddProd$ is a dummy indicating the introduction of a new product in the export market; $AddDest$ is a dummy indicating a new destination for a product that the firm already exports; $AddProdDest$ indicates that the variety corresponds to both a new product and a new destination[3]; $\log NFirms_{pdt}$ measures the number of firms that already export this product to that destination; $\log NDest_{fpt}$ measures the number of destinations to which the firm already exports this product;$\log NProd_{fdt}$ measures the number of products that the firm already exports to this destination; $\log(ExportValue)_{fpdt}$ is the total volume of exports. The regressions also control for firm (γ_p), product (δ_f) and destination-year (Θ_{dt}) fixed effects.The standard errors are clustered at the firm level.

The first-stage regression is:

identify its effect on the quality of inputs.

[2]We use the total value of all products imported by the firm in a given year. Therefore, this value is the same for all varieties exported by the same firm. It corresponds to the value of imports (by firm) in constant Colombian pesos of 2010

[3]The omitted category represents the cases where the firm already exported that product to another country or another product to the same country.

$$
\begin{aligned}
Imports_{ft} &= \alpha_0 + \alpha_1 ExchRate_{ft-1} + \alpha_2 AddProd + \alpha_3 AddDest + \alpha_4 AddProdDest \\
&+ \alpha_5 \log NFirms_{pdt} + \alpha_6 \log NDest_{fpt} + \beta_7 \log NProd_{fdt} \\
&+ \beta_8 \log(ExportValue)_{fpdt} + \gamma_p + \delta_f + \Theta_{dt} + \varepsilon_{fpdt}
\end{aligned}
$$

where $ExchRate$ is the weighted average of the countries of origin exchange rate index, with weights equal to each country share of imports in the previous period.

5 Results

We first present our baseline estimations as well as breakdowns by types of imports and then include controls using the accounting data available for a sub-sample of firms and also estimate regressions for different export values. Table 7 presents the results of the first-stage regressions, relating the value of imports to the lagged importers' (firm-specific) exchange rate index, conditional on the other controls that will be used in the second-stage. Column (1) relates the lagged value of imports to the lagged exchange rate index for the entire dataset and column (2) does the same for the sample of larger firms only (for which we have firm-level accounting information). Columns (3) and (4) present the results of the same specifications when only the value of capital goods imports are instrumented and columns (5) and (6) use only the value of intermediate goods imports as the endogenous variable of interest. All columns of the Table show a strong positive and statistically significant relationship between the importers' firm-specific exchange rate and the value of imports, even conditional

on firm, product and destination/year fixed effects, for the overall sample as well as for the sample of firms covered by the Superintendency of Corporations database firms, for total imports as well for capital and intermediate imported inputs. The estimated coefficients are largest for the total imports and smallest for imports of intermediate goods.

At the bottom of Table 7, we also present some diagnostic statistics, namely the heteroskedasticity-robust Kleibergen and Paap (2006) test statistics for under-identification and also for weak instruments. The p-values of the Kleibergen and Paap under-identication test clearly indicate rejection of the null in all columns, as do the p-values of the Kleibergen and Paap Wald rk F-statistics for weak instruments. This means that our instrumental variable modelling strategy is identified.

Table 8 presents our main results, describing the effects of lagged import values on export survival. Column (1) presents the specifications with no other controls, showing that the value of imports is positively related to the probability of export survival. We add firm, product and destination/year fixed effects in column (2), and the estimated coefficient actually increases in magnitude. Column (3) includes all the other variables of interest, such as the proxies for product characteristics, synergies and size, and the coefficient remains statistically significant.

As imports could be correlated with other time-varying omitted variables that also determine export survival, in column (4), we instrument the lagged value of imports with the lagged imports exchange rate index, measured as the weighted average of the countries of origin's exchange rates, with weights given by the firm-specific share of imports from each country in the previous period. The estimated

coefficient increases by almost 30 times with respect to the estimates reported in column (3). This magnitude implies that a firm that increases its imported volume by one standard deviation because of an exchange rate appreciation of the Colombian peso with respect to a basket of currencies from which the firm imported in the past period will increase its probability of survival in the export market by 16 percentage points. Column (5) reports the results of the same regression of the smaller subsample for firms from the Supersociety of Corporations database. The impact of imports estimated using this sample is actually very close to the one obtained in the main sample. This is reassuring given that given that the Superintendency of Corporations sample is is much smaller and mostly composed of larger firms. These results suggest that imports have a causal effect on the probability of survival in export markets.

