Intermediaries in International Trade: margins of trade and export flows*

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Abstract

This paper examines the factors that give rise to intermediaries in exporting and explores the implications for trade volumes. The most productive manufacturing firms export directly while less productive firms export indirectly through an intermediary. Export intermediaries such as wholesalers serve different markets and export different products than manufacturing exporters. These underlying differences between direct and intermediary exporters have important consequences for trade flows. The ability of export intermediaries to overcome country and product fixed costs means that they can more easily respond along the extensive margin to external shocks. Intermediaries and direct exporters respond differently to exchange rate fluctuations both in terms of the total value of shipments and the number of products exported as well as in terms of prices and quantities. Aggregate exports to destinations with high shares of indirect exports are much less responsive to changes in the real exchange rate than are exports to countries served primarily by direct exporters.

JEL codes: D22, F12, F14, L22, L23

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1 Introduction

The growing availability of firm-level international trade data has contributed to the blooming of both theoretical and empirical literatures highlighting the importance of firm heterogeneity in aggregate trade flows. Since the initial empirical papers of Bernard and Jensen (1995, 1999), Roberts and Tybout (1997) and the theoretical models of Melitz (2003) and Bernard et al. (2003), a major focus in international trade has been on the relationship between the characteristics of producing firms, most notably productivity, and their participation in international trade. An emerging stream of research has examined differences *among* trading firms (Bernard, Jensen, Redding and Schott; 2010; Ahn et al.; 2011; Antràs and Costinot; 2011). These papers emphasize that exporters include both manufacturing firms that organize the production and distribution of their goods abroad as well as intermediaries that specialize in distribution in foreign markets.

In this paper, using newly available Italian firm-level trade data, we examine the underlying factors that give rise to exports by intermediaries and the consequences for trade volumes and the margins of adjustment to external shocks. We find that producers in the middle range of size and efficiency are the most likely to export indirectly through an intermediary. Intermediaries themselves specialize in particular destinations and sell more products in each market. In particular, relative to manufacturing exporters, intermediaries sell more to difficult markets that have higher entry costs.

The ability of intermediaries to export to markets with high entry costs has implications for their responses to aggregate shocks to profitability. Wholesale (intermediary) exporters are more likely to adjust along the extensive margin, i.e. add and drop products. In addition, the characteristics of products handled by wholesalers are different from those exported directly - they are less differentiated and have lower contract intensity. Firm-level exports respond differently for wholesale exporters and manufacturing exporters. Pass-through is lower and total export value is less responsive to exchange rate changes for wholesalers. Aggregating to the country-level, this firm-level variation results in differential changes in exports between destinations served primarily by direct and indirect exporters.

More than one quarter of Italian exporters are intermediaries and they account for over 10 percent of exports. However, there is substantial variation in the importance of intermediaries across countries and products. New Zealand and China have intermediary export shares near 9 percent (25th percentile) while Paraguay and Malawi are at the 75th percentile with shares above 23 percent.

The existence of intermediaries suggests that they overcome barriers to international trade at a lower cost than manufacturers for some range of goods and for some countries. We show that manufacturers with intermediate levels of size and productivity are more likely to use intermediaries

to export. The least productive manufacturers do not export at all and the most productive export directly.

We examine the role of both country and product characteristics in country-product exports by wholesalers and manufacturers. Intermediaries are more likely to export to smaller markets with high export entry costs.[1] In addition, the quality of the general contracting environment is related to the choice of mode of export. Exports through an intermediary are more likely when the quality of the general contracting environment of the country is weak. Intermediaries also focus on products with particular characteristics such as lower contract intensity, greater product homogeneity, and higher product-level sunk costs of exporting.

One important difference between wholesalers and manufacturers lies in their tendency to add and drop products. Intermediaries add and drop products at much higher rates than direct exporters. These firms face lower sunk costs of exporting and thus are able to adjust their extensive margin more easily.

The differences in fixed costs across destinations and products give rise to variation in response to common external shocks to profitability such as exchange rate changes. Wholesalers are better able to adjust along the extensive margin and total exports by wholesalers are less responsive to exchange rate changes. Given the big difference in the share of intermediated exports across countries and products, these firm-level results suggest that there are potentially large, predictable differences in how aggregate exports will respond to changes in the value of the domestic currency. We indeed find that the responsiveness of aggregate exports is much greater in destinations served primarily by direct exporters.

1.1 Relation to the literature

Early theoretical work on the role of intermediaries in international trade, e.g. Rauch and Watson (2004) and more recently Petropoulou (2011), models trade as an outcome of search and networks. However, several new papers in the theoretical literature on intermediaries in exporting have taken a more technological perspective based on models of heterogeneous firms (Ahn et al.; 2011; Akerman; 2010; Felbermayr and Jung; 2011).[2] In these new papers, exporting entails both fixed and variable costs. However, there is an intermediation technology which allows wholesalers to lower the per-product fixed costs and exploit economies of scope in exporting.

While all active manufacturers serve the domestic market, producing firms can potentially serve foreign markets by selling directly or using a wholesale intermediary. Producing firms sort into different export channels according to their productivity. As in the standard model of Melitz

[1] Akerman (2010), Ahn et al. (2011), and Bernard, Jensen, Redding and Schott (2010) report evidence of a greater role for intermediaries in such markets.

[2] Blum et al. (2011) and Blum et al. (2010) look the role of intermediaries largely from the perspective of the importing country while Rauch and Watson (2004) discuss when intermediary firms actually take possession of the goods.

(2003), the least productive firms serve only the domestic market while the most productive firms can export directly by incurring the fixed cost of export and any variable trade costs. A third category of firms in the middle of the productivity range chooses to export indirectly through wholesalers. We provide direct evidence on the sorting of manufacturers into these three groups.

A firm's decision regarding the mode of export is determined by variable and fixed trade costs, which in turn also depends on country and product characteristics. Countries with relatively high fixed export costs offer a great opportunity for wholesalers to intermediate trade.

The existing theoretical frameworks emphasize the interaction of producer firm heterogeneity and fixed export costs in the decision to export directly or indirectly. While these models are all static models of single-product firms, it is relatively easy to envision a dynamic extension where firms potentially make multiple products and their profitability evolves over time (see Bernard, Redding and Schott; 2010; Bernard et al.; 2011). In a dynamic environment, variation in the sunk cost of exporting across firm types leads to predictable variation in product adding and product dropping in the export market. Firms facing lower sunk costs would be more likely to both add and drop products in steady state and in the face of exogenous shocks to profitability. As intermediary exporters have lower entry costs they should be more likely to churn their export product mix.

This paper is closely related to recent empirical work by Ahn et al. (2011), Akerman (2010) and Bernard, Jensen, Redding and Schott (2010) who examine various aspects of intermediaries in exports for China, Sweden and the US, respectively.[3] All three papers examine the differences between intermediaries and firms that export directly. Bernard, Jensen, Redding and Schott (2010) find that 35 percent of US exporters are wholesalers accounting for 10 percent of exports by value. Their work emphasizes the differences in the attributes between exporters of different types. Akerman (2010) reports slightly more exporting intermediaries than manufacturers and intermediaries are smaller in terms of total turnover and especially export value, but export more products and ship to more destinations. Akerman (2010) finds that country-sector intermediary export shares increase in distance and measures of fixed costs and fall with destination GDP. In contrast with the other studies, Ahn et al. (2011) find much higher exports per firm for intermediaries than for direct exporters. Intermediaries are also active in many more products than direct exporters. Intermediary export shares are positively related to distance, tariffs and a measure of fixed costs and negatively correlated with destination GDP.

