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Indirect exporters and importers

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Abstract

This paper analyses the relation between firms' productivity and the different modes of participation to international trade. In particular, we account for the possibility that firms can not only export their products, but also internationally source their inputs, either directly or indirectly. Using a cross section of firm-level data for several advanced and developing economies, the study confirms the productivity-sorting prediction according to which domestic firms are less efficient than those resorting to an export intermediary, while the latter are less productive than producers which export directly. We show that the same sorting exists also on the import side. Finally, we investigate the effects of source country characteristics on the sorting of firms into different modes of international trade.

Keywords: heterogeneous firms, international trade, direct and indirect exports, direct and indirect imports, intermediation
JEL codes: F14, D22, L22

1 Introduction

The last two decades witnessed a booming expansion in disaggregated data source which enabled to disclose a great deal of differences among firms, even within the same sector. In this scenario, the international trade literature was one of the first to reap the benefits associated to increased data availability so that new theoretical models were put forth and a whole new set of empirical facts was established concerning the differences between exporters and non exporters. The emergence of such firm level heterogeneities, while important *per se*, also proved to have relevant implications for aggregate outcomes and for policy design (see, among the others, Melitz; 2003; Bernard et al.; 2007).

It is in this scenario that an emerging stream of research, within international trade, has shown the existence of several categories of firms engaged, under different manners,

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in exporting activities. Such categories comprise manufacturing firms that produce the goods and also *directly* manage the exchange with the downstream customer abroad, producers that *indirectly* reach the destination market through intermediaries and *intermediaries* themselves (Bernard et al.; 2010b; Ahn et al.; 2011; Antràs and Costinot; 2011).[1]

The contribution of the paper to this stream of literature is twofold. First, we investigate which firm's characteristics are related to different modes of access to foreign markets, both on the import and export side. While works on exports are quite numerous, much less attention has been devoted to imports. This is unfortunate, given the strong interconnection between importing and exporting and the key role of imports in the global economy. As a matter of fact, around 20 per cent of total exports are due to intermediate inputs being used for further processing (Hummels et al.; 2001). To our knowledge, it is the first time that it is possible to provide evidence on productivity sorting both for direct and indirect importers. Second, we study how the sorting of firms into direct or indirect trade is related to that part of fixed costs that is specific to the source country. Following Davies and Jeppesen (forthcoming) we investigate whether trade barriers lower the differences between direct and indirect traders, again both from the export and import side.

To do this we resort to survey data by the World Bank (BEEPS) which provide, for several countries, information about the different modes of export and import. We complement this firm-level data with information on country-level fixed costs. The evidence suggests that producers in the middle range of size and efficiency are the most likely to export indirectly through an intermediary, while those firms that are highly productive and big can manage to export directly. We show that a sorting mechanism similar to that observed on the export side is found also with respect to the sourcing of imported inputs with more productive (bigger) firms that are better equipped to directly source in international market, whether firms in the middle range of productivity distribution tend to acquire imported inputs through an intermediary. The results for both exports and imports suggest a strong role for intermediaries which can contribute to open access to foreign markets to a large proportion of small and less productive firms. Indeed, the data reveals that, by allowing less efficient producers to export their products through intermediaries, the number of firms who reach foreign markets increases by more than a quarter. Whether the number of firms that can access to international sourcing of inputs increases by more than half when companies can resort to intermediaries.

By looking at the source-country characteristics, the work investigates to what extent the differences of direct and indirect traders with respect to non-traders are related to economy-wide factors. Similarly to Davies and Jeppesen (forthcoming) we observe that the higher the barriers to exports, the bigger the productivity gap between direct exporters and non-exporters. The same regularity holds on the import side when country barriers are measured with a proxy of the governance quality level. On the contrary, the difference between indirect traders and non-traders seems not to be affected.

The rest of the paper is organized as follows. Section 2 reviews the recent theoretical and empirical contributions considering intermediaries in international trade. Section 3 describes the survey data from BEEPS. Section 4 examines the characteristics of manufacturers that do not trade, those that trade indirectly through an intermediary and direct traders. Section 5 considers whether trade barriers lower the differences between

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[1]As emphasized by Bernard et al. (2010b) there exist also firms that are engaged in a mix of those activities.

direct and indirect traders, both from the export and import side. Section 6 concludes.

2 Background literature

Recent models of international trade emphasize the role that heterogeneity in productivity plays in explaining the structure of international commerce (Melitz; 2003; Roberts and Tybout; 1997). According to these models and a large quantity of associated empirical works, more productive firms are more likely to engage in exporting and foreign direct investment (Bernard et al.; 2007). These frameworks generally assume that trade occurs directly between producers in one country and final consumers in another and do not account for the possibility to export indirectly through an intermediary firm.

Only recently new models of trade, in particular Akerman (2010) and Ahn et al. (2011), extend the heterogeneous firm trade model of Melitz (2003) by introducing an intermediation technology which allows wholesalers to exploit economies of scope in exporting.[2] While the details of the models vary, the general framework is similar. Exporting directly incurs a fixed cost and a variable cost. Indirect exporting takes place through an intermediary firm, or using intermediary 'technology'. The intermediary is assumed to be able to lower the fixed costs of exporting while possibly incurring additional variable costs. The existence of the latter alternative means that a number of manufacturing firms may export indirectly through a wholesaler, rather than managing their own distribution networks. These firms, indirect exporters, pay an intermediary fixed cost which is smaller than their own fixed cost of direct exports. In this setting, firms choose to serve the foreign market either directly or through domestically-based export intermediaries.

The decision concerning the mode of export depends on the relative productivity of the firm. As in the standard model of Melitz (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 chooses to export indirectly through wholesalers. This third group, which looks like non-exporters in the data, includes some firms who would not have been exporters in the absence of intermediaries and some firms who would be marginal exporters in the absence of intermediaries.

On an empirical side, contributions by Ahn et al. (2011), Akerman (2010), Bernard et al. (forthcoming) and Bernard et al. (2010b) investigates several issues related to the activity of intermediary exporters in China, Sweden, Italy and the US, respectively. The common finding of these studies is that intermediaries differ from direct exporters as they are smaller in terms of total turnover and export value, but they export more products. Other differences include the types of products exported and the destinations served. Indeed, wholesalers are more likely to export to markets with higher destination-specific fixed costs and focus on products that are less differentiated and have lower contract intensity (Bernard et al.; forthcoming).

