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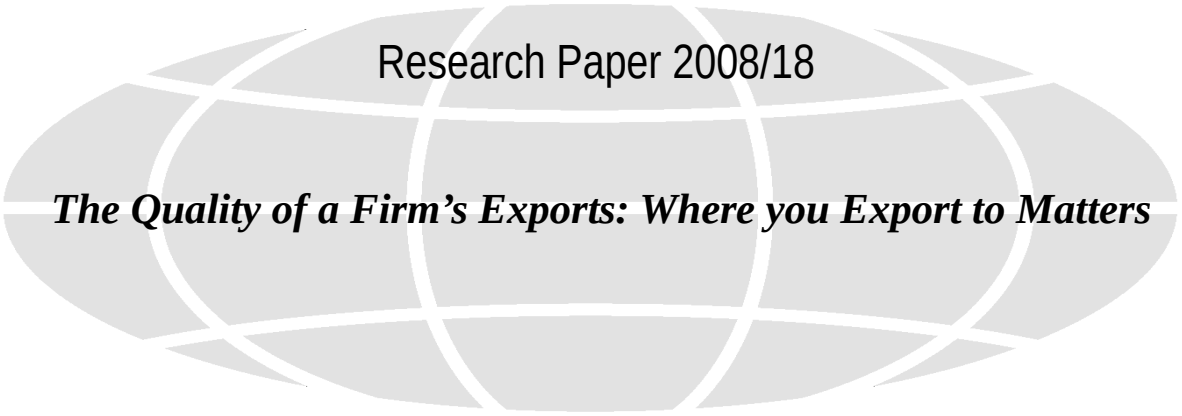

Research Paper 2008/18

The Quality of a Firm's Exports: Where you Export to Matters

by

Paulo Bastos and Joana Silva

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GEP Leverhulme Centre for Research on Globalisation and Economic Policy

The Authors
Paulo Bastos is an Economist at the European Commission and a Policy Associate of GEP.

Joana Silva is a Young Professional at the World Bank and a Policy Associate of GEP.

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Abstract

What drives export quality? Using firm-level data from Portugal on exports by product and destination market, we find that free-on-board unit values increase systematically with distance, and tend to be higher in shipments to richer nations. These relationships reflect not only the selection of firms across markets, but also the within-firm selection of product varieties across destinations. Furthermore, they prevail irrespective of the size of the exporter and the value of the export flow.

JEL classification: F1

Keywords: Firm-level exporting; product quality; destination markets.

Outline

Non-Technical Summary

In recent years, empirical research on firm-level exporting has uncovered a wide range of new, and often surprising stylized facts. It is by now well known, for example, that exporting firms are usually in minority in their own industry, tend to be larger and more productive than their purely domestic counterparts, and typically export only a small proportion of their total output. These empirical regularities have triggered profound re-thinking about several key positive and normative aspects of international trade theory. In fact, history appears to be repeating itself. Very much like the emergence of the "new trade theory" was mainly driven by the need to explain the observation of large volumes of intra-industry trade, the recent development of trade models with heterogeneous firms is largely rooted in the need to rationalize these new facts.

In this paper we use highly detailed data from Portugal to investigate a relatively unexplored dimension of firms' cross-border activities: The quality of exports and its drivers. The data cover the shipments of virtually all exporting firms in 2005 to each of 199 destinations in over 7,500 product categories. We compute free-on-board unit values at the firm-product-country level and then relate them to distance, the size of the importing country and its GDP per worker. Our main findings are as follows. Unit values increase systematically with distance, and tend to be higher in shipments to richer nations. These relationships reflect not only the selection of firms across markets, but also the within-firm selection of product varieties across destinations. Furthermore, they prevail irrespectively of the size of the exporter and the value of the export flow. Unit values within products tend to increase with the size of the destination market, but this relationship appears to be solely driven by the selection of heterogeneous firms across markets.

1 Introduction

In recent years, empirical research on firm-level exporting has uncovered a wide range of new, and often surprising stylized facts. It is by now well known, for example, that exporting firms are usually in minority in their own industry, tend to be larger and more productive than their purely domestic counterparts, and typically export only a small proportion of their total output.[1] These empirical regularities have triggered profound re-thinking about several key positive and normative aspects of international trade theory. In fact, history appears to be repeating itself. Very much like the emergence of the 'new trade theory' (Krugman 1979, 1980, 1981; Brander 1981) was mainly driven by the need to explain the observation of large volumes of intra-industry trade, the recent development of trade models with heterogeneous firms (Melitz, 2003; Helpman *et al.*, 2004; Melitz and Ottaviano, 2008) is largely rooted in the need to rationalize these new facts.