Export market survival could be explained by other factors as well. First, export market survival can increase due to demand shocks in specific export markets, which are unrelated to product characteristics or the productivity-enhancing effects of importing. An economic crisis in a particular market and year may disrupt sales irrespective of the exporter's strategy. Similarly, a boom cycle in a particular export market may extend sales to that market even for less competitive exporters whose products might not have survived in these markets otherwise. Moreover, home country currency devaluations can spur exports. We have accounted for these possibilities by controlling for destination-year fixed effects. To ensure that our results are not driven by the international demand for specific products (e.g., commodity cycles), we control for product fixed effects. Unobserved firm-specific factors, such as sector of activity, product development or marketing capabilities, skilled labour or capital

intensity, among others, may also affect export market survival and are controlled for by firm fixed effects, so long as they do not vary over time.

The estimated coefficients of the other variables in our regressions are also interesting by themselves. It is noteworthy that experience counts, since adding a new product to the export market is negatively related to survival, as is exporting to a new destination. The results also show that there are spillovers among firms, products and destinations. A larger number of firms exporting the same product to the same destination increases the probability of success of a variety. If a firm exports the same product to a larger number of export destinations, then the probability of success also increases substantially. Moreover, more diversified firms, in terms of the number of products they export to a specific destination have higher survival probabilities. Firm size (proxied here by the value of exports) is also correlated with survival, and the more relevant the product is for the firm at the destination ("Share of Prod. by Dest.), the higher its probability of survival.

In order to examine what type of imported inputs are more important for export survival, Tables 9 and 10 replicate these empirical exercises for imports of capital goods and of intermediate goods, respectively. The coefficients of import values are consistently positive and statistically significant when import values are instrumented in both cases (columns 4 and 5 of both tables). The results for smaller sample of firms monitored by the Superintendency of Corporations are once again very close to those obtained in the main sample in both cases. Interestingly, the impacts are stronger for imports of capital goods than for intermediate inputs and total imports. The magnitudes of the estimated coefficients imply that increases in the imports of

capital goods by one standard deviation increase the probability of survival in export markets by 23 percentage points. In the case of intermediate goods, the impact the impact of imports on export market survival reaches about 17 percentage points, very close to the one estimated for total imports. It seems, therefore, that imported machinery, that becomes cheaper as the Colombian peso appreciates, is slightly more important for export survival than imports of intermediate products.

We now use the "Superintendency of Corporations" subsample to test for the robustness of our results after including time varying controls for profitability (Return on Sales, Return on Equity, Return on Assets) as well as sales volume. These are important alternative explanations, since exporters may churn varieties according to firm performance and domestic market dynamics (Berman et al., 2015). Table 11 presents the results and, as expected, all profitability ratios increase the likelihood of survival (Columns 2-4). Higher sales volumes, however, are no statistically significant for export survival (Column 5). More importantly, adding these controls does not substantially change our results.

We have also estimated the instrumented lagged import value coefficients for different export values. This is important because –as prior research on export dynamics has shown– firms may test new markets by exporting smaller values (Aeberhardt et al., 2014; Freund and Pierola, 2010). The results displayed in Table 12 show that the impact of imports on the survival of new varieties increase monotonically with the initial export values, for all imports and for imports of capital and intermediate goods as well. The coefficients are only marginally statistically significant for export values exceeding $ 50,000 for capital and intermediate goods. However, this may be

due to the smaller sample. This result may also suggest that importing could be less relevant for export market survival of larger firms whose international clients place larger orders. For lower export values, the coefficients are smaller for capital goods imports than for intermediate goods imports, a pattern that appears to reverse for larger export values. This finding seems to be aligned with the notion that capital goods are more likely to be used when export sales volumes are higher due to increasing fixed costs.