This paper builds on this growing empirical literature and extends it in a number of directions. First, we document the differences between producing exporters and intermediary exporters in terms

[3]The definition of an exporting intermediary varies across all the papers so the results are not directly comparable to each other or those presented below. Specifically, Ahn et al. (2011) define an intermediary as a firm with certain Chinese characters in its name, Akerman (2010) uses the main activity of the firm and includes both wholesalers and retailers and Bernard, Jensen, Redding and Schott (2010) distinguish between pure wholesalers, pure retailers and two types of firms that mix manufacturing with wholesaling and retailing. As discussed below we only consider firms with wholesaling as their main activity as intermediaries.

of their firm characteristics, destination and product mixes, and export values and quantities. We then examine export participation and levels by direct and intermediary exporters across countries and products and their relation to country and product characteristics. Our focus, however is on the differences between wholesale and manufacturing exporters in their response to shocks. We consider product adding and dropping, intensive and extensive margin adjustments at the firm level and their consequences for aggregate trade flows.

The rest of the paper is organized as follows: Section 2 examines the characteristics of producing firms that produce for the domestic market only, those that export indirectly through an intermediary and direct exporters. Section 3 documents differences between direct manufacturing exporters and wholesaler exporters and examines the role of country and product fixed costs on the choice of export mode. Section 4 explores product adding and dropping in the export market and the response of exports both at the firm level and in the aggregate to exchange rates shocks. Section 5 concludes.

2 Direct and Indirect Exporters

In this section we start by examining the relationship between manufacturing firm characteristics and their choice of export mode, direct or indirect. We then turn our attention to the differences between wholesale (intermediary) exporters and manufacturing exporters in the Italian data.

The Italian trade data do not contain information on the mode of export by domestic manufacturing firms. To examine the choice between direct and indirect exporting, we use the Business Environment and Enterprise Performance Survey conducted by the World Bank (BEEPS).[4]

The BEEPS data is available for a wide cross-section of countries at very different levels of development and unfortunately for our purposes does not include data on Italy. We look at the relationship between manufacturing firm size and efficiency and choice of export mode for all the countries in the sample as well as for two subsets of countries more likely to be similar to Italy. The first is the set of countries in the BEEPS data that are in the European Union.[5] The second set of countries are those with per capita income levels above the 75th percentile according to the World Bank.[6] Firm total sales are broken down in three mutually exclusive categories (that sum to 100 percent): share of national sales, share of indirect exports and share of direct exports. We group firms into those that do not export, firms that ship some or all of their goods indirectly and

[4]We consider only firms in the Manufacturing sectors. See the Appendix for a more detailed description of the BEEPS data. Table 1 in the online Technical Appendix provides the number of observations available for each country. The online Technical Appendix can be found at http://mba.tuck.dartmouth.edu/pages/faculty/andrew.bernard/IIT-Appendix.pdf

[5]The EU countries in the BEEPS data are Bulgaria, Croatia, Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Slovenia, and Spain.

[6]This high-income group consists of Argentina, Germany, Greece, Ireland, Oman, Portugal, Slovenia, Spain, and South Korea.

firms that only export directly. Across all countries, 63.5 percent of firms do not export at all, 27.0 percent of firms export directly and 9.5 percent of firms reach foreign markets using intermediaries for some or all of their exports.[7] The ability to export indirectly increases by a third the number of firms that can reach foreign markets with their goods.

We consider the prediction of the new models of intermediation and trade that firms will sort between domestic only firms, indirect exporters and direct exporters according to their underlying productive efficiency. As proxies for firm efficiency we use log total sales per employee as well as log employment and log total sales.[8]

We estimate regressions of the form

$$\ln Y_f = c + \alpha D_f^X + \beta D_f^X * Share^{Dir} + d_t + d_c + \varepsilon_i \tag{1}$$

where Y_f is the proxy for firm efficiency, D_f^X is a dummy which equals 1 if the manufacturer exports either directly or indirectly, and $D_f^X * Share^{Dir}$ an interaction of the export dummy and a direct export share variable which is 0 for pure indirect exporters and rises to 1 for pure direct exporters and d_t and d_c are year and country fixed effects. Standard errors are clustered at the firm level. The models predict positive coefficients on both the export dummy and the interaction term.

Results are reported Table 1 for all countries pooled together as well as for the subsets of EU and High Income countries. As has been reported extensively in the empirical literature, exporters are bigger in terms of employment and sales and have higher sales per employee. The differences between exporters and non-exporters are greater for the high income group.

Looking at the interaction term, we find a positive and significant coefficient in all specifications. Direct exporters are substantially larger and have higher sales per employee than indirect exporters. The sorting predictions of the model are born out in the data, suggesting that the presence of intermediaries allows less efficient producers to export their products. The EU and High Income subsets show the same overall pattern.

3 Wholesale and Manufacturing Exporters

We now turn to an examination of the exporters themselves, i.e. the wholesale firms that act as intermediaries and the manufacturers that export directly. We document the extent of intermediation in Italian exports, highlighting important stylized facts about intermediaries and showing how they differ from manufacturing firms.

[7] The share of indirect exporters is similar for both the High-Income and EU subset of countries, 7.8 and 9.4 percent respectively.

[8] We use sales because the data does not include measures of value-added.

3.1 Trade and firm data

The analysis of exports by manufacturers and wholesalers is based upon two firm-level datasets collected by the Italian statistical office (ISTAT), namely Statistiche del Commercio Estero (COE) and Archivio Statistico Imprese Attive (ASIA).[9]

The COE dataset consists of all cross-border transactions performed by Italian firms and it covers the period 2000-2007. COE includes the annual value and quantity of export transactions by the firm for product-country destination pairs.[10] A product is defined as a six digit category in the Harmonized System (HS6).

Using the unique identification code of the firm, we link the firm-level export data to ISTAT's registry of active firms, ASIA. In ASIA, firms are classified according to their main activity, as identified by ISTAT's standard codes for sectoral classification of business (5-digit ATECO). This information allows us to distinguish between four broad categories of firms: manufacturers, wholesalers, retailers, and a residual group including the remaining sectors.[11] ASIA also contains information on firms' operations including the number of employees and total turnover.[12] The combined dataset used for the analysis is not a sample but rather includes all active firms.

Table 2 reports the total value of exports and the relative share of the four broad categories of firms. A preponderance of exports, more than 85 percent of the value, is performed directly by manufacturing firms. Manufacturing exporters also represent more than 55 percent of exporting firms. The 27 percent of exporters that are wholesalers account for more than 10 percent of Italian exports in 2003. These figures are in line with those reported for the US in Bernard, Jensen, Redding and Schott (2010) where wholesalers are 35 percent of exporting firms and control just over 10 percent of US exports. As in other countries, retailers are relatively minor players in exporting, accounting for less than one percent of exports by value. As a result, the remainder of the paper focuses on the role of wholesalers as export intermediaries and uses the two terms interchangeably.

[9]This paper represents the first use of this data on Italian trade transactions at the firm level. The database has been made available for work after careful screening to avoid disclosure of individual information. The data were accessed at the ISTAT facilities in Rome.

[10]ISTAT collects data on exports based on transactions. The European Union sets a common framework of rules but leaves some flexibility to member states. A detailed description of requirements for data collection on exports in Italy is provided in the Appendix.