In this paper we use highly detailed data from Portugal to investigate a relatively unexplored dimension of firms' cross-border activities: The quality of exports and its drivers. The data cover the shipments of virtually all exporting firms in 2005 to each of 199 destinations in over 7,500 product categories. We compute *free-on-board* unit values at the firm-product-country level and then relate them to distance, the size of the importing country and its GDP per worker. Our main findings are as follows. Unit values increase systematically with distance, and tend to be higher in shipments to richer nations. These results hold irrespective of whether identification comes from the within-product, within-firm, or within-firm-product variation of unit values across destinations. Furthermore, they prevail independently of the size of the exporter and the value of the export flow. Unit values within products tend to increase with the size of the destination market, but this relationship appears to be solely driven by the selection of heterogeneous firms across markets.

Our empirical findings complement and extend the existing literature on the drivers of export quality. Schott (2004) and Hummels and Klenow (2005) focus on supply-side determinants. Using product-level data on US imports, Schott finds that within-product unit values increase systematically with the exporter's relative endowments of human and physical-capital, and per capita income. Hummels and Klenow also exploit trade data in narrow product categories, but for 126 exporting countries across 59 destinations. A key result is that, within each product, richer countries tend to export more units at

[1] This literature includes, among others, work by Bernard and Jensen (1995, 1999, 2004a,b), Bernard *et al.* (2003), Clerides *et al.* (1998), Eaton *et al.* (2004) and Pavcnik (2002). Tybout (2003) and Greenaway and Kneller (2007) offer recent literature surveys.

higher prices to a given market, consistent with producing higher quality. The paper by Hallak (2006), in turn, focuses on demand-side drivers. Based on sectoral data for bilateral trade among 60 countries, he finds that richer nations tend to import relatively more from partners that produce higher-quality products.

Baldwin and Harrigan (2007) introduce yet another dimension to this literature: the interplay between export quality and geography. Using product-level data on US bilateral exports, they find robust evidence that f.o.b. unit values increase with the distance to the destination market. To rationalize this finding, Baldwin and Harrigan introduce product quality in a heterogeneous-firms trade model *a la* Melitz (2003), augmented to allow for multiple asymmetric countries. More specifically, they consider a set-up in which consumers care about quality and regard some varieties as being better than others. On the supply side, firms are assumed to differ both in terms marginal costs of production and product quality. High-cost firms produce high-quality varieties; low-cost firms low-quality ones. A key finding is that, if the elasticity of product quality with respect to marginal costs is sufficiently high, high-cost firms sell their output at a lower quality-adjusted-price, being thus more competitive. Since variable trade costs increase with distance, this implies that only firms producing sufficiently high-price/high-quality varieties find it profitable to export to more distant markets. Within this framework, therefore, the self-selection of (heterogeneous) firms across markets is key to explain the positive effect of distance on average export unit values.

The use of firm-level data on shipments by product and destination market allows us to introduce several new elements into the analysis of export quality.[2] First, it enables us to reduce the aggregation bias in export unit values. Second, it permits us to examine the role of firm heterogeneity, which is currently obscured by the use of product-country level data. Lastly, and perhaps most importantly, it allows us to exploit the within-firm-product variation of unit values across destinations. Our empirical findings not only provide strong confirmation to the hypothesis that unit values increase with distance, but also suggest there is more to be learned from such a micro-level analysis. Indeed, our results suggest that this positive association reflects not only the selection of firms across markets, but also the within-firm selection of product varieties across destinations. In addition, our results suggest that firm size heterogeneity does not play a key role in explaining the positive effect of distance on export unit values.

The remainder of the paper is organized as follows. In Section 2, we describe the data employed. Section 3 outlines the econometric specification. The corresponding results

[2] While several recent papers make use of data with a similar level of detail (Bernard *et al.*, 2008; Eaton *et al.* 2008; Álvarez *et al.*, 2007; Muûls and Pisu, 2007), none focuses on export quality.

are presented in Section 4. Section 5 offers some concluding remarks.

2 Data

Export flows: We draw on micro data from the Foreign Trade Statistics (FTS) of Portugal for 2005. This is the country's official information source on imports and exports. It comprises the export flows of virtually all exporting firms, and provides detailed information on the product exported, the destination market, and the value and quantity exported.

These data are collected through two different systems. The statistics on trade with countries outside the EU (external trade) are obtained from the customs clearance system, which covers the universe of external trade transactions. The data on the transactions with other EU member States (internal trade) are collected through a separate method called the Intrastat.[3] In this case, the information providers are companies engaged in internal trade and registered in the VAT system whose value of annual shipments exceeds a given statistical threshold. This (legally binding) cut-off is defined by each member state so that as many of the smallest exporters as possible are exempted from submitting statistical declarations, while the quality standard of the statistics remains adequate.[4] In 2005, this threshold was set at 85,000 Euros.