These results mean that one of the most important channels that affect export survival is via the purchase of inputs from foreign countries. This is overall in line with evidence from Goldberg et al. (2010), who find that one of the most important effects of trade liberalization is to allow firms to import new varieties of inputs that are used to produce new varieties of domestic products. Our findings are also consistent with Bas and Strauss-Kahn (2014), who report that imports tend to increase export volumes. Our evidence confirms this and shows that imports also allow firms to survive in export markets.

6 Conclusion

In this paper we examined the relationship between the volume of imports and export survival of new exporting varieties after the first year. We explore several determinants of this behavior, such as whether the entry of a new variety corresponds to the addition of a new product or a new destination market. We also examine the role of synergies among firms and products: a higher number of firms exporting the

same product to the same destination country increases the probability of success of a new firm in that market. Most importantly, we investigated whether the importing behavior of the exporting firm affects its export survival. We examine whether the total amount of imports by the firm increase its survival rate, especially imports of capital goods and intermediate goods. The magnitude of the estimated coefficient in the preferred specification implies that a one standard deviation increase in the volume of imported intermediate goods increases the survival rate by 16 percentage points. Correspondingly, capital goods imports raise the probability of export market survival by 23 percentage points.

Our findings have important implications for the export dynamics literature. While extant research has primarily focused on firm-level (Albornoz et al., 2012), inter-firm level (Cadot et al., 2013), home country (Berman et al., 2015; Blum et al., 2013) or destination country-level factors (Aeberhardt et al., 2014; Araujo et al., 2016) to explain export survival, this is –to the best of our knowledge– the first study that extends this body of research to imports. Our findings also extend the nascent stream of research on importing-exporting relationships (Bas and Strauss-Kahn, 2014, 2015; Kasahara and Lapham, 2013) by demonstrating that imports do not only affect export market entry or export product scope, but also the probability of survival in export markets.

Thus, this study incorporates three elements of a global value chain: the import country of origin, the exporter's home base and the export destination country. This perspective of an interconnected globalized value chain on export survival has important implications for policy makers. While productivity, export experience, synergies

among exporters, products and destination country effects continue being important, imports seem to result in additional benefits for export survival. This is because importing likely increase product variety and quality, enhances technological learning, in addition to shielding exporters from declining export competitiveness when their home country currency appreciates. This further highlights the complementarity between importing and export success. Since export survival is important to raise long-term export revenues (Aeberhardt et al., 2014), policy makers should raise their exporters' success chances by facilitating imports of capital and intermediate goods, e.g. by manipulating tariffs and non-tariff barriers to importing.

While examining the precise mechanisms behind the importing–export survival link was beyond the scope of this study, future research may advance this field by investigating which mechanisms are more relevant for establishing this link. Since importing seems to raise productivity and product level innovation through a cheaper channel compared to internal innovation (Liu and Qiu, 2016), future studies may investigate under what conditions importing is more effective than in-house innovation to promote export survival. Future studies may also consider whether the characteristics of particular import countries of origin and/or export destination countries change the importing-export survival relationship. Whereas our study looked into importing of intermediate and capital goods as a source of export success, the question of how importing may affect export survival chances through competition in the domestic market was also beyond the scope of this project and constitutes a promising future research avenue.

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7 Tables

Table 1: Number of Varieties, Firms, Products and Destinations Over Time

	Varieties	Firms	Products	Destinations	Products-Destinations	
					Firm average	Median firm
2002	44,234	7,830	3,880	175	5.6	2
2003	51,746	8,889	4,081	175	5.8	2
2004	61,592	10,054	4,164	191	6.1	2
2005	66,272	11,227	4,177	182	5.9	2
2006	56,189	10,365	4,118	193	5.4	2
2007	57,385	10,424	4,133	188	5.5	2
2008	50,356	10,127	4,124	200	5.0	2
2009	55,189	10,652	4,153	196	5.2	2
2010	48,249	8,529	4,006	191	5.7	2

Notes: This table describes the evolution in the number of varieties, firms, products and destinations during the sample period. Varieties are defined as any firm-product-destination triplet.

