WPS6229

POLICY RESEARCH WORKING PAPER 6229

Exporter Dynamics Database

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Abstract

This paper introduces the Exporter Dynamics Database. The database includes exporter characteristics and measures of exporter growth based on firm-level customs information from 38 developing and seven developed countries, primarily for the period between 2003 and 2010. The measures are available at different levels of aggregation, including: a) country-year, b) country-year-product, and c) country-year-destination. Several new stylized facts about exporter behavior across countries emerge from the database. (i) Larger or more developed economies have more exporters, larger and more diversified exporters, and lower entry and exit rates than smaller or developing economies. (ii) In the short run, expansions along the intensive margin (exporter size) contribute more to export growth than expansions along the extensive margin (number of exporters). (iii) Exit rates are highly correlated with entry rates and both are negatively correlated with survival rates, average exporter size, and diversification. (iv) The number of exporters and the entry and exit rates in a country-product group are partially driven by country and product-group effects; however, the average size of exporters in a country-product group is not. Although the first three facts can be explained by models incorporating firm heterogeneity and uncertainty, the fourth fact is more difficult to explain with existing models. Several findings are confirmed in this database, including the importance of large multi-product firms. This database can be a valuable tool to improve the understanding of the micro-foundations of export growth, by providing new insights about exporter characteristics and dynamics.

Exporter Dynamics Database[*]

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Keywords: exporter dynamics, exporter growth, firm-level data.

I. Introduction

A large and growing strand of the recent trade literature - both theoretical and empirical - focuses on firms and how they export. Since the seminal work of Eaton and Kortum (2002) and Melitz (2003), a number of papers have developed models to understand the micro foundations of export growth.[5] On the empirical front, issues related to exporter behavior and dynamics in general have been heavily studied.[6] These studies have in common the use of micro datasets on export transactions within firms from a specific country or in a region. While the conclusions from many of the studies should in principle be comparable across countries, to date there has not been a comprehensive effort to produce analytical work covering an extensive set of countries, particularly developing countries. It would be of interest to see if for example, the empirical findings identified in this growing literature generalize across countries in different regions and at different levels of development, and whether cross-country evidence could provide new insights about how firms export and expand.

To fill this gap, we gather exporter-level customs information from 38 developing and 7 developed countries around the world to build the *"Exporter Dynamics Database"* (henceforth referred to as the Database), containing comparable measures of exporter, product and market dynamics and which is available to researchers and policy-makers worldwide. The Database contains measures at different levels of disaggregation: a) country-year, b) country-year-product (HS 2-digit, HS 4-digit, or HS 6-digit) and c) country-year-destination mostly for the period between 2003 and 2010 (with longer time series for some countries). The Database covers

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[5] See Bernard, Eaton, Jensen, and Kortum (2003), Bernard, Redding, and Schott (2007), Das, Robert, and Tybout (2007), Chaney (2008), Arkolakis (2010), Bernard, Redding, and Schott (2011), Eaton, Kortum and Sotelo (2012) and Redding (2011) for a review.

[6] See Eaton, Kortum, and Kramarz (2008) for France; Eaton, Eslava, Kugler, and Tybout (2008) for Colombia; Amador and Opromolla (2008) for Portugal; Iacovone and Javorcik (2008) for Mexico; Andersson, Lööf, and Johansson (2008) for Sweden, Freund and Pierola (2010) for Peru; Manova and Zhang (2012) for China, Masso and Vahter (2011) for Estonia, De Lucio, Mínguez-Fuentes, Minondo, and Requena-Silvente (2011) for Spain, Ekholm, Moxnes, and Ulltveit-Moe (2012) for Norway, Fabling and Sanderson (2012) for New Zealand, among others. See Bernard, Jensen, Redding, and Schott (2007, 2011) for reviews of the literature.

different aspects of firm dynamics, firm-product and firm-destination dynamics, as well as exporter growth patterns, concentration, and diversification in the non-oil exporting sector.

This paper introduces the Database and uncovers four new stylized facts based on the measures contained therein. The distinguishing feature of these stylized facts is that they could not have been uncovered using any other cross-country source of trade data available so far. We also confirm or generalize facts found in the recent trade literature.

The first stylized fact is that more developed and larger economies have a larger export base (number of exporters), larger exporter size, more concentrated export sectors among firms, more diversified exporters (in terms of their portfolio of products and destinations), and lower entry and exit rates, relative to less developed and smaller economies. The survival rates of new exporters are not correlated with the level of development or with the economic size of countries. These patterns are also true for countries with larger export sectors relative to income. This is consistent with more developed and larger economies having more competitive export sectors, with more firms that are globally competitive, and a higher proportion of large firms.

The second stylized fact is that across countries, expansions along the intensive margin – i.e., increases in the average exporter size – contribute more to export growth in the short run than expansions along the extensive margin – i.e., increases in the number of exporters. This evidence supports a trade model with heterogeneous firms along the lines of Melitz (2003), where entrants into export markets tend to be marginal firms that have little impact on total exports.

The third stylized fact is that across countries, entry and exit rates are high and strongly positively correlated with each other. Both entry and exit rates are negatively correlated with survival rates of new exporters, average exporter size, and diversification at the exporter level (in

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terms of products and destinations). These results reflect the importance of uncertainty and market structure in the decision to export.

The fourth stylized fact is that average exporter size, total exports, and exporter survival at the country-sector level are not explained by country or sector characteristics in an analysis of variance (ANOVA) while the number of exporters, the share of the top 5 percent of exporters, the average number of products and destinations per exporter and entry and exit rates are explained to an important extent by those characteristics. This fact is not as clearly consistent with standard heterogeneous firm models in that the number of firms is explained to a significant degree by country and industry effects, while the average and median size of firms are not. Considering that average size and the number of firms together drive export volumes and both respond to trade costs in similar ways in a heterogeneous firm model with comparative advantage (Bernard, Redding, and Schott 2007), it is puzzling to find that the ANOVA shows that country and sector characteristics explain far better the number of firms than the average or median size of firms. This finding could imply that comparative advantage works primarily via firm size as opposed to the number of firms.[7]

The fifth stylized fact confirms for a large number of developing countries the well-known fact from the literature focusing on individual countries that total exports are largely dominated by multi-product multi-destinations exporters, but these account for a small share of the number of exporters. In particular, exporters selling more than four products to more than four markets account for 60 percent of exports on average. But there is also significant variation, with Albania displaying the lowest share in at 13 percent and South Africa the highest, at 82 percent. The tremendous skewness of exports towards large firms has important implications (i)

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[7] Freund and Pierola (2012) explore why export size behaves differently from the number of firms and show that it is related to the skewed distribution of exporter size. In particular, they explore the importance of superstar firms (top one percent of exporters) in exports, export growth and diversification, and comparative advantage, as well as the origin of these firms

for empirical firm-level studies that focus on average effects since the average firm is relatively unimportant in trade, and (ii) for expanding exports because that would entail growth in the number and size of large firms.

The sixth stylized fact is consistent with previous literature that shows that bilateral exports increase with the size of the destination market and decrease with distance and with bilateral tariffs. Similar to Bernard et al (2007) for US firms and Mayer and Ottaviano (2008) on European firms, we find that a country's exports expand in larger markets primarily through the firm-count margin as opposed to the firm-size margin; and decline relatively more in distance and in tariffs because of the firm-count margin. Although this finding could be perceived as standing in contrast to the second stylized fact above that expansion in the average exporter size makes the major contribution to within-country export growth, it is worth noting that these facts emerge from two exercises focusing on different time dimensions. While the second stylized fact indicates that firm size drives export growth more than the number of firms in the short run, the sixth stylized fact indicates that the number of exporters in a given destination responds more sharply to standard determinants of trade such as market size and trade costs in the long run. Given the extreme concentration of exports in large firms (the top 5 percent of firms account on average for 80 percent of exports), average firm size will expand rapidly in countries when these large firms grow, and it is primarily these firms that can generate high aggregate export growth, since the majority of firms are too small to have sizeable aggregate effects (the bottom 75 percent of exporters account for just 3 percent of exports). However, in the long run, the number of firms expands when exports grow because of home- or foreign-market size or trade costs effects. The higher number of firms in a given destination drives down considerably the *average*

firm-destination size by definition, and thus obscures the firm-size effect on exports in a gravity equation.

Several of the stylized facts uncovered using the Database are broadly consistent with recent trade models with heterogeneous firms such as those reviewed in Bernard, Jensen, Redding, and Schott (2011) and Redding (2011), while other facts point to the need to extend and modify the existing models to accommodate them. In particular, with respect to dynamics, the high and correlated entry and exit rates point to tremendous uncertainty when firms enter export markets.

The rest of the paper is structured as follows. Section II describes in detail the construction of the Database based on customs exporter-level data in each country while Section III lists, defines and presents summary statistics on the measures included in the Database. Section IV presents six stylized facts based on the Database. Section V discusses possible avenues for future research and policy analysis using the Database.

II. Constructing the Export Dynamics Database Using Customs Data at the Exporter-Level

The measures included in the Database are computed using customs data from 45 countries at the exporter-product-destination-year level.[8] Pooling across the datasets for all countries, we obtain 15 million unique observations at the country-firm-product-destination-year level [9] This is the raw dataset that we use to construct the Database.

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[8] The providers of the raw datasets for each country were mostly governmental agencies, mainly customs offices. Appendix 1 provides a complete list of the countries included in the Database, the periods for which data is available, and the data sources. For Brazil, Egypt, Estonia, Laos, New Zealand, Norway, Portugal, Spain, Sweden, and Turkey we calculated the measures without having permanent access to the raw customs data at the exporter-product-destination-year level. A few of the data providers authorize the access by researchers outside the World Bank to the raw customs data at the exporter-product-destination-year level. The list of countries for which such data access is authorized is available (and subject to updates) at http://econ.worldbank.org/exporter-dynamics-database.

[9] This number of observations covers the countries for which we have access to the raw exporter-level customs data (i.e., it does not account for the observations for Brazil, Egypt, Estonia, Laos, New Zealand, Norway, Portugal, Spain, Sweden, and Turkey).

1. **Cleaning of Raw Datasets**

The cross-country raw dataset contain six variables -country of origin, firm codes, country of destination, product, value, and year- that have been reformatted uniformly and subjected to the cleaning procedures explained below.[10]

a) **Country of origin:** For each observation in the cross-country raw dataset, we define the country of origin as the country from which we received raw data from. It should be noted that Depending on the type of trade regime (general versus special) used by the country of origin, exports of a country might include goods originating from any geographical territory of that country or from any territory except free zones/customs. The implication of the trading regime in our cross-country raw database is discussed in more detail in the destination section c) below.

b) **Firm codes:** Firm codes are the numbers that uniquely identify firms across time within each country. We received this information in different formats: a) the actual names of the firms, b) their tax identification number or c) artificial unique codes randomly created by our data providers. One peculiarity of the datasets for Albania, Burkina Faso, Cambodia, Cameroon, Mexico, Uganda, and Yemen is that the firm coding systems changed during the sample period. Hence, a specific firm is represented by different codes before and after 2007 in these countries' datasets (2008 in Yemen's dataset). As a result, it is not possible to calculate exporter dynamic measures such as firm entry and exit rates in 2007 and survival rates in 2006 and 2007 for those countries (firm entry and exit rates in 2008 and survival rates in 2007 and 2008 in Yemen).