[11]In particular, we classify firms in sectors from 151 to 372 as manufacturers, and firms in sectors from 501 to 519 (with the exclusion of 502 which concerns the activity of repair of motor vehicles) as wholesalers. Retailers are firms in sectors 521 to 527, and Others contains the remaining sectors.

[12]Information on total turnover are available only for two years, 2000 and 2003.

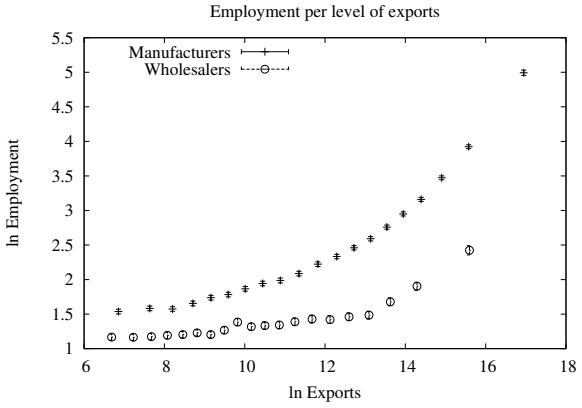

Figure 1: Relation between (log of) employment and exports, 2003. Observations are placed in 20 equally-sized bins according to the variable on x-axis. Coordinates of dots display the average of x and y variables of the data in each bin (see text).

3.2 Firm characteristics

The results compare manufacturers and wholesalers along a number of dimensions including size, the number of destination countries and the number of products exported.[13]

To quantify the differences between manufacturers and wholesalers, we estimate the following cross-sectional OLS regression,

$$\ln Y_f = c + \alpha D_f^W + \beta D_f^X + \gamma (D_f^W \cdot D_f^X) + \varepsilon_f \tag{2}$$

where $\ln Y_f$ denotes the logarithm of either total sales, number of employees, or sales per employee ratio. D_f^W is a firm-level dummy variable, one for wholesaler and zero for manufacturer; D_f^X is a dummy indicating if a firm is an exporter; and $(D_f^W * D_f^X)$ is the interaction between the two dummies and takes value of one if a firm is a wholesaler exporter and zero otherwise. The results are presented in Table 3.

As expected, manufacturers are on average larger than wholesalers, 12 percent (0.111 log points) in terms of sales and 70 percent in terms of employment, α is negative and significant in both specifications. In contrast, sales per employee are substantially higher at wholesalers. We also confirm the now-standard results that direct manufacturing exporters are dramatically larger and have higher sales per employee than manufacturers who do not export or who export indirectly, β is large, positive and significant.

Perhaps unsurprisingly, we provide the first evidence that the selection of good firms into exporting is true for wholesalers as well. Exporting wholesale firms have total sales 14.8 times

[13] In their work on US traders, Bernard, Jensen, Redding and Schott (2010) find not only that traders differ from domestic firms, but also that substantial heterogeneity exists between trading firms of different 'types'.

larger than non-exporting wholesalers and employ 2.8 times as many workers, $\beta + \gamma$ is positive and significant. Sales per employee at exporting intermediaries are 5 times higher than at non-exporters.

Looking at exports in columns 4 and 5 of Table 3, we find that the value of exports at wholesalers is much smaller than that of manufacturing exporters but that this difference largely disappears when considering exports per employee.

The results are consistent with the idea that manufacturing firms are performing two activities, the physical production of the goods and the intermediation of the goods to a downstream customer, while wholesalers are only engaged in the latter activity. This distinction is important when attempting to compare the exporting activities of wholesalers and manufacturers as the use of employment as a proxy for firm size may yield misleading comparisons. A manufacturing firm with 100 employees will typically have lower sales and exports than a wholesale firm with the same employment.

Figure 1 displays the binned relation between log exports and log employment, reporting the (log) number of employees a firm has, on average, for a certain level of exports.[14] The plot confirms that wholesalers require fewer employees to attain any given level of export value. As a consequence, we use sales-based measures as proxies for size throughout the rest of our analysis.

3.3 Product and geographic diversity

The theoretical models discussed in the introduction generally focus on the role of intermediaries in solving the fixed cost problem for specific markets. This section provides evidence on the presence of intermediaries in markets and sectors. Table 4 reports the results of the regression of the number of products exported and the number of destination markets (Products and Countries, respectively) on the firm wholesaler dummy, D_f^W, and a proxy for firm size,

$$Y_f = c + \alpha D_f^W + \beta \ln Size_f + \varepsilon_f \qquad if \quad D_f^X = 1. \tag{3}$$

The first row of Column 1 shows that, unconditionally, wholesale exporters export fewer HS6 products. However, including a control for firm size, log export value, the coefficient becomes positive and significant; exporting intermediaries are active in a wider range of products compared to similarly-sized manufacturers. In contrast, intermediaries serve fewer export markets even when adjusting for firm size. These results suggest that intermediaries are indeed able to spread country-specific fixed costs over a wider range of products.

[14] Binned plots allow for a succinct representation of the relation between two variables and avoid displaying clouds of thousands of observations. Here data are placed in 20 equally-sized bins according to their (log of) export value, and the x-coordinate displays the average of the bin. The y-coordinate is the average (log of) employment within that bin.

3.4 Intermediated exports

This section explores the relationship between country and product characteristics and exports by wholesalers and manufacturers.

3.4.1 Country level data

Firm-level trade data are complemented by country characteristics including proxies for market size and variable and fixed trade costs. For market size we use total GDP from the World Bank World Development Indicators database.

We create two measures of country-level fixed costs. To generate a proxy for the market-specific fixed costs of exporting to a country, we use information on three measures from the World Bank *Doing Business* dataset: *number of documents for importing, cost of importing* and *time to import* (Djankov et al.; 2010). Given the high level of correlation between these variables, we use the primary factor (*Market Costs*) derived from principal component analysis as that factor accounts for most of the variance contained in the original indicators (see Table A1 in Appendix).

The second measure of country-level fixed costs relates to the quality of governance and contracting. Data on the contracting environment are available from a variety of sources, e.g. World Bank, Heritage Foundation, and Transparency International. To proxy for institutional quality we use information from the six variables in the World Bank's *Governance* dataset (Kaufman et al.; 2009): *Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law*, and *Control of Corruption*. As these six measures are highly correlated, we again use the primary factor obtained from principal component analysis, *Governance*, as the proxy for country governance quality.[15] If firms must invest in fixed resources to export to countries with weaker contracting environments, one would expect better *Governance* to be associated with lower intermediary export shares.

Variable trade costs may be either due to policy barriers, such as tariffs and non-tariff barriers, or to the cost of moving goods across borders, such as transportation costs. Following the large gravity literature, transportation costs are proxied by geographic distance calculated using the great circle formula (de Sousa et al.; 2012). In order to account for the effect of policy barriers on the presence of intermediaries and manufacturers we also use HS6 product-country import tariffs, taken from World Integrated Trade System (WITS).[16]

[15] Table A2 in Appendix reports the results of the principal component analysis for the governance measure.

[16] WITS contains the TRAINS database on bilateral tariffs at the six-digit level of the Harmonized System (HS) product classification for about 5,000 products and 200 countries. TRAINS provides information on four different type of tariffs: Most-Favored National Tariffs (MFN), Preferential Tariffs (PRF), Bound Tariffs (BND), and the effectively applied tariffs (AHS). We use the AHS tariff in the empirical analysis. The AHS tariff is the MFN Applied tariff, unless a preferential tariff exists.

