# Importing after Exporting

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**Abstract**

In this paper, we uncover a novel fact about the relationship between exporting and importing. Using a comprehensive database of Argentine firms, we find that exporting to a new destination increases the probability of a firm beginning to import from that market within the lapse of one year. We develop a model of import and export decisions to study the effect of productivity and import costs on the intensive and extensive margins of importing. Comparing these predictions with the observed effect of reaching new export destinations, we argue that export entry in new markets reduces import costs. We show that importing after exporting is stronger in distant markets and in situations where importing involves non-homogeneous and rarely imported goods. Furthermore, the effect on the probability of importing remains, regardless on whether the firm survives in the export market. Taken together, our results suggest that firms gain knowledge on -or establish links with- potential suppliers after export entry, which reduces the costs associated with searching for import sources. The effect of export entry on sourcing costs has implications that go beyond offering insights on importing: according to our quantitative exercise, import costs fall 53% in a given destination after export entry (from US$ 49,600 to US$ 26,600), and the estimated import cost savings increase for distant markets outside the Americas.

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# 1 Introduction

It is well known that importers and exporters are more productive than non-trading firms. Firms engaged in international trade also use skilled labor and capital more intensively, pay higher wages and are associated with higher quality standards. Firms involved in both activities, i.e. global firms, rate even higher in these measurements (Bernard, Jensen, Redding, and Schott 2012, Kasahara and Lapham 2013, Manova and Zhang 2012). Yet, surprisingly, the research in international trade focuses on either exporting or importing as if they were independent activities.[1] As a consequence, little is known about how exporting and importing interact with each other.[2] In this paper, we aim at clarifying how exporting affects import decisions.

We begin our analysis by establishing a novel fact about the relationship between exporting and importing. Using a comprehensive database of Argentine firms for the period of 2002-2008, we find that exporting to a new destination raises the probability that a firm will begin importing from that market within a year (by 51% in our preferred estimation). This fact is intriguing. Why does a new destination for exports become a new source of imports? Why does the effect require time? As both activities are jointly determined by productivity, importing after exporting might be the result of a particular process through which firms become more productive. An alternative potential explanation for this phenomenon is that exporting reduces the fixed costs of importing. Thus, a firm reaching a new export destination may reflect a gain in productivity as well as a fall in import costs.

To explore these alternative explanations, we develop a framework that incorporates exporting decisions to a model of importing. We let import costs vary with the firm's experience in export market, so the model allows for heterogeneity in fixed costs at the firm-market-experience level. We then show that export entry reflecting productivity gains and export entry followed by a fall in import costs yield contrasting empirical implications.[3] For example, while export entry associated with higher productivity implies an increase on imports from every existent source, export entry that reduces the fixed cost of importing has no effect on the intensive margin of imports. We also show that export entry related to productivity should affect the extensive margin of importing from many markets simultaneously, whereas the effect of export entry related to a decline in the

[1] Redding (2011), Bernard, Jensen, Redding, and Schott (2012), Melitz and Redding (2014) summarize the literature on exporting but there is far less work available about importing. Halpern, Koren, and Szeidl (2015) and Amiti and Konings (2007) find that importing is associated with higher productivity. Goldberg, Khandelwal, Pavcnik, and Topalova (2010) find that importing extends the product scope; Gopinath and Neiman (2014) argue that the reaction of imports is a channel through which a currency crisis negatively affects aggregate productivity. Finally, Blaum, Lelarge, and Peters (Forthcoming) and Antras, Fort, and Tintelnot (2017) propose a general model of import behavior.

[2] Exceptions are Kasahara and Lapham (2013) finding a positive association between importing and exporting sunk costs, and Bas and Strauss-Kahn (2014) and Bas (2012) showing that imports increases the probability of becoming an exporter. We discuss these exceptions below.

[3] On the importing side, our model shares the main components and conclusions of any standard model of import behavior (Antras, Fort, and Tintelnot 2017, Blaum, Lelarge, and Peters Forthcoming, Gopinath and Neiman 2014, Halpern, Koren, and Szeidl 2015).

import cost is confined to the market in which it takes place. Based on these predictions, we use the observed effect of reaching a new destination to infer that exporting does trigger imports from new sources through reducing import costs, ruling out productivity as a channel of importing after exporting. This conclusion opens a new set of questions.

Why does exporting reduce the cost of importing? Is it because both activities involve similar operational fixed costs? Are these costs generated by informational barriers? Explaining the nature of these costs constitutes an important aspect of our analysis. We incorporate these features to the model and show that the implications of entering a new export market differ according to whether exporting either reduces operational import costs or lowers the informational barriers associated with finding potential suppliers. First, if the effect is driven by falling operational costs, we should observe a non-sequential association between importing and exporting. More precisely, export entry could occur at the same time-or even take place after-importing from a new source. In contrast, as learning about import opportunities takes time, sourcing from a new export destination should follow a sequential pattern. According to our results, importing from a new source does not trigger exports from the same market. Second, if import and export operational costs are merely complementary, then the probability of sourcing from a particular export market should be higher, regardless of whether this market is a new destination or an old export relationship. We observe that exporting affects the probability of importing only when the destination is new for the firm and the effect vanishes when we consider firms that re-enter as exporter. Third, if exporting affects the sourcing strategy by overcoming informational barriers, we should find a stronger association between exporting and importing in situations where the firm is poorly informed about the characteristics of the destination market, or when importing involves relatively rare goods. Consistent with the informational costs mechanism, our empirical results show that the effect of exporting on importing is stronger (a) in long-distance destinations; (b) for varieties that are rarely imported by Argentinian firms; and (c) for differentiated or high tech intermediate inputs. Finally, operational cost complementarities in exporting and importing require both activities to be carried out simultaneously. In contrast, if the effect is driven by the learning channel, the information acquired about suppliers may last, regardless on whether the firm continues serving the market or not. On this ground, we find that even when the export relation breaks just after entry, the probability of importing from the market remains higher. Even more, the importer relationship is more likely to continue in subsequent years, regardless on whether the exporting relationship with the market survives.

Taken together, these results suggest that firms gain knowledge on -or establish links with- potential suppliers after export entry, which lowers the informational costs associated with searching for and discovering new import sources in that market. This result is more than a qualitative insight. We use our model to derive the quantitative implications of export entry on import fixed costs. The estimated effects are large. For a median firm, import costs fall 53% in a given destination

after export entry: while the estimated fixed cost to start sourcing from a market without export experience is US$ 49,600, the cost for importing after export entry falls to US$ 26,600. The reduction in fixed cost of importing is bigger for distant markets outside the Americas.

Our work is related to a growing literature on importing at the firm level. For example, Halpern, Koren, and Szeidl (2015) and Amiti and Konings (2007) find that importing is associated with higher productivity. Also, according to Goldberg, Khandelwal, Pavcnik, and Topalova (2010), importing helps firms to extend their product scope. Given the positive effects of importing at the firm level, it is natural to find that importing is indeed positively associated with exporting. For example, Bas and Strauss-Kahn (2014) and Bas (2012) observe that importing intermediate goods-from any source-reduces firms marginal costs (or increases quality) and, thus, increases the probability of export entry to any destination in the future. Our findings are compatible with firms using imported intermediate goods as a way to prepare for new export activities, but we stress different aspects of the import-export interplay. Basically, we see importing after exporting as a completely different phenomenon, which is not driven by productivity or reductions in variable costs, but by interconnected activities between importing and exporting costs. Amiti and Davis (2012), Bache and Laugesen (2006) and Kasahara and Lapham (2013) also emphasize complementarities between exports and imports. For example, Kasahara and Lapham (2013) comparing the frequencies of exporting among non-importers with the frequency of exporting among importers, provide evidence which is consistent with complementarity between importing and exporting sunk costs. Importantly, we contribute by showing that these complementarities capture aspects of the relationship between exporting and importing that are market-specific, establishing a clear direction of the effect between importing and exporting, and emphasizing the role of information as the driver of these complementarities.

We also contribute to the literature on importing by providing an estimation of fixed costs of importing. Our estimated values are within the range $(15,000; 60,000)$ estimated in Antras, Fort, and Tintelnot (2017). Importantly, fixed costs in our framework vary according to firm trading experience. As noted by Antras, Fort, and Tintelnot (2017), the literature generally assumes homogeneous fixed costs which is at odds with the data. We rationalize variations in import fixed costs with differences in knowledge about potential suppliers in a given country. Our results suggest that this knowledge is acquired by exporting. Our estimated reduction in import costs is consistent with Halpern, Koren, and Szeidl (2015), where fixed costs of importing for local firms are compared to those for foreign firms in Hungary. According to Halpern, Koren, and Szeidl (2015), foreign firms pay 60% lower fixed costs of importing than local firms. Our findings suggest that the information acquired about suppliers after export entry reduces fixed costs by around 50%. Notably, we find that the entire distribution of import fixed costs is below for firms that enter the export market prior to start importing.

Our paper highlights that importing is not a simple activity. In making import decisions, firms

must evaluate how imported intermediate goods affect their production costs and weigh this against the fixed costs when dealing with foreign suppliers. However, this decision requires knowledge about products and potential suppliers that is not fully available for firms *ex ante*. Therefore, experience in foreign markets is important to overcome informational barriers to importing. Our results suggest that exporting is a source for such experience. On this ground, this paper is also related to recent literature on export dynamics that emphasizes the role of export experience in learning about a firm's potential in foreign markets (Albornoz, Calvo Pardo, Corcos, and Ornelas 2012, Defever, Heid, and Larch 2015). Our paper contributes to this literature by analyzing what firms learn when they export to previously unexplored markets. While these papers focus on uncertainty related to the demand and profitability abroad, our paper is the first in underlying that firms must also learn about suppliers in foreign markets. On this score, we also provide estimates that show that the informational costs of importing are quantitative relevant.[4]

Our results carry important policy implications. According to our calculations, one year after entering a new destination, imports account for 22% of the amount generated by the new exports. This entails implications for policy. For example, if export promotion policies were motivated by the goal of reducing trade imbalances, our findings warn against the effectiveness of this policy. On the other hand, the fact that export entry generates knowledge about suppliers serves as a novel rationale for export promotion, since better inputs are associated with higher productivity or many other positive attributes.

The remainder of the paper is organized as follows. In Section 2, we present the data and the preliminary observations. In section 3, we establish the main fact. In section 4, we derive predictions on how productivity and import costs affect the intensive and extensive margins of importing and show how importing after exporting is only empirically consistent with falls in import costs triggered by export entry in new destinations. In section 5, we analyze the channels through which exporting reduces import costs. Section 6 derives some implications of our results. In Section 7, we estimate the fall in import costs associated with export entry. To finish, we assess the plausibility of alternative explanations (Section 8) and offer some concluding remarks (Section 9).

## 2 Facts on importing

In this section, we describe the data, report relevant descriptive statistics, and provide preliminary observations about the relationship between exporting and importing.

[4]On this ground, Startz (2016) provide further evidence related to our mechanism in a fairly different context. Consistent with our mechanism, the author shows that Nigerian final good importers spend a considerably amount of money to travel in order to reduce informational barriers and contracting frictions.

## 2.1 Data

We use Argentine customs data comprising the universe of the country's exports and imports transactions. This data set covers the 2002-2009 period and includes annually reported information about the value (in US dollars) of foreign sales and imports for each firm, distinguished by country (origin / destination) and product (8 digits HS). We focus on Argentine manufacturing firms and restrict imports to intermediate goods (inputs and capital goods) according to BEC classification.

Export entry to a destination and sourcing from a new origin are rather rare events at the firm level. Hence, the analysis is more meaningful if we aggregate countries into regions, thus reducing the number of potential markets. In the main analysis, we restrict our attention to 10 regions: ASEAN+3 (ASEAN), Rest of Asia (RAsia), European Union (EU), Rest of Europe(REu), Africa, Australia, Mercosur, Rest of South America (RSA), North America (NA) and Central America (CA).[5] The results are robust to other ways of grouping countries.[6]

For most of our empirical exercises, we collapse the database to firm-level, yearly frequency and market. Using unique firm identifiers, we have matched this data set to fiscal files generated by the Fiscal Administration of Public Revenue (AFIP) from which we have obtained information on formal employment and firms' main sector of activity.

The main sample consists of a balanced panel of 14,636 manufacturing firms. In an average year, the total amount of exports within the sample is US$ 19 billions, while the total amount of imports is US$ 7 billions. The median only exporter exports around US$ 42,000 in an average year, reaches one market and employs 19 workers. The median only importer, imports around US$ 46,000 in an average year, combines inputs from two sources and employs 21 workers. The median global firm (importer and exporter), exports US$ 180,000 to two destinations, imports US$ 113,000 from two sources and employs 48 workers. Table 1 reports aggregate statistics on exports and imports. Despite the growth in the value of exports and imports throughout the period, there is no clear trend in terms of the number of new origins and new destinations per year. In an average year, Argentine firms start to import from a total of 4,940 new sources and reach a total of 3,703 new destinations. Mercosur accounts for 30% of Argentine exports within the period, followed by the Rest of South America (21%), North America (11%), EU (10%) and the Asean region (10%). As to imports, Mercosur is also the main partner with roughly 35% of total imports. The rest of imports is explained by the EU (21%), ASEAN countries (17%), North America (16%) and the Rest of South America (4%). Interestingly, new origins and new destinations are explained by different markets at the aggregate level. While most of new sources are explained by new imports from Mercosur (30%), EU(22%) and ASEAN(18%), export entry to a destination mostly happens

[5] In the Appendix, we describe the main sources and destinations within each region (tables A1 and A2)

[6] For example, we have alternatively obtained qualitatively similar results at the country level. We replicate the main results discussed in the next section for a sample that includes the 30 top trading partners for Argentina (See table A6 in the appendix). These sample represents roughly 93% of total Argentinian imports and exports.

within The Americas' markets (Mercosur, 23%, Rest of South America, 21%, and North America, 13%).

Table 1: Descriptive statistics: by year

| Year | Imports (millions US$) | Exports (millions US$) | New origin # | New destination # |
|---|---|---|---|---|
| 2003 | 3576 | 11598 | 5164 | 3819 |
| 2004 | 4893 | 14754 | 4765 | 3425 |
| 2005 | 6007 | 17708 | 5053 | 4018 |
| 2006 | 7310 | 17967 | 5070 | 3441 |
| 2007 | 8887 | 23521 | 4706 | 3443 |
| 2008 | 11180 | 31426 | 4883 | 4073 |
| Average | 6976 | 19496 | 4940 | 3703 |

Exports and imports values are in millions of US$

There are other two interesting features of the data that we exploit in our analyses and worth mentioning. First, around 25% of firms that reach a new destination are re-entrants. That is, firms that exported to a market in year $t-2$ or before, does not export in $t-1$ and re-enter in $t$ (See Table A3 in Section A.1 of the Appendix). Second, a remarkably high number of firms that reach a new destination, exit the next year. Less than 50% of the firms that reach a new destination in year $t$, survive as exporters in that market after two years (See Figure A1 in Section A.1 of the Appendix).