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[10] The cross-country raw dataset at country-firm-product-destination-year level includes also quantities exported that will be used to calculate some of the measures in the Database.

c) **Destination**: Destination countries in our cross-country raw dataset follow UN's guidelines (International Merchandise Trade Measures: Concepts and Definitions, p. 60) which recommend that countries of origin record their destinations as defined by the destination countries themselves. For instance, Bermuda (UK); Hong Kong SAR, China; and Macau (China) are all considered distinct destinations although they are not independent countries. Therefore, each country has a potential set of 247 destinations as of end-2011.[11]

The first cleaning operation applied to the country of destination variable relates to the use of special trade regimes by some countries –Bulgaria, Costa Rica, Colombia, Ecuador, Egypt, Jordan, Kuwait, Lebanon, Morocco, Peru, Turkey, Yemen.[12] Customs in these countries record the sales from inland to their own free zones/customs warehouses as exports which results in a larger set of potential destinations. For example, in Colombia's dataset, the Free Zone "Zona Franca Bogota" appears as a separate destination. Since there is a lack of uniformity across countries in the definition of the special trade regime, we do not consider this type of transactions as exports and hence we drop the observations related to sales to free zones from our dataset.[13] This operation had a minor effect on total export volumes as sales to free zones/customs warehouses are negligible in most cases.[14]

The second operation applied to the country of destination variable accounts for the changes in name that some statistical territories have undergone over time due to spatial

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[11] See http://unstats.un.org/unsd/methods/m49/m49alpha.htm for the current potential set of destinations.

[12] The "special trade regime" considers transactions where the goods are sold from the domestic territory *only* to both third countries and free zones/customs warehouses of the origin country as exports. In contrast, the "General trade regime" considers transactions where goods are sold from any national territory (*including free zones*) to third countries only as exports (see p. 32 of United Nations, 2008).

[13] See p. 34 of United Nations (1998).

[14] The export volumes of Turkey, the country most affected by this operation, drop by 2-3 percent.

divisions. In particular, the Former Republic of Yugoslavia was divided into Bosnia, Croatia and Serbia in 1996 and Serbia was further divided into Serbia and Montenegro in 2006. Furthermore, some countries recognize Kosovo as an independent state rather than a part of Serbia since 2009. For technical and consistency purposes we treat Serbia, Montenegro and Kosovo as a single destination since disregarding these changes in names would bias some calculations, especially those related to the geographical diversification and market dynamics.[15] For example, destination entry and exit rates in a given year would be overestimated as the appearance of a new destination in the dataset would not represent the true expansion of exporters into a different territory but would instead be due to the change in territory classification. Likewise, destination measures that are calculated using only one year of data (e.g., number of destinations, export volume per destination, etc.) would not be comparable to each other.[16]

In sum, after taking into account the operations mentioned above, the number of destinations in our dataset is 246.[17]

d) **Product:** The product classification system we use is the Harmonized System at 6-digit level (HS6). Although most countries record their export transactions at a higher level of disaggregation following their domestic or regional nomenclature (8-12 digits), we aggregate their information to HS 6-digit, since this is the most detailed level comparable internationally. That is, a specific HS code at 6 digits represents the same product in all country datasets in a given year.

The cleaning operations applied to the product variable have two components:

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[15] In the Database at the country-year-destination level the combined destination of Serbia, Montenegro, and Kosovo is coded as the 3-digit country code SRB.
[16] While some other territories have undergone changes in names, those changes either occurred before the beginning of our sample or do not involve the merger or separation of states (e.g., Zaire changed its name to Democratic Republic of Congo in 2006) and therefore they do not introduce any biases in our calculations.
[17] The list of destinations is available for download at http://econ.worldbank.org/exporter-dynamics-database.

i) <u>Elimination of non-existing HS codes</u>: First, we combine all the codes existing under the three different HS classifications (HS1996, HS2002 and HS2007) and end up with a unique aggregated list of 6065 HS 6-digit categories.[18] Next, we eliminate the observations with an HS 6-digit code that is not included in that aggregated list. This elimination accounts for about 0.5 percent of total exports in our cross-country raw dataset.[19]

ii) <u>Creation of a time-consistent HS classification</u>: While the HS 6-digit classification allows comparisons across countries in a given year, it has undergone transformations over time. The World Customs Organization (WCO) revises the HS classification on the basis of the value of trade realized under each product during the previous period. Three major revisions took place in years 1996, 2002, and 2007.[20] The modifications introduced in each of these revisions have taken two forms: i) two different codes with low trade volume were converted into a single code and ii) an existing code with an increasing trade volume was split into various codes. For example, code 030269 (other fish, fresh or chilled, excluding fish fillets or other fish meat) which included swordfish and toothfish in the HS2002 classification was split into codes 030267 (swordfish), 030268 (toothfish), and 030269 (for other fish) in the HS2007 classification. These modifications create problems for the tracking of trade volumes for certain products over time. In the example above, exports of swordfish under code 030267 would appear as a new export from 2007 onwards, while in reality they might have already been exported before but were recorded under the code 030269.

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[18] The number of HS categories included in the original classifications HS 1996, HS 2002, and HS 2007 are 5209, 5224, and 5053, respectively.

[19] Most of this elimination results from eliminating observations with a product code belonging to HS Chapter 99 as this is reserved for national use and the HS 6-digit codes under this chapter differ across countries.

[20] In addition to these major transformations, there are also smaller modifications introduced at the end of every year.

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In order to solve these inconsistencies, we went through a process of "consolidation" among HS1996, HS2002, and HS2007 classifications.[21] A similar process was used by Schott and Pierce (2012) to concord 10-digit United States Harmonized System codes between 1989 and 2007 and by Wagner and Zahler (2011) to homologate among 6-digit HS1992, HS1996, and HS2002 classifications. The basic principle of consolidation is to identify the HS codes related to each other (e.g., codes that were split or merged with the modifications introduced by the HS2002 or the HS2007) and to replace them with a single code for the entire period. In the example above, this process results in the replacement of codes 030267 and 030268 by the code 030269 from year 2007 onwards. In this way, the products that are represented by these three codes are all included in code 030269 during the entire period.

As a result of this consolidation process 1104 codes are replaced by 402 codes that already exist in the HS lists but whose contents are altered as discussed in Cebeci (2012). Consequently, the number of unique potential HS 6-digit codes in the 1996, 2002, and 2007 classifications of 6065 declines to a final number of 4961 unique potential HS 6-digit codes in the consolidated classification.[22] In the cross-country raw dataset 4767 of those 4961 codes are present.

e) **Exclusion of oil exports:** We eliminate from the cross-country raw dataset observations in HS Chapter 27 (hydrocarbons such as oil, petroleum, natural gas, coal etc.) given that

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[21] See Cebeci (2012) for the methodology used in the consolidation. The paper along with a list of consolidated codes and concordances are available at http://econ.worldbank.org/exporter-dynamics-database.

[22] The number of HS 6-digit codes not affected by the consolidation process is 4559, obtained as the total number of codes 6065 minus the 1104 codes that disappeared and the 402 codes whose content changed. Despite this consolidation of HS codes, for the countries for which the data providers allow the sharing of the raw data, the country input database with the original HS 6-digit classifications is also available upon request.

we do not have exporter-level data on that chapter for important oil exporting countries such as Burkina Faso, Cameroon, Iran, Kuwait, or Yemen.[23]

f) **Value:** The unit of measurement of export values in the cross-country raw dataset is the US Dollar (USD). The export values in the raw data were already in USD for many countries. For countries for which export values were provided in local currency, they were converted to USD using an annual official exchange rate series.[24] The exchange rates used differ slightly from those used in the United Nations COMTRADE database that are weighted average annual exchange rates based on monthly exchange rates and monthly trade volumes (as weights).[25] The resulting difference in the exchange rate series creates a small discrepancy (less than 0.5 percent in all cases) between our figures and COMTRADE's figures for the countries that provided their export values in local currency.

Export values in our dataset are Free on Board (FOB) figures, except for El Salvador and Senegal, whose export values represent Cost, Insurance and Freight (CIF) figures rather than just the pure value (FOB) of the good. This difference should be taken into account for cross-country comparisons of measures related to the size of exporters, exports per product or destination but is not expected to affect other measures related to concentration, diversification and firm, product and market dynamics.

g) **Period:** The information in the cross-country raw dataset has a yearly periodicity.

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[23] Possible reasons for this lack of data are confidentiality reasons or the fact that goods exported through pipeline are not recorded at customs but instead are recorded by other government/private institutions in the countries.

[24] The specific series used for this conversion is PA.NUS.FCRF taken from the World Development Indicators (whose original source is the IMF's International Financial Statistics). The series is based on an annual average of daily exchange rates determined by national authorities or in the legally sanctioned exchange market.

[25] http://unstats.un.org/unsd/tradekb/Knowledgebase/Calculation-of-dollar-value-in-trade-statistics-Current-value-or-constant-dollar-value.

2. Accuracy of the Cross-Country Raw Dataset

In order to have a sense of the reliability of the raw data in each of the countries included in the Database, we apply two filters:

a) For the first filter we compare the total values exported (excluding HS 27) calculated from the cross-country raw dataset with the total values exported from the United Nations' COMTRADE database (excluding HS 27) for every country and year.[26] This comparison yields quite different results for different countries. On the one hand, for Albania, Brazil, Cameroon, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Kenya, Lebanon Mexico, Morocco, Pakistan, Peru, South Africa, Tanzania and Turkey, the ratio of total values exported in the raw dataset to total values exported in COMTRADE is about 100 percent. On the other hand, for Mali and Yemen, the ratios indicate that total values exported in the raw dataset are as low as half of the total values exported in COMTRADE. On the opposite end, for Mauritius total values exported in the raw dataset are on average 30 percent above total values exported in COMTRADE.[27] Appendix 2 provides detailed results on these comparisons.

b) For the second filter, we focus on the countries and years that would have been left out because of a unfavorable match with COMTRADE (below 60 percent) and we keep those countries (and years) where we observe internal consistency within the export totals calculated from the corresponding exporter-level raw dataset over time. Although both sources of trade data, COMTRADE as well as the exporter-level raw datasets that we use, originate from customs authorities, we are aware of potential difficulties in the processing of the exporter-level

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[26] Given our understanding about which transactions are included in the raw files, for this comparison we consider gross export figures in COMTRADE (which include re-exports) for Albania, Kenya, Mauritius, Tanzania and Senegal and net export figures (gross exports minus re-exports) for Jordan, Uganda and Yemen. For all other countries, it does not matter which COMTRADE figure we choose as they report either insignificant or no re-exports.

[27] For Mauritius we examined the discrepancy further at the country-HS 2-digit-year level and found that the average match percentage benefited significantly from the exclusion of observations belonging to Chapter 49. Similarly, for Cambodia and Macedonia the average match percentage benefits significantly from the exclusion of observations belonging, respectively to Chapter 49 and Chapter 62.

raw datasets that may justify the differences sometimes observed between the export totals obtained from the exporter-level raw datasets and the export totals available in COMTRADE. One of the potential reasons for these difficulties relates to the manual registration of export transactions that still takes place in some countries and may result in under-recording of export transactions for some countries and years.

As a result of this second filter, we keep in the raw dataset the information for Macedonia, Jordan, Mali, Mauritius, and several years of El Salvador's data which would be left out due to an unfavorable match with COMTRADE data. We should also note that for countries such as Macedonia for which the match with export totals in COMTRADE in the first few sample years is relatively poor, the match improves over time and this is likely due to a shift from manual to digital registration of export transactions.