Exported products are classified according to the eight-digit level of the Combined Nomenclature (CN). This is the most detailed product classification system for foreign trade statistics in the EU. In 2005, it comprised 10,096 eight-digit product categories. Export values in these data are *free-on-board*, thus excluding any duties or shipping charges. For a large majority of product categories, information on export quantity is reported in kilos. For some categories, however, only a different unit of measurement is used (number of items, pairs, squared meters, cubic meters, etc.).

The Portuguese FTS data for 2005 comprise information on 16,541 exporting firms, 7,591 exported product categories, and 220 destination markets. Despite the aforementioned constrains, the export flows included in these data aggregate to 97 percent of the total value of merchandise exports reported in the official national accounts of Portugal.

A simple descriptive analysis of these data reveals some interesting patterns. Table

[3] The legislation regulating the compilation of statistics on the external (Extrastat) and internal (Intrastat) trade of the EU ensures that the statistics are based on an accurately defined set of norms applied in all member states. In addition, uniform definitions and methods have been issued in regulations or decisions of the European Commission on the practice of compiling statistics on foreign trade.

[4] Data on the total value of the internal trade of those minor companies exempted from the obligation to submit declarations is included in the monthly dispatches value statistics without specification.

1 shows that Spain was by far the most important export market for firms located in Portugal in 2005. Exports to Spain accounted for 26.9 percent of the total export value. The Spanish market also attracted the largest number of exporting firms (30.6 percent of the total) and product categories (68.2 percent of the total).[5] While the relative importance of each destination market in terms of each of these indicators tends to be highly correlated, some interesting cases stand out. Angola, for instance, is only the 9th destination market in terms of export value (2.6 percent of the total), but the 2nd market in terms of exporting firms and exported products.[6]

Table 2 shows that, on average, each firm exported to 3.4 countries. In this case, however, the mean hides substantial firm heterogeneity. More than one-half of all exporters sell solely to one foreign market (54.2 percent). However, they tend to be relatively small exporters, accounting for only 6.8 percent of the total export value. In contrast, only 7 percent of firms export to more than 10 countries, but they account for 60.2% of the total export value.

High firm heterogeneity also stands out when we look at the number of exported product categories per firm. Table 3 shows that 31.6 percent of firms in our data export a single product. However, they account for only 6.81 percent of the total export value. By contrast, 19.7 percent of firms export more than 10 products, and account for 56 percent of the total export value.[7] The average number of exported products per firm is 9.4.

Importing countries: We have supplemented the FTS data with information on the real GDP of the importing country (measured at PPP), its GDP per worker, and the geographic distance between its most populated city and Lisbon (measured in Kms). Data on distance come from CEPII. The remainder variables were taken from the World Development Indicators (WDI) of the World Bank. Whenever WDI data were reported missing, we have resorted to the CIA factbook to fill the corresponding gap. Because of unavailability of information for some small importing countries, the sample was restricted to 199 destination markets. As a result, 1 percent of the total export value, 175 firms and 38 product categories were excluded from the data set employed in the econometric analysis.

[5] Since each firm can export to many markets and each product may be shipped to several countries, the shares reported in the second and third columns of Table 1 do not aggregate to 100%.

[6] Among the 16,541 exporting firms in 2005, 29.5 percent have Angola within the portfolio of destination markets; of the 7,591 exported product categories, 66.9 percent were shipped to Angola.

[7] The high degree of firm heterogeneity revealed by these data and the concentration of export values in a relatively small subset of large multi-market, multi-product exporters are consistent with existing evidence for France, US, Belgium and Chile – see Eaton *et al.* (2004), Bernard *et al.* (2008), Muûls and Pisu (2007) and Álvarez *et al.* (2007).

3 Econometric specification

To investigate the drivers of export unit values, we estimate a linear regression of the form:

$$\ln UV_{ijk} = \alpha \ln DIST_k + \beta \ln Y_k + \gamma \ln (Y/L)_k + \eta_i + \varepsilon_j + \theta_k + \mu_{ijk} \quad (1)$$

where: UV_{ijc} is the unit value of product i exported by firm j to country k, $DIST_k$ is the distance between Lisbon and the most populated city of the destination market, Y_k is country k's real GDP, and L_k its labour force. η_i is a pure product unobserved effect, ε_j is a pure firm unobserved effect, and μ_{ijk} an exogenous disturbance.

The set of explanatory variables in (1) is similar to that employed by Baldwin and Harrigan (2007). The key novelty here is the use of firm-product-country data. In addition to reducing the aggregation bias in the measurement of f.o.b unit values, this level of detail enables us to exploit the within-product, within-firm and within-firm-product heterogeneity in export unit values across destination markets to identify the parameters of interest.