## 2.2 Preliminary observations

To take preliminary look at the relationship between exporting and importing, we compute the probability of starting to import from a region conditional on having started to export to that region the previous year. Table 2 reports the conditional and unconditional probability for each region.

Table 2: Probability of starting to import from a new region in $t$ conditional on having started to export to that region in $t-1$

| | Pr[NewOrigin$_{ijt}$=1] | Pr[NewOrigin$_{ijt}$=1/Export Entry$_{ij,t-1}$=1] | △% |
|---|---|---|---|
| All | 2.7 | 4.9 | 81 |
| ASEAN | 6.1 | 12.2 | 100 |
| RAsia | 3.2 | 5.9 | 84 |
| EU | 7.3 | 12 | 64 |
| REu | 1.6 | 5.6 | 250 |
| Africa | 0.3 | 1.9 | 533 |
| Australia | 0.3 | 2.6 | 767 |
| Mercosur | 4.5 | 5.6 | 24 |
| RSA | 1.8 | 2.5 | 39 |
| NA | 4.8 | 6.6 | 38 |
| CA | 0.2 | 0.3 | 50 |

Table 2 reveals some relevant preliminary patterns about the relationship between importing and exporting. First, export entry in a a region is positively associated with sourcing new imports from the same region within a year: the probability of start importing from a market after export entry to that market is 81% higher than the unconditional probability. Second, this association is stronger for more distant regions. For example, exporting to the European Union rises the probability of importing from there within a year by 64%, while exporting to Mercosur only rises this probability by 24%.

## 3 The main fact: importing after exporting

In this section, we study the observed association between exporting and importing in further detail. We use OLS to estimate the probability for a firm to start importing from a new source. [7] Our basic linear probability model is given by:

$$New\ Origin_{ijt} = \alpha Export\ Entry_{ij,t-s} + \beta X_{i,t} + \{FE\} + \mu_{ijt} \tag{1}$$

where $New\ Origin_{ijt}$ is a dummy indicating whether firm i imported from market j in year t for the first time, $Export\ Entry_{ij,t-s}$ indicates whether firm $i$ exported to destination $j$ in $t-s$ for the first time, where $s = \{0, 1, 2, 3, 4\}$. $X_{i,t}$ is a set of time-varying firm's characteristics. Since there are other factors that affect a firms decision to start to import from and export to a region,

[7] Results are robust to non-linear estimations such as Probit or Logit models.

such as specific characteristics of the market, economic shocks in a given year, and a firm's specific characteristics, we take advantage of the multidimensionality of our data set and include a wide range of fixed effects, $\{FE\}$. In particular, vector $\{FE\}$ includes different combinations of firm, year, and market fixed effects, as well as interactions between them such as firm-year, firm-market and year-market fixed effects.

Since there can only be one new origin per pair firm-region $'ij'$, when the amount of imports from a region in year $t$ is positive ($imports_{ij,t} > 0$) that pair firm $'ij'$ leaves the sample from $t+1$ onwards. Similarly, as we want to identify the effect of export entry to $j$ on the probability of sourcing from $j$ for those firms without any previous experience as exporters in that market, we drop pair firm $'ij'$ from t onwards whenever exports in $t-s$ to region j are positive ($exports_{ij,t-s} > 0$). To take into account that errors in different time periods or in different markets for a given firm might be correlated, our standard errors allow for clusters at the firm level in these and all subsequent regressions.[8]

Table 3 reports the estimation results for a series of models based on equation 1. For reasons that become clear below, we focus on $s = 1$.[9] The results reported in Table 3 establish the main fact: an export incursion to a market increases the probability of sourcing from that market in the following year.[10] Column 1 reports the basic specification including firm, year and market fixed effects. We find that export entry to a market increases the probability of sourcing from that market in the following year by 0.9 percent points. As the firm's decision to import and export from a market might be a joint decision due to, for example, a stable specific relationship with a partner abroad, we include firm-market fixed effects in the regression displayed in column 2. In column 3 we add market-year fixed effects to capture those aggregate shocks that affect the general attractiveness of a market, such as exchange rate variations or political changes. When included, we find that an export incursion increases the probability of sourcing from that market in the following year by 1.5 percent points (55% with respect to the unconditional). However, even if firm fixed effects control for time-invariant unobserved heterogeneity, it is possible that positive idiosyncratic productivity shocks induce firms to initiate export and import activities in the same market. In order to address this concern, we adopt two different approaches. First, results reported in column 4, column 5 and column 6 add different combinations of firm's characteristics as proxies for productivity (and any scale shock): total amount of exports, imports and level of employment.[11] Second, and more importantly, in column 7 we include firm-year fixed effects that control for all firm characteristics that vary over time, but are constant across markets. Arguably, productivity

[8] Main results are robust to different clustering strategies: year-market, firm, firm-year, firm-market.

[9] This implies estimating the effect of an export incursion to a market on new imports from that market in the following year.

[10] These result is robust to alternative grouping strategies of the regions. For example, in Table A6 of the Appendix we replicate our main estimation, but on a sample consisting in the the top 30 trade partners of Argentina (which represent more than 90% of the total value of imports and exports) and find qualitatively similar results.

[11] Results remain stable if we also include the growth of these variables (See A7 of the Appendix.

shocks (or any scale shocks) fit under this category since they are specific to a firm and are unlikely varying across markets. We find that the main coefficient remains positive and significant in all these different specifications, suggesting that productivity is not driving the observed relationship between exporting and importing. As reported in column 7, once any firm-year specific characteristics are controlled for, export entry to a given market increases the probability to start sourcing from the same market by 1.4 percent points. Reassuringly, the main coefficient remains stable throughout the different ways to proxy for productivity shocks.[12] As the regression reported in column 7 includes the full battery of fixed effects, we adopt it as our preferred estimation in the following sections. In order to have a sense of the quantitative relevance of the uncovered fact, an increase of 1.4 percent points implies that the probability of importing after exporting is 51% higher than the unconditional probability of importing.

[12]This result remains after several robustness checks. For instance, in Table A7 of the appendix we show further evidence that the effect of exporting on importing withstands different proxies for productivity and sector-market trends. Furthermore, in Table A8 we show that the main conclusion remain if we focused on the sample of firms that were already exporters (and thus active) in the first year of our data.

Table 3: Probability of importing from a new market

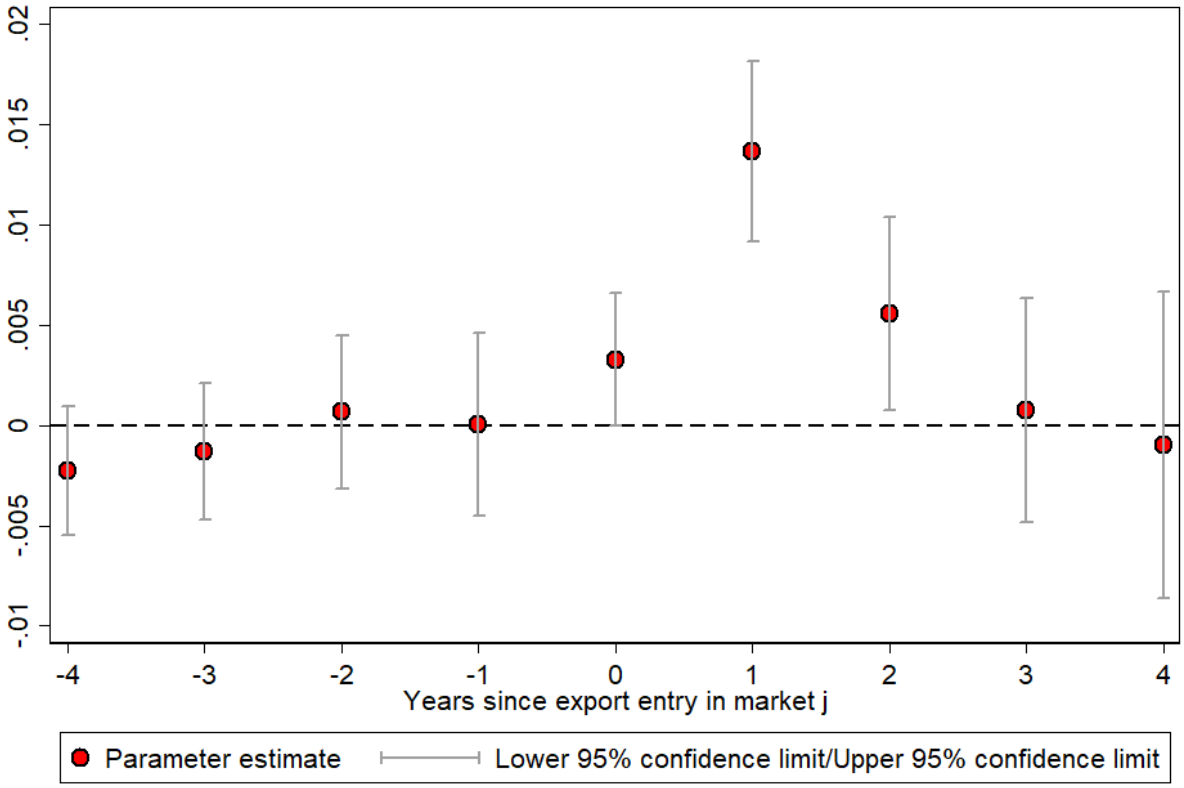
| | $Pr[NewOrigin_{ijt}=1]$ | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| $ExportEntry_{ijt-1}$ | 0.009*** | 0.018*** | 0.015*** | 0.015*** | 0.014*** | 0.014*** | 0.014*** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| $log(Exports)_{it}$ | | | | 0.000*** | | 0.000 | |
| | | | | (0.000) | | (0.000) | |
| $log(Imports)_{it}$ | | | | 0.007*** | | 0.007*** | |
| | | | | (0.000) | | (0.000) | |
| $log(labor)_{it}$ | | | | | 0.012*** | 0.004*** | |
| | | | | | (0.001) | (0.001) | |
| Mean dep variable | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 |
| Observations | 589,703 | 582,503 | 582,503 | 582,503 | 582,503 | 582,503 | 582,503 |
| R-squared | 0.074 | 0.342 | 0.357 | 0.380 | 0.358 | 0.380 | 0.452 |
| Firm FE | yes | yes | yes | yes | yes | yes | yes |
| Year FE | yes | yes | yes | yes | yes | yes | yes |
| Market FE | yes | yes | yes | yes | yes | yes | yes |
| Firm-Market FE | no | yes | yes | yes | yes | yes | yes |
| Market-Year FE | no | no | yes | yes | yes | yes | yes |
| Firm-Year FE | no | no | no | no | no | no | yes |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5%, and 10% respectively.

These results establish that export entry increases the probability of importing from the new export market the next year. Is the uncovered fact confined to $s = 1$? Figure 1 shows the regression coefficients $\alpha$ for $s = \{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$ under our preferred specification, where negative values are years before export entry. First, we do not observe any effect on the probability of new imports the years before the firm reaches market $j$ as exporter. Now, focus on $s = 0$. Although not significant at 1%, the effect of an export entry manifests within the same year, which indicates a possible simultaneity between both activities in a given market. However, as our data is yearly, we cannot distinguish whether the effect is simultaneous or simply triggered within days, weeks or months after the export incursion. Note as well that the coefficient is considerably lower than in the case of $s = 1$. Furthermore, in Table A9 of the Appendix we show that the association between export entry to a market and a start sourcing from that market is less robust when confined to the same year. We take a lower estimate and the lack of robustness as suggesting evidence that

the effect of export entry requires some time to manifest. Furthermore, in Table A10 we show that the relationship is unidirectional: there is no evidence of start exporting to a market after start sourcing. Finally, we note that the peak of the effect takes place when $s = 1$, as the estimate is lower two years after export entry ($s = 2$), and vanishes after three years ($s = 3$ and when $s = 4$). For this reason, we focus on the case of $s = 1$ from now on.

Figure 1: Estimated $\alpha$ for $s = \{-4, -3, -2, -1,\ 0,\ 1,\ 2,\ 3,\ 4\}$




# 4 Model

In this section, we develop a model of import and export decisions. The main goal is to derive our main fact as a theoretical prediction. This helps us clarify the main mechanism behind our results. Furthermore, we use the model to establish under which conditions we should observe importing after exporting. We empirically assess these conditions in section 5.

### 4.1 Environment

Firms produce final goods that can be sold to $N$ foreign markets and combine in production inputs that can be sourced domestically or from other countries. Since foreign suppliers are more efficient (or deliver higher quality) at producing some of the varieties, firms may be willing to demand imported inputs as a vehicle to reduce the marginal cost of production.

#### Demand

We assume that in each market $j$ there is a demand for final goods given by a standard CES:

$$U_j = \left[\int_i s_{ij}^{1/\sigma} q_{ij}^{\sigma-1/\sigma} di\right]^{\sigma/\sigma-1},$$

where $\sigma > 1$ is the elasticity of substitution.[13] $s_{ij}$ summarizes the taste for variety (firm) $i$ in destination $j$. We let $s_{ij}$ depend on two components: $s_{ij} = a_j \mu_{ij}$. $a_j$ denotes the average taste of consumers in market j for goods produced by Argentinian firms. $\mu_{ij}$ is a taste component specific to the relation between a variety (firm) $i$ and the market $j$. We refer to this component as firm-market profitability.[14] Note that this component implies that a firm may change their export decisions when facing a demand shock to $\mu_{ij}$, even in absence of any variation of productivity.

#### Supply

On the supply side, a measure N of final-good producers, all of each make a single differentiated product. Firms are characterized by an heterogeneous attribute $\varphi$ that, for concreteness, is interpreted as core productivity. Just like in Melitz (2003), this parameter is exogenously drawn from a probability distribution $\xi(\varphi)$ and revealed to the firms once they start to produce.

There is a set of markets $j$ (with $M$ elements) that are potential sources for inputs $z$. More specifically, the production function takes the following form:

$$y = q(z) = \varphi\left[\sum_k x_k^{\frac{\theta-1}{\theta}}\right]^{(\theta/\theta-1)} \quad with \quad x_k = max[z_{dk}; \eta_{1k} z_{1k}; ...; \eta_{mk} z_{mk}]$$

where $\eta_{jk}$ represents the quality of input $k$ sourced from market $j$, $z_{jk}$ denotes the amount of input $k$ sourced from market $j$ and $\theta > 1$ is the elasticity of substitution between inputs. Within an intermediate product $k$, input varieties are perfectly substitutable, so the firm optimally selects only one source for each intermediate product $k$. However, the firm can import more than one intermediate product from the same origin. These features are borne out in the data as for a given

[13] The main conclusions remain unchanged if we let $\sigma_j$ vary across markets.
[14] As in Albornoz, Calvo Pardo, Corcos, and Ornelas (2012).

product at HS6-digit level, 80% of firms import it from only one source (see Figure A2 in the appendix).