III. The Exporter Dynamics Database

The Database includes a series of measures classified under different categories reflecting basic characteristics of the export base in each country (size of the exporting sector, exporter size and exporter growth rates), concentration/diversification (Herfindahl index, share of top exporters, number of products and destinations per exporter), firm, product and market dynamics (entry, exit and survival rates) and unit prices (per exporter, product, market). The measures are available at different disaggregation levels: a) country-year (file CY.dta with 98 measures), b) country-year–product (HS2, HS4, or HS6) (file CYH2.dta with 113 measures, file CYH4.dta with 113 measures, and file CYH6.dta with 89 measures) and c) country-year-destination (file CYD.dta with 74 measures). The list of measures under each category and for each type of

disaggregation level is presented in Table 1 along with the corresponding formula.[28] The Database is publicly available for download free of charge at http://data.worldbank.org/data-catalog/exporter-dynamics-database.[29]

For the measures of firm dynamics, firm-product and firm-destination market dynamics, we use the following definitions:

- Exporter$_t$: any firm that exports in year t;

- Entrant$_t$: a firm that does not export in year t-1 but exports in year t;

- Exiter$_t$: a firm that exports in year t-1 but does not export in year t;

- Incumbent$_t$: a firm that exports in both years t-1 and t;

- 2-Year Incumbent$_t$: a firm that exports in years t-1, t, and t+1;

- Survivor$_t$: a firm that does not export in year t-1 but exports in both years t and t+1;

- 2-Year Survivor$_t$: a firm that does not export in year t-1 but exports in years t, t+1 and t+2;

- 3-Year Survivor$_t$: a firm that does not export in year t-1 but exports in years t, t+1, t+2 and t+3.

To protect the confidentiality of the firms in the raw datasets at the exporter-product-destination-year level, some of the measures in the files with product or destination disaggregation (CYH2.dta, CYH4.dta, CYH6.dta, CYD.dta) are missing when the underlying

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[28] Table 1 also describes the nomenclature used to name the different measures in the stata files consistently. For example, the variable 'B1' refers to the Herfindahl index; the variable 'A7' refers to the Export Value per Incumbent exporter, etc. While not shown in Table 1, note that we used suffixes to identify means (i), medians (ii), and standard deviations (iii) of certain measures in the stata files. For example, the variable 'A7i' represents the mean of the Export Value per Incumbent exporter in a given country and year; 'A7ii' represents the median of the same statistic and 'A7iii' represents its standard deviation.

[29] Although the files CY.dta, CYH2.dta, CYH4.dta, CYH6.dta, and CYD.dta are all based on the cross-country input dataset excluding oil exports in HS Chapter 27, interested users can request from the authors an alternative version of the files where the measures are calculated including exports in HS Chapter 27 (for the countries which provided such information).

country-product-year or country-destination-year cell includes a single firm whose individual

information cannot be revealed.[30]

Table 1: Definition of Measures

CODE	MEASURES	LEVEL			
		Country - Year	Country - Year - Destination	Country – Year – Product	
				HS2 & HS4	HS6
A	**BASIC CHARACTERISTICS**				
1,2,3,4,5	N (Exporters, Entrants, Exiters, Survivors, Incumbents)	✓	✓	✓	✓
6,7,8,9,10	MMS & Q1Q3 (TEV per Exporter, Entrant, Exiter, Survivor, Incumbent)	✓	✓	✓	✓
11	MMS & Q1Q3 (Growth of Incumbents)$_t$= MMS (ln(TEV of incumbent$_t$ in t) – ln(TEV of incumbent$_t$ in t-1))	✓	✓	✓	✓
12	MMS & Q1Q3 (Growth of Survivors)$_t$ = MMS (ln(TEV of survivor$_t$ in t+1) - ln(TEV of survivor$_t$ in t))	✓	✓	✓	✓
B	**CONCENTRATION/DIVERSIFICATION**				
1	Herfindahl Index	✓	✓	✓	✓
2	Share of top 1%, 5%, 25% Exporters in TEV	✓	✓	✓	✓
3	MMS (N. HS6 Products per Exporter)	✓	✓	✓	NA
4	MMS (N. Destinations per Exporter)	✓	NA	✓	✓
5	MMS (N. Exporters per HS6 Product)	✓	✓	✓	NA
6	MMS (N. Exporters per Destination)	✓	NA	✓	✓
C	**FIRM DYNAMICS**				
1	Firm Entry Rate$_t$ = N. Entrants$_t$ / N. Exporters$_t$	✓	✓	✓	✓
2	Firm Exit Rate$_t$ = N. Exiters$_t$/ N. Exporters$_{t-1}$	✓	✓	✓	✓
3	Firm Survival Rate$_t$ = N. Survivors$_t$ / N. Entrants$_t$	✓	✓	✓	✓
4	Share of Entrants$_t$= TEV of Entrants$_t$ in t / TEV in t	✓	✓	✓	✓
5	Firm 2-year Survival Rate$_t$ = N. 2-year Survivors$_t$ / N. Entrants$_t$	✓	✓	✓	✓
6	Firm 3-year Survival Rate$_t$ = N. 3-year Survivors$_t$ / N. Entrants$_t$	✓	✓	✓	✓
D	**PRODUCT DYNAMICS**				

[30] For such cells the number of exporters shows a value of 1 and most measures except those based on exiter firms in Table 1 are missing. The developed countries in our sample applied their own confidentiality rules (often stricter). Due to confidentiality reasons, the information in the CYH6.dta file is not provided for Brazil, Belgium, Egypt, New Zealand, Spain, Sweden, the information in the CYH4.dta files is not provided for Brazil, New Zealand and Sweden, the information in the CYH2.dta and the CYD.dta files is not provided for New Zealand. A file with the percentage of total exports corresponding to the hidden values by country and year, for the developing countries for which we have the raw exporter-level data is available at http://data.worldbank.org/data-catalog/exporter-dynamics-database.

1	MMS (Product Entry Rate of Incumbents)$_t$ = MMS (N. products not exported in t-1 but exported in t by incumbent$_t$ / N. all products exported by incumbent$_t$ in t)	✓	✓	✓	NA	
2	MMS (Product Entry Rate of Survivors)$_t$ = MMS (N. products not exported in t-1 but exported in t by survivor$_{t-1}$ / N. all products exported by survivor$_{t-1}$ in t)	✓	✓	✓	NA	
3	MMS (Share of New Products in TEV of Incumbents)$_t$= MMS (EV of incumbent$_t$ from products not exported in t-1 but exported in t / TEV of incumbent$_t$ in t)	✓	✓	✓	NA	
4	MMS (Share of New Products in TEV of Survivors)$_t$= MMS (EV of survivor$_{t-1}$ from products not exported in t-1 but exported in t / TEV of survivor$_{t-1}$ in t)	✓	✓	✓	NA	
5	MMS (Product Exit Rate of Incumbents)$_t$ = MMS (N. products exported by incumbent$_t$ in t-1 but not in t/ N. all products exported by incumbent$_t$ in t-1)	✓	✓	✓	NA	
6	MMS (Product Survival Rate of 2-year Incumbents)$_t$ = MMS (N. products not exported in t-1 but exported in both t and t+1 by 2-year incumbent$_t$ /N. all products not exported in t-1 but exported in t by 2-year incumbent$_t$)	✓	✓	✓	NA	
E	**DESTINATION DYNAMICS**					
1	MMS (Destination Entry Rate of Incumbents)$_t$ = MMS (N. destinations not exported in t-1 but exported in t by Incumbent$_t$ / N. all destinations exported by Incumbent$_t$ in t)	✓	NA	✓	✓	
2	MMS (Destination Entry Rate of Survivors)$_t$ = MMS (N. destinations not exported in t-1 but exported in t by Survivor$_{t-1}$ / N. all destinations exported by Survivor$_{t-1}$ in t)	✓	NA	✓	✓	
3	MMS (Share of New Destinations in TEV of Incumbents)$_t$= MMS (EV of Incumbent$_t$ from destinations not exported in t-1 but exported in t / TEV of Incumbent$_t$ in t)	✓	NA	✓	✓	
4	MMS (Share of New Destinations in TEV of Survivors)$_t$= MMS (EV of survivor$_{t-1}$ from destinations not exported in t-1 but exported in t / TEV of survivor$_{t-1}$ in t)	✓	NA	✓	✓	
5	MMS (Destination Exit Rate of Incumbents)$_t$ = MMS (N. destinations exported by Incumbent$_t$ in t-1 but not in t/ N. all destinations exported by Incumbent$_t$ in t-1)	✓	NA	✓	✓	
6	MMS (Destination Survival Rate of 2-year Incumbents)$_t$ = MMS (N. destinations not exported in t-1 but exported in both t and t+1 by 2-year Incumbent$_t$ /N. all destinations not exported in t-1 but exported in t by 2-year Incumbent$_t$)	✓	NA	✓	✓	
F	**UNIT PRICES**					
1,2,3,4,5	MMS (Unit Price (TEV/Quantity) per Exporter, Entrant, Exiter, Incumbent, Survivor)	NA	NA	✓	✓	

Notes: MMS indicate Mean, Median, Standard Deviation; Q1Q3 indicate the 25th and the 75th percentiles; N indicates Number of; EV indicates Export Value; and TEV indicates Total Export Value.

Given the increasing interest and analysis on multi-product firms in trade, we provide in addition to the measures in the Database a set of companion matrix tables by country and year showing the distribution of exporters and of total exports by the number of products exported and the number of destination markets served. The matrix tables consider the following categories for the number of products and the number of destinations: 1, 2, 3, 4-10, 11-20, 21 or more.[31] Some examples of the matrix tables are provided in Appendix 4. All matrix tables can be downloaded at http://data.worldbank.org/data-catalog/exporter-dynamics-database.

To illustrate the content and diversity of measures included in the Database, Table 2 presents a summary of a representative set of measures in the Database –average and median exporter size, share of top 5 percent firms, number of exporters, number of HS 6-digit products exported per firm, number of destinations served per firm, entry exit and survival rates– as well as total exports per country. We focus on averages per country for the period 2006-2008 which is the period most commonly covered across countries (and captures trade performance before the global financial crisis that started at the end of 2008).[32] Table 3 presents the same set of measures in the Database but for groups of HS 2-digit sectors, where the measures for each sector group are obtained as averages across all countries that export that particular group of HS 2-digit sectors, again focusing on the period 2006-2008.

Some interesting cross-country patterns emerge from Table 2. First, there is tremendous variation across countries in the export base (number of exporters) and the average exports per firm. Developed countries tend to exhibit the larger numbers of exporters. Among developing countries, the largest numbers of exporters are found in Turkey and Mexico followed by South

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[31] These matrix tables are available only for the developing countries for which we have the customs exporter-level data. We are unable to provide matrix tables for the developed countries in our sample.

[32] For countries for which data is available for only 1 or 2 years within the period 2006-2008 we compute the average based on those years. For Kuwait and Portugal the data coverage does not include that period. Hence for Table 2 and for Figure 1 as well as for the Figures in Appendix 3 we use averages for the period 2009-2010 for Kuwait and averages for the 2003-2005 period for Portugal.

Africa and Brazil (around 20,000) then by Pakistan, Bulgaria, and Iran (with more than 13,000 each) whereas the smallest pools of exporters (around and below 300) are found in Niger and Mali, followed by Burkina, Laos, Yemen, and Cambodia. This pattern seems to mirror the countries' level of development, and this link will be studied further in Section IV.

Average exports per firm are the highest (in the range of 7-8 million USD) for Belgium, Brazil, Chile, and Mexico followed by Cambodia, Sweden and Peru.[33] Albania, Lebanon, Macedonia, Yemen, and Kenya exhibit the lowest average export values per exporter (less than 800,000 USD). The tremendous difference between mean and median exports per firm indicates very skewed exporter size distributions in all countries with some very large exporters driving total exports.[34] For Botswana, Chile, Mali, Peru, South Africa, Mexico, and Malawi the skewness in the exporter size distribution is further confirmed by the very high share of exports – more than 90 percent– accounted for by just the top 5 percent of exporters. Interestingly, for most other developing countries the shares for developing countries are smaller than those for Norway, Sweden, Norway, and New Zealand and are smaller than those for the U.S. and other European countries for which the top 5 percent of firms account for 80 percent or more of trade, as shown by Bernard, Jensen, and Schott (2009) and Mayer and Ottaviano (2008).