Table 2: Varieties and Firm Characteristics

	N	Mean	Std. Deviation	Median	Min	Max
Success in the First Year	491,705	0.291	0.454	0	0	1
Add Product Only	491,705	0.202	0.401	0	0	1
Add Destination Only	491,705	0.122	0.327	0	0	1
Add both Prod. and Dest.	491,705	0.111	0.315	0	0	1
N. of Firms by Prod. Dest. (log)	491,705	1.845	1.533	1.609	0	6.640
N. of Destin. by Firm Prod. (log)	491,705	0.711	0.901	0	0	4.007
N. of Prod. By Firm Dest. (log)	491,705	1.826	1.275	1.792	0	5.714
Export value (log)	491,705	6.990	2.813	7.121	-4.605	20.634
Share of Prod. By Dest.	491,705	0.126	0.277	0.005	0	1

Notes: This table describes the main variables that will be included in the regressions.

Table 3: Survival of Exporting Varieties

	t=1	t=2	t=3	t=4	t=5	t=6	t=7	t=8	t=9	t=10	t=11
2001	100.0%	31.2%	16.3%	11.3%	8.1%	6.5%	5.1%	4.2%	3.4%	2.8%	2.5%
2002	100.0%	30.3%	17.7%	10.5%	7.8%	6.0%	4.8%	3.9%	3.3%	2.8%	
2003	100.0%	30.0%	15.0%	9.9%	7.0%	5.2%	4.1%	3.3%	2.7%		
2004	100.0%	27.4%	14.9%	9.6%	6.8%	4.9%	3.7%	3.0%			
2005	100.0%	30.9%	17.5%	11.7%	8.5%	6.0%	3.4%				
2006	100.0%	27.5%	14.1%	8.6%	5.7%	4.2%					
2007	100.0%	29.5%	14.6%	9.0%	6.4%						
2008	100.0%	26.5%	12.8%	8.5%							
2009	100.0%	28.2%	15.6%								
2010	100.0%	31.8%									
2011	100.0%										

Notes: Percentage of export varieties that survive over time. Period 1 (t=1) indicates the entry of the variety in a market, and the other columns indicate whether the variety survives in the consecutive years of our sample. Varieties are defined as any firm-product-destination triplet. The first and last years of the sample (2000 and 2011) are excluded since it is not possible to determine entry for those periods.

Table 4: Importers by Type of Goods

	Importers (% of exporters)	Importers of capital goods (% of exporters)	Importers of interm. goods (% of exporters)	Among importers	
				Import only capital goods	Import only interm. Goods
2002	36.8%	24.5%	33.6%	8.6%	33.4%
2003	35.5%	24.2%	32.0%	10.1%	31.8%
2004	33.6%	22.6%	30.6%	9.1%	32.8%
2005	30.6%	21.8%	27.3%	11.0%	28.9%
2006	33.7%	24.3%	30.2%	10.4%	27.8%
2007	34.7%	25.6%	31.0%	10.5%	26.0%
2008	34.1%	25.4%	30.2%	11.2%	25.5%
2009	32.2%	22.9%	29.2%	9.1%	28.8%
2010	39.6%	28.4%	36.0%	9.1%	28.4%

Notes: Table 4 reports the percentage of importing firms by type of import goods. The goods are aggregated in capital and intermediate goods, according to its 10-digit product code. In the first division between capital and intermediate goods, firms can be in one or more groups; in the second one, each firm can be in only one group.