Importing $k$ from $j$ involves a fixed cost and we define $j = d$ for the domestic market. Import costs can also vary across firms according to their trading experience in market $j$. This is an important (and unique to the best of our knowledge) aspect of our framework, which delivers multi-dimensional heterogeneity in productivity and country-specific trade experience. Formally, the fixed cost of importing product k from market j is given by $F^M_{ijk} = \kappa_{jk} g\left(\left\{\mathbb{I}^X_{ij,(t-s)}; s = 0, 1, ..., T\right\}\right)$. $I^X_{ij,(t-s)}$ are indicators that take value 1 if firm $i$ exported to market $j$ in year $t - s$ and, for convenience, we denote $h_{ij} = \left\{\mathbb{I}^X_{ij,(t-s)}; s = 0, 1, ..., T\right\}$ the history of export status of firm $i$ in market $j$. We assume that $g(h_{ij})$ is weakly decreasing in the firm's experience in export market $j$, $g'(h_{ij}) \leq 0$. Intuitively, if there are import cost savings associated with exporting experience, then we expect to find that $g'(h_{ij}) < 0$. For the time being, we leave unspecified the source of this cost reduction and test whether $g'(h_{ij}) < 0$ or $g'(h_{ij}) = 0$. We come back to this and put more structure to this function in section 5. In equilibrium, each firm is characterized by a vector $(\varphi_i, \kappa_{dk}(g(h_{id})), ..., \kappa_{mk}(g(h_{im})))$. We further assume that firms take the set of input prices (including variable transport costs) $[p_{jk}]_{jk}$ as given.

### 4.2 Firm decisions

We briefly analyze the firm behavior in steady-state. It is convenient to define a sourcing strategy $\Omega$ as the subset of input varieties $(j, k)$, such that the firm imports positive amounts of these varieties. Similarly, we define an exporting strategy $\Omega^X$ as the subset of destinations $j$, such that the firm exports positive amounts.[15] To characterize the firms' decisions, we proceed in three steps. First, conditional on the sourcing strategy $\Omega$ and the export strategy $\Omega^X$, we characterize the intensive margin of imports from active sources, the minimum cost function, and derive the optimal revenues in each active market. Second, conditional on the sourcing strategy, we characterize the exporting strategy. Third, we characterize the sourcing strategy.

#### Step 1: Optimal amount of imports, cost function and revenues conditional on sourcing and exporting strategy

We begin by finding the optimal minimum variable cost. To do so, we compute the intensive margin for each variety in the sourcing strategy set $(z^*_{jk})$; the minimum marginal cost function $c(\Omega)/\varphi$; and optimal prices and revenues.

Conditional on the sourcing strategy, the intensive margin of imports is fully determined by the

[15] Note that both sourcing and export strategy are firm-year specific.

solution to the cost function,

$$z^*_{jk}(\varphi,\Omega,y) \equiv arg\min_{z_{jk}} \sum_{(j,k)\in\Omega} p_{jk}z_{jk} \text{ s.t } y=\varphi\left[\sum_{(j,k)\in\Omega}\left(\eta_{jk}z_{jk}\right)^{\frac{\theta-1}{\theta}}\right]^{(\theta/\theta-1)}. \tag{2}$$

This yields that the amount of imports of intermediate $k$ from market $j$ is given by :

$$p_{jk}z^*_{jk}(\varphi,\Omega,y)=\frac{y}{\varphi}\frac{\left(\frac{\eta_{jk}}{p_{jk}}\right)^{\theta-1}}{\left[\sum_{(j,k)\in\Omega}\left(\frac{\eta_{jk}}{p_{jk}}\right)^{\theta-1}\right]^{\theta/(\theta-1)}} \qquad \forall(j,k)\in\Omega, \tag{3}$$

Once we have the intensive margin of imports for any potential sourcing strategy, it is straightforward to obtain the minimum unit cost function for a given sourcing strategy:

$$\frac{c(\Omega)}{\varphi}=\frac{1}{\varphi}\left[\sum_{(j,k)\in\Omega}\left(\frac{\eta_{jk}}{p_{jk}}\right)^{\theta-1}\right]^{-\frac{1}{\theta-1}}.$$

To derive optimal prices, each firm chooses its price in each market to maximize profits subject to a downward-sloping residual demand curve with constant elasticity of substitution. From the first-order condition, the equilibrium price for each variety is a constant mark-up over marginal costs. This constant mark-up implies the typical relationship between productivity and prices. The difference imposed by considering importing as well is that prices also depend on the sourcing strategy. In particular, local prices are given by:

$$p=\frac{\sigma}{\sigma-1}\frac{c(\Omega)}{\varphi}.$$

Thus, revenues for a firm $i$ exporting to market $j$, paying an iceberg cost equal to $\tau_j$ are given by,

$$r_{ij}(\Omega^X,\Omega,\varphi)=\left[\frac{\varphi_i}{c(\Omega_i)}\right]^{(\sigma-1)}A_j\mu_{ij},$$

where we define $A_j$ as destination specific appeal: $A_j=\left(\frac{\sigma}{\sigma-1}\right)^{-\sigma}(1+\tau_j)^{1-\sigma}P_j^{\sigma-1}X_ja_j$.

Therefore, total revenues for a firm with sourcing strategy $\Omega$ and export strategy $\Omega^X$ are given by,

$$R_i=\left[\frac{\varphi_i}{c(\Omega_i)}\right]^{(\sigma-1)}B_i(\Omega^X),$$

where $B_i(\Omega^X)=\sum_j I^x_{ij}A_j\mu_{ij}$, represents a "scale" component.

**Step 2: Exporting Strategy**

Conditional on the sourcing strategy and the optimal unit cost $c(\Omega)_i$, a firm will export to market $j$ if the benefits of doing so outweigh the fixed costs of exporting to that market ($F_j^x$). A firm exports to market $j$ if:

$$r_{ij}(\Omega^X, \Omega, \varphi) = \left[\frac{\varphi_i}{c(\Omega_i)}\right]^{(\sigma-1)} A_j \mu_{ij} \geq F_j^x,$$

Note that there are three sources of export entry to a market. As usual, firms with higher core productivity ($\varphi$) are more likely to export to any destination $j$. Furthermore, firms are more likely to export to markets with higher $A_j$. Importantly, we allow firms to be more likely to export to some destinations depending on their firm-market profitability, $\mu_{ij}$.

Note as well that the firm does not internalize the effect of exporting from a market on the probability of importing when deciding its exporting strategy. This implies that learning is passive and unanticipated. Thus, firms do not export just to learn about import opportunities. Exporting-to-learn could be incorporated without affecting the qualitative predictions we derive bellow. As in Albornoz, Calvo Pardo, Corcos, and Ornelas (2012), some firms would find it optimal to export with small revenues to learn about the destination market. If this were the case, then we should observe that firms with and without previous import experience should enter the market with different sizes (proxy by total export values). In Table A5 of Appendix A.2.2, we show that this is not the case. For this reason and to facilitate the discussion, we do not allow firms to export to a market just to learn about foreign input suppliers in our theoretical model.

REMARK **1** *Conditional on productivity, a positive shock to market profitability of a firm $i$ in market $j$, $\mu_{ij}$, increases the probability of export entry in market $j$.*

This remark is crucial to justify our empirical preferred specification in Table 3. As we include firm-year fixed effects, we control for shocks to core productivity of a firm. In addition, market-year fixed effects control for any shock in time specific to the destination (i.e: China is growing). Therefore, we exploit variability in export entry coming from shocks to firm's profitability in a given market.

We turn now to characterizing the sourcing strategy.

**Step 3. Sourcing strategy**

Note that for a given sourcing strategy ($\Omega$) and optimal export strategy ($\Omega^{X*}$), profits are:

$$\pi_i(\Omega^{X*}, \Omega, \varphi) = \left[\frac{\varphi_i}{c(\Omega_i)}\right]^{(\sigma-1)} B_i(\Omega_X^*) - \sum_{(j,k)\in\Omega} \kappa_{jk} g(h_{ij}) - \sum_{(j)\in\Omega^{X*}} F_j^x, \tag{4}$$

Equation 4 implicitly contains the basic ingredients to determine the extensive margin of imports. The first term represents variable profits, which are increasing in the quality of the variety

within each intermediate product $k$, and also in the number of products k combined in production. Intuitively, quality-differences and love for variety reduce marginal costs, generating incentives to import inputs.The second term corresponds to the import costs associated with the sourcing strategy. Importantly, we allow these costs to vary with the firms' experience as exporter in market $j$. Note that $g(.)$ being positive could be interpreted as complementarity between both activities. Alternative, a positive $g(.)$ could be capturing the trading experience in that market, which implies lower informational costs in finding potential suppliers. Importantly, export entry into market $j$ affects the trading experience of the firm which, in turn, increases the probability of begin sourcing from that market.

We can now define the optimal sourcing strategy. A sourcing strategy $\Omega^*$ is the firm's optimal strategy if and only if $\pi(\Omega^{X*}, \Omega^*, \varphi) > \pi(\Omega^X, \Omega, \varphi) \quad \forall \quad \Omega \neq \Omega^*$. Explicitly, this condition implies,

$$\frac{R(\Omega^{X*}, \Omega^*, \varphi)}{\sigma} - \sum_{jk \in \Omega^{X*}} F_j^X - \sum_{jk \in \Omega^*} \kappa_{jk} g\left(h_{ij}\right) > \frac{R(\Omega^X, \Omega, \varphi)}{\sigma} - \sum_{jk \in \Omega^X} F_j^X - \sum_{jk \in \Omega} \kappa_{jk} g\left(h_{ij}\right) \quad (5)$$

for all $\Omega \neq \Omega^*$

Equation 5 highlights that, if $g'(h_{ij}) < 0$, those markets where the firm has experience as exporter are more likely to be included in the sourcing strategy. Furthermore, if $g'(h_{ij}) < 0$, a shock to export profitability in a market ($\mu_{ij}$) that induce new exports to market $j$ may trigger new imports from that market, and not necessarily from other markets. This feature is important for our empirical strategy (see equation 1).[16] We summarize the main predictions of the model in the next subsection.

### 4.3 Predictions on the extensive and intensive margin of importing

We derive firms' optimal responses to shocks in productivity ($\varphi_i$) and in market-profitability ($\mu_{ij}$). How does importing after exporting emerge in this framework? On the one hand, it is a established fact that exporting is related to productivity and productivity is related to importing (e.g. Halpern, Koren, and Szeidl (2015), Antras, Fort, and Tintelnot (2017), Blaum, Lelarge, and Peters (Forthcoming)). Thus, export entry to market $j$ could reflect unobservable productivity shifts that may also affect the probability of importing. On the other hand, export entry can reduce the cost of importing either by complementarity between export and import operational costs or, indirectly, by relaxing informational costs that are associated with establishing relations with foreign suppliers in a new market. The fact uncovered in Section 3 can be either the result of a productivity shock or the result of cost savings expressing a complex association between exporting and importing, we will use the model predictions to rationalize our fact and distinguish between these two channels.

[16] Antras, Fort, and Tintelnot (2017) remark that assuming homogeneous fixed costs across firms is at odds with the data. We provide one rationale for those differences: firm experience in export markets can affect costs of importing.

We start by the extensive margin of imports.

### 4.3.1 Export entry and the extensive margin of imports

Importing from a new source may be driven by multiple forces. Some of these drivers are also determinants of exporting to new markets. In particular, productivity and scale shocks may affect entry in export markets and also the firm's sourcing strategy. Conversely, market-specific profitability shocks are confined to the decision to export. If these shocks induce export entry in a market, and exporting to a market reduces the cost of importing from that market, then export entry may affect the subsequent decision to source specifically from the new export destination; not from other markets. We summarize this logic in the following proposition.

PROPOSITION **1 (Extensive margin)**

1. ***Import cost savings*** *Conditional on productivity ($\varphi$) and scale ($B(\Omega^X)$):*
   - A. *(import cost savings) If $g'(h_{ij}) < 0$, export entry in market $j$, increases the probability of sourcing from market $j$.*
   - B. *(import cost savings) If $g'(h_{ij}) < 0$, export entry in market $j$, that is not followed by new imports from $j$, carries no effect on the probability of importing from other sources $m \neq j$.*
2. ***Productivity:***
   - A. *(scale effects) Export entry in market $j$ driven by a productivity ($\varphi_i$) shock (or any scale shock), increases the probability of sourcing from **any** potential source (the effect of a productivity shock is not confined to a particular market).*

**Proof** See Appendix. ■

Part 1.A. of this proposition delivers as a prediction the fact that we uncover in Section 3: after controlling for firm-year FE (productivity and scale), export entry in market $j$ leads to an increase in the probability of start sourcing from that market. Part 1.B. and Part 2.A. are related to the effect of reaching a new export destination on importing from any other potential source. These parts of the Proposition provide contrasting predictions on the extensive margin in other markets, according to whether export entry is related to productivity gains or to import cost savings. If export entry in market $j$ does not affect production through new inputs from that market, then there is no reason to expect new import sources, unless export entry was driven by a productivity shock in which case every potential source could be affected. Put it differently, if importing after exporting is related to import costs savings, through the function g(.), we should not observe any effect on new imports from third markets. In contrast, if export entry were related to a shift in

productivity, then we should observe an increase in the probability of start importing from third markets. To test these implications, we estimate the probability of start sourcing from $m$ following export entry in market $j$, controlling for employment as a proxy for productivity. Formally,

$$New\ Origin_{ijt} = \alpha Export\ Entry(-j)_{i,t-1} + \beta log(labor)_{i,t} + \{FE\} + \mu_{ijt} \tag{6}$$

where $Export\ Entry(-j)_{i,t-1}$ is an indicator that takes value 1 if the firm started to export to any market $m \neq j$ the previous year.

We display the results in Table 4. We present results for the overall sample and for each market separately. Consistent with the import cost savings explanation, we observe that an increase on employment raises the probability of start sourcing from any market, whereas export entry in destination $m$ carries no impact on the probability of new sourcing from market $j$.