4 Results

4.1 Product-country data

We begin by estimating equation (1), but with export unit values aggregated at the product-country level ($\ln UV_{ik}$).[8] The motivation for so doing is twofold. First, it allows us to establish a direct comparison between our results and those reported in the received literature. Second, these estimates will provide a useful benchmark to analyze the importance of the aggregation bias in export unit values.

Figure 1 illustrates the difference between product- and firm-product-level unit values for a single destination market (Spain). The thick line refers to product-level unit values, which are displayed in ascending order in terms of value. The scattered dots illustrate the corresponding positioning of firm-product-level unit values (located over, above or below the corresponding product-level unit value). Clearly, within a given product, export unit values exhibit substantial heterogeneity across firms.

Table 5 reports the regression results for the full product-country data set − column (1) − and for manufacturing goods only − column (2). As in Baldwin and Harrigan (2007), we estimate product-fixed effects models to control for the average unit value

[8] To compute UV_{ik}, we simply aggregate, for each product-country pair, the information on export values and quantities across firms, and compute the ratio between the two.

of products (e.g. aluminium versus gold) and differences in units (e.g. kilos vs. simple count) across products.

The econometric results yield strong support to the hypothesis that within-product unit values increase with distance. The coefficient associated with this variable is positive and significant at the 1% level. The estimates for the full-sample indicate that if the distance to the destination market doubles export unit values increase by 9.8 percent. For manufacturing products only, this effect is found to be somewhat smaller (9.4 percent).

As regards the effect of market size, however, our empirical findings differ in a substantive way from those of Baldwin and Harrigan (2007). The estimates reported in Table 5 indicate that unit values within products increase with the size of the destination market. This positive effect is inconsistent with Baldwin and Harrigan's model, which postulates that a larger destination market implies that more lower-quality firms will find it profitable to enter, thereby lowering the average export unit value.

Lastly, we find that export unit values increase with the income per worker of the importing country. This result is in line with Hallak (2006), and indicates that demand side considerations *do* play a role in explaining export quality.

4.2 Firm-product-country data

We now turn to the analysis of firm-product-country data. The results from estimating equation (1) for the full sample are reported in columns (1) to (3) of Table 6. Columns (4) to (6) present the estimates for manufacturing goods only.

We start by estimating product-fixed effects models. The econometric results provide strong confirmation to the findings of the preceding sub-section. Unit values increase with distance and rise with the importer's market size and income per worker. Moreover, the point estimates are very similar to those obtained with product-level data, thus suggesting that the bias imposed by the aggregation of unit values across firms is not very significant.

Is the positive effect of distance on export unit values solely explained by the self-selection of (heterogeneous) firms across markets, or does it also occur within each firm? To investigate this question, we exploit the highly disaggregated nature of our data and estimate models with firm fixed-effects. Identification of the parameters of interest now solely comes from the within-firm variation of export unit values across importing countries. The estimates reported in columns (2) and (4) suggest that distance also has a positive effect on within-firm export unit values.

One potential concern with the firm fixed-effects estimates is that firms often export

different products. As a result, it may be difficult to compare the effect of distance on unit values when different products are involved. To address this concern, we estimate firm-product fixed-effects models. In this case, identification comes from the within-firm-product variation of unit values across importing countries.[9] The results reported in columns (3) and (6) demonstrate that the positive effect of distance applies as well to within-firm-product export flows. The point estimate is about two-thirds of that obtained with product-fixed effects models, indicating that doubling the distance increases within-firm-product unit values by 6.5 percent. Taken together, these estimates suggest that the positive effect of distance on unit values reflects not only the selection of firms across markets, but also the within-firm selection of product varieties across destinations.

Our firm- and firm-product fixed-effects estimates also provide new insights about the relation between export unit values and the importer's income per worker. As with distance, the positive effect of Y/L on export unit values is found to apply as well to within-firm and within-firm-product export flows. The magnitude of the point estimates declines slightly, but the coefficients remain positive and significant in both cases. Thus, demand-side factors seem to play a role in explaining within-firm variations in export unit values.

The results for market size suggest, however, a different picture. The magnitude of the coefficient approaches zero and becomes insignificant when the impact of this variable is identified through the within-firm-product variation of unit values across markets. A possible interpretation for this result is that the positive effect of market size on export quality is solely driven by the self-selection of heterogeneous firms across markets.

4.2.1 Robustness checks

We have conducted a number of checks to see if our results are robust to the unit of measurement of export quantity and the value of the export flow. First, we split the sample in two, according to the unit of measurement of export quantity. The results for the products for which quantity is reported in kilos are presented in columns (1) to (3) of Table 7. The estimates for the goods for which only a different unit of measurement is provided are reported in columns (4) to (6). As before, we estimate product, firm and product-firm fixed effects models.