While these works mainly emphasize the differences in the attributes between direct manufacturing exporters and intermediaries, due to data constraints they provide no information on the manufacturer which supplied the good to the intermediary in the first place. Few recent works have started to investigate what drives the sorting of firms into

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[2]Early theoretical work on the role of intermediaries in international trade, e.g Rauch and Watson (2004) and more recently Petropoulou (2011), models international trade as an outcome of search and networks.

different mode of export. Abel-Koch (2013), using data from the World Bank Enterprise Survey conducted in Turkey in 2005, shows that the share of indirect exports in total exports declines significantly with a firm's size, and this result is robust to the inclusion of a variety of control variables and different estimation methods. Similarly, McCann (2013) using the BEEPS survey for Eastern Europe shows that direct exporters are more productive than both indirect exporters and domestic firms. Finally, Davies and Jeppesen (forthcoming) confirm on a larger set of countries covered by BEEPS the existence of a further productivity sorting for indirect exporters and they also investigate the interrelation between productivity sorting and source-specific country fixed costs of exporting.

While there is an emerging literature on the role of intermediaries on the export side, empirical as well as theoretical work on the import side and on the characteristics of firms that source inputs from abroad indirectly through wholesalers is much scarcer. The only study available, Bernard et al. (2010b), suggests that intermediaries are important not only for exports but also for imports. Using data for US, the paper shows that pure importers wholesalers account for a large fraction of the population, 42%, and they have a share of import value of 15%.

Who are such manufacturing firms that import indirectly through wholesalers? As reminded, there are no available theoretical or empirical contributions on the different sorting of firms into direct or indirect importing, notwithstanding the relevance of intermediated imports. The existing evidence is limited to direct importers and it shows that these firms display many of the features which identify direct exporters. Bernard et al. (2009) focus on exporters and importers in the US and show that both are associated with better performance. The evidence of higher productivity for importers with respect to domestic firms is also detected in Muls and Pisu (2009); Altomonte and Bekes (2009); Castellani et al. (2010); Halpern et al. (2011), among others. Theoretical models have recognized that imports of intermediate and capital goods can raise productivity via several channels: learning, variety and quality effects. It has also been suggested that, as for exports, there is a self-selection mechanism that holds on the import side (Castellani et al.; 2010). This is because importers need to invest in complementary assets (or absorptive capacity) in order to effectively use imported inputs in their production process and that this mechanism especially applies when importers purchase abroad higher quality and/or more complex inputs compared to those domestically available. Similarly, Kugler and Verhoogen (2009), assume that input quality and productivity are complementary to obtaining higher-quality output, and that importing allows to choose from a wider variety of inputs. Thus, more productive firms can be expected to look for higher-quality inputs in international markets and they are more likely to self-select into importing.

If the productivity sorting mechanism holds also for importers, we might expect that, similarly to what observed for exports, the decision concerning the mode of import depends on the relative productivity of the firm. With the possibility of importing through intermediaries, firms now have an additional option of using the intermediation technology to source from abroad. Therefore, we should observe an efficiency-ordering of firms into import markets according to which domestic firms are less efficient than those using an intermediary, while the latter are less efficient than firms which import directly. This is because more capable firms produce higher quality outputs by using higher quality and more expensive intermediate inputs.[3] It follows that highly efficient firms importing

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[3]Kugler and Verhoogen (2012) observe a positive relationship between plant size, input and output prices using a representative sample of Colombian manufacturing firms. The assumption that marginal

knowledge-intensive capital goods or very specific and high quality intermediate inputs are more likely to do it directly, while firms sourcing abroad standardised low-price / quality inputs find it more profitable to do it indirectly through wholesalers. As in the export case we can have two productivity cut-offs that indicate which ranges of productivity determine exit, domestic purchase only, or direct imports.

Finally, the emerging literature on the existence of a variety of firms involved in international trade has shown that country characteristics, and country level fixed costs more in detail, are related to the level of firms' exports and that such impact varies across categories of exporters. In this respect, Ahn et al. (2011) show that exports by intermediaries are less sensitive to country characteristics, such as distance and market size, than exports by direct exporters. Focusing on a proxy for market level fixed costs, Bernard et al. (forthcoming) find that intermediaries' exports increase with market costs in the destination market, suggesting that wholesalers are better able to spread fixed costs across the different products they distribute in the destination market. Whether most of these works consider the relationship between the export mode and the heterogeneity in trade barriers of the destination countries, the recent work by of Davies and Jeppesen (forthcoming) takes another perspective by investigating how productivity differences across exporters vary with economy-wide factors of the source country. Using data for several developing countries, their work suggests that a reduction in source-country trade barriers increases the difference between indirect exporters and domestic-only firms while reducing the gap between direct and indirect exporters. Our paper also contribute to this stream of literature by analysing how the differences in the source-country specific costs affect not only the export but also the import mode.

3   Data description

To investigate the choice between direct and indirect exporting and direct and indirect importing, the paper employs data from the Business Environment and Enterprise Performance Survey (BEEPS), 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.[4] 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 unifies the questions over a wide range of countries and it contains more detailed information compared to the standardized dataset for the other period. In particular, it contains the breakdown of input purchases into domestic, indirect and direct import, which is crucial for our analysis. However, as a robustness check we also run some of the regressions on the "Standardized data 2006-2011" and on the pooled

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costs increase in output quality is also supported by the empirical results in Brambilla et al. (2012). These authors find a positive relationship between the income level of destination countries, proxing consumers' preference for high-quality goods, and the wages of workers employed by Argentinean exporters.

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

data from 2002 to 2011.[5]

The "Standardized data 2002-2005" dataset originally includes 71,789 firms ranging in all economic activities from 107 countries over the period 2002-2005. Once we focus on firms in manufacturing industries and remove firms reporting missing values in the variables of interest,[6] we are left with 27,298 from 95 countries. The BEEPS database contains information on a number of firm-level variables including number of employees, total turnover, ownership structure, industry and geographical location. The empirical analysis of this paper is mostly based on categorical variables whose values reflect inter-viewees' responses to survey questions. Table A1 in Appendix A reports the questions of the BEEPS questionnaire with the coding of the possible answers that have been used to construct the variables included in empirical models.