Table 4: The effect of export entry in market k on importing from market j≠k

| $Pr[NewOrigin_{ijt} = 1]$ | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **All** | **Outside the Americas** | | | | | |
| Market (j) | All | ASEAN | RAsia | UE | REu | Africa | Australia |
| $Export\ entry(-j)_{it-1}$ | 0.000 | 0.001 | 0.003 | 0.001 | -0.000 | 0.000 | 0.001 |
| | (0.001) | (0.004) | (0.003) | (0.004) | (0.002) | (0.001) | (0.001) |
| $log(labor)_{it}$ | 0.024*** | 0.037*** | 0.019*** | 0.054*** | 0.014*** | 0.004** | 0.003** |
| | (0.002) | (0.004) | (0.003) | (0.005) | (0.003) | (0.002) | (0.001) |
| Observations | 512,783 | 50,449 | 52,163 | 46,619 | 52,826 | 53,457 | 53,626 |
| R-squared | 0.468 | 0.434 | 0.469 | 0.433 | 0.520 | 0.492 | 0.470 |
| | | **The Americas** | | | | | |
| Market | | Mercosur | RAme | North Am. | CA | | |
| $Export\ entry(-j)_{it-1}$ | | 0.004 | -0.004* | 0.001 | -0.000 | | |
| | | (0.004) | (0.002) | (0.003) | (0.001) | | |
| $log(labor)_{it}$ | | 0.039*** | 0.023*** | 0.043*** | 0.003*** | | |
| | | (0.004) | (0.002) | (0.003) | (0.001) | | |
| Observations | | 48,039 | 52,306 | 49,650 | 53,648 | | |
| R-squared | | 0.440 | 0.470 | 0.468 | 0.489 | | |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5%, and 10% respectively. Column 1 includes firm-market and market-year fixed effects. Remaining columns include firm and year FE.

We now turn to the intensive margin of imports.

### 4.3.2 Export entry and the intensive margin of imports

In this section, we examine how export entry affects the intensive margin of imports. The following proposition summarizes firms' responses on the intensive margin depending on whether export entry is associated with productivity gains or with a decline in import costs.

PROPOSITION **2 (Intensive margin)**
*Conditional on the sourcing strategy,*

A. ***Conditional on productivity and scale,*** *if* $g'(h_{ij}) < 0$*, export entry does not affect the value of imports from pre-existent sources.*

B. *Export entry associated to a positive productivity shock (or a scale shock) increases the value of imports from any pre-existent source.*

**Proof** See Appendix

■

We can use these predictions to obtain further evidence about whether importing after exporting reflects an increase in productivity or a reduction in import costs through the function $g(.)$. According to Proposition 2, conditional on the sourcing strategy, export entry should affect the intensive margin of imports only if it relates to productivity gains. When export entry into market $j$ is driven by a market profitability shock, we should not observe a rise in the value of imports from pre-existent sources. By contrast, when export entry into a market is related to positive productivity shocks, we expect an increase in the value of imports from any pre-existent source. In order to assess how export entry affects the value of imports from pre-existing sources, we hold constant the sourcing strategy and estimate:

$$log(Imports_{ijt}) = \alpha Export\ Entry_{i,t-1} + \beta log(labor_{i,t}) + \delta_{ij} + \delta_{jt} + \mu_{ijt}, \tag{7}$$

where $Imports_{ijt}$ is firm i's value of imports from market $j$ at year $t$, $Export\ Entry_{i,t-1}$ is a dummy indicating whether firm $i$ entered to a new destination in $t-1$ for the first time. We also include firm-market fixed effects ($\delta_{ij}$) and market-year fixed effects ($\delta_{jt}$). Since we are interested in the intensive margin of imports, we only consider active markets in $t-1$ ($imports_{ij,t-1} > 0$).

Results of the estimation of equation 7 are reported in Table 5. As Part A of Proposition 2 predicts, an export entry that is not followed by a change in the sourcing strategy carries no effect on the value of imports from pre-existent sources. In contrast, as expected, labor (as proxy for productivity) positively affects the value of imports from all pre-existent sources.

We take these results on the intensive margin, together with results regarding the extensive margin, and the fact that the main effect remains after controlling for firm-year fixed effects as indicative that the effect of export entry on new imports is associated with a fall in import costs.

Table 5: Intensive margin: The effect of an export entry to a new destination on amount of imports from pre-existent sources

| | Conditional on Sourcing Strategy | |
|---|---|---|
| | $ln(imports)_{ijt}$ | $ln(imports)_{ijt}$ |
| $Export\ Entry_{it-1}$ | 0.040 | 0.026 |
| | (0.060) | (0.057) |
| $log(labor)_{it}$ | | 2.045*** |
| | | (0.200) |
| Firm-Market FE | yes | yes |
| Market-Year FE | yes | yes |
| Cond Sources | yes | yes |
| Observations | 35,549 | 35,549 |
| R-squared | 0.676 | 0.681 |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5% and 10% respectively.

## 5 Complementarity versus learning potential

Our previous analysis suggests that reaching a new export destination affects the probability of importing by reducing import costs. Clearly, import costs play a crucial role in determining the extensive margin of imports (Halpern, Koren, and Szeidl 2015, Amiti and Konings 2007). But, what are these costs? While there is indirect evidence of the existence of import costs, little is known about their nature. Furthermore, it is not clear whether import decisions require experience and involve the acquisition of costly information about input markets. In order to address this question, it is useful to distinguish between operational import costs that may be complementary with export costs and informational costs that may be reduced with export experience in a market. For example, opening a new foreign trade division involves operational costs that are common to both activities (complementarity in import and export costs). In contrast, the presence of a firm in

a market facilitates setting up intermediate networks, learning about potential suppliers, building commercial relationships or specifying particular attributes of the goods to be acquired.

Our empirical strategy will be based on deriving distinct implications for how operational costs reductions and how informational costs reductions affect import sourcing. In our model, the effect of exporting on import costs is captured by $g(.)$. We proceed by closing the complementarity in operational costs channel to derive predictions on how importing after exporting varies across different market and product characteristics when, by exporting, firms gain experience that let them reduce the import cost associated with learning about potential suppliers. In particular, in order to emphasize the experience channel, we make function $g(.)$ depend only on knowledge of the firm about the market $j$ $(K_{ij})$. We further assume $g'(K_{ij}) < 0$ and $g''(K_{ij}) > 0$. Under this specification, export entry affects import costs by increasing the stock of knowledge about the market. Since $g''(.) > 0$, we expect a stronger effect of an export entry on import sourcing in situations where the firm is less informed about the characteristics of the market and the inputs to be sourced.[17] Intuitively, there is more to learn from an export incursion when the market is relatively unknown or the inputs to be imported are relatively rare. Under the above assumptions, we establish formally these intuitions:

PROPOSITION **3** *If $g'(K_{ij}) < 0$ and $g''(K_{ij}) > 0$, an export incursion that reduces information costs implies:*

*I Market previous knowledge* DOES *matter for import decisions: stronger effect in less explored markets.*

*II Product specificity* DOES *matter for import decisions: stronger effect when imports involve non-homogeneous goods or higher technological content*

*III Export survival DOES not matter for import decisions: start sourcing from market $j$ after export entry to $j$* DOES NOT *require export survival.*

**Proof** See Appendix ■

Alternatively, there may be a potential association between exporting and importing given by cost complementarity (as emphasized by Kasahara and Lapham (2013), for example). For instance, we could define the function $g(.)$ as $g(.) = \Gamma * \mathbb{I}^x_{ij}$, where $\Gamma$ captures the cost complementarity between importing and exporting. Note that this specification rules out the possibility of learning (i.e: $\Gamma$ does not depend on the knowledge that the firm has about each market $(K_{ij})$). The example

[17] Note that these assumptions are also consistent with the effect being higher the year after export entry as shown in Section 3.

of a trade division in charge of both activities fits well this description.[18] Besides, an explanation based on complementarity in operational costs requires export survival since cost savings depend on both activities to be carry out simultaneously. On this score, each part of Proposition 3 provides a contrasting prediction that allows us to distinguish between the empirical relevance of each competing explanation. We examine the validity of each prediction in the following sections.

### 5.1 Market previous knowledge

In this section, we design different exercises in order to test if importing after exporting depends on previous knowledge about the market. Our strategy is guided by the results of proposition 3. How do we proxy previous knowledge about potential suppliers? First, we want to make sure that exporting triggers new imports shortly after entry. If importing after exporting happens as a result of learning, then a firm that has previous export experience in a specific market may have less knowledge to acquire.

To explore this, we exploit the fact that a considerable number of the firms in our sample are re-entrants to export markets. These are firms that did not export at $t-2$, but did so before $t-2$ and export again at $t-1$.[19] The underlying hypothesis is that a firm that re-enters a market already has previous knowledge about that market and, therefore, we expect this entry to have a weaker effect on import sourcing if the channel is associated with gaining experience in a particular market. We estimate $Pr[NewOrigin_{ijt} = 1]$ as a function of $Re-entrant_{ijt-1}$; a variable that takes value 1 if the firm entered as exporter to market $j$ in $t$, but already had experience as exporter in that market before $t-1$. Table 6 reports the results. Consistent with the informational costs savings hypothesis, we do not observe a significant effect on the probability of new imports when the firm starts exporting a market that the firm has already served in the past.[20]

[18] Note that, in part, we have already rule out some explanations related to operational costs since most of the operational costs complementarities are not confined to the same market. In addition, most of stories related to complementarity in operational costs would usually require a simultaneous relation between importing and exporting. However, it is still possible that the observed sequence of export entry followed by new sourcing from the same market to be explained by cost complementarity. In this section, we note that if this were case, it would be unlikely that the magnitude of the effect varies according to a firm's previous knowledge about the market and the specificity of the product. Hence, we perform tests on this direction and provide further evidence against operational costs explanations.

[19] As shown in Table A3 of the Appendix, about 25% of firms entering to a new destination are re-entrants.

[20] Even if the possibility of self-selection into being a re-entrant may bias our estimates, the fact remains that re-entry in an export market is likely a more informed decision (Albornoz, Calvo Pardo, Corcos, and Ornelas 2012, Albornoz, Fanelli, and Hallak 2016), which provides evidence in favor of the informational costs channel.

Table 6: Exporting does not affect importing if the export market is not new

| | $Pr[NewOrigin_{ijt}=1]$ | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| $Re-entrant_{ijt-1}$ | 0.005 | 0.004 | 0.000 |
| | (0.005) | (0.005) | (0.005) |
| $log(labor)_{it}$ | | 0.013*** | |
| | | (0.001) | |
| Observations | 615,787 | 615,787 | 615,614 |
| R-squared | 0.354 | 0.355 | 0.463 |
| Firm-Market FE | yes | yes | yes |
| Market-Year FE | yes | yes | yes |
| Firm-Year FE | yes | yes | yes |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5% and 10% respectively.

Note that this evidence goes against the possibility of importing after exporting being explained by complementarity in operational costs. Should this be the case, the potential decline in importing operational costs due to previous exporting experience would manifest in any export activity, not only in new ones.

Furthermore, as the model predicts, previous information ($K_{ij}$) should also vary across markets. And this is indeed the case. To show this, we run our baseline estimation for each market $j$, including firm and year fixed effects, as well as employment to control for productivity.[21] Results are reported in Table 7. Clearly, the effect of exporting on importing is stronger for markets outside The Americas, such as Asean+3, EU, RAsia, while the association between exporting and importing disappears in nearby markets such as Mercosur and the rest of the American continent. For example, export entry to the European Union rises the probability of starting to import from a country within European Union by 6,4%. For Mercosur, new export activity has no such effect. Furthermore, if we split the sample into Non-Americas' markets (Asean+3, RAsia, EU, REurope,Australia,Africa) and The Americas' markets (Mercosur, RSA, North America and CA) and perform a separate estimation for each sub-sample, we find that export entry is only associated with new imports from the same source in Non-Americas' markets.

[21]Results are qualitatively similar if we include other proxies for productivity such as amount of exports/imports, or growth of these variables. These estimations are available upon request.

Table 7: Region specific importing after exporting

| $Pr[NewOrigin_{ijt}=1]$ | **Non-Americas Markets** | ASEAN | RAsia | EU | REu | Africa | Aus |
|---|---|---|---|---|---|---|---|
| $Export\ Entry_{ijt-1}$ | 0.031*** | 0.046*** | 0.026** | 0.041*** | 0.030*** | 0.018*** | 0.017** |
| | (0.005) | (0.017) | (0.011) | (0.012) | (0.010) | (0.007) | (0.007) |
| Observations | 363,880 | 55,145 | 61,054 | 42,504 | 64,601 | 69,697 | 70,879 |
| Mean dep variable | 0.027 | 0.061 | 0.032 | 0.074 | 0.016 | 0.003 | 0.003 |
| $Pr[NewOrigin_{ijt}=1]$ | **The Americas Markets** | Mercosur | RSA | North America | CA | | |
| $Export\ Entry_{ijt-1}$ | 0.005* | 0.004 | 0.005 | 0.002 | 0.005* | | |
| | (0.003) | (0.005) | (0.003) | (0.008) | (0.003) | | |
| Observations | 218,623 | 44,560 | 54,810 | 50,775 | 68,478 | | |
| Mean dep variable | 0.026 | 0.045 | 0.018 | 0.048 | 0.002 | | |
| Firm FE | yes | yes | yes | yes | yes | yes | yes |
| Year FE | yes | yes | yes | yes | yes | yes | yes |
| Firm-Market FE | yes | no | no | no | no | no | no |
| Employment proxy | yes | yes | yes | yes | yes | yes | yes |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates signicance at the level 1%, 5% and 10% respectively.

Of course, it could be the case that this result may be driven by destination-specific complementarity in operational costs between exporting and importing. An alternative interpretation of this finding is that trading experience matters more to source from markets where Argentinian firms lack of relevant information about potential suppliers.[22] This explanation can be tested. For this, we have to generate a measure of information about potential suppliers at the firm level before entry to a new destination. For each input variety (a combination of product $k$ at the HS 6-digit level and origin $j$), we define whether it is "known" or "unknown" according to the following rule:

Let $N_{vjk}$ denote the number of firms that import the variety $(j,k)$ in sector $v$ (at the ISIC 4-digit level). Then, define an unknown variety for sector $v$ at year 2003 as:

$$Unknown\ Variety_{vjk} = \begin{cases} 1, & \text{if } N_{vjk,0} < Median_v\left[N_{vjk}\right] \\ 0, & \text{if otherwise} \end{cases}$$

[22] In general, Argentine firms have more experience with some markets than others. For example, even if a firm never exported to Mercosur, we expect that it has good enough information about inputs available there. In contrast, a firm that had never established trade with the European Union or ASEAN+3 might have less information about those markets, and thus more to learn.