The average number of products per exporter also exhibits a high degree of heterogeneity across countries, ranging from 2 in Laos to 15 in South Africa. In terms of markets, the average number of destinations per exporter is more similar across countries ranging from 1.4 in Botswana to 4.8 in Cambodia and 6.8 in Belgium. Interestingly, the average or median of these

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[33] The very large average exporter size in Cambodia is driven by a small number of extremely large formerly state-owned apparel and textiles producers, as gathered from statistics based on the World Bank Enterprise Surveys for Cambodia.

[34] Using the same cross-country input dataset used in the construction of the Database, Freund and Pierola (2012) show that exports are dominated by a small group of very large exporters (so-called 'superstars'). These firms are remarkably larger than the rest, they participate in many sectors and most importantly, they define the productive structures and drive the export growth observed in most countries.

two firm-level diversification measure taken across developing countries are quite similar to those taken including also developed countries.

Table 2: Measures by Country (2006-2008 Averages)

		Total Exports (bn USD)	Number of Exporters	Mean Exports per Exporter ('000s USD)	Median Exports per Exporter ('000s USD)	Share of Top 5% Exporters	Number of Products per Exporter	Number of Destinations per Exporter	Entry Rate	Exit Rate	Survival Rate
ALB	Albania	1.1	1895	550	35	63%	3.0	1.5	39%	33%	47%
BEL	Belgium	309.1	23204	13312	64	84%	9.3	6.8	31%	28%	40%
BFA	Burkina Faso	0.5	425	1177	37	85%	3.8	2.4	44%	41%	42%
BGD	Bangladesh	12.4	6356	1946	277	50%	4.2	3.8	28%	22%	61%
BGR	Bulgaria	12.9	13804	934	22	83%	6.2	2.4	38%	40%	
BRA	Brazil	165.4	19375	8539	233	82%			22%	23%	54%
BWA	Botswana	4.6	1715	2666	2	99%	6.6	1.4	42%	40%	39%
CHL	Chile	60.9	7314	8317	49	94%	4.5	3.4	38%	35%	35%
CMR	Cameroon	1.7	938	1879	19	82%	4.0	2.8	48%	46%	23%
COL	Colombia	19.1	9768	1957	58	81%	4.9	2.8	32%	31%	42%
CRI	Costa Rica	8.7	2931	2970	54	82%	5.6	3.2	29%	26%	48%
DOM	Dominican Republic	4.5	2709	1708	26	85%	4.7	2.3	44%	43%	40%
ECU	Ecuador	5.7	3110	1830	25	80%	4.4	2.4	41%	37%	41%
EGY	Egypt	14.3	8370	1717	65	79%		2.7	25%	27%	51%
ESP	Spain	229.9	89798	2559	21	86%	4.7	4.0	39%	38%	30%
EST	Estonia	9.3	4915	1885	109	69%	7.8	2.7	44%	41%	30%
GTM	Guatemala	6.3	4420	1421	38	78%	7.8	2.5	31%	29%	42%
IRN	Iran	12.8	13770	940	88	72%	6.0	2.1	47%	51%	41%
JOR	Jordan	3.4	1869	1804	57	83%	2.7	3.1	38%	32%	49%
KEN	Kenya	4.0	5057	796	18	81%	7.2	2.5	40%	44%	35%
KHM	Cambodia	3.4	595	5706	546	44%	8.3	4.8	33%	30%	57%
KWT	Kuwait *	3.0	3315	915	27	86%	4.4	2.0	53%	53%	
LAO	Laos	0.6	462	1284	42	88%	2.3	1.6	52%	40%	50%
LBN	Lebanon	3.4	5177	659	38	78%	7.7	3.1			
MAR	Morocco	15.3	5429	2811	90	74%	6.4	2.5	33%	34%	43%
MEX	Mexico	226.3	34382	6588	44	91%	6.7	2.1	35%	36%	39%
MKD	Macedonia	2.2	2926	751	24	83%	4.5	2.2	38%	35%	45%
MLI	Mali	0.8	305	2729	48	93%	3.8	2.2	43%	39%	45%
MUS	Mauritius	2.6	2251	1138	17	87%	9.0	2.6	30%	31%	43%
MWI	Malawi	0.6	631	1077	8	91%	4.2	1.9	52%	61%	25%
NER	Niger	0.3	160	2160	18	89%	3.9	1.6			
NIC	Nicaragua	1.3	1236	1031	27	76%	5.9	2.1	36%	34%	47%
NOR	Norway	39.1	18309	2137	14	93%	5.2	3.4	38%	37%	
NZL	New Zealand	24.6	13276	1853	24	90%	7.5	3.1	29%	29%	42%
PAK	Pakistan	16.8	15023	1116	62	73%	5.5	3.3	28%	27%	56%
PER	Peru	25.2	6732	3740	37	92%	7.2	2.6	39%	35%	44%
PRT	Portugal *	33.5	16217	2064	68	77%	8.5	3.5	30%	29%	45%
SEN	Senegal	0.9	727	1228	73	71%	6.2	3.2	40%	37%	40%
SLV	El Salvador	4.2	2554	1648	30	82%	6.9	2.4	31%	30%	44%
SWE	Sweden	129.5	30126	4299	17	92%	6.5	4.3	29%	28%	
TUR	Turkey	98.7	44570	2204	105	80%	9.6	3.9	32%	29%	55%
TZA	Tanzania	2.3	1899	1180	17	86%	4.1	2.4	51%	46%	32%
UGA	Uganda	1.2	938	1289	15	77%	3.8	2.4	47%	38%	29%
YEM	Yemen	0.4	492	779	49	64%	4.4	2.4	52%	54%	
ZAF	South Africa	58.8	21721	2699	29	92%	15.0	3.6	28%	26%	49%
Average - developing countries		21.7	7017	2206	63	81%	5.7	2.6	38%	37%	43%
Median - developing countries		4.2	2931	1708	37	82%	5.2	2.5	38%	35%	43%
Average - all countries		35.1	10027	2489	61	81%	5.9	2.8	38%	36%	43%
Median - all countries		5.7	4420	1830	37	82%	5.6	2.6	38%	35%	43%

Note: the figures shown are based on measures in the country-year level dataset (file CY.dta) averaged across the period 2006-2008 for each country. * indicates exceptions to the sample period: for Kuwait averages are taken across the period 2009-2010 and for Portugal averages are taken across the 2003-2005 period. Total exports are obtained as the number of exporters multiplied by the average exports per exporter.

The measures of exporter dynamics also exhibit important variability across countries. Entry rates range from 22 percent in Brazil to more than 50 percent in Malawi and Yemen while exit rates range from 22 percent in Bangladesh to 61 percent in Malawi.[35] First-year survival rates of new exporters vary between 23 percent in Cameroon and 61 percent in Bangladesh. The magnitude of the survival rates in Table 2 suggests an extremely high attrition rate of new entrants after just one year in export markets, particularly in Africa. However, that is not a characteristic of less developed countries since high attrition rates of new entrants are also observed in Spain and Estonia.

Table 3: Measures by Sector (2006-2008 Averages)

HS 2-Digit Codes	HS Section Description	Number of Exporters	Mean Exports per Exporter ('000s USD)	Median Exports per Exporter ('000s USD)	Share of Top 5% Exporters	Number of Products per Exporter	Number of Destinations per Exporter	Entry Rate	Exit Rate	Survival Rate
01-05	Live Animals and Animal Products	108	1109	107	53%	1.9	1.9	49%	48%	38%
06-15	Vegetable Products (including Animal and Vegetable Fats)	168	631	40	58%	1.6	1.8	50%	48%	36%
16-24	Foodstuff (Beverages, Spirits, Vinegar, Tobacco etc.)	147	1427	147	63%	1.7	2.3	46%	43%	38%
25-26	Mineral Products (except hydrocarbons)	199	9730	294	76%	1.3	1.6	54%	49%	36%
28-38	Chemicals and Parachemical Products	201	1205	50	73%	1.6	2.0	53%	51%	31%
39-40	Plastics and Articles Thereof	989	408	7	77%	1.9	1.8	54%	51%	33%
44-46, 47-49, 94	Wood and Articles Thereof (including Paper & Articles, Furniture)	476	1221	55	73%	1.5	1.7	57%	56%	28%
50-59, 41	Textiles (Including Raw Skins and Leather)	153	413	30	66%	1.5	1.8	58%	57%	27%
60-63, 64-67, 42-43	Apparel (Including Footwear, Headgear, Art. of Feathers, Fur, Leather Products)	353	402	35	69%	1.9	1.7	58%	57%	28%
68-70	Glass, Ceramics and Articles of Stone, Cement, etc.	429	212	4	76%	1.5	1.7	60%	58%	26%
71	Precious Metals (Pearls, Jewellery, Coin, Precious Stones etc.)	227	7503	473	78%	1.4	1.6	50%	47%	33%
72-83	Base Metal and Articles Thereof	327	2010	26	75%	1.5	1.6	60%	58%	26%
84, 91-92	Mechanical Machinery (including Clocks and Music Instruments)	870	252	8	72%	1.9	1.6	62%	61%	24%
85, 90	Electrical Machinery (including Optical, Medical, Photographic Instruments)	1183	737	8	76%	2.4	1.8	57%	54%	30%
86-89	Transportation Vehicles	326	1275	41	71%	1.4	1.6	65%	63%	24%
93	Arms and Ammunitions	25	523	39	69%	1.4	1.7	59%	61%	19%

Note: the figures shown in the table for each group of sectors are based on measures in the country-year-product (HS 2-digit) level dataset (file CYH2.dta) averaged across HS 2-digit sectors, countries, and the 2006-2008 period.

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[35] Kuwait also exhibits a high entry rate but it covers a different sample period.

Some interesting cross-sectoral patterns emerge from Table 3.[36] On average across all countries, the number of exporters is largest in electrical machinery and smallest in live animals and animal products and in arms and ammunitions. The degree of concentration as measured by the share of the top 5 percent of exporters is largest on average in precious metals and in plastics. Entry and exit rates are highest in transportation vehicles and mechanical machinery (more than 60 percent) and lowest in foodstuff (about 45 percent).

IV. The Exporter Dynamics Database: Six Stylized Facts

In this section we present four new stylized facts (facts 1 through 4) and we generalize two stylized facts (facts 5 and 6) from earlier work. The distinguishing feature of these stylized facts is that they could not have been discovered using any other cross-country source of trade data available so far. Therefore, they show the usefulness of the Database and illustrate the possibilities of future policy-relevant analysis and research that can be done using the Database.

Stylized Fact 1: More developed and larger economies have a larger export base (number of exporters), larger average exporter size, more concentrated export sectors among firms, and more diversified exporters (in terms of their portfolios of products and destinations). In contrast, more developed and larger economies exhibit significantly lower exporter entry and exit rates. The survival rates of new entrants are not correlated with the level of development or the economic size of countries. Similar patterns are obtained for the importance of the export sector in the country.

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[36] We exclude Kuwait and Portugal from the calculation of the averages across all countries that export that particular group of HS 2-digit sectors shown in Table 3 since those countries do not have data for the period 2006-2008.