In order to check whether our results are driven by the over-representation of developing countries in the dataset we perform the empirical analysis separately on the subgroup of advanced economies. Therefore, we select among the available countries those with per capita income levels above the 75th percentile according to the World Bank.[7] Countries belonging to "High Income" groups are marked in Table 1 and 2 with *.

Besides cross-country comparability, one of the main advantage of the BEEPS data is that total sales of producing firms are broken out in three mutually exclusive categories (that sum to 100 percent): share of national sales, share of indirect exports and share of direct exports. In the "Standardized data 2002-2005" dataset, but not in the later waves, the same decomposition is also available for material inputs, so that the survey reports the share of domestic purchases and the shares of indirectly and directly imported material inputs.

Exploiting such decomposition of sales (purchase of inputs) we compute for each firm the share of direct and indirect exports (imports). Figure 1 shows the distribution of direct export (import) shares. The bimodality of the distribution is apparent and suggests a dichotomy in the way firms get involved in international trade: either they only export (import) directly or indirectly. Indeed, only 3.40% (5.05%) of exporters (importers) can be classified as mixed direct-indirect.[8]

Given the properties of the distribution we proceed to create three mutually exclusive dummy variables accounting for non-exporters, indirect exporters and direct exporters (and the same on the import side).[9] Table 1 and 2 report, respectively for exporters and importers, the number of observations for each country broken down into domestic only firms, indirect and direct exporters (importers). Across all countries, 65.4% of firms do not export at all, 27.3% of firms export directly and 7.3% of firms reach foreign markets using intermediaries.[10] The ability to export indirectly increases by more than a quarter the number of firms that can reach foreign markets with their goods. On the import side,

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[5]Unfortunately, not all the analyses can be done on the pooled data as the information contained in the two standardized datasets are not completely overlapping.

[6]The cleaning procedures are described in Appendix A, the Stata do file to replicate the analysis is available upon request.

[7]This high-income group consists of Argentina, Germany, Greece, Ireland, Oman, Portugal, Slovenia, Spain, and South Korea. GDP per capita, constant 2000 US$, downloaded from http://data.worldbank.org/indicator/NY.GDP.PCAP.KD.

[8]We thank one anonymous referee for the suggestion to further investigate the distribution of the shares of direct and indirect exports.

[9]The very few firms that are both direct and indirect exporters are assigned to the category direct (indirect) if the share of direct exports is bigger (smaller) than the share of indirect exports. The same procedure is applied to importers.

[10]The share of indirect exporters for High-Income is 5.5%.

Table 1: Number of firms in BEEPS: domestic, direct, indirect exporters

Country	Domestic Only (1)	Indirect Exporter (2)	Direct Exporter (3)	Country	Domestic Only (1)	Indirect Exporter (2)	Direct Exporter (3)
Albania	26	2	23	Latvia	13	2	15
Angola	68	1		Lebanon	28	17	45
Argentina*	95	4	33	Lesotho	9	2	14
Armenia	148	22	37	Lithuania	49	9	34
Bangladesh	554	54	366	Madagascar	146	13	64
Belarus	17	5	15	Malawi	106	10	33
Benin	108	5	21	Malaysia	29	5	19
Bolivia	37	4	6	Mali	51	1	11
Bosnia Herzegovina	21	3	20	Mauritania	18	2	4
Botswana	20			Mauritius	43	10	81
Brazil	1090	87	398	Mexico	651	20	15
Bulgaria	24	4	22	Moldova	143	6	76
Burkinafaso	25	2	8	Mongolia	122	18	27
Burundi	23			Morocco	332	48	457
Cambodia	1	8	18	Namibia	15		3
Cameroon	34	7	30	Nicaragua	419	65	68
Capeverde	24		1	Niger	8		7
Chile	518	51	266	Oman*	41	2	21
China	1163	176	141	Pakistan	628	17	113
Colombia	185	31	27	Panama	30	1	1
CostaRica	202	24	69	Paraguay	31	2	7
Croatia	21	4	29	Peru	37	9	14
Czech	36	9	31	Philippines	376	59	198
Dom.Republic	104	4	14	Poland	334	9	140
Ecuador	318	21	92	Portugal	55	14	46
Egypt	725	48	178	Romania	240	22	80
ElSalvador	333	62	165	Russia	71	4	21
Eritrea	6			Rwanda	10	1	2
Estonia	15	3	18	Senegal	64	2	50
Ethiopia	115	2	6	Serbia	78	26	87
Gambia	12			Slovakia	6		23
Georgia	14		15	Slovenia*	9	5	39
Germany*	109	7	93	SouthAfrica	209	58	275
Greece*	48	2	33	Spain*	63	2	46
Guatemala	342	36	135	SriLanka	117	125	157
Guinea	45		2	Swaziland	21	2	2
Guyana	98	7	46	Syria	98	20	46
Honduras	361	41	118	Tajikistan	132	3	16
Hungary	138	14	133	Tanzania	232	10	23
India	2612	140	505	Thailand	450	83	373
Ireland*	73	9	81	Turkey	360	152	456
Jamaica	23	4	19	Uganda	253	10	18
Jordan	160	13	163	Ukraine	99	8	35
Kazakhstan	216	3	32	Uruguay	20	1	3
Korea	103	17	77	Uzbekistan	128	2	29
Kyrgyzstan	102	9	39	Vietnam	579	142	408
Laos	143	17	81	Zambia	50	2	24
				Total	17,858	1,988	7,452
				High Income*	596	62	469

Note: Table reports the observations only for firms in the manufacturing sectors. High Income* includes those countries above the 75th percentile of income level according to the World Bank. Mixed exporters are those that export both directly and indirectly. Source: Our elaboration on BEEPS Standardized data 2002-2005.