Table 5: Import Value and Composition

	Imports (U$S)		% imports	% of total import - average		Importers	Number of firms
	Average	Median	from OECD	Capital goods	Interm. Goods	(% exporters)	(exporters)
2002	3,260,083	168,500	58.7%	31.0%	69.0%	36.8%	7,830
2003	3,273,493	175,371	59.4%	33.7%	66.3%	35.5%	8,889
2004	3,561,505	157,900	55.9%	33.2%	66.8%	33.6%	10,054
2005	4,428,878	198,057	52.4%	36.0%	64.0%	30.6%	11,228
2006	4,984,944	222,188	53.1%	36.1%	63.9%	33.7%	10,366
2007	5,177,526	255,426	50.3%	37.9%	62.1%	34.7%	10,425
2008	6,533,424	304,677	49.5%	38.5%	61.5%	34.1%	10,128
2009	5,123,806	245,970	48.0%	35.6%	64.4%	32.2%	10,653
2010	6,240,114	286,193	46.2%	35.8%	64.2%	39.6%	8530
Total	4,774,979	219,676	52.4%	35.4%	64.6%	34.3%	-

Notes: Table 5 reports value and composition of imports in 2010 US$.

Table 6: Superintendency of Corporations - Number of Varieties, Firms, Products and Destinations Over Time

	Varieties	Firms	Products	Destinations	Products-Destinations	
					Firm average	Median firm
2002	17,983	1,805	3,010	161	10.0	4
2003	19,918	1,930	3,171	165	10.3	4
2004	23,057	1,976	3,225	179	11.7	4
2005	28,759	2,742	3,394	168	10.5	4
2006	28,746	3,132	3,449	181	9.2	3
2007	29,388	3,016	3,501	177	9.7	3
2008	26,086	2,849	3,439	180	9.2	3
2009	29,612	3,155	3,506	188	9.4	3
2010	28,891	2,959	3,451	180	9.8	3

Notes: Table 6 describes the evolution in the number of varieties, firms, products and destinations during the sample period of the Superintendency of Corporations . Varieties are defined as any firm-product-destination triplet.

Table 7: Imports and Export Survival - First Stage Regressions

	Import Value $(t-1)$		Import value Capital Goods $(t-1)$		Import Value Interm. Goods $(t-1)$	
	(1)	(2)	(3)	(4)	(5)	(6)
Exchange Rate Index (t-1)	1.3138***	1.2667***	0.8378***	0.7002***	0.4760***	0.5665***
	(0.09257)	(0.10566)	(0.07188)	(0.07206)	(0.04936)	(0.06109)
Add Product Only	0.0889	0.1171***	0.0813	0.1001***	0.0075	0.0170
	(0.06387)	(0.04076)	(0.06158)	(0.03623)	(0.01408)	(0.01536)
Add Destiny Only	0.1688***	0.0889**	0.1912***	0.0767**	-0.0224	0.0122
	(0.05988)	(0.04269)	(0.05667)	(0.03744)	(0.01612)	(0.01703)
Add Both Prod. and Dest.	0.2146**	-0.0031	0.2587***	0.0099	-0.0440**	-0.0130
	(0.09625)	(0.07213)	(0.09385)	(0.06763)	(0.01763)	(0.02069)
Nº of Firms by Prod. Dest. (log)	-0.0359**	-0.0518**	-0.0007	-0.0034	-0.0352***	-0.0484***
	(0.01607)	(0.02212)	(0.01281)	(0.01730)	(0.00718)	(0.01005)
Nº of Destin. by Firm Prod. (log)	0.2876***	0.2179***	0.2833***	0.1900***	0.0042	0.0279**
	(0.05686)	(0.03857)	(0.05586)	(0.03616)	(0.01053)	(0.01259)
Nº of Prod. by Firm Dest. (log)	0.2062***	0.1579***	0.1871***	0.1293***	0.0191***	0.0286***
	(0.03342)	(0.03263)	(0.03163)	(0.03001)	(0.00730)	(0.00979)
Real export value (log)	-0.0109	0.0076	-0.0092	0.0009	-0.0017	0.0067**
	(0.00695)	(0.00667)	(0.00622)	(0.00541)	(0.00263)	(0.00325)
Share of Prod. by Dest.	0.2842***	0.0972	0.2563***	0.1233*	0.0279*	-0.0261
	(0.04814)	(0.08510)	(0.04484)	(0.07367)	(0.01564)	(0.03130)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Dest-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Under-Identification						
Kleibergen-Paap LM statistic	212.287	148.083	143.139	97.311	98.002	88.607
Kleibergen-Paap LM p-value	0.000	0.000	0.000	0.000	0.000	0.000
Weak Instruments						
Kleibergen-Paap rk F statistic	201.457	143.708	135.837	94.436	93.002	85.990
Kleibergen-Paap rk F p-value	0.000	0.000	0.000	0.000	0.000	0.000
Observations	467,595	230,137	467595	230,137	467,595	230,137
R-squared	0.753	0.848	0.751	0.865	0.733	0.770