Figure 1 presents the scatter plot between each of a set of measures in the Database at the country level and the stage of development measured by GDP per capita along with the R-squared from the corresponding regression among the plotted pair of variables. Appendix 3 presents analogous scatter plots between each of a set of measures in the Database and either the economic size of the economy measured by GDP or the importance of the export sector measured by the ratio of exports to GDP. The Database measures as well as the GDP per capita, GDP, and the ratio of exports to GDP values are taken as averages over the period 2006-2008.[37]

Figure 1: Correlations of Selected Database Measures with GDP per Capita
(averages over 2006-2008)
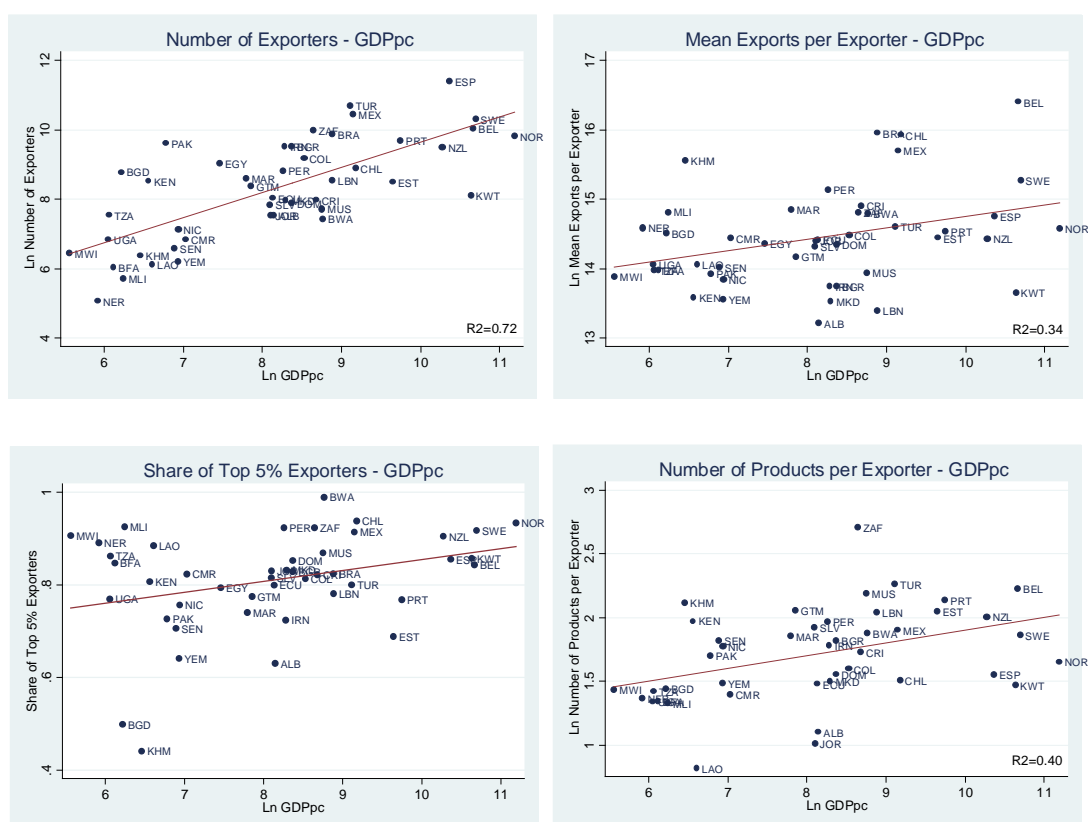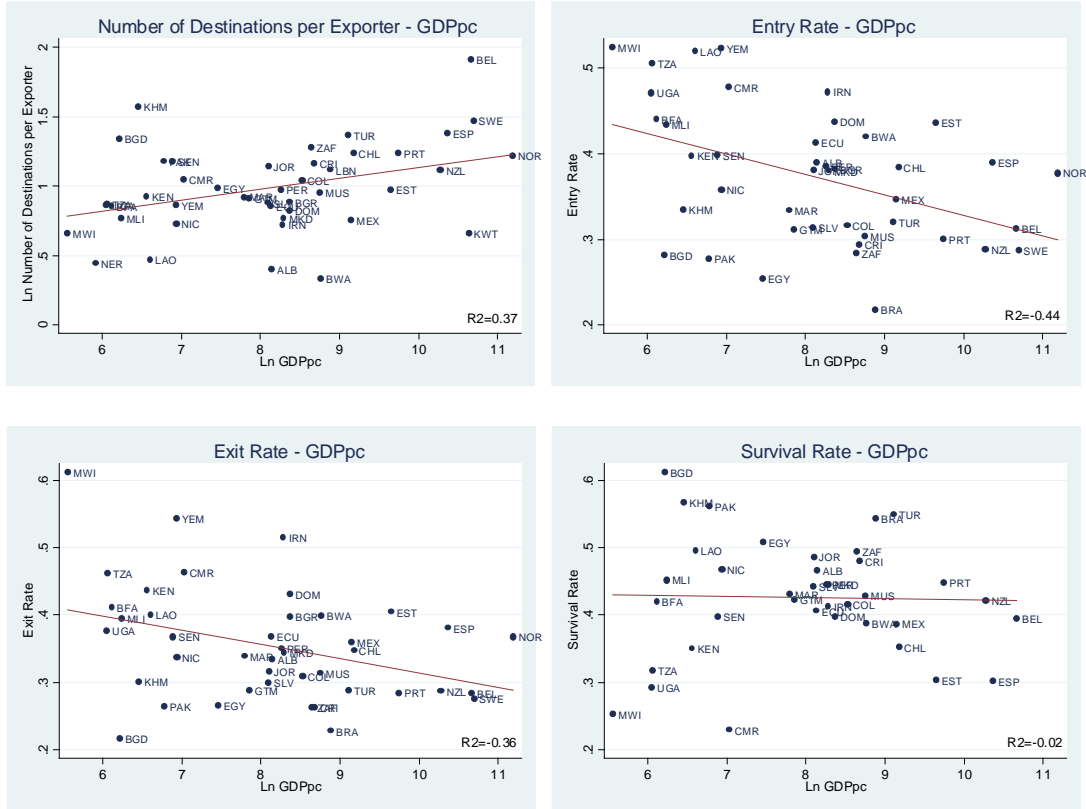
Notes: The measures plotted are based on measures in the country-year level dataset (file CY.dta) averaged across the 2006-2008 period for each country for each country except Kuwait for which data is for 2009 and Portugal for which averages are across the 2003-2005 period. GDP per capita is in current USD per inhabitant.

The panels in Figure 1 show that more developed economies have a larger number of exporters as well as larger average exporter sizes.[38] More developed economies are also characterized by more concentrated export sectors, in terms of higher shares accounted for by the top 5 percent of exporters. Exporters in more developed economies exhibit a more diversified portfolio in terms of products and destinations. However, more developed economies are less dynamic in terms of exporter churning. In such economies, larger pools of more productive firms may already be operating in the exporting sector and taking advantage of the profitable opportunities in markets abroad, making it less appealing to potential exporters to attempt an entry thus reducing entry rates. If those firms are well established, their probability of exit is also

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[38] A similar pattern is found for median exporter size.

lower. Survival rates of new entrants into export markets exhibit no clear correlation with the level of development. One possibility is that survival rates may depend more heavily on characteristics of the primary destination markets (neighborhood) than of the source markets. Indeed, the three countries with the lowest survival rates are in Africa, and two are landlocked. Table 4 shows that all the correlations discussed so far, with the exception of survival rates, are highly significant.

Table 4: Correlations between Database Measures, GDP per Capita, GDP, and the Ratio of Exports to GDP

	Ln Number of Exporters	Ln Mean Exports per Exporter (mn USD)	Share of Top 5% Exporters	Ln Number of Products per Exporter	Ln Number of Destinations per Exporter	Entry Rate	Exit Rate	Survival Rate
Ln GDP per capita	0.72	0.35	0.32	0.40	0.38	-0.32	-0.25	-0.02
	(0.00)	(0.02)	(0.03)	(0.01)	(0.01)	(0.04)	(0.10)	(0.90)
Ln GDP	0.90	0.52	0.15	0.41	0.54	-0.48	-0.35	0.16
	(0.00)	(0.00)	(0.31)	(0.01)	(0.00)	(0.00)	(0.02)	(0.34)
Ratio of exports to GDP	0.27	0.53	0.08	0.45	0.43	-0.32	-0.32	-0.03
	(0.08)	(0.00)	(0.59)	(0.00)	(0.00)	(0.04)	(0.04)	(0.84)

Notes: P-value shown in parentheses. The measures used in the correlations are based on measures in the country-year level dataset (file CY.dta) averaged across the 2006-2008 period for each country for each country except Kuwait for which averages are across the period 2009-2010 and Portugal for which averages are across the 2003-2005 period.

Table 4 and the figures in Appendix 3 show that the results are quite similar when the correlations are established with either the economic size of countries or the importance of their export sector instead of their level of development. In terms of magnitudes, the correlations of most measures tend to be higher with economic size than with the level of development or the ratio of exports to GDP.[39]

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[39] Kuwait and Portugal are part of the sample used to compute the correlations in Table 4 despite their data covering a period other than 2006-2008. However, similar correlation patterns are obtained if they are excluded from the sample.

Stylized Fact 2: Across countries expansions along the intensive margin – i.e., increases in the average exporter size – contribute more to annual export growth than expansions along the extensive margin – i.e., increases in the number of exporters.

To understand whether in the short run exports expand through increases in the average size of exporters (the intensive margin) or through increases in the numbers of exporters (the extensive margin), we consider a simple decomposition of the change in exports between consecutive years for each country in the Database. If *c* designates a country and *t* a year, total exports in a given year X_{ct} can be written as the product of the number of exporters n_{ct} and the average exporter size s_{ct}: $X_{ct} = n_{ct} * s_{ct}$. Thus, the change in exports between years *t-1* and *t* can be written as: $dX_{ct} = \overline{n_{ct}} * ds_{ct} + \overline{s_{ct}} * dn_{ct}$ where ds_{ct} is the change in the average exporter size between years *t-1* and *t*, dn_{ct} is the change in the number of exporters between years *t-1* and *t*, $\overline{n_{ct}}$ is the average number of exporters across years *t-1* and *t*, and $\overline{s_{ct}}$ is the average exporter size across years *t-1* and *t*. The contribution of the intensive margin to a change in exports is given by $\overline{n_{ct}} * ds_{ct}/dX_{ct}$ while the contribution of the extensive margin to a change in exports is given by $\overline{s_{ct}} * dn_{ct}/dX_{ct}$.

Table 5 shows the results from this decomposition using the measures available in the Database at the country-year level (CY.dta) across years 2006 and 2007 and across years 2007 and 2008.[40] While there is an important degree of heterogeneity across countries in the role of the intensive and the extensive margins, expansions in the average size of exporters are typically more important than the addition of new exporters for export growth in the short run, as pointed out by the medians across all countries, which are above 80% in both periods (as seen in the bottom rows). Moreover, of the eleven countries with double-digit export growth in one year, all

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[40] We chose to exclude from the table values for the 2006-2007 decomposition for Albania, Burkina Faso, Cambodia, Cameroon, Mexico, and Uganda since their firm coding systems changed in 2007 and for the 2007-2008 decomposition for Yemen since its firm coding system changed in 2008.

but two (Belgium and Spain in 2007-2008) show dominance of the intensive margin, and in more than half of this group the robust export growth is fully explained by the intensive margin.