3.4.2 Product level data

In addition to country attributes, we consider both product characteristics that are related to the specificity of the product and those more generally related to market structure.

Wholesale exporters should handle products where the direct interaction between producers and customers is less important. If goods with higher relation-specificity have relatively larger product-country fixed costs of exporting, the share of direct exports is likely to be greater. Transactions involving complex goods, whose production process is intensive in the use of highly specialized and customized inputs, may require specific knowledge and tasks because of the effort associated with the identification of potential customers, more detailed contracts, post-sale service, etc. For those goods, the product-market component of fixed costs is relatively large and such goods are more likely to be exported directly by the firms that produce them.

We use a measure of industry contract intensity developed by Nunn (2007) to measure the importance of relationship-specific investment in intermediate inputs across industries. Nunn's original data, corresponding to US I-O industries, is concorded to HS6 products.[17] Industries that require more relationship-specific investments are expected to be less easily served by intermediaries as the product-market component of fixed costs is relatively large.

On the contrary, the indirect mode of export would prevail if the traded good does not require a relation-specific investment, as for commoditized products. This prediction is in line with the hypothesis put forward by Peng and Ilinitch (2001) "the higher the commodity content of the product, the more likely that export intermediaries will be selected by manufacturers".

In order to account for differentiation within a HS6 product class we employ the coefficient of price dispersion (Ahn et al.; 2011).[18] Lower price dispersion is assumed to be associated with more homogeneous products. For homogeneous products, the product-market component of fixed costs will be lower and thus it is more likely that the export transactions will be carried out by an intermediary.

The ease with which firms can start and stop exporting a product is directly related to product-level sunk export costs. Products that have higher sunk costs of entry are more likely to be handled by intermediaries. We adapt a measure of product-level sunk entry costs developed by Bernard and Jensen (2007) to the export market. In steady state, a product with high sunk costs of entry into export markets should have a low entry rate and an equally low exit rate. During transitions between steady states, either the entry rate (expanding product) or the exit rate (shrinking product) may be unusually high. However, the minimum of the two rates should still correspond to steady-state entry or exit. We calculate the minimum of the firm-level export entry and exit rates for each

[17] See the Data Appendix for a description of the concordance procedure.

[18] The coefficient of price variation is computed on COE data as the coefficient of variation in the unit values of any of the HS6 products across all firm-product-country transactions. In the empirical analysis we use data from 2003, but the product ranking in terms of price dispersion does not vary much over the years.

product, min(entry, exit).[19] A higher minimum level of entry and exit indicates lower sunk costs of exporting and a lower likelihood that the product will be exported through an intermediary.

3.4.3 Country and product outcomes

In this section we examine the relationship between country and product characteristics and export levels by wholesalers and manufacturers. Exports by wholesaler are expected to be more prevalent in difficult markets characterized by high costs of entry and small relative size and in more homogeneous products with low relation-specificity and high sunk export costs.[20] For this and all the subsequent empirical analysis, we restrict our attention to Italian exports outside the EU. Due to the differential reporting requirements for Intra-EU and Extra-EU trade it is not desirable to pool all destinations together.[21]

Table 5 reports regression results with the log of country-product exports by exporter type, $\ln X^i_{cp}$, as dependent variable and country, product and product-country characteristics, C_c, P_p and τ_{pc}, as explanatory variables, together with a full set of interactions with the wholesaler dummy, D^W,

$$\ln X^i_{cp} = c + \alpha D^W + \beta_1 C_c + \beta_2 C_c * D^W + \gamma_1 P_p + \gamma_2 P_p * D^W + \delta_1 \tau_{pc} + \delta_2 \tau_{pc} * D^W + d_j + \varepsilon_{cp}. \quad (4)$$

Columns 1 and 2 add country and product fixed effects, respectively, while column 3 includes all the available product and country characteristics.[22]

Results on the country characteristics in columns 1 and 3 show that the level of exports of both manufacturers and wholesalers exports is positively correlated with GDP, however the effects are significantly lower for wholesalers. The results on *Market Costs* and *Governance* are also in line with the theoretical predictions. Intermediaries' exports increase with market costs, suggesting that wholesalers are better able to spread fixed costs across products. The country governance indicator yields a similar pattern of results: better governance is associated with higher exports from manufacturers but that effect is greatly reduced or disappears entirely for wholesalers.

Both greater distance and higher tariffs, our variable trade cost measures, significantly reduce exports. However neither shows a significant differential effect between manufacturers and whole-

[19] The entry rate is the number of new exporters of the product between year t and t+s divided by the average number of exporters in the two years. The exit rate is the number of firms that stop exporting the product between t and t+s divided by the average number of exporters in the two years. The min(entry, exit) in a given product is computed on COE data for years 2003 and 2007. Considering different years for the computation of the rates does not significantly affect the results.

[20] Higher country-level fixed costs of exporting and weaker governance are associated with smaller total levels of exports (Lawless; 2010; Djankov et al.; 2010), here we consider their relationship to the composition of exports by firm type.

[21] See the Appendix for details on the trade reporting cutoffs.

[22] In Column 3 we cluster both on countries and products.

salers.[23]

Columns 2 and 3 of Table 5 report the results on the product characteristics. We focus on the sign and significance of the interaction terms with the wholesaler dummy. Wholesalers export relatively less in products with lower sunk entry costs, i.e. greater min(entry, exit), higher price dispersion, and higher relationship specificity. All these coefficients have the expected signs and point to product characteristics playing an important part in the endogenous choice of firms to export directly or through an intermediary.

This section has examined the role of country and product characteristics in exports by manufacturers and wholesalers. Country-specific fixed export costs are correlated with the use of export intermediaries. We further show that the quality of the more general contracting environment is related to the choice of mode of export. Exports through an intermediary are more likely when the quality of the general contracting environment of the country is weak.

We also show that the characteristics of the product play a role in determining the choice of export mode. Lower contract intensity, greater product homogeneity, and higher product-level sunk costs of exporting are associated with a greater reliance on intermediaries in exporting.

4 Intermediaries and exogenous shocks

4.1 Product adding and dropping

The cross-sectional analysis reveals that exporting wholesalers are smaller than manufacturers and that they export a larger number of products to a smaller set of destinations. In addition to lower firm-level trade flows, intermediaries also ship less within a product-country pair.[24] These results are broadly supportive of a framework emphasizing country-specific fixed costs of exporting. As discussed earlier, the presence of sunk export costs that vary across firm types also has implications for export dynamics. Lower sunk costs should result in higher probabilities of both entry into exporting and exit from exporting. Intermediaries should be more likely to add and drop products from their export portfolio than direct exporters.

If wholesalers have lower sunk costs per product, then they should also be more likely to add and drop products. Following Bernard, Redding and Schott (2010), we analyze export product switching between t and $t+1$ using those years for which we have information on firms' total turnover, 2000-2001 and 2003-2004. We examine the probability that a current exporter adds a

[23] In contrast to Ahn et al. (2011), geographical distance affects negatively the value of trade equally for both types of firms. Their specification is slightly different as they include a smaller set of covariates and do not include the interacted wholesale dummy.