Notes: Table 7 reports the output of the regressions of tables 7, 8 and 9. Standard errors are clustered at firm level. * statistically significant at the 0.10 level; ** at the .05 level; *** at the .01 level.

Table 8: Imports and Export Survival

Dependent variable: 1 if exporting variety survives in the first year, 0 otherwise

	(1)	(2)	(3)	(4)	(5)
Import value (t-1)	0.0004***	0.0010***	0.0006***	0.0168***	0.0165**
	(0.00015)	(0.00021)	(0.00017)	(0.00482)	(0.00656)
Add Product Only			-0.0276***	-0.0290***	-0.0192***
			(0.00346)	(0.00366)	(0.00394)
Add Destiny Only			-0.0365***	-0.0391***	-0.0386***
			(0.00339)	(0.00359)	(0.00372)
Add Both Prod. and Dest.			0.0078	0.0043	0.0105*
			(0.00524)	(0.00562)	(0.00553)
Nº of Firms by Prod. Dest. (log)			0.0410***	0.0416***	0.0395***
			(0.00282)	(0.00293)	(0.00355)
Nº of Destin. by Firm Prod. (log)			0.1173***	0.1126***	0.1259***
			(0.00191)	(0.00241)	(0.00272)
Nº of Prod. by Firm Dest. (log)			0.0584***	0.0551***	0.0629***
			(0.00146)	(0.00175)	(0.00205)
Real export value (log)			0.0395***	0.0396***	0.0389***
			(0.00068)	(0.00069)	(0.00063)
Share of Prod. by Dest.			0.1810***	0.1765***	0.1675***
			(0.00537)	(0.00539)	(0.00888)
Firm Fixed Effects	No	Yes	Yes	Yes	Yes
Product Fixed Effects	No	Yes	Yes	Yes	Yes
Dest-Year Fixed Effects	No	Yes	Yes	Yes	Yes
IV Regressions				*	*
Instrument				ERI (t-1)	ERI (t-1)
Observations	467,595	467,595	467595	467,595	230,137
R-squared	0.000	0.211	0.278	0.248	0.220

Notes: Table 8 reports the output of the regression estimated using the import value of all goods. Standard errors are clustered at the firm level. * statistically significant at the 0.10 level; ** at the .05 level; *** at the .01 level. Column (1) is a simple regression without controls or fixed effects. In the second column, the regression includes fixed effects. Column (3) include controls. Columns (4) and (5) show the IV regression results for all firmsand firms covered by the Superintendency of Corporations database, respectively.

Table 9: Imports and Export Survival - Capital Goods

Dependent variable: 1 if exporting variety survives in the first year, 0 otherwise