Table 2: Number of firms in BEEPS: domestic purchaser, direct and indirect importers

Country	Domestic Purchaser (1)	Indirect Importer (2)	Direct Importer (3)	Country	Domestic Purchaser (1)	Indirect Importer (2)	Direct Importer (3)
Albania	10	10	31	Latvia	12	9	9
Angola	69			Lebanon	14	28	48
Argentina*	132			Lesotho	1	17	7
Armenia	82	86	39	Lithuania	59	10	23
Bangladesh	377	94	503	Madagascar	89	48	86
Belarus	8	17	12	Malawi	28	26	95
Benin	66	29	39	Malaysia	53		
Bolivia	47			Mali	17	23	23
Bosnia Herzegovina	14	12	18	Mauritania	24		
Botswana	20			Mauritius	22	36	76
Brazil	887	487	201	Mexico	686		
Bulgaria	12	22	16	Moldova	108	38	79
Burkinafaso	7	19	9	Mongolia	52	37	78
Burundi	23			Morocco	168	116	553
Cambodia		7	20	Namibia	18		
Cameroon	11	27	33	Nicaragua	300	158	94
Capeverde	4	10	11	Niger	1	1	13
Chile	469	84	282	Oman*	14	8	42
China	1480			Pakistan	758		
Colombia	243			Panama	32		
CostaRica	151	48	96	Paraguay	40		
Croatia	10	20	24	Peru	60		
Czech	25	28	23	Philippines	292	88	253
Dom.Republic	75	10	37	Poland	223	200	60
Ecuador	177	80	174	Portugal	55	21	39
Egypt	648	79	224	Romania	157	102	83
ElSalvador	302	96	162	Russia	58	19	19
Eritrea	6			Rwanda	13		
Estonia	13	8	15	Senegal	29	12	75
Ethiopia	123			Serbia	51	71	69
Gambia	12			Slovakia	1	8	20
Georgia	13	2	14	Slovenia*	8	8	37
Germany*	90	67	52	SouthAfrica	158	126	258
Greece*	32	27	24	Spain*	66	13	32
Guatemala	280	101	132	SriLanka	186	51	162
Guinea	47			Swaziland	25		
Guyana	98	4	49	Syria	61	50	53
Honduras	318	57	145	Tajikistan	124	14	13
Hungary	98	55	132	Tanzania	198	19	48
India	3042	91	124	Thailand	906		
Ireland*	37	56	70	Turkey	500	183	285
Jamaica	7	19	20	Uganda	251	14	16
Jordan	124		212	Ukraine	58	60	24
Kazakhstan	159	26	66	Uruguay	24		
Korea	98	27	72	Uzbekistan	116	12	31
Kyrgyzstan	77	21	52	Vietnam	493	259	377
Laos	165	17	59	Zambia	11	7	58
				Total	16,894	3,735	6,669
				High Income*	532	227	368

Note: Table reports the observations only for firms in the manufacturing sectors. High Income* includes those countries above the 75th percentile of income level according to the World Bank. Mixed exporters are those that export both directly and indirectly. Source: Our elaboration on BEEPS Standardized data 2002-2005.
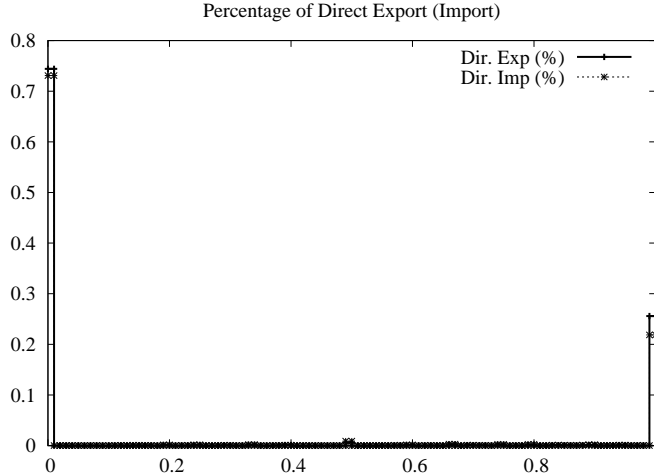
Figure 1: Percentage of direct exports (imports)

61.9% of firms do not import, 24.4% of firms import directly and 13.7% import indirectly. Notice that on the import side the phenomenon is much more relevant as the possibility to resort to international sourcing of inputs increases by more than half when firms can resort to indirect imports.

The longitudinal component of the BEEPS dataset is insufficient to exploit time variations. Indeed, repeated observations are available only for a sub-sample of firms. Therefore, pooled estimation is the preferred technique in our empirical analysis where we exploit the cross-sectional variation, within and across countries, in terms of firms' performance and access to foreign markets. Nevertheless, firm-level controls are selected in the BEEPS dataset to reduce the risk of bias arising from the omission of relevant firm-level characteristics.

The main variables of the survey that we employ as proxy of firm size are total sales and number of employees, and we use the ratio of the two as our proxy of labour productivity. From the BEEPS dataset we obtain additional variables used in the empirical analysis. The variable (log of) Age is included as a firm-level control to account for the fact that younger firms are found to be less productive, smaller and less likely to get access to foreign market. The analysis takes into account the legal structure of a firm by including a dummy variable D^{FO} that takes value one if the majority shareholder in the company is a foreign firm. Indeed, foreign firms have greater opportunities to access international markets and are, on average, bigger and more productive than domestically owned ones. We also consider a proxy for the quality level of a firm, $D^{quality}$, which is a dummy that takes value one if a firm has received an ISO certification. Finally, we include the variable D^{innov} that takes value one if a firm introduced new product lines, upgraded existing ones or introduced new technology that has substantially changed the way that the main product is produced in the last three years.

We are aware that, because of reverse causality problems, these controls are likely to be endogenous with respect to the dependent variables. Therefore, we will not be able to provide a causal interpretation to our results since the various mode of trading and the firms' performance might be jointly determined.

Firm-level trade data from the Enterprise survey are complemented with country variables to investigate the extent to which the sorting of firms into direct or indirect

trade is related to the characteristics of the country in which a firm is located. While the empirical literature on intraindustry heterogeneity and trade usually discriminates between firms based on where they export to or import from (Melitz and Ottaviano; 2008; Eaton et al.; 2011; Bernard et al.; forthcoming; Serti et al.; 2010), the attention here is on the relationship between source-specific trade costs and the differences across trading statuses.[11] Indeed, differences in institutional settings or the quality of the governance across countries might be related to a higher (lower) propensity of firms to get involved into international trade and, relatedly, also to the choice of the export or import mode.

To generate a proxy for the source-specific fixed costs we use information from three measures provided by the World Bank *Doing Business* dataset (Djankov et al.; 2010). Specifically, to measure how difficult is to export from a given country we use: the number of documents required for exporting, the cost of exporting and the time needed to export. Similarly, as a proxy of the barriers to import for a given country we use: the number of documents required for importing, the cost of importing and the time needed to import. Given the high level of correlation, on both the export and import side, between the three variables, we use the primary factor derived from principal component analysis as that factor accounts for most of the variance contained in the original indicators. We call the source-specific market costs for exporting *Market Costs Exp* and the source-specific market costs for importing *Market Costs Imp*.