[24] This is shown in Table 4 of the Technical Appendix.

product to its export portfolio between years t and $t+1$ in the specification,

$$Add_{ft} = c + \alpha D_{ft}^{W} + \beta \ln Sales_{ft} + \gamma \ln Products_{ft} + d_{ind} + d_t + \varepsilon_{ft} \tag{5}$$

where Add_{ft} takes value 1 if the firm adds an export product and zero otherwise. D_{ft}^{W}, $\ln Sales_{ft}$, and $\ln Products_{ft}$ are defined as above. Additional controls include year fixed effects, d_t, and industry-mix fixed effects, d_{ind} that controls for firms with the same mix of industries at the HS2 level. The specification for product dropping by the firm is similar,

$$Drop_{ft} = c + \alpha D_{ft}^{W} + \beta \ln Sales_{ft} + \gamma \ln Products_{ft} + d_{ind} + d_t + \varepsilon_{ft} \tag{6}$$

where $Drop_{ft}$ takes value 1 if the firm drops an export product and zero otherwise.

Results of Table 6 show that, as expected, intermediaries are both more likely to add a product and more likely to drop a product than manufacturers that export directly. This finding is robust to controlling for firm size and number of exported products.[25]

We further examine the differences across firm types in their product dropping behavior by estimating a linear probability model at the firm-product level,

$$Drop_{fpt} = c + \alpha D_{ft}^{W} + \beta \ln Sales_{ft} + \gamma Deviation_{fpt} + \delta \ln Products_{ft} + d_p + d_t + \varepsilon_{fpt} \tag{7}$$

where $Drop_{fpt}$ takes value 1 if product p is exported by the firm f in year t and not exported in year $t+1$ and equal zero if the product is exported in both years.[26] D_{ft}^{W} is the firm wholesale dummy and is the variable of interest. To control for firm attributes associated with product switching, we include firm size, $\ln Sales_{ft}$, the relative importance of the firm in the exports of the product given by the log difference between the firm's exports in product p and average firm exports in product p, $Deviation_{fpt}$, and the number of products exported by the firm in year $t, \ln Products_{ft}$. The inclusion of product and year fixed effects, d_p and d_t, allows us to control for the possibility that wholesalers export products with characteristics that make them more likely to be dropped.

Table 7 reports the results of the estimation of the firm-product dropping specification equation 7 for Extra-EU countries. Within a product-year, wholesaler exporters are much more likely to drop a product than manufacturer exporters, 6.9 percentage points or 14.4 percent.[27] This differential persists even controlling for firm size, the number of exported products and the relative importance of the firm in the product, although the magnitude of the coefficients is reduced.

[25] Results in the Technical Appendix show that the effect is more pronounced when comparing wholesalers and manufacturers that are single-product firms.

[26] It is not feasible to estimate an adding regression at the firm-product level as the set of possible added products includes all the products not currently exported by the firm.

[27] On average the fraction of exported firm-products outside the EU that is dropped every year is 50% among all firms, 48% for manufacturers and 53% for wholesalers.

The results on both export product dropping and export product adding are consistent with intermediary exporters facing lower sunk costs of participation in the export market. These findings suggest that shocks such as changes in tariffs or exchange rates may have differential effects on wholesalers and manufacturers even within the same country-product pair.

4.2 Exchange rates and exports

The results support the idea that export intermediaries arise in large part because of the presence of significant fixed export costs at the country and product level. In addition, product adding and product dropping in the export market are greater for wholesale exporters than for manufacturers. Taken together this evidence suggests that a common shock to profits across destinations, e.g. a common tariff cut, may have different effects both across types of exporting firms *and* in the aggregate across countries due to variation in the composition of exporters.

This section examines whether intermediaries and manufacturers respond differently to exogenous currency shocks. Using annual fluctuations in bilateral real exchange rates as measures of exogenous changes in export profitability, we investigate the effects on firms' export behavior. We consider the impact of exchange rate changes on firm exports to country c, as well as on the number of exported products and the average value of exports to that destination. A firm's total exports to a destination can be decomposed into extensive and intensive margins,

$$\ln X_{fc} = \ln Prod_{fc} + \ln avgX_{fc} \tag{8}$$

where $\ln X_{fc}$ is the log of total exports by firm f to country c, $Prod_{fc}$ is the number of distinct HS6 products exported by firm f to country c, and $avgX_{fc}$ is the average value of exports per product from firm f to country c. We regress the annual log change from 2000 to 2007 of firm total exports to country c and the annual changes of the two components on a dummy for wholesaler (D^W_{ft}), the change in the log of the real bilateral exchange rate of the Italian currency ($\Delta \ln RER_{ct}$) and their interaction

$$\Delta \ln Z_{fct} = c + \alpha D^W_{ft} + \beta \Delta \ln RER_{ct} + \gamma \Delta \ln RER_{ct} * D^W_{ft} + \delta \ln npc_{ft} + d_j + \varepsilon_{fct} \tag{9}$$

where $\ln npc_{ft}$ is the number of country-product pair where the firm has positive exports and d_j indicates a set of fixed effects.[28] Using data from the International Financial Statistics database (IMF, 2010), we define the RER_{ct} index for each year:

$$RER_{ct} = ER_{ct} \frac{CPI_t}{CPI_{ct}}$$

[28] We thank a referee for suggesting the inclusion of the number of country-product pairs to account for the number of markets where the firm has already sunk the entry costs.

where ER_{ct} is the nominal Italian exchange rate expressed as the number of foreign currency units per home currency unit and $\frac{CPI_t}{CPI_{ct}}$ is the ratio of the domestic consumer price level and the consumer price index abroad.[29] An upward (downward) movement therefore represents an appreciation (depreciation) of the domestic currency.

Table 8 reports results from estimating equation 9 for firm-country exports, the number of products and the average exports per product. Since real exchange rate variations inside the Eurozone are related only to price levels changes, we include in the regressions only countries outside the EU.

The first two columns of Table 8 present the results for export value, including country and year fixed effects (column 1) and country and firm fixed effects (column 2). Exchange rate movements have the expected effects on firm exports to country c: an appreciation of the Euro is associated with a decrease in firm exports. However, the interaction of wholesaler type and the real exchange rate is positive and significant in both columns; firm exports fall less (6.8-7.6 percent) for intermediaries than for manufacturers when the Italian currency appreciates.[30]

Looking at columns 3-6 we observe that, for both manufacturing and wholesale firms, the fall in exports in response to an appreciation of the domestic currency is driven both by a decrease in the number of products exported and by a decline in the firm's average exports per product. However, for wholesalers, the adjustment on the extensive margin of the number of products is greater, while the response of average exports is more muted. These results would appear to confirm that wholesale exporters face lower fixed costs and are thus able to adjust more easily along the extensive margin than direct exporters.

We next explore the sensitivity of the firm's response within a country-product pair to annual exchange rate movements by considering export value, quality and unit value. The estimation equation is

$$\Delta \ln Y_{fpct} = c + \alpha D_{ft}^{W} + \beta \Delta \ln RER_{ct} + \gamma \Delta \ln RER_{ct} * D_{ft}^{W} + \delta \ln npc_{ft} + d_j + \varepsilon_{fpct} \qquad (10)$$

where $\ln Y_{fpct}$ is the log of firm-level product-country export value, quantity or unit value. Table 9 reports results with country, year and firm-product fixed effects. As before, exports fall as the Italian currency appreciates but the effect for wholesalers is significantly smaller. For direct exporters the adjustment to a stronger home currency is primarily due to reductions in export quantities (93

[29] We use annual averages of the monthly official exchange rate, i.e. the rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. Using a wholesale price index to construct the real exchange rate reduces the number of countries in the sample but does not change the results. See the Technical Appendix for results using the WPI.