We can use $Unknown\ Variety_{vjk}$ to generate two types of imported inputs:

$$u = \{known, unknown\}$$

Thus, for each firm, we can distinguish imported inputs according to $Unknown\ input_{iju}$, which takes the value of 1 for imports of unknown varieties and 0 otherwise.[23] This variable allows to explore, for a given firm, whether the probability of a new sourcing following an export entry in the same market depends on the type of input. Implicitly, even when a firm had never imported a variety $(jk)$, knowledge about potential suppliers increases for varieties that are known in the sector where the firm belongs. Intuitively, knowledge available about a particular variety increases with the number of firms belonging to the same sector importing that variety. To test this, we estimate:

$$NewOrigin_{ijut} = \beta_1 ExportEntry_{ij,t-1} + \beta_2 ExportEntry_{ij,t-1} * Unknown\ Input_{iju} + \{FE\} + \epsilon_{iujt},$$

where the vector of fixed effects includes our baseline FE combined with the type of input $u$.

The estimated coefficients are reported in Table 8. The results are eloquent. Columns 1 and 2 show that the effect of export entry on the likelihood of importing from that market crucially depends on whether the firm has previous information about the market. In particular export entry has a stronger effect on import entry when the newly imported variety is relatively unknown in the sector where the firm operates.

[23] Results are qualitatively similar is we use amount of imports, instead of number of firms and are available upon request.

Table 8: Importing after exporting: Stronger effect when new import variety is relatively unknown

| | $Pr[NewOrigin_{ijut}=1]$ | |
|---|---|---|
| | (1) | (2) |
| $ExportEntry_{ij,t-1}$ | 0.004* | 0.002 |
| | (0.002) | (0.002) |
| $ExportEntry_{ijt-1} * UnknownInput_{iju}$ | 0.008*** | 0.008*** |
| | (0.003) | (0.003) |
| $log(labor)_{it}$ | 0.010*** | |
| | (0.001) | |
| Observations | 1,126,308 | 1,126,308 |
| R-squared | 0.328 | 0.399 |
| Firm-Market-unknown FE | yes | yes |
| Market-Year-unknown FE | yes | yes |
| Firm-Year FE | yes | yes |
| Mean dep variable | 0.018 | 0.018 |

The dataset is at the firm-market-year-producttype level. Where unknown takes values 0 or 1 for unknown and known varieties, respectively. Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5% and 10% respectively.

## 5.2 Product specificity

In this section, we exploit the fact that certain types of inputs may require previous knowledge about specific suppliers. For example, homogeneous goods do not require a specific supplier and are sold in relatively competitive markets where information is more likely to be conveyed by the price. By contrast, non-homogeneous goods are differentiated across different attributes such as quality, and typically require knowledge about the sellers. Similarly, low-technology inputs are easier to acquire than high-tech goods for which knowledge about suppliers may be more valuable.

We consider two ways to distinguish between different inputs: product differentiation and technology differentiation. For product differentiation, we use the classification proposed by Rauch (1999). To distinguish products according to their technological content, we use the OECD classification. Thus, we generate two types to classify imported inputs:

$$u = \{\text{Differentiated, Non-Differentiated}\}$$

or alternatively,

$$u = \{\text{High-tech, low-tech}\}$$

We then perform our baseline regression distinguishing between the differential effect of export entry on new imports, depending on whether the newly imported product is different ($Diff_u$=1), or not ($Diff_u$=0) for both definitions of $u$:

$$NewOrigin_{ijut} = \beta_1 ExportEntry_{ij,t-1} + \beta_2 ExportEntry_{ij,t-1} * Diff_u + \{FE\} + \epsilon_{iujt},$$

where the vector of fixed effects includes those of our baseline regression. In this case, we are interested in estimating $\beta_2$, which captures the effect of interacting $ExportEntry$ with the type of import.

Results are reported in table 9. We can observe that the effect of export entry on the probability of start importing is remarkably higher when the newly imported input is differentiated (columns 1 and 2). We arrive to a similar conclusions if we focus on technology differentiation of thew newly imported input (columns 3 and 4).

Table 9: Product specificity: stronger effect for differentiated and med-high tech inputs

| | $NewOrigin_{ijut}$ | | | |
|---|---|---|---|---|
| | Product Differentiation (Rauch) | | Technology Differentiation (OECD) | |
| $ExportEntry_{ijt-1}$ | 0.001* | 0.002** | 0.003* | 0.002 |
| | (0.001) | (0.001) | (0.002) | (0.002) |
| $ExportEntry_{ijt-1} * Diff_u$ | 0.014*** | 0.014*** | 0.011*** | 0.010*** |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| $log(labor)_{it}$ | 0.009*** | | 0.009*** | |
| | (0.001) | | (0.001) | |
| Observations | 1,139,030 | 1,139,030 | 1,139,030 | 1,139,030 |
| R-squared | 0.271 | 0.324 | 0.269 | 0.322 |
| Firm-Market-Diff FE | yes | yes | yes | yes |
| Market-Year-Diff FE | yes | yes | yes | yes |
| Firm-Year-Diff FE | no | yes | no | yes |

The dataset is at the firm-market-year-differentiated level. Diff takes value 1 for differentiated inputs. Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5% and 10% respectively.

### 5.3 Importing after exporting does not require export survival

Finally, a more clear-cut distinction is given by observing that operational cost complementarity in exporting and importing requires both activities to be carried out simultaneously. In contrast, if the effect is driven by the experience channel, the information acquired about suppliers may last,

regardless on whether the firm continues serving the market or not. We explore whether the effect of export entry on new imports depends on the firm survival in the export market.[24] Formally, we begin by estimating the following version of equation 1,

$$NewOrigin_{ijt} = \alpha_1 ExportEntry_{ij,t-1} + \alpha_2 Exporter_{ijt} + \alpha_3 ExportEntry_{ij,t-1} * Exporter_{ijt} + \{FE\} + \mu_{ijt},$$

where $Exporter_{ijt}$ is an indicator that takes value one if the firm exports positive amount to market $j$ in year $t$. The key parameter is $\alpha_3$, which indicates how relevant is export survival for our main fact. If the effect is related to complementarity in operational costs, then we expect a statistically significant estimate for the interaction term, indicating that export survival is required. In contrast, if the effect operates through the reduction in informational costs through export experience, then the interaction term would not be relevant. As we report in Table 10, consistent with the learning channel, surviving in the export market is not required to trigger new sourcing after export entry.

Table 10: Does the persistence of the export relationship matters?

| | $Pr[NewOrigin_{ijt} = 1]$ | |
|---|---|---|
| $ExportEntry_{ijt-1}$ | 0.014*** | 0.016*** |
| | (0.003) | (0.003) |
| $Exporter_{ijt}$ | 0.008*** | 0.006*** |
| | (0.002) | (0.002) |
| $Export\ Entry_{ijt-1} * Exporter_{ijt}$ | **0.001** | **-0.004** |
| | **(0.005)** | **(0.005)** |
| $log(labor)_{it}$ | 0.012*** | |
| | (0.001) | |
| Observations | 582,503 | 582,503 |
| R-squared | 0.358 | 0.452 |
| Firm-Market FE | yes | yes |
| Year-Market FE | yes | yes |
| Firm-Year FE | no | yes |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5% and 10% respectively.

[24] We exploit variability coming from the fact that a considerable number firms exit the export market just after export entry (see Table A3 of the Appendix).

# 6 Backing up Fixed costs and Fixed cost savings G

According to our model, our findings reflect the effect of export entry on import sourcing through a reduction in the fixed cost of importing. Although, unfortunately, unobservable, we can provide an approximation of the fixed costs of importing and estimate the savings in import costs associated with recently acquired experience in a new export destination.

The estimation strategy requires the additional assumption of time being continuous. This implies that a firm starts to import from a new source as soon as the gains from importing hit the fixed costs threshold of importing from that market. Thus, the fixed cost of sourcing from market $j$ can be approximated by the variation in firm's total revenues between $t-1$ to $t$ at the moment the firm starts importing from $j$, controlling from new operations in other markets. As in the data time is discrete, the change in revenues at entry is an upper bound for the firm fixed costs of importing. Another source of bias comes from the fact that realized revenues depend on decisions taken after export entry. For these reasons, the main aim of this exercise is to approximate the average percentage savings on import fixed costs for firms with recent export experience, while putting less emphasis on the levels of fixed costs.

As in the model, we let fixed costs depend on firm's previous status as exporter in a given market. Hence, by comparing the fixed costs for firms with no previous export experience in a market and for firms that started to export the year before starting to import, we can infer the magnitude of the fixed cost savings function $g(.)$ (see equation 5).

Formally, normalize to $g(0)=1$ the cost savings when the firm has no export experience and recall that $g'(.)<0$ is decreasing with experience in a market. For simplicity, we suppress the product $k$ dimension and write fixed costs of importing from $j$ as $\kappa_j$. Now consider a firm that starts importing from market $j$ in year $t$.

The difference in revenues before and after sourcing from a new market is given by:

$$R_{it}\left(\varphi_{it},\Omega_{it}^{X*},\Omega_{it-1}\cup j\right)-R_{it-1}\left(\varphi_{it-1},\Omega_{it-1}^{X*},\Omega_{it-1}\right)=(1-\mathbb{I}_{jt-1}^{X})\kappa_j+\mathbb{I}_{jt-1}^{X}\text{`}\kappa_j g(.),$$

where we denote $\Omega_{it-1}\cup j$ the subset that combines the sourcing strategy of previous period with sourcing from market $j$. The equation above suggest that the cost savings can be estimated by comparing the change in revenues for a firm that starts to import after export entry (denoted by $MaX$) and a similar firm that starts to import, with no export experience ($No-MaX$).[25] Taking logs and rearranging,

[25]Since the first value of export at entry is usually low, results remain almost unchanged if we include or not the value of exports to $j$. Here we present results excluding the amount of exports to $j$.

$$lng(.) = log \frac{\left[R_{it}\left(\varphi_{it}, \Omega_{it}^{X*}, \Omega_{it-1} \cup j\right) - R_{it-1}\left(\varphi_{it-1}, \Omega_{it-1}^{X*}, \Omega_{it-1}\right)\right]^{MAX}}{\left[R_{it}\left(\varphi_{it}, \Omega_{it}^{X*}, \Omega_{it-1} \cup j\right) - R_{it-1}\left(\varphi_{it-1}, \Omega_{it-1}^{X*}, \Omega_{it-1}\right)\right]^{No-MAX}},$$

which can be estimated by the following linear model:

$$log\left(Exports_{it} - Exports_{it-1}\right) = \beta ExportEntry_{ijt-1} + X_{it} + \gamma_i + \gamma_{sjt} + \epsilon_{ijt}, \text{for } NewOrigin_{ijt} = 1.$$

We include market-year-sector fixed effects and control for different sourcing strategies by including the number of previous sources of the firm. The estimate $\beta$ approximates the savings in import costs due to learning: $\beta = ln(g(.))$.

As shown in Table A11 of the appendix, the coefficient of the regression is $-0.50$ and it is statistically significant at the 1%. We predict the outcome value for new importers and summarize the main estimations in Table 11. The median firm fixed cost of importing is $50,000$ dollars. However, previous export entry reduces these costs by a factor of $1 - g(.) = 0.46$, leading to a fixed cost of $26,700$ dollars for firms that start importing after export entry. The estimated values are within the range $(15,000; 60,000)$ estimated in Antras, Fort, and Tintelnot (2017) and contrast well with Halpern, Koren, and Szeidl (2015), where fixed costs of importing for local firms are compared to those for foreign firms in Hungary. According to their estimates, foreign firms pay 60% lower fixed costs of importing than local firms. Our findings suggest that the information acquired about suppliers after export entry reduces fixed costs by 50%. Notably, we find that the entire distribution of import fixed costs is below for firms that enter the export market before starting to import.

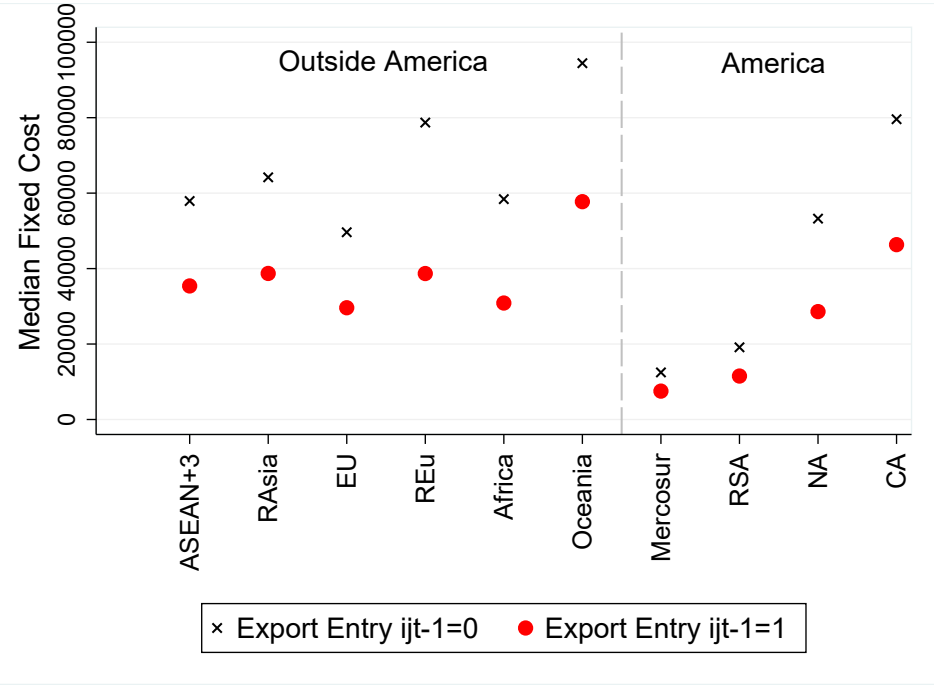
Table 11: Fixed costs and Fixed Costs savings

| Percentile | Fixed Cost | | g(.) |
|---|---|---|---|
| of Fixed Cost | $ExportEntry_{ijt-1} = 0$ | $ExportEntry_{ijt-1} = 1$ | |
| 10th | 14264.93 | 6966.60 | 0.49 |
| 25th | 36870.61 | 11107.93 | 0.30 |
| 50th | 49636.65 | 26663.95 | 0.54 |
| 75th | 71124.48 | 36730.27 | 0.52 |
| 90th | 91817.04 | 51351.67 | 0.56 |

As a further exploration, we can replicate the previous exercise by market, and estimate the fixed cost of importing depending on whether the firm has started to export to that market the previous year or not. We report the median fixed costs in each market in Figure 2. First, as expected, fixed costs are lower for nearer markets. For instance, while the fixed cost of importing from Mercosur

for a median firm with no export experience is 15,000 dollars, the fixed cost of importing from Rest of Asia is around 62,000 dollars. Second, we confirm once again that export entry reduces import fixed costs in every market. Interestingly, fixed costs savings are systematically higher in markets outside the American continent.