To proxy for the institutional quality of the source country 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 follow Bernard et al. (2010a) and use the primary factor obtained from principal component analysis, *Governance*, as the proxy for country governance quality.[12] The activity of exporting or importing for firms located in countries with better contracting environments is expected to be relatively easier and therefore to require lower productivity than for firms based in countries with poor institutional quality.

4   Indirect Exporters and Importers

The aim of our empirical analysis is to examine the relationship between manufacturing firm characteristics and their choice of import and export mode, direct or indirect. In this respect we intend to examine one of the main predictions of recent theoretical trade models contemplating the presence of intermediaries and the existence of a further productivity sorting for firms that indirectly access to foreign markets. At the same time, we also verify if the same sorting is at work also on the import side.[13] In order to test this hypothesis we perform a linear regression model, where the dependent variable is a proxy of firm performance and the regressors are the different export or import mode. This specification allows us to investigate how differences in firms' performances are, on average, related to increasing modes of involvement in international trade.

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[11]Notice that the data at our disposal do not allow to decompose total exports (imports) across different destinations (country of origin).

[12]Details on the construction of such variables to account for country level fixed costs are provided in Bernard et al. (forthcoming).

[13]Producers might export indirectly through wholesale firms or through other manufacturing firms, so-called "carry-along trade" (Bernard et al.; 2012). We cannot distinguish between these modes of indirect export in the BEEPS data.

To study the productivity sorting between domestic firms, and different categories of trading firms we estimate the following regression model

$$\ln Y_f = c + \alpha_1 D^{DirExp} + \alpha_2 D^{IndExp} + \beta_1 D^{DirImp} + \beta_2 D^{IndImp} + d_{ct} + d_s + \varepsilon_f \quad (1)$$

where Y_f is the proxy for a firm's efficiency measured by the (log) total sales per employee.[14] D^{DirExp} is a dummy which equals 1 if the manufacturer exports directly and zero otherwise while D^{IndExp} is a dummy which equals 1 if the manufacturer exports indirectly and zero otherwise. Therefore, coefficients α_1 and α_2 capture how direct and indirect exporters differ with respect to the baseline category of firms that report only domestic sales. Similarly, we define as D^{DirImp} the dummy for direct importers and D^{IndImp} the dummy for indirect importers. Hence the β_1 and β_2 coefficients represent the percentage premia for firms importing directly or indirectly with respect to the baseline category of non importing firms.

To account for heterogeneity in cross-sectional regressions we introduce country-year fixed-effects in all specifications, d_{ct}. Moreover, industry fixed-effects (d_s) are included to allow for different production technologies across sectors. Standard errors are clustered at the firm level to allow for serial correlation of the error terms of a given firm across years. However, given the fact that only for few firms we observe repeated observations, we check the robustness of our results to alternative treatments of the error terms, such as clustering by country, industry or country-industry-year level. Results, available upon request, show that the use of alternative clustered standard errors does not affect the significance of the coefficients on the variables of interest.

To directly compare the premium of direct with that of indirect traders, we propose a different specification

$$\ln Y_f = c + \gamma_1 D^{DirExp} + \gamma_2 D^X + \sigma_1 D^{DirImp} + \sigma_2 D^M + d_{ct} + d_s + \varepsilon_f \quad (2)$$

where the dependent variable is, as before, a proxy for a firm's efficiency. As regressors we include a dummy D^X that equals 1 if a firm export either directly or indirectly and a dummy D^{DirExp} if a firm export but only directly. In this case, while γ_2 tells us the average effect of exports (either direct or indirect) on a firm's productivity, the coefficient γ_1 captures the difference in the productivity premia between direct and indirect exporters. Similarly, for imports D^M equals 1 if a firm imports, either directly or indirectly, and D^{DirImp} equals 1 if a firm imports but only directly.

The results for both specifications are reported in Table 3. We start our analysis by including in the regression only the dummies for exporters (columns 1 and 4), those for importers (columns 2 and 5) and then all the four dummies (columns 3 and 6). Column (1) shows that both direct and indirect exporters reports higher sales per employee than non-exporting firms. The relative magnitude of the coefficients also suggests that direct exporters report a performance that is superior to that of indirect exporters. This is confirmed by column (4) in which we directly test for the difference in the productivity premia by estimating equation (2). Indeed, column (4) provides evidence that indirect exporters report sales per employee that are 28.3% higher than non exporters and, in turn, the labour productivity of direct exporters is, on average, 33.8% higher than that of indirect exporters. The same sorting of firms that one observes on the export side, is also found when looking at importing activities, column (2). Importers display higher

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

Table 3: Productivity sorting. Indirect exporters and importers, 2002-2005

Dep. Var.	ln Labour Productivity					
	(1)	(2)	(3)	(4)	(5)	(6)
D^{DirExp}	0.541***		0.388***	0.291***		0.182***
	(0.017)		(0.018)	(0.031)		(0.031)
D^{IndExp}	0.249***		0.206***			
	(0.030)		(0.029)			
D^{DirImp}		0.665***	0.504***		0.445***	0.326***
		(0.020)	(0.021)		(0.022)	(0.023)
D^{IndImp}		0.221***	0.178***			
		(0.021)	(0.020)			
D^X				0.249***		0.206***
				(0.030)		(0.029)
D^M					0.221***	0.178***
					(0.021)	(0.020)
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.873	0.873	0.876	0.873	0.873	0.876
Observations	26,727	26,727	26,727	26,727	26,727	26,727

Note: Table reports regression of firms' labour productivity on different dummies for direct and indirect exporters and importers. D^{DirExp} is a dummy for direct exporter and D^{IndExp} is a dummy for indirect exporter. Similarly, D^{DirImp} is a dummy for direct importer and D^{IndImp} is a dummy for indirect importer. D^X and D^M is a dummy for exporter and importers, respectively. Baseline category is domestic only. Robust standard errors clustered at firm-level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p< 10%). Source: Our elaboration on BEEPS Standardized data 2002-2005.

sales per employee than non-importers, and also on the import side we find evidence of a further productivity threshold that distinguishes indirect from direct importers, column (5). On the import side, column (5), indirect importers are 24.7% more productive than non importers, whether direct importers are 56% more productive than indirect ones. The magnitude of the coefficients is not much affected when we consider, columns (3) and (6), for the possibility that a firm might be both an importers and an exporters, *two-way traders* in the following.