[30] Including the year fixed effects in columns 1, 3, and 5 effectively removes changes in the Euro that are common across all destinations. Similar results using a decomposition of the exchange rate movements into common and idiosyncratic components can be found in the Technical Appendix.

percent) rather than in unit value (7 percent). For wholesalers, the overall adjustment is smaller due to a much smaller quantity response. Wholesalers drop their unit values more as the currency rises, pass-through is lower, and quantities fall less.[31]

The literature on intermediaries in trade largely has focused on the underlying choice of firms to export directly or indirectly and in particular on the role of fixed export costs. This section has shown that these choices give rise to different responses to common external shocks to profitability. Wholesalers are better able to adjust along the extensive margin and are less responsive to exchange rate changes.

4.3 Aggregate exports

The firm-level results presented above suggest that the endogenous choice of direct or indirect exporting by producing firms should matter for the response of aggregate, country-level export volumes to exogenous shocks such as changes in the exchange rate. Destinations with high wholesale export shares should show smaller responses of exports in response to exchange rate changes than countries with low wholesale export shares.

In Table 10 we consider a simple specification of the form

$$\Delta \ln Y_{ct} = c + \alpha D_c^W + \beta \Delta \ln RER_{ct} + \gamma \Delta \ln RER_{ct} * D_c^W + d_j + \varepsilon_{ct} \tag{11}$$

where $\ln Y_{ct}$ is the log of country exports and D_c^W is a dummy that equals one if the country-level share of wholesale exports is greater than the median (mean), and the exchange rate is defined as before. Columns 1 and 3 report results with year fixed effects, while columns 2 and 4 include both year and country fixed effects.

In every case, the results strongly confirm the importance of the mode of export in shaping the aggregate responses to changes in the real exchange rate. The exchange rate export elasticity for countries with low wholesale shares is negative and significant, ranging from -0.455 to -0.551 across the specifications. In contrast, countries with wholesale export shares above the mean or median have elasticities that are insignificantly different from zero.[32]

5 Conclusions

The present paper examines the role of intermediaries in exporting, the factors that lead firms to export indirectly, and the consequences of intermediary exporters on trade value and the margins of

[31] In a recent paper on variation exchange rate pass-through and firm characteristics, Berman et al. (2012) emphasize that pass-through differs systematically with the productivity of the exporting firm. While there are substantial differences between our Italian data and the French data they employ, in the Technical Appendix, we confirm their findings and show that our main results on the differences between wholesaler and manufacturing exporters are robust to the inclusion of a firm-level productivity measure.

[32] Including other aggregate country characteristics does not affect these findings, see the Technical Appendix.

adjustment to external shocks. Confirming the predictions of the theoretical literature, we find that manufacturers of intermediate productivity are the most likely to export through an intermediary. Using Italian firm-level trade data, we investigate the importance of wholesalers in exports across destinations and products and examine how they differ from manufacturing firms that export directly. Intermediary exporters are smaller, ship more products and reach fewer countries than direct exporters.

We confirm the findings of previous research that wholesalers are more likely to export to countries with high fixed export costs and to smaller markets. However, exporting by wholesalers is also more common in destinations with weak contracting environments and in products that are more homogeneous, have higher sunk entry costs and have lower relationship specificity. The ability of intermediaries to effectively lower destination and product fixed costs means that they churn their product mix more often and adjust along the extensive margin.

The differences in fixed costs across destinations and products have important implications for firm-level and aggregate responses to exogenous changes in profitability such as exchange rates. Wholesalers are more likely to adjust their product mix in response to an exchange rate change and their total exports adjust less. Given the big difference in the share of intermediated exports across countries and products, these firm-level results suggest that there are potentially large differences in how aggregate exports will respond to changes in the value of the domestic currency that are linked to the type of the exporting firm. We find significantly lower responses of aggregate exports to changes in the exchange rate for destinations served primarily by wholesale exporters.

These findings raise questions for future research. Firms in smaller, lower income countries may be more likely to use intermediaries to reach foreign countries. Rapidly growing countries with rising productivity may see a large shift from intermediated trade to direct exports. Our results suggest such a shift would be associated with greater responsiveness of aggregate exports to exchange rate changes.

Appendix

Direct and indirect export data

The Business Enterprise Survey (BEEPS) is a joint initiative of the European Bank of Reconstruction and Development (EBRD) and of the World Bank Group. The survey examines the quality of the business environment for different regions by collecting firm-level data on a broad range of issues including firm financing, labor, infrastructure, informal payments and corruption, trade and innovation activities.[33] Four rounds of the survey have so far been implemented (1999, 2002, 2005 and 2009). The questionnaire administered by Enterprise Surveys has evolved over time, hence not all variables are available in all waves. As a result data are provided in two different formats: 1) the standardized one, where country data are matched to a standard set of questions, and 2) country specific surveys, that offer the complete survey information for a particular country. We chose the "Standardized data 2002-2005" as it includes countries which are more similar to Italy and its time span overlaps with our period of investigation.

The database includes 36,956 firms from represent 99 countries and 16 industries in manufacturing. The database contains information on a number of firm-level variables including number of employees, total turnover, ownership structure, industry and geographical location.

Firm trade data

ISTAT collects data on export transactions, which are the basic unit of observation for trade flows. It is then possible to link transactions to firms using the value added tax identification code (*partita IVA*) of the firm which is also recorded in the transaction.[34] There are different requirements in order for a transaction to be recorded. These requirements depend on the destination, Intra or Extra-EU, and on the value of the transactions. The European Union sets a common framework but leaves some flexibility to member states.

As far as Extra-EU transactions are concerned there is a good deal of homogeneity among member states as well as over time. Since the adoption of the euro as a common currency, Italy set the threshold at 620 euro (or 1,000 Kg), so that all transactions bigger than 620 euro (or 1,000 Kg) are recorded. All these records of Extra-EU transactions report complete information, that is, also information about the product. From 2007 onward the threshold is at 1,000 euro (or 1,000 Kg).

Most of the existing differences are due to varying Intra-EU requirements. In 2003 there were two reporting thresholds: 200,000 euros[35] and 40,000 euros. Firms with more than 200,000 euros of exports (based on the previous year) have to fill in the Intrastat document monthly. They report

[33] All data are freely accessible to researchers at http://www.enterprisesurveys.org.

[34] The value-added tax identification number also allows the linking of export data to various Censuses conducted by ISTAT.

[35] In 2007 this threshold was raised to 250,000.

complete information including details about products. Firms with exports between 40,000 and 200,000 euros have to fill in the Intrastat form on a quarterly basis. The value of exports is recorded but *not* information on products. Below 40,000 euros per year the transactions are not recorded.

Other data

We use the measure of industry contract intensity developed by Nunn (2007) . Nunn's data are classified according to the industry classification of the US I-O table compiled by the Bureau of Economic Activity. To match each I-O industry to an HS6 product, first we use information from Lawson et al. (2002) to construct a concordance between I-O industry classification and NAICS1997 code. Then the data are converted from NAICS1997 to NAICS2002. Finally, we exploit the concordance between Harmonize System Codes and NAICS Industries developed by Pierce and Schott (2009) to obtain the information on contract intensity at the level of HS6 product.