	(1)	(2)	(3)	(4)	(5)
Import value - capital goods (t-1)	0.0002	0.0012***	0.0007***	0.0264***	0.0298**
	(0.00017)	(0.00025)	(0.00020)	(0.00762)	(0.01195)
Add Product Only			-0.0276***	-0.0297***	-0.0203***
			(0.00346)	(0.00391)	(0.00410)
Add Destiny Only			-0.0365***	-0.0413***	-0.0395***
			(0.00339)	(0.00392)	(0.00387)
Add Both Prod. and Dest.			0.0077	0.0011	0.0102*
			(0.00524)	(0.00605)	(0.00569)
Nº of Firms by Prod. Dest. (log)			0.0410***	0.0410***	0.0387***
			(0.00282)	(0.00292)	(0.00357)
Nº of Destin. by Firm Prod. (log)			0.1173***	0.1099***	0.1238***
			(0.00191)	(0.00299)	(0.00328)
Nº of Prod. by Firm Dest. (log)			0.0584***	0.0536***	0.0616***
			(0.00146)	(0.00202)	(0.00238)
Real export value (log)			0.0395***	0.0397***	0.0390***
			(0.00068)	(0.00071)	(0.00064)
Share of Prod. by Dest.			0.1810***	0.1745***	0.1655***
			(0.00537)	(0.00549)	(0.00905)
Firm Fixed Effects	No	Yes	Yes	Yes	Yes
Product Fixed Effects	No	Yes	Yes	Yes	Yes
Dest-Year Fixed Effects	No	Yes	Yes	Yes	Yes
IV Regressions				*	*
Instrument				ERI (t-1)	ERI (t-1)
Observations	467,595	467,595	467,595	467,595	230,137
R-squared	0.000	0.211	0.278	0.219	0.179

Notes: Table 9 reports the output of the regressions estimated using the import value of all goods. Standard errors are clustered at the firm level. * statistically significant at the 0.10 level; ** at the .05 level; *** at the .01 level. Column (1) is a simple regression without controls or fixed effects. In the second column the regression includes fixed effects. Column (3) include controls. Columns (4) and (5) shows the IV regression results for all firms and firms covered by the Superintendency of Corporations database, respectively.

Table 10: Imports and Export Survival - Intermediate Goods

Dependent variable: 1 if exporting variety survives in the first year, 0 otherwise

	(1)	(2)	(3)	(4)	(5)
Import value - interm. goods (t-1)	0.0021***	0.0002	0.0003	0.0464***	0.0369**
	(0.00041)	(0.00032)	(0.00032)	(0.01389)	(0.01495)
Add Product Only			-0.0275***	-0.0279***	-0.0179***
			(0.00346)	(0.00347)	(0.00388)
Add Destiny Only			-0.0363***	-0.0352***	-0.0376***
			(0.00339)	(0.00347)	(0.00368)
Add Both Prod. and Dest.			0.0079	0.0100*	0.0110**
			(0.00523)	(0.00548)	(0.00556)
Nº of Firms by Prod. Dest. (log)			0.0410***	0.0426***	0.0404***
			(0.00282)	(0.00300)	(0.00359)
Nº of Destin. by Firm Prod. (log)			0.1175***	0.1172***	0.1285***
			(0.00191)	(0.00196)	(0.00241)
Nº of Prod. by Firm Dest. (log)			0.0585***	0.0576***	0.0644***
			(0.00146)	(0.00149)	(0.00186)
Real export value (log)			0.0395***	0.0395***	0.0388***
			(0.00068)	(0.00069)	(0.00063)
Share of Prod. by Dest.			0.1812***	0.1800***	0.1701***
			(0.00537)	(0.00542)	(0.00891)
Firm Fixed Effects	No	Yes	Yes	Yes	Yes
Product Fixed Effects	No	Yes	Yes	Yes	Yes
Dest-Year Fixed Effects	No	Yes	Yes	Yes	Yes
IV Regressions				*	*
Instrument				ERI (t-1)	ERI (t-1)
Observations	467,595	467,595	467,595	467,595	230,137
R-squared	0.000	0.211	0.278	0.243	0.222

Notes: Table 10 reports the output of the regressions estimated using the import value of all goods. Standard errors are clustered at the firm level. * statistically significant at the 0.10 level; ** at the .05 level; *** at the .01 level. Column (1) is a simple regression without controls or fixed effects. Ont he second column the regression includes fixed effects. Column (3) include controls. Columns (4) and (5) shows the IV regression results for all firms and firms covered by the Superintendency of Corporations database, respectively.