The results on the different sorting of firms in direct and indirect participation to international trade remain valid even when restricting the sample to high income countries, columns (1) to (3) of Table 4, which has the effect of both dramatically reducing the number of observations and of focusing on a set of countries with relevant differences from developing countries, which represent the bulk of BEEPS.

As an additional robustness check we add to our baseline specifications of Table 3 further firm level controls such as the (log) age of a firm and three dummies accounting respectively for the foreign ownership of a firm, D^{FO}, the quality of a firm's internal processes, as proxied by ISO qualification, $D^{Quality}$ and a firm's level innovation activity, D^{Innov}. Results are reported in columns (4) to (6) of Table 4. Again the variables of interests, the dummies accounting for the different participation to trade, maintain the expected sign and the statistical significance.

Appendix B contains further robustness checks. In particular, in Table 6 we consider the relation between different export and import mode, and two proxies for firm size,

Table 4: Productivity sorting. Indirect exporters and importers, 2002-2005. Robustness

Dep. Var.	ln Labour Productivity					
	(1)	(2)	(3)	(4)	(5)	(6)
	HI	HI	HI	All	All	All
D^{DirExp}	0.398***		0.303***	0.432***		0.326***
	(0.071)		(0.088)	(0.020)		(0.021)
D^{IndExp}	0.287***		0.235**	0.218***		0.182***
	(0.096)		(0.100)	(0.032)		(0.032)
D^{DirImp}		0.408***	0.244**		0.520***	0.408***
		(0.085)	(0.105)		(0.023)	(0.024)
D^{IndImp}		0.146*	0.073		0.181***	0.151***
		(0.076)	(0.080)		(0.021)	(0.021)
ln Age				0.011	0.011	0.001
				(0.010)	(0.010)	(0.010)
D^{FO}				0.413***	0.413***	0.336***
				(0.031)	(0.031)	(0.031)
$D^{Quality}$				0.348***	0.367***	0.315***
				(0.023)	(0.023)	(0.023)
D^{Innov}				0.087***	0.086***	0.068***
				(0.018)	(0.018)	(0.018)
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.117	0.110	0.121	0.857	0.857	0.859
Observations	1,114	1,114	1,114	20,818	20,818	20,818

Note: Table reports regression of firms' labour productivity on different dummies for direct and indirect exporters and importers. D^{DirExp} is a dummy for direct exporter and D^{IndExp} is a dummy for indirect exporter. Similarly, D^{DirImp} is a dummy for direct importer and D^{IndImp} is a dummy for indirect importer. Baseline category is domestic only. D^{FO} is a dummy for the foreign ownership of the firm; $D^{Quality}$ takes value one if a firm has received a ISO qualification; D^{Innov} is a dummy for the level of firm's innovation. HI (High Income) includes those countries above the 75th percentile of the income level according to the World Bank. Robust standard errors clustered at firm-level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p< 10%). Source: Our elaboration on BEEPS Standardized data 2002-2005.

such as the number of employees and total sales, whether in Table 7 we consider the more recent wave of the Enterprise survey 2006-2011, columns (1) to (3), and then we pool both waves together, columns (4) to (6).[15]

Although, the cross-sectional nature of the analysis does not allow to establish causality, the results presented in this section are consistent with the initial hypothesis of firms' productivity sorting into indirect and direct participation to international trade. In the next section we test whether the productivity differences between direct and indirect traders are related to the characteristics of the country where a firm is located, i.e. the source-country.

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[15]The BEEPS Standardized Data 2006-2011 does not contain the break down of input purchase in domestic, indirect and directly imported. Hence it is possible to replicate only the analysis on the export side.

5 Source country trade costs and the mode of trade

The literature on the presence of different firms that are exporting has shown that country characteristics display a different effect across the various categories of direct and indirect traders (Ahn et al.; 2011; Bernard et al.; forthcoming). We take here a different perspective and, similarly to Davies and Jeppesen (forthcoming), we explore the relationship between source-specific trade costs and the differences across trading statuses. Indeed, it might be that the productivity sorting patterns detected in the previous section for both exporters and importers varies with some source-specific variables. In particular, we would expect that in those countries characterized by higher impediments to trade firms have to be relatively more productive to reach foreign markets than firms located in regions where trade is facilitated. This is because these firms, in addition to the 'standard' trade barriers, incur in other costs related, for instance, to the bad governance or to the scarce infrastructure quality of the regions they are located in. To test this hypothesis we estimate the following regression model

$$
\begin{aligned}
\ln Y_f = {} & c + \alpha_1 D^{DirExp} + \alpha_2 D^{IndExp} + \alpha_3 D^{DirExp} * Z_c + \alpha_4 D^{IndExp} * Z_c + \\
& + \beta_1 D^{DirImp} + \beta_2 D^{IndImp} + \beta_3 D^{DirImp} * Z_c + \beta_4 D^{IndImp} * Z_c + d_{ct} + d_s + \varepsilon_f
\end{aligned}
\tag{3}
$$

where we propose a model similar to that of equation (1) but we add the interactions term of the dummy variables for the trade status with Z_c that are the two proxies for source-specific costs described in Section 3. Specifically, Z_c can be either the variable *Market Costs* (for exports or imports) or the variable *Governance*. Therefore, the interaction $D^{DirExp} * Z_c$ captures whether the trade premia of direct exporters is stronger or weaker in countries where it is relatively more difficult for firms to exports. Similarly, $D^{IndExp} * Z_c$ tells us to what extent the productivity premia of indirect exporters with respect to non-traders varies across countries with different characteristics. Analogously, on the import side, we consider the two interacted terms $D^{DirImp} * Z_c$ and $D^{IndImp} * Z_c$. Note that in the specification of equation (3) the direct effect of source-country characteristics is absorbed by the country-year specific fixed effect.