The coefficient on distance remains always positive and statistically significant, confirming our previous findings. Also as before, the coefficient associated with market size is positive and significant in the product-fixed effects regressions, and insignificant in the

[9] For a detailed exposition on these models, see Andrews et al. (2006).

remainder cases. The coefficient attached to the importing country's income per worker remains positive and significant when quantity is reported in kilos. The only substantive difference refers to the coefficients in columns (4) to (6), which become insignificant. However, given the relatively small number of products in this sub-sample and the fact that it contains different units of measurement, the interpretation of these insignificant results should remain cautious.

As another robustness check, we examine if the results are sensitive to the exclusion of small export flows. Since unit values are clearly an imperfect indicator of prices and the information on such small flows is relatively more likely to be incorrectly recorded, this allows us to check the extent to which our findings might be driven by measurement error. The econometric results reported in Table 8 provide convincing evidence that this is not the case. The findings of the preceding section do hold irrespective of the value of the export flow.

4.2.2 The role of firm size heterogeneity

We now check the extent to which the above results are influenced by firm size heterogeneity. To do so, we split our data into three different sub-samples, according to the number of employees of the exporting firm. Firms are included into one of three size categories: small if the number of employees is lower than 50; medium if they employ between 50 and 250 workers; large if the number of workers is greater than 250. The corresponding results are shown in Table 9.

The coefficient on distance remains positive and significant for all size categories. Furthermore, the magnitude of the estimates obtained with firm-product fixed-effects remains almost unchanged across sub-samples and similar to before. Therefore, firm size heterogeneity does not appear to play an important role in explaining the positive effect of distance on within-firm-product unit values. The results for the remainder variables are overall consistent with our previous findings. The only exceptions are found in columns (3) and (4), where the coefficients attached to income per worker and market size become insignificant.

4.2.3 The role of product differentiation

The positive association between distance and within-firm-product export unit values, overwhelmingly confirmed by the above analysis, is consistent with at least two different underlying stories. One the one hand, in the spirit of Baldwin and Harrigan (2007), it could reflect the fact that, within each firm, only high-quality varieties of vertically

differentiated products tend to be exported to more distant markets. On the other hand, the results could reflect price discrimination across markets, with relatively homogeneous goods being exported at higher prices to more distant markets.

To investigate these hypotheses further, we resort to Rauch's (1999) classification scheme, which divides 4-digit SITC product categories into three groups: differentiated, reference price, and homogeneous products. Homogeneous goods are those traded on an organized exchange, and include products such as oil, metals, corn, etc. Reference price products are relatively homogeneous goods that are not sold on organized exchanges but have a benchmark price (e.g. listed in industry guides and trade journals). The remainder products are classified as differentiated. In order to merge the SITC classification with the more detailed product classification of our data set, we make use of a concordance made available online by RAMON, the Eurostat's Metadata server.[10]

Clearly, for the purposes of the present analysis, the use of a classification scheme of this sort is subject to several limitations, which are worth reiterating up-front. First, and despite being the most detailed scheme available, Rauch's (1999) categorization relies still on a relatively broad definition of product, thereby obscuring significant heterogeneity. Second, the scheme does not allow to discriminate between horizontal and vertical product differentiation, with the latter concept being the most relevant for the purposes of this study. Notwithstanding these caveats, it is arguably plausible to assume that, on average, the degree of quality heterogeneity should be higher for differentiated products than for reference price or homogeneous goods.

Table 10 presents econometric results for each of these product groups, based on firm-product fixed effects models. For differentiated products, the coefficient on distance is positive and significant at the 1% level. Furthermore, its magnitude is very similar to that obtained before, and clearly the highest among the three product groups: for reference price products, the coefficient of distance is not only much smaller but also insignificant; for homogeneous goods it is also lower but statistically significant at the 5% level. The econometric results appear, therefore, to be more supportive of the hypothesis that the coefficient on distance is capturing within-firm-product differences in quality across destinations. However, given the aforementioned limitations and the differences in sample size across product groups, the conclusions should remain tentative.

[10] http://ec.europa.eu/eurostat/ramon. Due to imperfect correspondence, 14.7% of the observations of the original data set were lost (corresponding to 10% of the products initially considered).

5 Concluding remarks

In recent years, empirical research on firm-level exporting has established a wide range of new stylized facts. This paper has contributed to this literature by providing, to the best of our knowledge the first, firm-level evidence on the drivers of export quality. Using micro data from Portugal covering virtually all export flows in 2005, we have found robust evidence that *free-on-board* unit values within narrow product categories increase systematically with distance. Our results provide, therefore, further confirmation to the finding of Baldwin and Harrigan (2007), based on product-country data for the US. There is, however, more to be learned from such detailed data. Indeed, we have shown that this relationship holds as well *within* each exporter, and does not appear to be driven by firm size heterogeneity. Lastly, our results indicate that unit values within products rise with the income per worker of the importing country, suggesting that demand side factors are an important driver of export quality.