Table 11: Imports and Export Survival - Robustness

	Dependent variable: 1 if exporting variety survives in the first year, 0 otherwise				
	(1)	(2)	(3)	(4)	(5)
Import value (t-1)	0.0165**	0.0163**	0.0164**	0.0164**	0.0189***
	(0.00652)	(0.00653)	(0.00652)	(0.00653)	(0.00685)
Add Product Only	-0.0188***	-0.0186***	-0.0188***	-0.0188***	-0.0182***
	(0.00403)	(0.00403)	(0.00403)	(0.00403)	(0.00447)
Add Destiny Only	-0.0378***	-0.0378***	-0.0378***	-0.0378***	-0.0334***
	(0.00382)	(0.00382)	(0.00382)	(0.00382)	(0.00402)
Add Both Prod. and Dest.	0.0148***	0.0143**	0.0148***	0.0146**	0.0090
	(0.00572)	(0.00573)	(0.00572)	(0.00572)	(0.00605)
Nº of Firms by Prod. Dest. (log)	0.0372***	0.0373***	0.0372***	0.0372***	0.0466***
	(0.00360)	(0.00360)	(0.00360)	(0.00360)	(0.00428)
Nº of Destin. by Firm Prod. (log)	0.1281***	0.1282***	0.1281***	0.1281***	0.1537***
	(0.00284)	(0.00284)	(0.00284)	(0.00283)	(0.00291)
Nº of Prod. by Firm Dest. (log)	0.0628***	0.0629***	0.0628***	0.0627***	0.0534***
	(0.00194)	(0.00194)	(0.00194)	(0.00194)	(0.00204)
Share of Prod. by Dest.	0.1694***	0.1699***	0.1694***	0.1696***	0.3605***
	(0.00909)	(0.00912)	(0.00908)	(0.00909)	(0.01095)
Real export value (log)	0.0391***	0.0391***	0.0391***	0.0391***	
	(0.00064)	(0.00064)	(0.00064)	(0.00064)	
Return on Sales		0.0007**			
		(0.00034)			
Return on Equity			0.0003***		
			(0.00012)		
Return on Assets				0.0099**	
				(0.00391)	
Real Sales (log)					-0.0062
					(0.01023)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes
Dest-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
IV Regressions	*	*	*	*	*
Instrument	ERI (t-1)	ERI (t-1)	ERI (t-1)	ERI (t-1)	ERI (t-1)
Under-Identification					
Kleibergen-Paap LM statistic	156.783	157.468	156.837	157.092	157.923
Kleibergen-Paap LM p-value	0.000	0.000	0.000	0.000	0.000
Weak Instruments					
Kleibergen-Paap rk F statistic	152.204	152.871	152.255	152.503	153.313
Kleibergen-Paap rk F p-value	0.000	0.000	0.000	0.000	0.000
Observations	213793	213481	213762	213762	213481
R-squared	0.228	0.228	0.228	0.228	0.191

Notes: Table 11 reports the output of the regressions estimated using the import values of all goods and some some variables obtained from the Superintendency of Corporations database. Standard errors are clustered at the firm level. * statistically significant at the 0.10 level; ** at the .05 level; *** at the .01 level.

Table 12: Export Survival by Volume of Exports

	Firm export value				
	All firms	>$1,000	>$5,000	>$10,000	>$50,000
All goods	0.0168***	0.0193**	0.0268**	0.0418***	0.0573**
Std. error	(0.0048)	(0.0075)	(0.0112)	(0.0139)	(0.0284)
N	467 k	269 k	163 k	124 k	65 k
Capital goods	0.0264***	0.0343**	0.0590**	0.0906***	0.1507
Std. error	(0.0076)	(0.0135)	(0.0257)	(0.0333)	(0.0973)
N	467 k	269 k	163 k	124 k	65 k
Intermediate goods	0.0464***	0.0442**	0.0493**	0.0775***	0.0924*
Std. error	(0.0139)	(0.0178)	(0.0211)	(0.0273)	(0.0474)
N	467 k	269 k	163 k	124 k	65 k

Notes: Table 12 reports the coefficients of import value on variety success for different firm sizes and databases. The import value is instrumented by exchange rate index, and all regressions include the whole set of controls and fixed effects used in column (4) of Table 7. Standard errors are clustered at the firm level. * statistically significant at the .10 level; ** at the .05 level; *** at the .01 level.