Table 5: Decompositions of Export Growth across Countries

		Change in Total Exports Between 2006 and 2007 (bn USD)	Contribution of the Intensive Margin in 2006-2007	Contribution of the Extensive Margin in 2006-2007	Change in Total Exports Between 2007 and 2008 (bn USD)	Contribution of the Intensive Margin in 2007-2008	Contribution of the Extensive Margin in 2007-2008
ALB	Albania				0.27	60.9%	39.1%
BEL	Belgium	48.45	104.5%	-4.5%	20.81	45.2%	54.8%
BFA	Burkina F.				0.01	-331.2%	431.2%
BGD	Bangladesh	-4.06	103.6%	-3.6%	6.01	73.9%	26.1%
BRA	Brazil	22.53	81.3%	18.7%	36.82	114.0%	-14.0%
BWA	Botswana	0.55	98.5%	1.5%	-0.70	120.8%	-20.8%
CHL	Chile	9.86	27.6%	72.4%	2.40	0.3%	99.7%
CMR	Cameroon				0.37	0.0%	100.0%
CRI	Costa Rica	1.11	86.6%	13.4%	0.11	455.3%	-355.3%
DOM	Dominican Republic	0.29	-475.8%	575.8%	0.54	248.7%	-148.7%
ECU	Ecuador	0.78	44.3%	55.7%	1.42	73.1%	26.9%
EGY	Egypt	2.57	99.4%	0.6%	3.74	113.9%	-13.9%
ESP	Spain	35.94	106.7%	-6.7%	17.19	41.7%	58.3%
EST	Estonia	1.71	117.7%	-17.7%	1.71	51.2%	48.8%
GTM	Guatemala	0.85	73.7%	26.3%	0.77	53.0%	47.0%
IRN	Iran	0.94	232.4%	-132.4%	2.85	129.8%	-29.8%
JOR	Jordan	0.20	30.1%	69.9%	1.53	81.4%	18.6%
KEN	Kenya	0.66	149.9%	-49.9%	0.88	123.1%	-23.1%
KHM	Cambodia				1.41	110.9%	-10.9%
LAO	Laos	-0.05	295.0%	-195.0%	0.56	75.3%	24.7%
LBN	Lebanon						
MAR	Morocco	2.33	99.2%	0.8%	4.86	99.7%	0.3%
MEX	Mexico				11.67	148.6%	-48.6%
MKD	Macedonia	0.79	77.2%	22.8%	0.30	83.0%	17.0%
MLI	Mali	-0.32	133.3%	-33.3%	0.23	85.9%	14.1%
MUS	Mauritius	-0.15	89.8%	10.2%	-0.01	-1921.2%	2021.2%
MWI	Malawi	0.22	223.8%	-123.8%	0.03	123.5%	-23.5%
NER	Niger						
NIC	Nicaragua	0.20	72.9%	27.1%	0.29	88.8%	11.2%
NZL	New Zealand	3.75	109.3%	-9.3%	2.19	90.0%	10.0%
PAK	Pakistan	1.20	66.4%	33.6%	2.51	87.7%	12.3%
PER	Peru	3.87	82.7%	17.3%	2.12	16.7%	83.3%
SEN	Senegal	0.14	90.5%	9.5%	0.29	72.9%	27.1%
SLV	El Salvador	0.46	55.3%	44.7%	1.02	93.2%	6.8%
TUR	Turkey	20.10	61.6%	38.4%	22.07	95.0%	5.0%
TZA	Tanzania	0.26	3.4%	96.6%	0.77	82.0%	18.0%
UGA	Uganda				-0.09	316.5%	-216.5%
YEM	Yemen	0.06	124.3%	-24.3%			
ZAF	South Africa	9.62	96.2%	3.8%	12.26	73.6%	26.4%
	Median - all countries		90.5%	9.5%		84.5%	15.5%
	Median - countries in both sub-periods		90.5%	9.5%		82.5%	17.5%

Notes: the terms of the decomposition shown in the table are based on measures in the country-year level dataset (file CY.dta).

The findings in Table 5 are consistent with the predictions from trade models with heterogeneous firms whereby growth in the number of firms contributes relatively little to total exports as compared with growth in average firm size because entrants tend to be marginal firms.[41]

Stylized Fact 3: Across countries, entry and exit rates are strongly positively correlated with each other and both are negatively correlated with entrant survival rates, average exporter size, and diversification at the exporter level (in terms of products and destinations).

Table 6 shows the matrix of correlation coefficients among several measures in the Database at the country-year level (averaged over the 2006-2008 period) and the corresponding p-values.[42] The table presents also the correlations between the dynamics and diversification measures with total exports. Exporter entry and exit rates are strongly positively correlated in Table 6, implying that countries with high entry rates also have high exit rates. This evidence is similar to that based on industry data for individual countries such as Peru by Freund and Pierola (2010). In a typical year there are naturally high levels of experimentation (entry) accompanied by similar levels of failure (exit) in all countries. This intuition is reinforced by the strong negative correlations of both entry and exit with one-year survival of new entrants into export markets. Entry and exit rates are also strongly negatively correlated with average exporter size. This is not surprising since export markets are more contestable in countries where exporters are relatively smaller, observed churning is likely to be higher.

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[41] This finding differs, however, from cross-sectional evidence provided by Mayer and Ottaviano (2008) and our stylized fact 5 below on the correlation between the number of exporters and standard gravity variables. We discuss this in more detail below.

[42] Kuwait and Portugal are part of the sample used to compute the correlations in Table 6 despite their data covering a period other than 2006-2008. However, similar correlation patterns are obtained if they are excluded from the sample. Moreover, similar patterns are obtained if we use data for individual years within or outside the 2006-2008 period.

Another fact emerging from the correlations in Table 6 is that entry and exit rates are strongly negatively correlated with the average number of firms, the average number of products per firm and the average number of destination markets served per firm. This indicates that across countries, less churning takes place in more sophisticated export markets, where there are a lot of firms that sell a wider range of goods to more markets.

Table 6: Correlation among Selected Measures in the Database at the Country Level

	Entry Rate	Exit Rate	Survival Rate	Ln Mean Number of Products per Exporter	Ln Mean Number of Destinations per Exporter	Ln Number of Exporters	Ln Mean Exports per Exporter	Share of Top 5% of Exporters	Ln Total Exports
Entry Rate	1								
Exit Rate	0.92	1							
	(0.00)								
Survival Rate	-0.65	-0.73	1						
	(0.00)	(0.00)							
Ln Mean Number of Products per Exporter	-0.59	-0.38	0.14	1					
	(0.00)	(0.01)	(0.42)						
Ln Mean Number of Destinations per Exporter	-0.55	-0.52	0.21	0.47	1				
	(0.00)	(0.00)	(0.21)	(0.00)					
Ln Number of Exporters	-0.57	-0.43	0.1522	0.5202	0.53	1			
	(0.00)	(0.00)	(0.36)	(0.00)	(0.00)				
Ln Mean Exports per Exporter	-0.44	-0.45	0.10	0.30	0.54	0.35	1		
	(0.00)	(0.00)	(0.53)	(0.05)	(0.00)	(0.02)			
Share of Top 5% of Exporters	0.11	0.15	-0.40	0.00	-0.21	0.14	0.22	1	
	(0.50)	(0.35)	(0.01)	(0.99)	(0.17)	(0.34)	(0.16)		
Ln Total Exports	-0.62	-0.51	0.16	0.54	0.63	0.93	0.66	0.20	1
	(0.00)	(0.00)	(0.32)	(0.00)	(0.00)	(0.00)	(0.00)	(0.20)	

Notes: P-values in parentheses. The correlations shown in the table are based on measures in the country-year level dataset (file CY.dta) averaged across the 2006-2008 period for each country except Kuwait for which averages are across the 2009-2010 period and Portugal for which averages are across the 2003-2005 period.

Stylized Fact 4: The typical exporter size, total exports, and exporter survival rates at the country-sector level are not explained by country or sector characteristics while the share of

the top 5 percent of exporters, the average number of products and destinations per exporter, and entry and exit rates are explained to an important extent by those characteristics.

We conduct an ANOVA decomposition of the same set of Database measures shown in Table 2 taken at the country and HS 2-digit sector level –averaged across the 2006-2008 period– to determine the explanatory power of country effects and sector effects.[43] The results are shown in Table 7 and indicate that country and sector effects combined explain an important share of the observed variation in the number of exporters, the average number of products and destinations per exporter, the share of the top 5 percent of exporters, the number of exporters (export base), and in exporter entry and exit rates.[44] In contrast, country and sector effects do very little to explain total exports in the country-sector, the average or median size of an exporter and exporter survival rates in the country-sector. The pattern of total exports across sectors in a country reflects comparative advantage. Since total exports in a country-sector are by definition determined by the number of exporters in the country-sector and their average size, the importance of country and sector effects in determining the number of exporters but not the size of exporters implies that comparative advantage works primarily via firm size.

There are also interesting differences in the importance of sector versus country characteristics in explaining exporter behavior. Sector characteristics do more to explain the share of top 5 percent and the number of products, while country characteristics explain better the number of exporters, the number of destinations, and entry and exit rates. While many of these differences are to be expected, the importance of sector for the share of top 5 percent implies that market structure drives a good part of concentration as opposed to country rules and

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[43] The ANOVA decomposition is a type of statistical hypothesis testing, whereby the observed variance of a given variable is partitioned into components attributable to different sources of variation. The ANOVA provides a statistical test of whether the means of the variable for different groups are all equal.

[44] Kuwait and Portugal are part of the sample used for the ANOVA decomposition in Table 7 despite their data covering a period other than 2006-2008. However, similar findings are obtained if they are excluded from the sample.

regulations. In contrast, the importance of country characteristics for entry and exit suggests that fixed costs and uncertainty vary more at the country level than at the sector level.

Table 7: ANOVA Decomposition at Country and HS 2-digit Sector Level

	Total Exports	Number of Exporters	Mean Exports per Exporter (mn USD)	Median Exports per Exporter (mn USD)	Share of Top 5% Exporters	Number of Products per Exporter	Number of Destinations per Exporter	Entry Rate	Exit Rate	Survival Rate
Country	10%	24%	3%	2%	28%	14%	37%	30%	29%	14%
HS 2-digit Sector	9%	18%	7%	5%	24%	46%	12%	17%	17%	16%
Residual	81%	58%	90%	93%	54%	41%	51%	55%	55%	70%

Note: The variance decomposition shown is based on measures in the country-year-product (HS 2-digit) level dataset (file CYH2.dta) averaged across the 2006-2008 period for each country except Kuwait for which averages are across the 2009-2010 period and Portugal for which averages are across the 2003-2005 period.

Stylized Fact 5: There is a tremendous skewness in exporters as total exports of developing countries are largely dominated by multi-product multi-destinations exporters but these account for a very small share of the number of exporters.

The recent trade literature shows a dominant role for firms that export many products to many destinations in explaining trade flows (see, for example, Bernard, Jensen, Redding, and Schott, 2009 on the US; Eaton, Kortum and Kramarz, 2008 on France; and Amador and Opromolla, 2008 on Portugal). As mentioned in Section 3, a component of the Database is a set of matrix tables showing for each developing country and year the distribution of exporters and of total exports by the number of HS 6-digit products exported and the number of destination markets served that can provide an insight onto the importance of multi-product multi-destination exporters across developing countries and over time.

Using the information from developing countries over the period 2006-2008, we calculate for each country the average share of exporters and of total exports accounted for by single-product single-destination firms and by firms exporting to more than four countries and to more than four destinations and show them in Table 8. Single-product single-destination firms

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represent more than a third of exporters on average across all countries. They represent an even higher share over 40 percent in most African countries as well as in Albania and Mexico. The percentages shown in Table 8 are quite close to the 40 percent reported by Bernard, Jensen, Redding, and Schott (2009) for the U.S.[45] However, these single-product single-destination firms account for a minimal fraction of total exports, on average less than 3 percent across countries. That fraction is particularly low in Botswana, Costa Rica, and Niger at 0.5 percent or less.

Table 8 also shows that firms exporting more than four products to more than four destinations represent a relatively small percentage of exporters, 12 percent on average across all countries. Those percentages do exhibit a substantial degree of heterogeneity across countries ranging from about 3.5 percent in Albania and Botswana to 21.5 percent in South Africa, 22.4 percent in Bangladesh, and 29.4 percent in Cambodia. These multi-product multi-destination firms account for a large share of total exports in all countries, more than 60 percent on average. In Cambodia, Costa Rica, and South Africa that share is actually close to 80 percent whereas in Albania and Niger it is less than 30 percent.[46]

This high degree of concentration of total exports in the hands of a small number of multi-product multi-destination exporters can be rationalized by the model of multi-product multi-destination exporters developed by Bernard, Redding, and Schott (2011), where firms face fixed costs to export each product and serve each market. Only higher ability firms are able to generate variable profits to cover those fixed costs and thus supply a wider range of products to each market.