Results are reported in Table 5. Looking at coefficients in column (1) notice first that the results regarding the productivity premia of direct and indirect exporters over non-traders (α_1 and α_2) are robust to the inclusion of the interaction terms. The coefficient α_3 suggests that an increase in our measure of source-country specific costs of exporting is associated to a larger productivity gap between direct exporters and domestic firms. Therefore, the productivity premia of direct exporters is larger in those countries characterized by higher impediments to exports. On the contrary, looking at the coefficient α_4, an increase in cost of exporting does not appear to exert any effect on the difference between indirect exporters and non-exporters.[16] Overall the results on the export side, suggests that while an increase in source-country specific costs is associated to a wider productivity gap between direct exporters and domestic firms, the increase in market cost does not contribute to further enlarge the gap between indirect exporters and domestic firms. This is an interesting result as it suggests that the 'intermediation' technology is, to a certain extent, better able to cope with difficulties related to barriers to exports. Indeed, higher source-country fixed costs of exporting do not imply a higher productivity threshold for those firms resorting to an export intermediary.

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[16]Notice that our results are roughly consistent with those of Davies and Jeppesen (forthcoming) even if we consider a different wave of Enterprise Surveys.

Table 5: Productivity sorting. Indirect exporters and importers, 2002-2005: the role of trade costs

Dep. Var.	ln Labour Productivity					
	(1)	(2)	(3)	(4)	(5)	(6)
D^{DirExp}	0.443***		0.340***	0.427***		0.325***
	(0.021)		(0.022)	(0.020)		(0.021)
D^{IndExp}	0.209***		0.174***	0.215***		0.181***
	(0.034)		(0.034)	(0.032)		(0.033)
D^{DirImp}		0.514***	0.405***		0.511***	0.399***
		(0.023)	(0.024)		(0.023)	(0.024)
D^{IndImp}		0.176***	0.149***		0.177***	0.147***
		(0.022)	(0.022)		(0.021)	(0.021)
D^{DirExp}* Market costs Exp	0.079***		0.106***			
	(0.024)		(0.026)			
D^{IndExp}* Market costs Exp	-0.004		0.003			
	(0.052)		(0.053)			
D^{DirImp}* Market costs Imp		-0.025	-0.036			
		(0.024)	(0.027)			
D^{IndImp}* Market costs Imp		-0.026	-0.021			
		(0.029)	(0.029)			
D^{DirExp}* Governance				-0.100***		-0.055*
				(0.027)		(0.031)
D^{IndExp}* Governance				0.013		0.005
				(0.059)		(0.060)
D^{DirImp}* Governance					-0.145***	-0.139***
					(0.032)	(0.036)
D^{IndImp}* Governance					-0.031	-0.046
					(0.030)	(0.031)
ln Age	0.009	0.010	-0.001	0.010	0.011	0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
D^{FO}	0.414***	0.414***	0.337***	0.415***	0.417***	0.340***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
$D^{Quality}$	0.358***	0.375***	0.324***	0.357***	0.377***	0.323***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
D^{Innov}	0.084***	0.083***	0.066***	0.084***	0.083***	0.065***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.859	0.859	0.861	0.859	0.859	0.861
Observations	20,458	20,458	20,458	20,458	20,458	20,458

Note: Table reports regression of firms' labour productivity on different dummies for direct and indirect exporters and importers. D^{DirExp} is a dummy for direct exporter and D^{IndExp} is a dummy for indirect exporter. Similarly, D^{DirImp} is a dummy for direct importer and D^{IndImp} is a dummy for indirect importer. Baseline category is domestic only. *Market costs* and *Governance* are two different proxy for trade costs. D^{FO} is a dummy for the foreign ownership of the firm: $D^{Quality}$ takes value one if a firm has received a ISO qualification; D^{Innov} is a dummy for the level of firm's innovation. Robust standard errors clustered at firm-level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p< 10%). Source: Our elaboration on BEEPS Standardized data 2002-2005.

When looking at the import side, column (2), both interactions terms β_3 and β_4 seem to indicate that the market fixed costs for importing do not affect the differences in productivities for the categories of firms under analysis. This suggests that while there

exists a similar efficiency sorting of firms into direct and indirect export (import) there might exist differences in how the various modes of trade respond to varying source-specific costs of exporting (importing). Finally, column (3) shows that results still hold when including both export and import dummies and the relative interactions.

Columns (4) to (6) of Table 5 consider a different source-specific variable, *Governance*, capturing the level of institutional quality of the country. This variable takes into account a broader set of country characteristics than the previous one as it includes data on the governance, the political stability or the control of corruption. While the previous variable focuses on the impediments related to trade, this indicator contains a large set of information regarding the contracting environment. Coherently with the analysis on the cost indicator, as governance improves, the difference between direct exporters and non exporters declines, whether the difference between indirect exporters and non exporters is not affected. Column (5) shows that when looking at the governance indicator as a proxy for market fixed costs, one finds an analogous effect of the interacted dummy also on the import side: a higher quality of governance corresponds to a smaller gap in productivity between direct importers and non-importers. In column (6) we include both export and import dummies and their interactions and the coefficients maintain their sign and significance levels.

Overall the results of Table 5 suggest that while on the export side both higher costs for exporting and lower governance quality increase the productivity difference between direct exporters and non-exporters, on the import side only a lower governance quality affects the gap. More interesting, for both exports and imports, source-country fixed costs do not seem to change the productivity gap between indirect traders and domestic firms. This result might be due to the fact that wholesalers are better able to cope with difficulties related to barriers to exports. Such explanation is consistent with previous empirical analyses showing that wholesalers are more likely to export to more 'difficult' markets, characterized by higher fixed costs of entry (Ahn et al.; 2011; Bernard et al.; forthcoming). Due to the characteristics of the 'intermediation technology', even when exports costs increases the productivity level required to export or import indirectly does not change.

6   Conclusion

This paper contributes to the emerging literature on the relative importance of the different modes of access to foreign markets. Recent theoretical models of international trade with intermediaries show that heterogeneity in productivity plays an important role in explaining the different mode of export entry. These models predict an efficiency-ordering of firms into three categories: non-exporters, indirect and direct exporters. Indeed, the most productive firms export directly to foreign countries, followed by firms in the middle range of the productivity distribution that export indirectly through intermediaries, and finally by the least efficient firms that serve the domestic country only.