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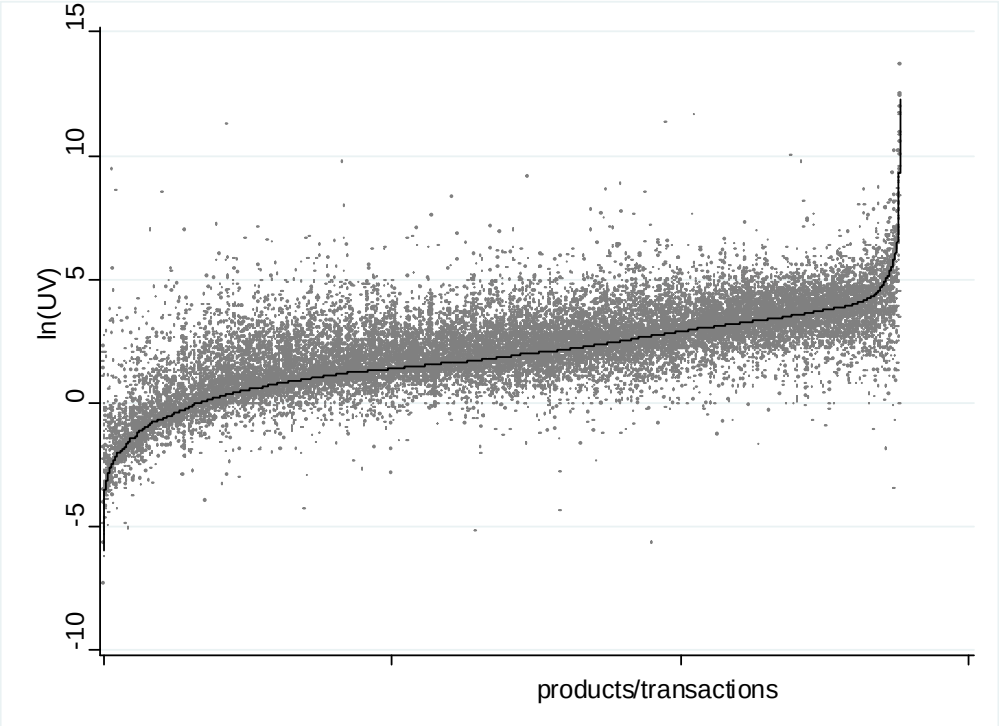

Figure 1: Unit values: Product versus firm-product data

Table 1: Main destination markets: value, firms and products

Destination	Export value		Exporting firms		Exported products	
	% of total	rank	% of total	rank	% of total	rank
Spain	26.93	1	30.57	1	68.17	1
France	13.61	2	21.39	3	45.82	4
Germany	12.44	3	14.38	7	34.99	5
United Kingdom	8.35	4	14.40	6	33.46	6
United States	5.53	5	14.45	4	27.66	8
Italy	4.38	6	10.89	9	26.76	10
Netherlands	4.03	7	10.45	10	25.64	12
Belgium	3.87	8	9.90	11	25.93	11
Angola	2.60	9	29.45	2	66.86	2
Singapore	1.29	10	1.38	47	4.35	51
Sweden	1.14	11	6.24	13	14.36	18
Switzerland	0.84	12	12.25	8	24.57	13
Denmark	0.82	13	5.99	15	12.19	20
Finland	0.74	14	3.90	23	10.21	27
Turkey	0.72	15	3.13	28	10.04	28
Brazil	0.59	16	5.66	16	16.51	16
Austria	0.57	17	4.12	21	10.93	26
Poland	0.57	18	2.90	29	9.35	33
Ireland	0.55	19	4.47	19	12.74	19
China	0.55	20	3.31	26	9.37	32
Canada	0.47	21	7.13	12	15.23	17
Cape Verde	0.47	22	14.42	5	46.96	3
Greece	0.45	23	3.98	22	11.53	22
Morocco	0.42	24	3.68	25	16.81	15
Hungary	0.36	25	2.01	40	6.49	43

Table 2: Number of markets covered per firm

Number of markets covered	% of firms	% of value
1	54.18	6.81
2	14.97	6.17
3	7.67	4.69
4	5.02	3.17
5	3.28	3.72
6	2.42	3.88
7	1.81	2.54
8	1.46	3.63
9	1.13	2.56
10	1.03	2.61
More than 10	7.03	60.24
Average number of destinations per firm	3.41	
Maximum number of destinations per firm	84	