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[45] Note, however, that the U.S. percentage is based on products defined at the HS 10-digit level.
[46] Focusing on three country examples, Appendix 4 shows further that only 1.2% of exporters in Tanzania, 2.3% in Colombia, and 2.2% in Mexico export more than 11 products to more than 11 destinations and these very rare exporters account for about 32% of total exports in Tanzania, 26% in Colombia, and 45% in Mexico.

Table 8: Share of Single-Product Single-Destination and Multi-Product Multi-Destination Exporters

		Share of Exporters Accounted for by:		Share of Total Exports Accounted for by:	
		Single-Product Single-Destination Firms	Firms Exporting More than 4 Products to More than 4 Destinations	Single-Product Single-Destination Firms	Firms Exporting More than 4 Products to More than 4 Destinations
ALB	Albania	45.4%	3.4%	8.4%	13.4%
BFA	Burkina Faso	41.2%	13.4%	2.8%	66.5%
BGD	Bangladesh	26.5%	22.4%	2.0%	63.9%
BGR	Bulgaria	37.2%	11.2%	1.4%	74.8%
BWA	Botswana	38.9%	3.5%	0.4%	53.0%
CHL	Chile	38.5%	14.4%	0.8%	75.1%
CMR	Cameroon	39.1%	9.3%	3.6%	55.2%
COL	Colombia	33.1%	12.9%	3.0%	60.1%
CRI	Costa Rica	27.5%	18.3%	0.7%	79.4%
DOM	Dominican Republic	37.9%	10.4%	1.6%	60.3%
ECU	Ecuador	37.5%	8.8%	4.6%	54.6%
EGY	Egypt	33.9%	12.3%	2.6%	51.9%
GTM	Guatemala	27.7%	12.8%	1.5%	56.7%
IRN	Iran	34.3%	6.9%	5.7%	47.5%
JOR	Jordan	39.1%	13.8%	2.4%	52.7%
KEN	Kenya	35.3%	12.8%	2.6%	58.7%
KHM	Cambodia	25.5%	29.4%	1.1%	78.7%
LBN	Lebanon	31.3%	19.9%	2.6%	70.8%
MAR	Morocco	28.2%	12.6%	3.0%	51.9%
MEX	Mexico	40.1%	9.1%	1.2%	63.4%
MKD	Macedonia	35.2%	11.1%	1.7%	76.2%
MLI	Mali	35.8%	11.3%	2.4%	60.9%
MUS	Mauritius	26.6%	15.1%	3.4%	62.7%
MWI	Malawi	42.5%	5.6%	1.6%	57.9%
NER	Niger	41.3%	8.1%	0.5%	29.9%
NIC	Nicaragua	34.2%	8.6%	4.2%	53.4%
PAK	Pakistan	25.2%	18.6%	2.2%	68.9%
PER	Peru	29.8%	11.9%	3.8%	73.0%
SEN	Senegal	35.5%	19.2%	3.6%	64.0%
SLV	El Salvador	30.1%	14.3%	3.6%	72.5%
TZA	Tanzania	42.8%	10.2%	3.1%	75.1%
UGA	Uganda	42.9%	9.3%	3.7%	38.5%
YEM	Yemen	38.6%	11.1%	6.8%	54.9%
ZAF	South Africa	25.0%	21.5%	1.3%	82.3%
Average		34.8%	12.8%	2.8%	60.5%
Median		35.4%	12.1%	2.6%	60.6%

Note: the shares are based on several cells in the matrix tables for all countries averaged over the period 2006-2008.

Stylized Fact 6: Bilateral exports increase with the size of the destination market and decrease with distance and with bilateral tariffs. Most or all of these effects come from the number of exporting firms serving a destination market (extensive margin) rather than from the average exports per firm in those markets (intensive margin).

The gravity model of trade that relates bilateral trade flows between two countries to their economic size and variable trade costs is one of the most successful empirical models in economics (Anderson, 2011). Most studies focus on aggregate bilateral trade flows between countries but a few recent studies have begun to delve into the role of firms for the gravity equation but focusing on single countries only.[47] An exception is Mayer and Ottaviano (2008), who examine data from a handful of European countries. Using measures in the Database at the country-year-destination level, we provide estimates of a gravity equation for our large sample of countries (and their trading partners) that allow us to examine whether the effects of the classical determinants of bilateral trade –economic size and proxies for trade costs (distance and tariffs) along with the level of development– operate through firm export participation or through the average value exported per firm.

We decompose exports from country i to partner country j for any given year (ignoring the year subscript) into the product of n_{ij} the number of country i firms exporting to country j (extensive margin) and $s_{ij} = X_{ij}/n_{ij}$ the average exports per firm for firms that export from country i to country j (intensive margin): $X_{ij} = n_{ij} * (X_{ij}/n_{ij})$. The measures corresponding to the three elements in this decomposition are available in the Database at the country-year-destination level (CYD.dta) and are used in turn as dependent variables in the gravity equations whose estimates are shown in Table 9. Data on bilateral distances is taken from CEPII described in Mayer and Zignago (2011), and data on bilateral tariffs from Kee, Nicita, and Olarreaga (2009).[48] Since OLS estimation is used in Table 9, the coefficient on an independent variable in

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[47] For example Bernard, Jensen, Redding, and Schott (2007) and Lawless (2010) examine bilateral U.S. exports, Bastos and Silva (2012) examine bilateral Portuguese exports, and Eaton, Kortum, and Kramarz (2011) examine bilateral French exports.
[48] We calculate the average bilateral tariff faced by origin country A when exporting to destination country B as the simple average of the applied tariffs imposed by B on all HS 6-digit products it imports from A in 2008 (the only year for which we have available data).

column (1) is equal to the sum of the coefficients on that same independent variable in columns (2) and (3), and the same is true for the other two sets of three columns (4)-(6) and (7)-(9).[49]

The estimates in column (1) of Panel A show that bilateral exports increase significantly with GDP of both exporter and destination country and decrease significantly with distance, a finding that mimics those in all prior gravity studies. Columns (2) and (3) of Panel A show that both the number of exporters as well as average exports per firm increase significantly with exporter and destination country GDP but decrease significantly with distance. Importantly, most of the negative effect of distance on bilateral exports operates through the number of exporters: the coefficient of -1.223 in column (2) of Panel A accounts for 76 percent of the total effect of distance on bilateral exports. Most of the positive effects of exporter country size operate through the extensive margin but for the positive effects of destination country size, extensive and intensive margins play more equal roles.

The estimates in column (4) of Panel A show that bilateral exports decrease significantly with the average tariff imposed by the destination country. Column (5) of Panel A shows that the number of exporters decreases significantly with tariffs while column (6) of Panel A shows that the average exporter size does not vary significantly with tariffs. Thus, the entire negative effect of bilateral tariffs on bilateral exports operates through the number of exporters.

Columns (7)-(9) of Panel A include both distance and bilateral tariffs and provide qualitatively similar results to those when only one of the measures of trade costs are included. Also, Panel B of Table 9 shows the results from estimating gravity regressions where GDP of the exporter and the importer country are replaced by exporter and importer country fixed effects.

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[49] Since this gravity equation is meant to illustrate the types of analysis that can be done using the Database with the destination disaggregation level, the estimation is done by OLS and zero trade flows are not included in the sample. Future work using the Database can address selection problems and employ the novel estimation techniques for gravity equations proposed for example by Santos-Silva and Tenreyro (2004).

The predominance of the number of exporters in accounting for the negative effect of distance and of bilateral tariffs on bilateral trade is maintained in Panel B.

Table 9: Gravity Equation Estimates

Panel A. Including Exporter and Importer GDP

	Dependent Variable is:								
	Ln Total Exports *Bilateral*	Ln Number of Exporters *Bilateral*	Ln Mean Exports per Firm *Bilateral*	Ln Total Exports *Bilateral*	Ln Number of Exporters *Bilateral*	Ln Mean Exports per Firm *Bilateral*	Ln Total Exports *Bilateral*	Ln Number of Exporters *Bilateral*	Ln Mean Exports per Firm *Bilateral*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ln GDP of exporter	1.169***	0.855***	0.314***	1.039***	0.763***	0.277***	1.203***	0.887***	0.316***
	(0.027)	(0.016)	(0.019)	(0.031)	(0.019)	(0.019)	(0.026)	(0.014)	(0.019)
Ln GDP of destination	0.845***	0.498***	0.347***	0.731***	0.410***	0.321***	0.841***	0.494***	0.347***
	(0.019)	(0.011)	(0.012)	(0.021)	(0.013)	(0.013)	(0.018)	(0.010)	(0.012)
Ln bilateral distance	-1.616***	-1.223***	-0.393***				-1.634***	-1.240***	-0.394***
	(0.046)	(0.028)	(0.028)				(0.045)	(0.027)	(0.028)
Ln bilateral tariffs				-1.196***	-1.118***	-0.078	-1.252***	-1.160***	-0.0915*
				(0.084)	(0.053)	(0.051)	(0.076)	(0.047)	(0.049)
Observations	2780	2780	2780	2780	2780	2780	2780	2780	2780
R-squared	0.553	0.615	0.251	0.426	0.469	0.212	0.594	0.698	0.252

Panel B. Including Exporter and Importer Fixed Effects

	Dependent Variable is:								
	Ln Total Exports *Bilateral*	Ln Number of Exporters *Bilateral*	Ln Mean Exports per Firm *Bilateral*	Ln Total Exports *Bilateral*	Ln Number of Exporters *Bilateral*	Ln Mean Exports per Firm *Bilateral*	Ln Total Exports *Bilateral*	Ln Number of Exporters *Bilateral*	Ln Mean Exports per Firm *Bilateral*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ln bilateral distance	-2.118***	-1.535***	-0.582***				-2.052***	-1.487***	-0.565***
	(0.052)	(0.034)	(0.032)				(0.053)	(0.035)	(0.033)
Ln bilateral tariffs				-3.395***	-2.470***	-0.925***	-1.134***	-0.831***	-0.302***
				(0.776)	(0.559)	(0.234)	(0.260)	(0.184)	(0.117)
Exporter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2980	2980	2980	2980	2980	2980	2980	2980	2980
R-squared	0.742	0.834	0.439	0.585	0.637	0.393	0.744	0.837	0.44

Notes: Robust standard errors in parentheses; *** and * indicate significance at the 1 and 10 percent percent confidence levels, respectively. The dependent variables used in the regressions are measures in the country-year-destination level dataset (file CYD.dta) in the year 2008 for each country. The real GDP variable used is in PPP terms.

Our evidence that significantly more exporters serve larger destination markets is consistent with trade models with heterogeneous firms. These models show that as the size of the export market increases, firms with lower productivity are able to generate sufficient variable profits to cover the fixed costs of exporting and thus the number of exporting firms increases (Bernard, Redding, and Schott, 2011). Distance is typically used in gravity equations to proxy for

variable transportation costs, which vary with the amount exported. But distance could also proxy for fixed trade costs related for example to informational networks (Lawless, 2010). Either way, our evidence that larger distance to trading partners as well as higher bilateral tariffs imposed by trading partners have an inhibiting effect in firm participation in exports is consistent with theory. Trade costs – fixed or variable – increase with distance, implying that lower productivity firms do not generate sufficient profits to cover the fixed costs of exporting and thus the number of exporting firms decreases to more distant destinations. While distance is not an actionable policy variable per se, it can be influenced by improvements in transportation or reductions in other trade barriers. Our findings suggest that improvements in transportation or reductions in other trade barriers would likely affect bilateral exports more through the number of exporters than through their average size. Regarding tariffs, which are a variable trade cost per se, our findings suggest that their reduction by partner countries affects bilateral exports primarily through the number of exporters.