We use information for 27,298 firms from 95 countries for the period between 2002-2005 to provide empirical support for this prediction. We confirm previous findings and show that firms which export directly perform better than those using an intermediary firms. While the existing studies focus on the mode of exports, there are no available theoretical or empirical contributions on the different sorting of firms into direct or indirect importing, notwithstanding the relevance of intermediated imports. We fill this

gap by providing the first evidence on productivity sorting both for direct and indirect importers. In principle, the efficiency sorting model detected for exporters should hold also on the import side. Indeed, because most productive firms purchase abroad higher quality and/or more complex inputs they are more likely to do it directly rather than resorting to an import intermediary. The analysis of the import side also reveals that the phenomenon of indirect trade is much more relevant on the import as compared to the export side. Exporting firms increase by a quarter when allowing for indirect export, whether accounting for indirect importing reveals that the number of firms resorting to international sourcing of inputs increase by 50%.

Finally, we investigate whether trade barriers lower the differences between direct and indirect traders, again both from the export and import side. We confirm the previous findings of Davies and Jeppesen (forthcoming) concerning the productivity gap between direct exporters and non-exporting firms. We extend the previous analysis by showing that the same effect holds also when looking at direct importers and domestic purchasers. However, the average difference between indirect traders and non-traders does not appear to change with the country characteristics, neither on the export nor on the import side. The latter result suggests that intermediaries are better able to cope with barriers to trade.

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Appendix

Appendix A - Variables description and data cleaning

The empirical analysis was performed employing the dataset "Standardized data 2002-2005" which was downloaded from `www.enterprisesurveys.org`. Although a more recent dataset is available, covering the period 2006-14, it does not contain the breakdown for the purchase of material inputs into domestic, indirectly, and directly imported. The dataset originally contains 71,789 observations from 151 countries.[17] Once we focus on firms in the manufacturing sectors we are left with 45,137 observations from 102 countries. Removing firms without information on the breakdown of sales (purchase of inputs) drops 1,096 (10,985) observations. We also drop more than 5,000 observations not reporting either sales or employment. At this stage we are left with 27,298 observation from 95 countries, which is the total number of observation reported in Tables 1 and 2. In order to get rid of outliers which might bias the results we set as missing observations reporting with productivity, employment and sales figures smaller than the first and bigger that the 99th percentile on a year-country basis (some countries are surveyed in more than one years). Davies and Jeppesen (forthcoming) also resort to a question of the 2006-14 BEEPS dataset about the quality of the responses to the survey. The wave of the survey that we employ (2002-05) does not contain such question.

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[17]Stata do files with the cleaning procedures and regressions are available upon request.

Table A1: Variables description

Variable	Wording of survey questions and answers' codes
Exporting	
	QUESTION: What percent of your establishment's sales are:
	i) sold domestically
	ii) exported directly
	iii) exported indirectly (through a distributor)
Importing	
	QUESTION: What percent of your establishment's material inputs and supplies are:
	i) purchased from domestic sources
	ii) imported directly
	iii) imported indirectly (through a distributor)
Age	
	QUESTION: In what year did your firm begin operations in this country?
Foreign Ownership	
	QUESTION: Which of the following best describes the largest shareholder or owner in your firm?
	1)Individual
	2)Family
	3)Domestic company
	4)Foreign company
	5)Bank
	6)Investment fund
	7)Managers of the firm
	8)Employees of the firm
	9)Government or government agency
	10) Other (Specify)
Quality	
	QUESTION: Has your firm received ISO (e.g. 9000, 9002 or 14,000) certification?
	Yes=1 ; No=2
Innovation	
	QUESTION: Has your company undertaken any of the following initiatives in the last three years?
	1) Developed a major new product line: Yes=1 ; No=2
	2) Upgraded an existing product line: Yes=1 ; No=2
	3) Introduced new technology that has substantially changed
	the way that the main product is produced: Yes=1 ; No=2

Note: The table reports the questions in the BEEPS survey used to construct the variable used in the empirical analysis.

Appendix B - Robustness checks

Table 6: Employment and Sales. Indirect exporters and importers, 2002-2005.

Dep. Var.	ln Employment			ln Sales		
	(1)	(2)	(3)	(4)	(5)	(6)
D^{DirExp}	1.316***		1.033***	1.857***		1.423***
	(0.019)		(0.019)	(0.025)		(0.026)
D^{IndExp}	0.654***		0.579***	0.884***		0.765***
	(0.031)		(0.030)	(0.043)		(0.040)
D^{DirImp}		1.362***	0.938***		2.028***	1.442***
		(0.022)	(0.022)		(0.030)	(0.031)
D^{IndImp}		0.411***	0.298***		0.637***	0.481***
		(0.025)	(0.023)		(0.034)	(0.031)
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.386	0.356	0.427	0.788	0.782	0.805
Observations	26,826	26,826	26,826	26,733	26,733	26,733
Countries	99	99	99	99	99	99

Note: Table reports regression of firms' characteristics on different dummies for direct and indirect exporters and importers. D^{DirExp} is a dummy for direct exporter and D^{IndExp} is a dummy for indirect exporter. Similarly, D^{DirImp} is a dummy for direct importer and D^{IndImp} is a dummy for indirect importer. Baseline category is domestic only. Robust standard errors clustered at firm-level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p< 10%). Source: Our elaboration on BEEPS Standardized data 2002-2005.

Table 7: Productivity sorting. Indirect exporters, 2002-2011

Dep. Var.	ln LP	ln Empl	ln Sales	ln LP	ln Empl	ln Sales
	Standardized data 2006-2011			Pooled data 2002-2011		
	(1)	(2)	(3)	(4)	(5)	(6)
D^{DirExp}	0.663***	1.489***	2.152***	0.623***	1.464***	2.086***
	(0.017)	(0.018)	(0.026)	(0.014)	(0.013)	(0.019)
D^{IndExp}	0.323***	0.830***	1.154***	0.276***	0.790***	1.066***
	(0.026)	(0.026)	(0.039)	(0.022)	(0.020)	(0.031)
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.808	0.314	0.685	0.824	0.353	0.771
Observations	34,533	34,533	34,533	71,489	71,489	71,489
Countries	118	118	118	150	150	150

Note: Table reports regression of firms' characteristics on D^{DirExp}, a dummy for direct exporter and D^{IndExp}, a dummy for indirect exporter. Baseline category is domestic only. Robust standard errors clustered at firm-level are reported in parenthesis below the coefficients. Asterisks denote significance levels (***: p<1%; **: p<5%; *: p< 10%). Our elaboration on BEEPS Standardized data 2006-20011 and Pooled data 2002-2011.

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