Table 3: Number of products exported per firm

Number of products exported	% of firms	% of value
1	31.58	6.22
2	14.69	4.46
3	9.09	3.97
4	6.83	5.85
5	4.90	3.67
6	3.63	2.55
7	3.00	2.61
8	2.43	5.62
9	2.27	2.26
10	1.89	6.82
More than 10	19.68	55.95
Average number of products per firm	9.94	
Maximum number of products per firm	961	

Table 4: Descriptive statistics: Regression data

	Mean	SD	Min	Max
ln UV	2.15	1.72	-7.86	15.12
ln Y	25.69	2.45	16.52	30.15
ln Y/L	10	1.26	3.43	17.99
ln DIST	7.98	0.87	6.09	9.87
Observations	247,269			
Products	7,553			
Firms	16,366			
Destination Markets	199			

Table 5: Product-country data: Basic results

	Full sample	Manufacturing
	(1)	(2)
Y	0.019	0.02
	(2.18)**	(2.28)**
Y/L	0.063	0.065
	(2.31)**	(2.42)**
DIST	0.098	0.094
	(3.22)***	(3.22)***
Product fixed-effects	Yes	Yes
R^2	0.0220	0.0220
F-statistic	14.76	15.30
P-value	0.000	0.000
Observations	74,046	71,489
Products	7,553	7,080
Destination markets	199	199

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significant at 5%; ***significant at 1%.

Table 6: Firm-product-country data: Basic results

	Full sample			Manufacturing		
	(1)	(2)	(3)	(4)	(5)	(6)
Y	0.023	0.008	0.002	0.024	0.008	0.002
	(3.32)***	(1.72)*	(0.35)	(3.50)***	(1.76)*	(0.33)
Y/L	0.048	0.045	0.038	0.048	0.047	0.039
	(1.98)**	(2.92)***	(2.03)**	(2.03)**	(3.10)***	(2.09)**
DIST	0.095	0.076	0.065	0.092	0.074	0.065
	(6.92)***	(6.56)***	(4.47)***	(6.90)***	(6.39)***	(4.38)***
Product fixed-effects	Yes			Yes		
Firm fixed-effects		Yes			Yes	
Firm-product fixed-effects			Yes			Yes
R^2	0.0103	0.0080	0.0052	0.0109	0.0081	0.0047
F-statistic	24.08	15.91	7.10	25.17	15.50	6.86
P-value	0.000	0.000	0.000	0.000	0.000	0.000
Observations		247,269			240,649	
Products		7,553			7,080	
Firms		16,366			15,815	
Product-firm groups		161,166			156,456	
Destination markets		199			199	

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significant at 5%; ***significant at 1%.

Table 7: Export quantity unit of measurement

	Kilos			Other measure		
	(1)	(2)	(3)	(4)	(5)	(6)
Y	0.025	0.008	-0.0004	0.014	0.014	0.002
	(3.64)***	(1.60)	(0.07)	(0.96)	(1.81)*	(0.32)
Y/L	0.041	0.043	0.035	0.005	-0.011	0.004
	(1.75)*	(2.66)***	(1.88)*	(0.15)	(0.39)	(0.14)
DIST	0.057	0.050	0.033	0.105	0.091	0.085
	(3.59)***	(3.78)***	(2.38)**	(5.46)***	(10.02)***	(7.03)***
Product fixed-effects	Yes			Yes		
Firm fixed-effects		Yes			Yes	
Firm-product fixed-effects			Yes			Yes
R^2	0.0122	0.0100	0.0069	0.0041	0.0055	0.0042
F-statistic	18.58	9.44	2.54	10.12	35.71	16.84
P-value	0.000	0.000	0.055	0.000	0.000	0.000
Observations		224,631			22,638	
Products		7,487			810	
Firms		15,942			2,367	
Product-firm groups		151,913			11,217	
Destination markets		199			127	

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significantat 5%; ***significant at 1%.

Table 8: Value of the export flow

	> 200 euros			> 1,000 euros		
	(7)	(8)	(9)	(10)	(11)	(12)
Y	0.025	0.013	0.004	0.023	0.015	0.006
	(3.77)***	(2.46)**	(0.72)	(2.92)***	(2.30)**	(1.07)
Y/L	0.047	0.040	0.040	0.044	0.040	0.043
	(2.28)**	(3.10)***	(2.13)**	(2.09)**	(2.70)***	(2.40)**
DIST	0.150	0.107	0.085	0.156	0.105	0.085
	(10.20)***	(9.50)***	(5.78)***	(9.66)***	(8.73)***	(5.92)***
Product fixed-effects	Yes			Yes		
Firm fixed-effects		Yes			Yes	
Firm-product fixed-effects			Yes			Yes
R^2	0.0106	0.0097	0.0077	0.0090	0.0098	0.0086
F-statistic	38.86	31.28	12.08	35.34	28.62	12.37
P-value	0.000	0.000	0.000	0.000	0.000	0.000
Observations		200,642			150,120	
Products		7,268			6,827	
Firms		15,859			14,355	
Product-firm groups		127,378			90,841	
Destination markets		198			196	

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significant at 5%; ***significant at 1%.