To generate a proxy for the market-specific fixed costs of exporting to a country, we use information from the World Bank Doing Business database (DB). Three variables are used: *number of documents for importing* includes all documents required per shipment to import the goods from a given destination; *cost of importing* measures the fees levied on a 20-foot container in US dollars; *time to import* reflects the number of days needed to import a standard container of goods from a factory in the largest business city to a ship in the most accessible port (for details, see Djankov et al.; 2010). Data are available from 2004 to 2010. Given the low variability of these indicators, we take the average value over the available years.

We perform principal component analysis to construct a single measure for *Market Costs* and again for *Governance*. Tables A1 and A2 report the principal component analysis (PCA) on standardized variables for *Market Costs* and *Governance*, respectively. The panel in the middle of Tables A1 and A2 shows the total variance accounted by each factor. The Kaiser criterion suggests to retain those factors with variance equal or higher than 1. In both cases there is only one factor that satisfies this criterion and this factor explain 77 percent and 86 percent of the sum of the observed variance respectively. The lower panel of the two tables reports the factor loadings. Table A1 shows the loadings on Factor1 are relatively large for all the variables related to market costs. The same is true for institutional quality in Table A2. Finally, uniqueness is the variance that is "unique" to the variable and not shared with others. Again all variables, in both tables, have a low percentage of variance not accounted by other variables.

Table A1: PCA for Market Costs

Number of Obs.	180	
Retained Factors	1	
Number of Parameters	3	
	Variance	Proportion
Factor1	2.30	0.77
Factor2	0.51	0.17
Factor3	0.18	0.06

Standardized Variables	Factor1 Loadings	Uniqueness
Number of documents for importing	0.81	0.34
Cost of importing	0.87	0.23
Time to import	0.93	0.12

Table A2: PCA for Governance Indicator

Number of Obs.	193	
Retained Factors	1	
Number of Parameters	6	
	Variance	Proportion
Factor1	5.16	0.86
Factor2	0.4	0.07
Factor3	0.28	0.05
Factor4	0.09	0.01
Factor5	0.05	0.01
Factor6	0.03	0.01
Standardized Variables	Factor1 Loadings	Uniqueness
Voice & Accountability	0.86	0.25
Political Stability	0.85	0.27
Government Effectiveness	0.96	0.09
Regulatory Quality	0.95	0.1
Rule of low	0.98	0.05
Control of Corruption	0.96	0.09

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Table 1: Productivity sorting. Exporters (any export mode) and share of direct exports, 2002-2005.

Dep. Var.	log Employment			log Total Sales			log Total Sales/Empl.		
	World	HI*	Europe	World	HI*	Europe	World	HI*	Europe
D_X	0.698***	0.987***	1.090***	0.901***	1.261***	1.196***	0.204***	0.274***	0.107*
	(0.028)	(0.200)	(0.141)	(0.040)	(0.248)	(0.164)	(0.029)	(0.114)	(0.062)
$D_X * Sh.^{Dir}$	0.760***	0.531*	0.775***	1.160***	0.950***	0.879***	0.340***	0.213**	0.104*
	(0.031)	(0.297)	(0.147)	(0.043)	(0.251)	(0.169)	(0.031)	(0.109)	(0.063)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.374	0.282	0.320	0.755	0.294	0.374	0.834	0.127	0.489
N. Obs	36,956	1,712	2,482	36,956	1,712	2,482	36,956	1,712	2,482
Countries	99	9	16	99	9	16	99	9	16

Note: Table reports regression of firms' characteristics on a dummy for manufacturer (direct or indirect) exporter (D_f^X) and an the interaction of the export dummy and a direct export share variable ($D_X * Sh.^{Dir}$). Baseline category is domestic only. HI* (High Income) includes those countries above the 75th percentile of the income level according to the World Bank. Europe includes countries in the European Union. Robust standard errors clustered at firm-level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p< 10%).

Table 2: Exports and Number of exporting firms: share by type of firms, 2003

	Share (%)				
	Manufacturers	Wholesalers	Retailers	Others	Total
Exports	85.52	10.71	0.86	2.91	254.91(billion euros)
Exporters	55.57	27.41	7.72	9.3	143421 (firms)

Note: Table reports the share of exports and the share of exporters by type of firm.

Table 3: Export premia, 2003

	ln Sales$_f$	ln Employment$_f$	ln Sales/Empl.$_f$	ln Exports$_f$	ln Exports/Empl.$_f$
	(1)	(2)	(3)	(4)	(5)
D_f^W	-0.111***	-0.533***	0.433***	-1.047***	-0.025
	(0.004)	(0.002)	(0.003)	(0.016)	(0.015)
D_f^X	2.775***	1.533***	1.229***		
	(0.007)	(0.005)	(0.004)		
$D_f^W \cdot D_f^X$	-0.081***	-0.489***	0.388***		
	(0.012)	(0.008)	(0.008)		
R-squared	0.22	0.29	0.14	0.03	0.001
Observations	985719	1022424	985710	118994	118994

Note: Table reports OLS regression of noted characteristic on dummy for wholesaler (D_f^W), dummy for exporter (D_f^X), and their interaction ($D_f^W \cdot D_f^X$). Robust standard errors are reported below coefficients. Asterisks denote significance levels (***: p <1%; **: p<% 5%; *: p<10%). Data are for 2003.

Table 4: Export premia: Number of Countries and Number of Products, 2003

	Products_f	Products_f	Countries_f	Countries_f
D_f^W	-1.269***	1.668***	-4.562***	-1.630***
	(0.093)	(0.088)	(0.058)	(0.043)
ln Exports_f		2.805***		2.801***
		(0.027)		(0.015)
R-squared	0.001	0.25	0.03	0.45
Observations	118994	118994	118994	118994

Note: Table reports OLS estimates of the number of HS6 products exported (Products_f) and the number of destination countries (Countries_f) on a dummy for wholesaler (D_f^W). The regression sample is exporting firms. Robust standard errors are reported below coefficients. Asterisks denote significance levels (***: p< 1%;**: p<5%; *: p<% 10%). Data are for 2003.

Table 5: Total exports by country-product, 2003 -Extra-EU

	$\ln X_{cp}^i$	$\ln X_{cp}^i$	$\ln X_{cp}^i$
	(1)	(2)	(3)
D^W	3.208***	-0.869***	4.432***
	(0.847)	(0.141)	(0.900)
ln GDP_c	0.487***		0.370***
	(0.102)		(0.073)
$*D^W$	-0.189***		-0.194***
	(0.039)		(0.039)
ln Distance_c	-0.503***		-0.276***
	(0.120)		(0.086)
$*D^W$	-0.012		0.003
	(0.060)		(0.060)
Market Costs_c	-0.117		-0.100
	(0.105)		(0.085)
$*D^W$	0.111*		0.103*
	(0.072)		(0.060)
$\text{Governance Indicator}_c$	0.264***		0.134**
	(0.099)		(0.070)
$*D^W$	-0.181***		-0.189***
	(0.063)		(0.063)
Tariff_{cp}			-0.165**
			(0.068)
$*D^W$			0.058
			(0.043)
$\min(\text{entry,exit})_p$		-0.710***	-0.660***
		(0.155)	(0.171)
$*D^W$		-0.305**	-0.309**
		(0.119)	(0.128)
$\text{Coefficient of Variation}_p$		0.101***	0.103***
		(0.013)	(0.014)
$*D^W$		-0.028***	-0.040***
		(0.008)	(0.009)
$\text{Relation Specificity}_p$		1.212***	1.223***
		(0.226)	(0.275)
$*D^W$		-0.798***	-0.929***
		(0.140)	(0.186)
Country FE	No	Yes	No
Product FE	Yes	No	No
Clustering	Country	HS6 Product	Country-Product
Adj R-squared	0.44	0.25	0.24
Observations	117112	117112	117112
Countries	142	142	142
HS6 Products	3623	3623	3623

Note: Table reports OLS regression of logarithm of aggregate exports by type for Extra-EU. D^W is a dummy for wholesale and $*D^W$ is the interacted dummy. Robust standard errors clustered at different levels are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p<10%). Data are for 2003.