Figure 2: Median fixed cost of importing by export experience previous year




We conclude that importing after exporting bear important quantitative implications. Firms that start importing to a market with recent export experience are more persistent as importers after exporting pay about 50% lower fixed costs.

## 7 Implications

Our findings emphasize the complexity of the importing activities. Acquiring export experience generates information about import sources, which facilitates the process of finding import sources. On this ground, our findings highlight the relevance of informational barriers that firms face to importing and how exporting may help firms overcome these barriers. However, import cost savings associated with exporting have broader implications. In this section, we discuss some of them.

First, interpreting the findings of this paper through the lens of our model suggests that the effect of acquiring export experience is higher for relatively unknown and differentiated import varieties. In this sense, new export markets become a channel through which firms improve input quality and production efficiency.

Second, as recent export experience informs new sourcing relationships, it is possible to hypoth-

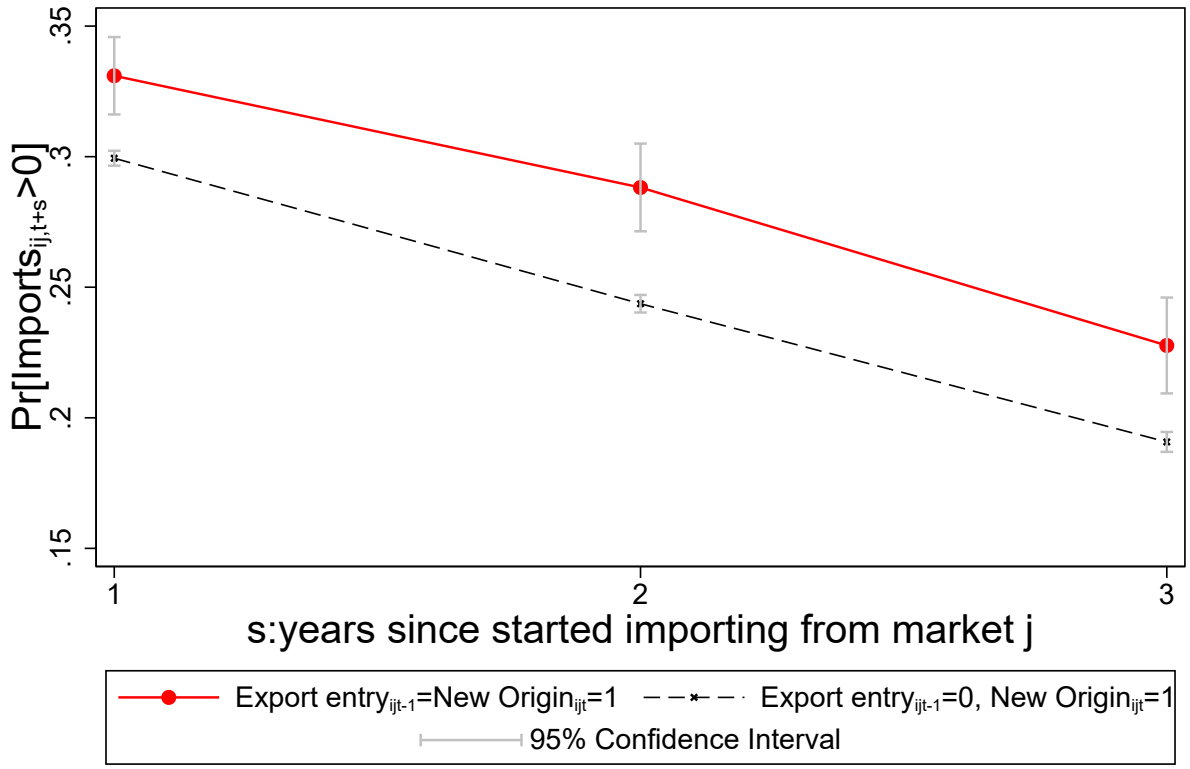
esize that a better informed matching between importers and suppliers generates longer trading relationships, which should be reflected in higher survival rates.[26] Intuitively, export entry provides firms with experience to resolve part of their uncertainty about suppliers. As sourcing is decided with more accurate information, we expect new import relationships after export entry in a market to last longer. To test this implication, we compare the likelihood of being active in an import market for firms that start importing after export entry in the same market, relative to firms that start importing with no previous export experience in that market. Formally,

$$Import\ Status_{ij,t+s} = \beta_1 NewOrigin_{ij,t} + \beta_2 NewOrigin_{ij,t} * ExportEntry_{ij,t-1} + \delta_{ij} + \delta_{jt} + \delta_{it} + \epsilon_{ijt}$$

for $s = \{1, 2, 3\}$, where $s$ denotes years after the initial year of importing from $j$. We report $\beta_1$ and $\beta_1 + \beta 2$ for different values of $s$ in Figure 3. We can observe that one year after start sourcing from a market, a firm is 11% more likely to remain active as importer in those markets where the firm started to import after export entry. This difference remains stable even 3 years after the import entry.

[26] For example, Besedeš (2008) shows that duration of relationships increases for more reliable suppliers.

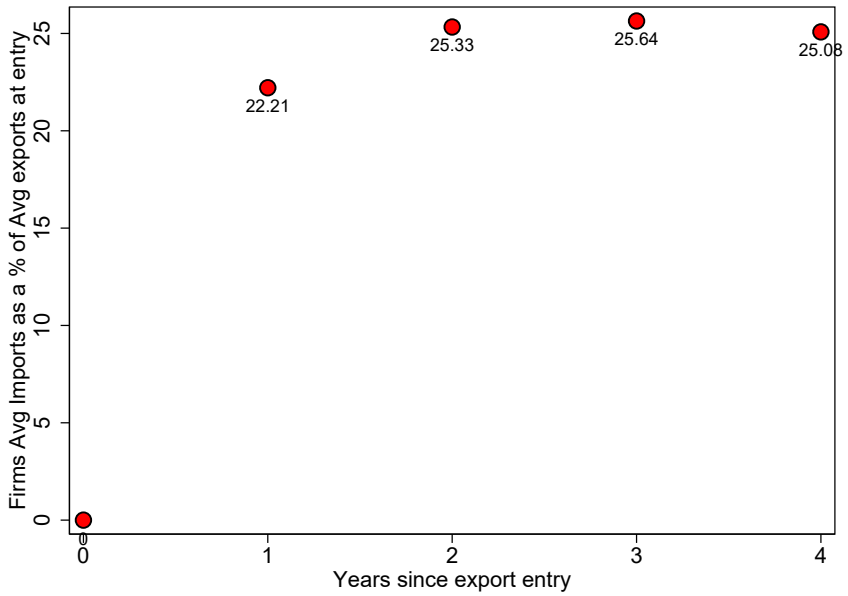
Figure 3: Importers after exporting are more likely to be active in the import market in the following years




Notes: we report estimations of $\beta_1$ and $\beta_1 + \beta 2$ for different values of $s$ according to equation 7 including firm-market, market-year and firm-year fixed effects.

Third, importing after exporting has an effect on trade balances. In figure 4, we focus on firms that start importing after exporting and report the total amount of imports from market $j$ as a percentage of total exports to that market at the moment of entry. According to our calculations, one year after entering a new destination, total imports from market $j$ account for 22% of exports to market $j$ at entry. As expected, this new flow of imports generated after export entry continues over time. This entails implications for policy. For example, if export promotion policies were motivated by the goal of reducing trade imbalances, our findings warn against the effectiveness of this policy. On the other hand, the fact that export entry generates knowledge about suppliers serves as a novel rationale for export promotion, since better inputs are associated with higher productivity or many other positive attributes.

Figure 4: Average imports as a % of Average Exports at the moment of entry to market $j$




Sub-sample of firms that start importing after exporting.

Taken together, a substantial part of new exports is translated on new imports from that market within a year. In addition import relations that are established after having exported to a market involve relatively unknown and differentiated inputs and are more likely to persist overtime.

## 8 Further discussion on alternative explanations

To conclude the exhaustive examination of alternative explanations we briefly explore two other potential channels: i) Market-specific similarity in import and export entry thresholds; and ii) Customization.

i) **Market-specific similarity in entry thresholds for exporting and importing:** Despite including firm-year fixed effects to control for firm specific changes in productivity and showing that exporting only affects the probability of importing from the same market, there is still a remaining possibility that productivity shocks affect the probability for a firm of exporting to and importing from the same market. Consider, for instance, a world in which firm's productivity in each foreign market follows a geometric Brownian motion (As in Albornoz, Fanelli, and Hallak (2016), Arkolakis, Papageorgiou, and Timoshenko (2018)). For this to generate new imports after new exports from the same market, we would need, at least, two conditions to hold:

   (a) The threshold of export entry to market $j$ is lower than the threshold of import entry to

market $j$.

(b) The threshold to start exporting to market $j$ is similar to the threshold to start importing from market $j$.

The first condition is necessary to explain that importing from $j$ happens after exporting to $j$. The second condition would be necessary to observe importing after exporting from the same market, and not from others, even in absence of fixed costs savings after export entry.

We provide evidence that these conditions do not hold in the data. First, recall that we include market-year fixed effects in our preferred specification. This would rule out firm-invariant variability across markets in any given year; which eliminates potential issues related to a market being, on average, easier to reach by Argentinian firms. Second, we also control for firm-market fixed effects. These fixed-effects address concerns related to some firms being more likely to trade in a specific market; such as a firm having a lower threshold to entry as exporter and importer in Mercosur markets. Third, similar import and export entry thresholds implies that, on average, the easiest export destination markets should also be the easiest markets to source from. Also, similar thresholds implies that firms that begin serving and sourcing from a market have similar characteristics. We test this in two ways. First, in Table 12, we display the average number of export (import) markets to (from) where the firm was exporting (importing) before it started to export (import) to (from) a new market. This orders import and export markets according to how hard it is to reach them. We can observe that the hierarchy of markets based on export entry is very different to the one based on new sourcing. This suggests that the import and export entry thresholds of a given market differ. For example, on average, before reaching ASEAN+3 as exporter, a firm usually exports to 3.3 other markets (ranked 6th). In contrast, firms that import from ASEAN+3 only need to import from 1.2 markets before starting to source from there (ranked 3rd). Second, we rank the firms according to their size (number of employees) at the moment of reaching a new destination or at the moment of start sourcing from a new origin. In Table 13 we report the results. Reassuringly, we observe a pattern similar to the one stated in table 12. We also observe that the average size when the firm enters as exporter to a market is remarkably different to the average size when the firm enters as importer; suggesting that the import and export entry thresholds differ. For instance, firms with an average of 53 employees are able to source from UE, while firms with 129 employees are able to reach UE as exporters.[27]

[27] Rankings are similar if we approximate size with total exports.

Table 12: Previous exportimport market experience when a firm reaches a market

| Rank | New exporter to | # of previous export markets | Rank | New importer from | # of previous import markets |
|---|---|---|---|---|---|
| 1 | Mercosur | 0.71 | 1 | Mercosur | 0.71 |
| 2 | RAme | 0.74 | 2 | UE | 1.10 |
| 3 | NA | 1.86 | 3 | ASEAN | 1.22 |
| 4 | UE | 1.99 | 4 | NA | 1.25 |
| 5 | CentralAm | 2.52 | 5 | RAsia | 1.91 |
| 6 | ASEAN | 3.30 | 6 | RAme | 2.25 |
| 7 | RAsia | 3.32 | 7 | REuropa | 2.63 |
| 8 | REuropa | 3.40 | 8 | Africa | 3.78 |
| 9 | Africa | 3.60 | 9 | Aus | 4.07 |
| 10 | Aus | 4.24 | 10 | CentralAm | 4.16 |

Table 13: Employment when a firm reaches a new market

| Rank | New exporter to | # of workers | Rank | New importer from | # of workers |
|---|---|---|---|---|---|
| 1 | Merc | 43.8 | 1 | EU | 53.5 |
| 2 | RSA | 47.7 | 2 | Merc | 73.1 |
| 3 | NA | 98.7 | 3 | NA | 75.2 |
| 4 | CA | 121.3 | 4 | ASEAN+3 | 80.8 |
| 5 | EU | 129.8 | 5 | RAsia | 109.6 |
| 6 | REu | 168 | 6 | RSA | 154.4 |
| 7 | RAsia | 189.1 | 7 | REu | 166.3 |
| 8 | Africa | 193.9 | 8 | Africa | 311.9 |
| 9 | ASEAN+3 | 215.8 | 9 | CA | 357.1 |
| https://www.overleaf.com/16063791hzbdzkymvdxg 10 | Aus | 241.9 | 10 | Aus | 370.9 |

Given the observed patterns, we can fairly discard the possibility that the observed sequence of a new export destination becoming a new import source be due to a systematic association between export and import entry threshold at the market level.

ii) **Customization:** Finally, is is possible that, in order to export to a market, firms need to adapt their product by importing from that market. However, customization hypothesis does not seem to fit with the patterns documented in our paper. First, it is hard to explain the sequential pattern of importing after exporting. Second, and more importantly, we show that importing after exporting does not require survival in the export market. This implies that

the newly imported input from market $j$ is used by the firm to produce a final good for many markets and not specifically for the export market $j$.

# 9 Conclusion

In this paper, we document a novel fact about the interrelationship between exporting and importing. Exporting to a specific market increases the probability of importing from that market within a year. We develop a framework, where firms take decisions on exporting and importing that accounts for different aspects of import behavior and allows us to rationalize this fact, clarify the main driving mechanisms and establish its main qualitative and quantitative implications.

Our findings emphasize the complexity of the importing activities. Acquiring export experience generates information about import sources, which facilitates the process of finding import sources. Exporters reaching a new market gain knowledge about potential suppliers. This reduces the informational costs associated with potential import sources. We develop a framework where we can study export and import decisions at the firm level. We derive qualitative implications of export entry on exporting shedding new light on import behavior. Importing is not a perfectly informed activity and requires knowledge about available inputs and potential suppliers. This knowledge is not readily available and depends on the firm's experience in foreign markets. Discovering new export markets provides this experience. We estimate the import cost savings associated with export entry; which are about 50% and increase in markets beyond the Americas.

Questions for future research on exporting and importing include the effect on productivity and exports after better informed import decisions, and also further exploration of the implications of export promotion policies.