Table 8: Value of the export flow (continued)

	> 5,000 euros			> 50,000 euros		
	(1)	(2)	(3)	(4)	(5)	(6)
Y	0.021	0.014	0.007	0.013	0.014	0.005
	(2.06)**	(1.80)*	(1.06)	(1.26)	(1.65)	(0.71)
Y/L	0.046	0.046	0.048	0.079	0.047	0.054
	(2.03)**	(2.42)**	(2.14)**	(3.55)***	(2.27)**	(2.33)**
DIST	0.137	0.083	0.072	0.108	0.058	0.051
	(7.33)***	(6.16)***	(5.05)***	(7.09)***	(4.00)***	(3.64)***
Product fixed-effects	Yes			Yes		
Firm fixed-effects		Yes			Yes	
Product-firm fixed effects			Yes			Yes
R^2	0.0078	0.0099	0.0087	0.0118	0.0126	0.0115
F-statistic	20.82	14.47	8.76	18.54	6.17	6.01
P-value	0.000	0.000	0.000	0.000	0.000	0.000
Observations		93,104			33,050	
Products		5,987			3,933	
Firms		11,384			7,210	
Product-firm groups		52,446			18,099	
Destination markets		193			169	

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significant at 5%; ***significant at 1%.

Table 9: Firm size (number of employees)

	Small Firms (n. employees < 50)			Medium Firms (50 ≤n.employees <250)		
	(1)	(2)	(3)	(4)	(5)	(6)
Y	0.036	0.013	-0.004	0.011	0.006	0.004
	(4.53)***	(2.05)**	(0.48)	(1.62)	(1.00)	(0.74)
Y/L	0.050	0.032	0.032	0.080	0.072	0.048
	(1.71)*	(1.76)*	(1.38)	(3.93)***	(4.36)***	(2.37)**
DIST	0.110	0.068	0.069	0.084	0.085	0.064
	(5.99)***	(4.75)***	(3.11)***	(6.14)***	(6.84)***	(4.62)***
Product fixed-effects	Yes			Yes		
Firm fixed-effects		Yes			Yes	
Product-firm fixed-effects			Yes			Yes
R^2	0.0091	0.0082	0.0019	0.0144	0.0118	0.0104
F-statistic	22.44	9.47	5.89	21.18	18.64	7.26
P-value	0.000	0.000	0.000	0.000	0.000	0.000
Observations		141,252			69,547	
Products		6,814			5,443	
Firms		13,278			2,588	
Product-firm groups		109,817			34,940	
Destination markets		184			183	

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significant at 5%; ***significant at 1%.

Table 9: Firm size (continued)

	Large Firms (employees $\geq$ 250)		
	(7)	(8)	(9)
Y	0.017	0.005	0.006
	(2.64)***	(0.87)	(1.04)
Y/L	0.048	0.027	0.029
	(2.39)**	(1.26)	(1.94)*
DIST	0.072	0.071	0.061
	(5.37)***	(3.89)***	(3.81)***
Product fixed-effects	Yes		
Firm fixed-effects		Yes	
Product-firm fixed-effects			Yes
R^2	0.0165	0.0037	0.0067
F-statistic	17.97	5.14	6.06
P-value	0.000	0.000	0.000
Observations		36,470	
Products		4,494	
Firms		500	
Product-firm groups		16,409	
Destination markets		183	

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significantat 5%; ***significant at 1%.

Table 10: The role of product differentiation

	Differentiated	Reference Price	Homogeneous
	(1)	(2)	(3)
Y	0.006	-0.006	-0.007
	(0.90)	(0.70)	(0.74)
Y/L	0.039	0.032	0.027
	(1.72)*	(1.75)*	(1.55)
DIST	0.080	0.024	0.059
	(4.10)***	(1.44)	(2.08)**
Product-firm fixed effects	Yes	Yes	Yes
R^2	0.0057	0.0030	0.0369
F-statistic	5.88	1.52	2.10
P-value	0.000	0.210	0.098
Observations	174,040	36,248	7,850
Products	4,102	2,000	719
Firms	13,415	5,022	1,446
Product-firm groups	114,792	22,009	5,080
Destination markets	191	175	115

Robust t-statistics in absolute value within parentheses, based on standard errors clustered by importing country.* significant at 10%; ** significantat 5%; ***significant at 1%.