Table 6: Adding and dropping product at firm level, Extra-EU (2000&2003)

	All firms Add_{ft} (1)	All firms Add_{ft} (2)	All firms Add_{ft} (3)	All firms Drop_{ft} (4)	All firms Drop_{ft} (5)	All firms Drop_{ft} (6)
D_{ft}^{W}	0.026***	0.031***	0.036***	0.025***	0.028***	0.043***
	(0.005)	(0.006)	(0.006)	(0.005)	(0.014)	(0.006)
ln Sales_{ft}		0.023***	0.013***		0.014***	-0.020***
		(0.002)	(0.002)		(0.004)	(0.002)
ln Products_{ft}			0.057***			0.175***
			(0.006)			(0.013)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Mix FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering Industry-Mix	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.006	0.013	0.021	0.098	0.101	0.192
Observations	167081	167081	167081	167081	167081	167081
Firms	110452	110452	110452	110452	110452	110452
Industry-mix	32383	32383	32383	30285	30285	30285

Note: Table reports OLS regression results of a dummy variable indicating a firm adding a product between t and $t+1$. D_{ft}^{W} is a dummy for wholesaler; Sales_{ft} is firm's total sales; and Products_{ft} is the number of products exported by each firm. All variables are computed at time t. The regression sample is surviving exporting firms. Industry-mix FE allows to control for firms with the same mix of industries at the HS2 level. Robust standard errors in parentheses are adjusted for clustering by industry-mix. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p<10%).

Table 7: Firm-product dropping, Extra-EU (2000&2003)

	Drop_{fpt}	Drop_{fpt}
	(1)	(4)
D_{ft}^{W}	0.069***	0.021***
	(0.001)	(0.001)
ln Sales_{ft}		-0.004***
		(0.000)
Deviation_{fpt}		-0.099***
		(0.000)
ln Products_{ft}		-0.013***
		(0.001)
Year FE	Yes	Yes
Product FE	Yes	Yes
Clustering	Firm-Product	Firm-Product
Adj R-squared	0.06	0.19
Observations	1221737	1221737
HS6 Products	5259	5259
Firms	110452	110452

Note: Table reports OLS regression results of a dummy variable indicating a firm-product drop between t and $t+1$. D_{ft}^{W} is a dummy for wholesaler; Sales_{ft} is firm's total sales; Deviation_{fpt} is (log of) firm's exports in product p minus (log of) average exports in product p; and Products_{ft} is the number of products exported by each firm. All variables are computed at time t. The regression sample is surviving exporting firms. Robust standard errors in parentheses are adjusted for clustering by firm-product. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p<10%).

Table 8: Exchange rates, firm-country exports, and extensive and intensive margins of trade, Extra-EU (2000-2007)

	Annual Differences					
	ln X_{fct}	ln X_{fct}	ln $Prod_{fct}$	ln $Prod_{fct}$	ln Avg X_{fct}	ln Avg X_{fct}
	(1)	(2)	(3)	(4)	(5)	(6)
D_{ft}^W	0.016***		0.020***		-0.005	
	(0.004)		(0.003)		(0.003)	
ln Real Ex $Rate_{ct}$	-0.522***	-0.427***	-0.188***	-0.057*	-0.334***	-0.370***
	(0.150)	(0.120)	(0.047)	(0.027)	(0.107)	(0.089)
$*D_{ft}^W$	0.040*	0.029*	-0.048**	-0.037*	0.087**	0.066*
	(0.020)	(0.015)	(0.023)	(0.018)	(0.039)	(0.038)
ln npc_{ft}	0.048***	0.326***	0.034***	0.280***	0.014***	0.046***
	(0.002)	(0.010)	(0.002)	(0.009)	(0.001)	(0.005)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes
Clustering Country-Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.007	0.013	0.003	0.016	0.003	-0.002
Observations	2487054	2487054	2487054	2487054	2487054	2487054
Countries	150	150	150	150	150	150
Firms	137311	137311	137311	137311	137311	137311

Note: Table reports results of regressions at the firm-country level, using data on exports, number of products and average exports between 2000 and 2007. The dependent and independent variables are defined as annual differences. D_{ft}^W is a dummy for wholesaler, $*D_{ft}^W$ is the interacted dummy and ln npc_{ft} is the (log) number of country-product pairs. Robust standard errors clustered at country-year level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p<10%).

Table 9: Exchange rates and firm-product-country exports, quantity and unit value, Extra-EU (2000-2007)

	Annual Differences		
	ln X_{fcpt}	ln Quantity$_{fcpt}$	ln UnitValue$_{fcpt}$
	(1)	(2)	(3)
ln Real Ex Rate$_{ct}$	-0.382***	-0.354***	-0.028**
	(0.113)	(0.118)	(0.011)
$*D_{ft}^{W}$	0.030*	0.061*	-0.031**
	(0.015)	(0.037)	(0.013)
$\ln npc_{ft}$	-0.097***	-0.100***	0.003**
	(0.008)	(0.008)	(0.000)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm-Product FE	Yes	Yes	Yes
Clustering Country-Year	Yes	Yes	Yes
Adj R-squared	-0.009	-0.010	0.034
R-squared	0.165	0.165	0.201
Observations	4008339	4008339	4008339
Countries	150	150	150
Firms	119201	119201	119201
HS6 Products	5201	5201	5201

Note: Table reports results of regressions at the firm product country level, using data on exports, quantity and unit value between 2000 and 2007. The dependent and independent variables are defined as annual differences. D_{ft}^{W} is a dummy for wholesaler, $*D_{ft}^{W}$ is the interacted dummy and $\ln npc_{ft}$ is the (log) number of country-product pairs. Robust standard errors clustered at country-year level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p<10%).

Table 10: Exchange rates and country exports, Extra-EU

Annual Differences				
(Above)	ln X_{ct} Median	ln X_{ct} Median	ln X_{ct} Mean	ln X_{ct} Mean
	(1)	(2)	(3)	(4)
D_c^W	-0.008		-0.009	
	(0.032)		(0.032)	
ln Real Exchange $Rate_{ct}$	-0.551**	-0.484*	-0.520**	-0.455*
	(0.241)	(0.266)	(0.269)	(0.272)
$*D_c^W$	0.582*	0.531*	0.526*	0.481*
	(0.271)	(0.287)	(0.284)	(0.289)
Year FE	Yes	Yes	Yes	Yes
Country FE	No	Yes	No	Yes
Observations	1032	1032	1032	1032
Adj R-squared	0.005	-0.119	0.004	-0.120
R-squared	0.014	0.050	0.013	0.050
Countries	150	150	150	150

Note: Table reports results of regressions at the country-year level, using data on exports between 2000 and 2010. The dependent and independent variables are defined as annual differences. D_c^W is a dummy that takes value 1 if the intermediary export share to country c is above the median (mean) value of intermediary export share across countries, $*D_c^W$ is the interacted dummy. Robust standard errors are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p< 10%).