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# A Appendix

## A.1 Descriptive statistics

### A.1.1 Main sources / destinations within regions

Table A1: Main sources within regions

| ASEAN+3 | % | Rasia | % | EU | % | Reu | % | Africa | % | AUS | % | Merc | % | RSA | % | NA | % | CA | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHN | 59 | IND | 47 | DEU | 29 | RUS | 54 | ZAF | 48 | AUS | 66 | BR | 95 | CHL | 59 | USA | 96 | CRI | 68 |
| JPN | 14 | TWN | 28 | ITA | 20 | UKR | 7 | MAR | 18 | NZL | 34 | URU | 4 | MEX | 29 | CAN | 4 | BHS | 11 |
| KOR | 11 | PAK | 9 | ESP | 14 | ISR | 11 | EGY | 15 | | | PRY | 1 | VEN | 2 | | | GTM | 9 |
| | | | | FRA | 13 | | | | | | | | | PER | 6 | | | | |
| | | | | GBR | 6 | | | | | | | | | | | | | | |

Table A2: Main destinations within regions

| ASEAN+3 | % | Rasia | % | EU | % | Reu | % | Africa | % | AUS | % | Merc | % | RSA | % | NA | % | CA | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHN | 66 | IND | 44 | DEU | 13 | RUS | 37 | ZAF | 20 | AUS | 90 | BR | 84 | CHL | 38 | USA | 91 | CRI | 11 |
| JPN | 12 | TWN | 10 | ITA | 14 | SVL | 12 | MAR | 10 | NZL | 9 | URU | 7 | MEX | 24 | CAN | 9 | PAN | 12 |
| KOR | 8 | PAK | 10 | ESP | 16 | ISR | 11 | EGY | 20 | | | PRY | 9 | VEN | 13 | | | GTM | 20 |
| | | | | FRA | 11 | | | | | | | | | PER | 9 | | | DOM | 23 |
| | | | | GBR | 9 | | | | | | | | | | | | | | |

### A.1.2 Variability in type of export-market relation

We classify firm-market exports into 4 categories: Continuers, Exiters, Entrants and Re-entrants. Continuers are firms that export to a market in t and t-1. Exiters are firms that export to a market in $t-1$, but not in $t$. Entrants are firms that export to a market in $t$, but were not exporting to that market in $t-1$ and in any previous year. Finally, there is a considerable number of re-entrants: firms that exported to a market at $t-2$ or before, did not export in $t-1$ and export again in $t$. We summarize the number of firm-market combinations for each of this categories in Table A3. We can observe that around 25% of export entries into a market are explained by re-entrants.

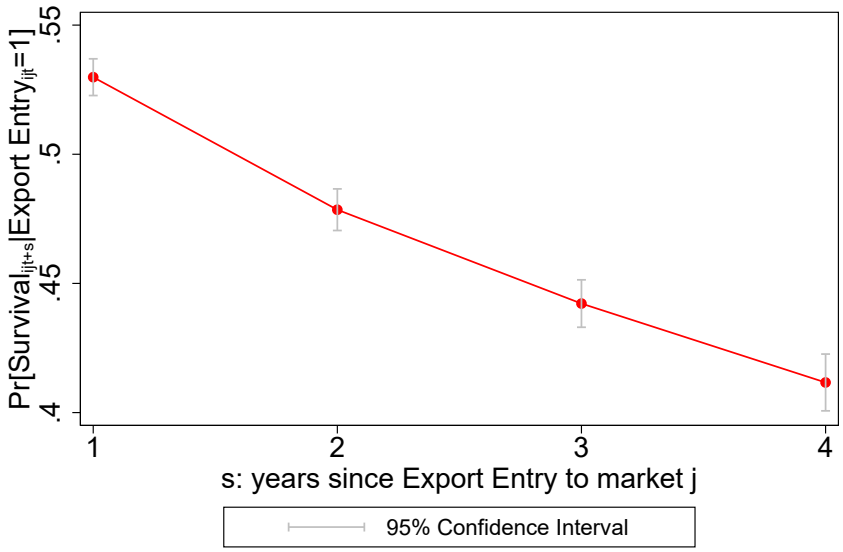
Table A3: Descriptive: Exporters

| *Year* | *Exporters* | *Continuers* | *Exiters* | *Entrants* | *Reentrants* |
|---|---|---|---|---|---|
| 2002 | 10441 | 0 | 0 | 0 | 0 |
| 2003 | 12137 | 8318 | 2123 | 3819 | 0 |
| 2004 | 13068 | 9643 | 2494 | 3425 | 0 |
| 2005 | 14763 | 10745 | 2323 | 3567 | 451 |
| 2006 | 14806 | 11365 | 3398 | 2752 | 689 |
| 2007 | 15123 | 11680 | 3126 | 2384 | 1059 |
| 2008 | 15797 | 11724 | 3399 | 2963 | 1110 |
| 2009 | 14420 | 11512 | 4285 | 1765 | 1143 |

Exporter count the number of active markets for the firms in year $t$. Continuers are firm-markets for which the firms exported in $t-1$ and also export in $t$. Exiters are firm-markets that exported in $t-1$, but not in $t$. Entrants are the number of markets for which the firms never exported and export in t. Re-entrants the are the number of markets for which the firms did not export in $t-1$, but exported before that and re entry at $t$.

### A.1.3 Survival profile after reaching a new destination

Figure A1: Survival profile after export entry into $j$




### A.1.4 Descriptive: variability in type of importer

Similarly, we summarize information by type of importer.

Table A4: Descriptive: Importers

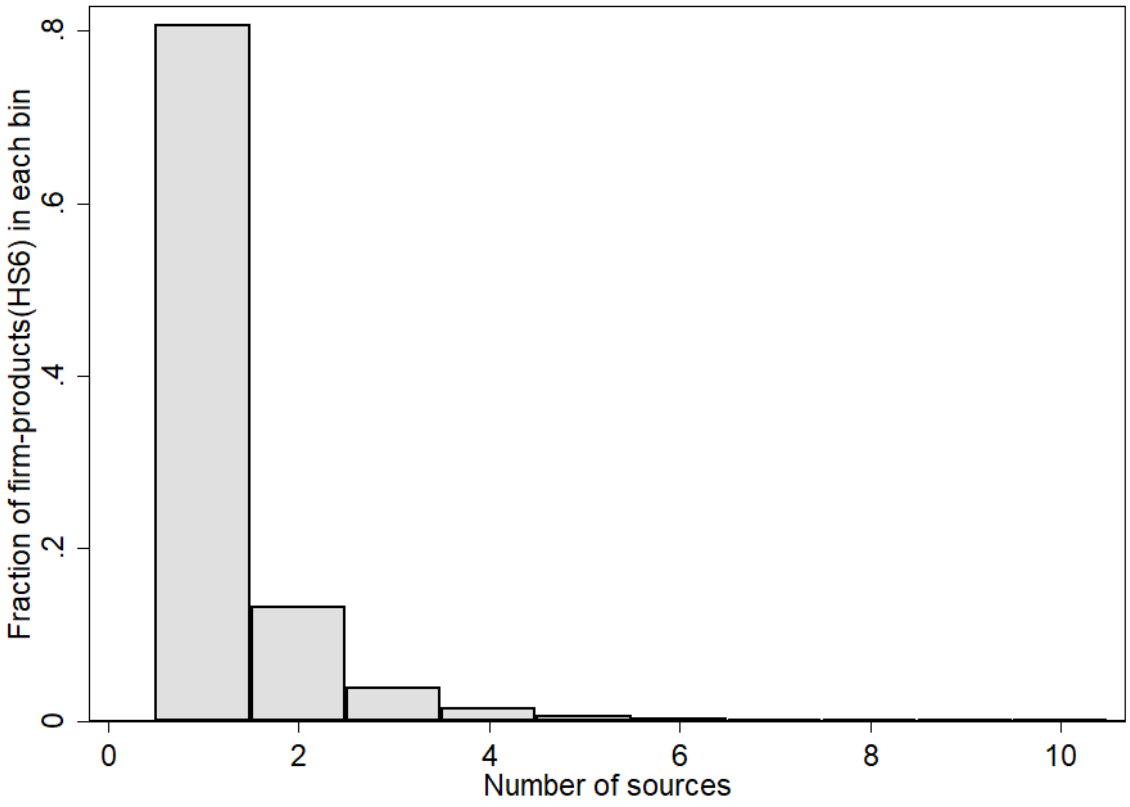
| *Year* | *Importers* | *Continuers* | *Exiters* | *Entrants* |
|---|---|---|---|---|
| 2002 | 9365 | 0 | 0 | 0 |
| 2003 | 12352 | 7188 | 2177 | 5164 |
| 2004 | 13930 | 9165 | 3187 | 4765 |
| 2005 | 15255 | 10202 | 3728 | 5053 |
| 2006 | 16166 | 11096 | 4159 | 5070 |
| 2007 | 16372 | 11666 | 4500 | 4706 |
| 2008 | 16999 | 12116 | 4256 | 4883 |

Importers count the number of active markets for the firms in year $t$. Continuers are firm-markets for which the firms imported in $t-1$ and also import in $t$. Exiters are firm-markets that imported in $t-1$, but not in $t$. Entrants are the number of markets from which the firms never imported and start to import in t.

## A.2 Theoretical Framework Appendix

### A.2.1 Most of the firms import a given product (hs6 digits) from only one source

Figure A2: Most of the firms import a given product from only one source




### A.2.2 Do firms internalize the effect of exporting on importing?

The main prediction of a model in which we let firms anticipate the effect is that the cutoff to start exporting to a market would be lower. Given that exporting has indirect gains through possible import costs savings in the future, firms might find profitable to enter to a market with lower revenues.

To test this, we compare export values when a firm start to export to a market for two types of firms. By comparing these two types of firms, we assess whether firms internalize the effect of exports on the probability of importing. The first group are firms that start exporting to a market from where they haven't imported. The second group are firms that start exporting to a market where they already import. Intuitively, for the first group start exporting to market $j$ increases the probability of importing from there in the future. In contrast, the second group has no indirect gains from exporting. Therefore, if firms anticipate that exporting might lead to importing, we

expect the amount of exports to market $j$ at the moment of entry to be lower for the first group. Results are reported in Table A5. We demeaned the variables by market-year-industry and include different combinations of fixed effects in order to compare amount of exports to market $j$ at the moment of entry: a) across firms with similar characteristics (column 1); b) within a firm, across markets and years (column 2); and c) within a firm-year, across markets (column 3). Throughout the specifications, we find no conclusive evidence of firms changing their export decisions in order to internalize the effect on the probability of importing in the future.

Table A5: Does firms anticipate the effect of exporting on importing?

| | (1) | (2) | (3) |
|---|---|---|---|
| | $log(Exports)_{ijt-1}$ | | |
| $Imported\ Before_{ijt-1}$ | -0.081 | -0.093 | -0.068 |
| | (0.056) | (0.067) | (0.111) |
| Observations | 16,894 | 13,900 | 5,582 |
| R-squared | 0.265 | 0.629 | 0.761 |
| Firm FE | no | yes | yes |
| Firm-Year FE | no | no | yes |
| Market-Year-Sector FE | yes | yes | yes |
| Controls | yes | yes | yes |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

### A.2.3 Proofs

**Proof: proposition 1.1.A** Assume a fixed costs draw $\kappa = \{\kappa_d, \kappa_1, ..., \kappa_{j^*}, ..., \kappa_m\}$ such that the firm optimal sourcing strategy ($\Omega_{-j^*}$) does not include market $j^*$. Also assume that the optimal export strategy does not include $j^*$ ($\Omega^X_{-j^*}$).

By definition, we know that the optimal sourcing strategy ($\Omega_{-j^*}$) yields higher benefits than $\Omega_{j^*}$ for any strategy that contains $j^*$ as a sourcing market. This implies:

$$\frac{R(\Omega_{-j^*}, \varphi, \Omega^{X*}_{-j^*})}{\sigma}\left\{\left[\frac{c(\Omega_{-j*})}{c(\Omega_{j^*})}\right]^{\sigma-1} - 1\right\} < \sum_{(j,k)\in\Omega_{j^*}} \kappa_{jk} g(h_{ij}) - \sum_{(j,k)\in\Omega_{-j^*}} \kappa_{jk} g(h_{ij})$$

Now assume a shock to $\mu_{ij}$ that induces export entry to $j$. The left hand side, total revenues increase. More importantly, if $g'(h_{ij^*}) < 0$, then the right-hand side becomes smaller for any $\Omega$

that includes $j^*$. Therefore, the probability that the firm chooses a new optimal strategy $\Omega_{j^*}$ that includes source $j^*$ increases. ■

**Proof: proposition 1.1.B** Assume a fixed costs draw $\kappa = \{\kappa_d, \kappa_1, ..., \kappa_{j^*}, ..., \kappa_m\}$ such that the firm optimal sourcing strategy $(\Omega_{-j^*})$ does not include market $j^*$. Also assume that the optimal export strategy does not include $j^*$ $(\Omega^X_{-j^*})$.

Now assume export entry into $j$; such that fixed costs of the firm are now given by $\hat{F} = \{\kappa_d, \kappa_1, ..., \kappa_j, g(h_{ij^*} + \Delta h_{ij^*})\kappa_{j^*}, ..., g(h_{im}\kappa_m\}$. Given $g'(.) < 0$, fixed costs of importing from $j^*$ are now lower, while fixed costs of importing from other markets remain unchanged. Now consider a different optimal sourcing strategy that still does not include $j^*$: $\Omega'_{-j^*}$. This implies that for old fixed costs we have:

$$\frac{R(\Omega'_{-j^*}, \varphi, \Omega^{X*})}{\sigma}\left\{\left[\frac{c(\Omega'_{-j^*})}{c(\Omega_{-j^*})}\right]^{\sigma-1} - 1\right\} \leq \sum_{(j,k)\in\Omega'_{-j}} g(h_{ij})\kappa_{jk} - \sum_{(j,k)\in\Omega_{-j^*}} g(h_{ij})\kappa_{jk},$$

and for new fixed costs we have,

$$\frac{R(\Omega'_{-j^*}, \varphi, \Omega^{X*})}{\sigma}\left\{\left[\frac{c(\Omega'_{-j^*})}{c(\Omega_{-j^*})}\right]^{\sigma-1} - 1\right\} \geq \sum_{(j,k)\in\Omega'_{-j}} g(h_{ij})\kappa_{jk} - \sum_{(j,k)\in\Omega_{-j^*}} g(h_{ij})\kappa_{jk}.$$

Since $j^* \notin \Omega_{-j^*}$ and $j^* \notin \Omega'_{-j^*}$, and since there is a unique profit maximizing strategy, the two inequalities above holds only if $\Omega_{-j^*} = \Omega'_{-j^*}$. Then, if the firm does not import from $j^*$ after export entry, it does not change its sourcing strategy. ■

**Proof: Proposition 1.2.A** Assume two different draws of productivity $\varphi\prime > \varphi$. Consider two sourcing strategies $\Omega$ and $\hat{\Omega}$. Assume that $\Omega$ is optimal for a firm with productivity $\varphi$. Then, the extensive margin condition (5) implies:

$$\varphi_i^{(\sigma-1)} B_i(\Omega^{X*})\left\{\left[\frac{c(\Omega)}{c(\hat{\Omega})}\right]^{\sigma-1} - 1\right\} < \sum_{(j,k)\in\hat{\Omega}} g(h_{ij})\kappa_{jk} - \sum_{(j,k)\in\Omega} g(h_{ij})\kappa_{jk}$$

Now Consider a shock that increases the productivity from $\varphi$ to $\varphi\prime$. In order to prove the proposition, we will proceed in two steps. First, we will show that the cost function is decreasing in productivity. Second, we will show that productivity directly increase the LHS of equation above.

**Step 1:** Assume that $c(\hat{\Omega}) > c(\Omega)$. From equation above, we can see that, all else equal, the LHS becomes decreasing in productivity, since $\left\{\left[\frac{c(\Omega)}{c(\hat{\Omega})}\right]^{\sigma-1} - 1\right\} < 0$. Therefore, if a sourcing strategy $\hat{\Omega}$ has higher marginal costs and is not optimal for $\varphi$, then it is not optimal for higher

productivity $\varphi'$ either.

**Step 2:** it is straight-forward to see that there is a direct positive effect on the LHS from higher productivity.

**Step 3:** Therefore, higher productivity implies higher LHS directly and even higher LHS through changes in the sourcing strategy towards a lower cost function. Hence, higher productivity can induce the firm to select a new sourcing strategy $\hat{\Omega}$, increasing the probability of observing new imports from any different markets.

Note that it is straight-forward to show that the response of a firm to a any scale shock ($B_i(.)$) is qualitatively equivalent to the response of a firm to a productivity shock. ■

**Proof: proposition 2.A** Consider a firm with productivity $\varphi$ and a vector of fixed costs $F_i^M = \left\{\kappa_d, g(h_{ij})\kappa_{j'}, ..., g(h_{im})\kappa_m\right\}$ that optimally chooses sourcing strategy $\Omega$. The total amount of imports sourced from market $j^{'}$ is given by:

$$\sum_{j'k\in\Omega} z_{j'k} = \varphi^{\sigma-1} Y (P\rho)^{\sigma} \sum_{j'k\in\Omega} \frac{\left(\frac{\eta_{j'k}^{\beta}}{p_{j'k}}\right)^{1/1-\beta}}{c(\Omega)^{\sigma-\theta}}.$$

Now assume export entry to $j'$ such that $\hat{F_i^M} = \left\{\kappa_d, g(h_{ij'} + \Delta h_{ij'})\hat{\kappa_{j'}}, ..., g(h_{im})\kappa_m\right\}$. Note that $g'(h_{ij}) < 0 \Rightarrow g(h_{ij'} + \Delta h_{ij'})\kappa_{j'} < g(h_{ij'})\kappa_{j'}$. Assume that the fixed costs of importing from other markets remain unchanged.

1. Conditional on the sourcing strategy, it is straight-forward to show that the equation above remains unchanged with the new configuration of fixed costs.

■

**Proof: proposition 2.B** Consider a firm with productivity $\varphi$ and a vector of fixed costs $\kappa = \left\{\kappa_d, g(h_{ij'})\kappa_{j'}, ..., g(h_{im})kappa_m\right\}$ that optimally chooses sourcing strategy $\Omega$. It can be shown that firm's optimal output $y$ is given by: $y = Y\left[\frac{c(\Omega)}{P\rho}\right]^{-\sigma}\varphi^{\sigma}$. Where P is the ideal price index and $Y$ is total output. Plugging $y$ into intensive margin condition (**??**), the total amount of imports from market j' is given by:

$$\sum_{j'k\in\Omega} z_{j'k} = \varphi^{\sigma-1} Y (P\rho)^{\sigma} \sum_{j'k\in\Omega} \frac{\left(\frac{\eta_{j'k}^{\beta}}{p_{j'k}}\right)^{1/1-\beta}}{c(\Omega)^{\sigma-\theta}}.$$

Consider two different productivity draws where $\varphi^{'} > \varphi$. Given sourcing strategy $\Omega$, we define

as $Z'_{j'k}(\varphi')$ and as $Z_{j'k}(\varphi)$ the intensive margin of imports from $j'$ for a firm with productivity $\varphi'$ and $\varphi$, respectively. Furthermore, $\hat{Z}'_{j'k}$ represents the intensive margin of imports from $j'$ for a firm with optimal sourcing strategy $\hat{\Omega}$ and productivity $\varphi'$.

Conditional on the sourcing strategy ($\Omega$), provided $\sigma > 1$, it is straightforward to derive from equation above that:

$$\varphi' > \varphi \implies Z'_{j'k}(\varphi') > Z'_{j'k}(\varphi) \quad \forall (j', k) \in \Omega.$$

■

## A.3 Appendix to Empirical Analysis 3

### A.3.1 Main fact: Importing after exporting at the country level

In this section, we replicate the main estimation at the country level. We select the 30 main Argentinian partners according to aggregate level of exports and imports. These countries represent roughly 93% of total exports and imports in the manufacturing sector. Results are presented in Table A6. We can observe that results are qualitatively similar. In our preferred specification, export entry to market $j$ increases the probability of start sourcing from that market by 60% with respect to the unconditional probability.

Table A6: Probability of importing from a new destination: 30 main partners

| | $Pr[NewOrigin_{ij,t}=1]$ | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| $ExportEntry_{ijt-1}$ | 0.005*** | 0.011*** | 0.011*** | 0.011*** | 0.011*** | 0.011*** | 0.006*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| $log(Exports)_{it}$ | | | | 0.000*** | | 0.000 | |
| | | | | (0.000) | | (0.000) | |
| $log(Imports)_{it}$ | | | | 0.002*** | | 0.002*** | |
| | | | | (0.000) | | (0.000) | |
| $log(labor)_{it}$ | | | | | 0.006*** | 0.003*** | |
| | | | | | (0.001) | (0.001) | |
| Observations | 1,932,017 | 1,932,017 | 1,932,017 | 1,932,017 | 1,932,017 | 1,932,017 | 1,932,017 |
| R-squared | 0.041 | 0.335 | 0.347 | 0.354 | 0.348 | 0.354 | 0.389 |
| Mean dep variable | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
| Firm FE | yes | yes | yes | yes | yes | yes | yes |
| Year FE | yes | yes | yes | yes | yes | yes | yes |
| Market FE | yes | yes | yes | yes | yes | yes | yes |
| Firm-Market FE | no | yes | yes | yes | yes | yes | yes |
| Market-Year FE | no | no | yes | yes | yes | yes | yes |
| Firm-Year FE | no | no | no | no | no | no | yes |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5%, and 10% respectively. Columns 5 and 6 have fewer observations because we do not have data on employment for 2008.

### A.3.2 Other robustness checks

In table A7 we check the robustness of our results to other proxies for productivity and to the inclusion of sector-market-year fixed effects. In column (1) and (2) we include the growth rate of total employment, total exports and total imports of the firm. In column (3), we add sector-market-year fixed effects to our preferred specification. This fixed effects also remove shocks specific to a sector-market in a given year such as a country demand increasing in a particular sector. We observe that results remain qualitatively unchanged. Furthermore, the coefficient remains remarkably stable throughout the specifications.

Table A7: Robustness check: other proxies for productivity and sector-market trends

| | $Pr[NewOrigin_{ij,t}=1]$ | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| $ExportEntry_{ijt-1}$ | 0.017*** | 0.015*** | 0.012*** |
| | (0.002) | (0.002) | (0.003) |
| $log(labor)_{it}$ | | 0.004*** | |
| | | (0.001) | |
| $log(Exports)_{it}$ | | -0.000** | |
| | | (0.000) | |
| $log(Imports)_{it}$ | | 0.008*** | |
| | | (0.000) | |
| $\Delta log(Exports)_{it}$ | 0.000*** | 0.000*** | |
| | (0.000) | . (0.000) | |
| $\Delta log(Imports)_{it}$ | 0.003*** | -0.001*** | |
| | (0.000) | (0.000) | |
| $\Delta log(labor)_{it}$ | 0.001 | -0.000 | |
| | (0.001) | (0.001) | |
| Observations | 582,503 | 582,503 | 582,503 |
| R-squared | 0.366 | 0.380 | 0.473 |
| Firm FE | yes | yes | yes |
| Year FE | yes | yes | yes |
| Market FE | yes | yes | yes |
| Firm-Market FE | yes | yes | yes |
| Market-Year FE | yes | yes | yes |
| Market-Year-sector FE | no | no | yes |
| Firm-Year FE | no | no | yes |
| Mean dep variable | 0.027 | 0.027 | 0.027 |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5%, and 10% respectively.

In table A8 we check the robustness of our results once we condition to the sub-sample of firms that were already exporters in 2002 to at least one destination. Again, the effect remains.

Table A8: Probability of importing from a new destination: sub-sample of already exporters in 2002

| | $Pr[NewOrigin_{ij,t}=1]$ | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| $ExportEntry_{ijt-1}$ | 0.005* | 0.020*** | 0.018*** | 0.017*** | 0.018*** | 0.017*** | 0.012*** |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.004) |
| $log(Exports)_{it}$ | | | | 0.001*** | | 0.000*** | |
| | | | | (0.000) | | (0.000) | |
| $log(Imports)_{it}$ | | | | 0.006*** | | 0.006*** | |
| | | | | (0.000) | | (0.000) | |
| $log(labor)_{it}$ | | | | | 0.019*** | 0.011*** | |
| | | | | | (0.002) | (0.002) | |
| Observations | 145,693 | 141,953 | 141,953 | 141,953 | 141,953 | 141,953 | 141,406 |
| R-squared | 0.098 | 0.359 | 0.374 | 0.384 | 0.375 | 0.385 | 0.492 |
| Firm FE | yes | yes | yes | yes | yes | yes | yes |
| Year FE | yes | yes | yes | yes | yes | yes | yes |
| Market FE | yes | yes | yes | yes | yes | yes | yes |
| Firm-Market FE | no | yes | yes | yes | yes | yes | yes |
| Market-Year FE | no | no | yes | yes | yes | yes | yes |
| Firm-Year FE | no | no | no | no | no | no | yes |
| Mean dep variable | 0.0506 | 0.0506 | 0.0506 | 0.0506 | 0.0506 | 0.0506 | 0.0506 |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5%, and 10% respectively.

### A.3.3 Testing simultaneous relation

We test whether Export entry to market $j$ in a given year is associated with new imports from that market in the same year. Results are reported in table A9. We can observe that the estimated coefficient is about a third compared to our preferred specification in which we let the relation to manifest after one year. Furthermore, the significance of the effect vanishes in some of the specifications.

Table A9: Probability of importing from a new market at the same time

| | $Pr[NewOrigin_{ijt} = 1]$ | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| *Export Entry*$_{ij,t}$ | 0.013*** | 0.010*** | 0.009*** | 0.006*** | 0.002 | 0.002 | 0.005** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| log(exports) | | | | 0.000** | | 0.000 | |
| | | | | (0.000) | | (0.000) | |
| log(imports) | | | | 0.007*** | | 0.006*** | |
| | | | | (0.000) | | (0.000) | |
| log(labor) | | | | | 0.013*** | 0.007*** | |
| | | | | | (0.001) | (0.001) | |
| Mean dep variable | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 |
| Observations | 589,378 | 582,139 | 582,139 | 582,139 | 582,119 | 582,119 | 582,139 |
| R-squared | 0.074 | 0.342 | 0.357 | 0.380 | 0.409 | 0.424 | 0.469 |
| Firm FE | yes | yes | yes | yes | yes | yes | yes |
| Year FE | yes | yes | yes | yes | yes | yes | yes |
| Market FE | yes | yes | yes | yes | yes | yes | yes |
| Firm-Market FE | no | yes | yes | yes | yes | yes | yes |
| Market-Year FE | no | no | yes | yes | yes | yes | yes |
| Firm-Year FE | no | no | no | no | no | no | yes |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5%, and 10% respectively.

### A.3.4 Does new imports trigger export entry within the following year?

If the observed relationship between export entry and new sourcing is driven by common operational costs, there is no reason to think that there is a particular order in this sequence of activities. If a firm starts sourcing from $j$ the cost of exporting there fall and we should observe exporting after importing. If the driver was learning about suppliers, it is hard to establish ex-ante whether importing inputs should reveal relevant information about exporting to the new source country. Our theory is silent about what to expect regarding how importing to a market affect export entry to that market in the following year. Therefore, this is empirical question that we test for completeness. We estimate the probability of a firm starting to export to a new destination ($ExportEntry_{ij,t}$) on a indicator variable $NewOrigin_{ij,t-1}$ that takes the value of 1 if the firm started to source from market $j$ in the previous year, and our battery of fixed effects. As reported in Table A10, sourcing from a new market does not affect the probability of exporting there the following year. This fact remains both in the whole sample and also doing the estimation market

by market.

Table A10: Exporting does not follow importing in any market

| $Pr[NewDest_{ij,t}=1]$ | All | **Non-Americas Markets** | Asean | RAsia | EU | REu |
|---|---|---|---|---|---|---|
| $NewOrigin_{ij,t-1}$ | 0.001 | 0.006 | 0.003 | 0.006 | -0.001 | 0.000 |
| | (0.003) | (0.007) | (0.004) | (0.007) | (0.006) | (0.010) |
| $Pr[NewDest_{ij,t}=1]$ | | **The Americas Markets** | Mercosur | RSA | North America | CA |
| $NewOrigin_{ij,t-1}$ | | 0.000 | -0.016* | -0.011 | 0.001 | -0.012 |
| | | (0.005) | (0.010) | (0.013) | (0.007) | (0.030) |
| Firm FE | no | no | yes | yes | yes | yes |
| Year FE | yes | no | yes | yes | yes | yes |
| Firm-Region FE | yes | yes | no | no | no | no |
| Employment-proxy | yes | yes | yes | yes | yes | yes |

Standard errors in parenthesis are clustered at the firm level. ***,** and * indicates significance at the level 1%, 5% and 10% respectively.

## A.4 Appendix to Implications section

Table A11: Difference in revenues at entry to import market

| | (1) $\Delta Revenues_{it}$ | (2) $\Delta Revenues_{it}$ |
|---|---|---|
| $ExportEntry_{ijt-1}$ | -0.506*** | -0.290** |
| | (0.137) | (0.136) |
| Constant | 10.532*** | 8.997*** |
| | (0.189) | (0.207) |
| Observations | 6,858 | 8,734 |
| R-squared | 0.830 | 0.179 |
| Firm FE | yes | no |
| Year-Market-Sector FE | yes | yes |

Clustered standard errors at the firm level in parentheses

*** p<0.01, ** p<0.05, * p<0.1