The results presented here based on a cross-section appear to be at odds with stylized fact 2 on export growth. In particular, our cross-country evidence shows that exporting-country size, destination-country demand, and trade costs largely affect aggregate exports via the number of exporters. In contrast, export growth within countries over time is largely driven by average exporter size and not by the number of exporters. This is likely to be related to the extraordinarily skewed distribution of firm size (recall that the top 5 percent account for over 80 percent of exports on average and the bottom third of the distribution, the single-product single-destination firms, account for less than 3 percent of exports). This implies that aggregate export growth is very dependent on firm growth at the top of the distribution. In contrast, when the export base expands, these are likely to be very small firms that enter, reducing average size, all

else equal. This means that shocks that expand *both* firm size and the number of firms, such as improved market access or lower trade costs, will increase average *overall* exporter size by a much smaller amount than *incumbent* exporter size since the entrants are primarily very small exporters. Thus, gravity-type regressions on average size and number of exporters will understate the importance of size effects on aggregate exports. Examining export growth over time, it is in countries where the shocks affect large firms most significantly that exports will grow most rapidly and this will tend to push up the average exporter size more than the number of exporters. This is precisely what we see in stylized fact 2. From a policy perspective, it also suggests that there may be important levers that can be used to enhance exports, such as attracting large multinationals.

V. Concluding Remarks

While the literature on exporter dynamics is rapidly growing, there has not been a comparison across a large number of countries at differing stages of development. The Exporter Dynamics Database presented in this paper addresses that limitation by providing policymakers and the research community with a set of measures of exporter characteristics and dynamics that allow for cross-country comparisons. The ultimate objective of this Database is to provide researchers with more data that will expand our understanding of how exporting happens and generate policy implications for countries seeking to expand their exports. The Database compiles measures for 45 countries (most of them developing countries) covering the universe of annual firm-level export transactions primarily for the period between 2003 and 2010.

This paper presents six stylized facts that arise from the analysis of measures in the Database and their cross-country comparisons. The data point to wide variation in the export

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base and characteristics of the exporting sector across countries, though some strong general patterns emerge. The facts show that exporting country size, stage of development, and sectoral characteristics explain a number of patterns at the firm level. They also highlight the tremendous skewness of exporter size and the importance of firm growth in aggregate export growth. While some of our stylized facts are consistent with facts shown by previous studies on individual countries, others reveal features that are not explained by current trade models with heterogeneous firms and thus, require further research to understand them fully.

The measures in the Database will allow the examination of several interesting cross-country questions, cross-country cross-sector questions, and within-country questions. The measures can also be used as controls in estimations that require exporter characteristics at the country-industry level. In particular, as the measures in the Database offer the first opportunity to study exporter characteristics and dynamics on a global basis, some of the facts described above open the door to questions such as: How can countries attract more large multi-product firms? What determines entrant survival? How is comparative advantage related to the typical exporter characteristics in an industry? And many others that will hopefully be addressed in future research to be conducted using the Database.

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Appendix 1: Countries Included in the Database, Periods Available and Sources of Data

a) Latin America and the Caribbean (LAC)

	Country	*Period available*	*Source*
1	Brazil	1997-2010	Government (Receita Federal)
2	Chile	2003 - 2009	Private company (Veritrade)
3	Colombia	2007 - 2009	Private company (Veritrade)
4	Costa Rica	1998 - 2009	Government (Promotora del Comercio Exterior de Costa Rica - PROCOMER)
5	Dominican Republic	2002 - 2009	Government (Dirección General de Aduanas)
6	Ecuador	2006 - 2009	Private company (Veritrade)
7	El Salvador	2002 - 2009	Government (Dirección General de Aduanas)
8	Guatemala	2003 -2010	Government (Superintendencia de Administración Tributaria)
9	Mexico	2000 - 2009	Government (Secretaría de Economía)
10	Nicaragua	2002 - 2011	Government (Dirección General de Servicios Aduaneros)
11	Peru	1997 - 2008	Government (Superintendencia Nacional de Administración Tributaria - SUNAT)

b) Europe and Central Asia (ECA)

	Country	*Period available*	*Source*
12	Albania	2004 - 2009	Government (Ministry of Finance)
13	Bulgaria	2001 - 2006	Government (National Customs Agency)
14	Macedonia	2001 - 2010	Government (Customs Administration)
15	Turkey	2002-2010	Government (Turkish Statistical Institute)

c) Sub-Saharan Africa (SSA)

	Country	*Period available*	*Source*
16	Botswana	2003 - 2010	Government (Botswana Unified Revenue Service)
17	Burkina Faso	2005 - 2010	Government (Direction Générale des Douanes)
18	Cameroon	1997 - 2009	Government (Douanes Camerounaises)
19	Kenya	2006 - 2009	Government (Kenya Revenue Authority)
20	Malawi	2006 - 2008	Government (Malawi Revenue Authority)
21	Mali	2005 - 2008	Government (Direction Générale des Douanes)
22	Mauritius	2002 - 2009	Government (Mauritius Revenue Authority)
23	Niger	2008 - 2010	Government (Direction Générale des Douanes)
24	Senegal	2000 - 2010	Government (Direction Générale des Douanes)
25	South Africa	2001 - 2009	Government (South Africa Revenue Service)
26	Tanzania	2003 - 2009	Government (Tanzania Revenue Authority)
27	Uganda	2000 - 2010 (except 2006)	Government (Uganda Revenue Authority)

d) East Asia and the Pacific (EAP)

	Country	*Period available*	*Source*
28	Cambodia	2000 - 2009	Government (General Department of Customs and Excise of Cambodia)
29	Laos	2005 - 2010	Government (Lao PDR Customs)

e) South Asia (SA)

	Country	*Period available*	*Source*
30	Bangladesh	2005 - 2011	Government (National Board of Revenue)
31	Pakistan	2002 - 2010	Government (Federal Bureau of Pakistan and Pakistan Customs Department)

f) MENA

	Country	Period available	Source
32	Egypt	2006 - 2010	Non-profit Organization (Economic Research Forum)
33	Iran	2006 - 2010	Government (The Islamic Republic of Iran Customs Administration - IRICA)
34	Jordan	2003 - 2010	Government (Ministry of Planning and International Cooperation)
35	Lebanon	2008 - 2010	Government (Lebanese Customs Administration)
36	Morocco	2002 - 2010	Government (Administration des Douanes et Impôts Indirects)
37	Yemen	2006 - 2010	Government (Yemen Customs Authority)

g) Others

	Country	Period available	Source
38	Belgium	1997 - 2010	Researcher: Emmanuel Dhyne (Bank of Belgium), Luc Dresse (Bank of Belgium), Cedric Duprez (Bank of Belgium), Hylke Vandenbussche (Université Catholique de Louvain)
39	Estonia	1997 - 2009	Researcher: Jaan Masso (University of Tartu) and Priit Vahter (University of Birmingham)
40	Kuwait	2009 - 2010	Government (General Administration of Customs, Office of Public Scrutiny, Statistics, and Conservation)
41	New Zealand	1999-2010	Researcher: Lynda Sanderson (The Treasury) and Richard Fabling (Motu Economic and Public Policy Research)
42	Norway	1997 - 2006	Researcher: Andreas Moxnes (Dartmouth College)
43	Portugal	1997 - 2005	Researcher: Joana Silva (World Bank)
44	Spain	2005 - 2009	Researchers: Juan de Lucio (High Council of Spanish Chambers of Commerce), Raul Minguez (High Council of Spanish Chambers of Commerce), Asier Minondo (Deusto Business School), Francisco Requena, (University of Valencia)
45	Sweden	1997 - 2006	Researcher: Martin Andersson (Lund University) and Lina Ahlin (Lund University)

Appendix 2: Country-Year Comparison, Comtrade Data

	Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio		Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio
ALB	Albania	2004	649	586	111	BRA	Brazil	2006	138,000	127,000	109
ALB	Albania	2005	712	639	111	BRA	Brazil	2007	161,000	147,000	109
ALB	Albania	2006	789	758	104	BRA	Brazil	2008	197,000	179,000	110
ALB	Albania	2007	1,050	996	105	BRA	Brazil	2009	153,000	139,000	110
ALB	Albania	2008	1,320	1,230	107	BRA	Brazil	2010	202,000	178,000	114
ALB	Albania	2009	1,140	961	118	BWA	Botswana	2003	2,270	3,800	60
BEL	Belgium	1997	139,000	-		BWA	Botswana	2004	3,240	3,510	92
BEL	Belgium	1998	144,000	-		BWA	Botswana	2005	4,270	4,430	96
BEL	Belgium	1999	144,000	174,000	83	BWA	Botswana	2006	4,430	4,500	99
BEL	Belgium	2000	141,000	176,000	80	BWA	Botswana	2007	4,990	5,060	99
BEL	Belgium	2001	142,000	182,000	78	BWA	Botswana	2008	4,290	4,930	87
BEL	Belgium	2002	160,000	206,000	78	BWA	Botswana	2009	2,860	3,440	83
BEL	Belgium	2003	190,000	242,000	79	BWA	Botswana	2010	4,280	4,680	92
BEL	Belgium	2004	230,000	289,000	80	CHL	Chile	2003	19,000	21,200	90
BEL	Belgium	2005	247,000	311,000	79	CHL	Chile	2004	29,600	32,000	92
BEL	Belgium	2006	270,000	341,000	79	CHL	Chile	2005	36,800	40,400	91
BEL	Belgium	2007	318,000	402,000	79	CHL	Chile	2006	53,500	57,600	93
BEL	Belgium	2008	339,000	433,000	78	CHL	Chile	2007	63,400	67,100	94
BEL	Belgium	2009	274,000	344,000	80	CHL	Chile	2008	65,800	64,700	102
BEL	Belgium	2010	321,000	375,000	86	CHL	Chile	2009	47,600	53,200	90
BFA	Burkina Faso	2005	348	332	105	CMR	Cameroon	1997	1,140	-	
BFA	Burkina Faso	2006	458	-		CMR	Cameroon	1998	1,170	-	
BFA	Burkina Faso	2007	493	453	109	CMR	Cameroon	1999	1,040	-	
BFA	Burkina Faso	2008	501	470	107	CMR	Cameroon	2000	860	836	103
BFA	Burkina Faso	2009	622	795	78	CMR	Cameroon	2001	872	839	104
BFA	Burkina Faso	2010	1,310	1,290	102	CMR	Cameroon	2002	915	919	99
BGD	Bangladesh	2005	8,910	9,280	96	CMR	Cameroon	2003	1,130	1,170	97
BGD	Bangladesh	2006	13,100	11,600	113	CMR	Cameroon	2004	1,230	1,320	93
BGD	Bangladesh	2007	9,070	12,900	70	CMR	Cameroon	2005	1,230	1,230	100
BGD	Bangladesh	2008	15,100	-		CMR	Cameroon	2006	1,360	1,360	100
BGD	Bangladesh	2009	15,100	-		CMR	Cameroon	2007	1,750	1,750	100
BGD	Bangladesh	2010	18,900	-		CMR	Cameroon	2008	2,120	2,100	101
BGD	Bangladesh	2011	24,000	-		CMR	Cameroon	2009	1,710	1,720	100
BGR	Bulgaria	2001	4,770	4,660	102	COL	Colombia	2007	18,500	18,500	100
BGR	Bulgaria	2002	5,650	5,220	108	COL	Colombia	2008	19,800	19,800	100
BGR	Bulgaria	2003	7,170	7,100	101	COL	Colombia	2009	16,700	16,600	100
BGR	Bulgaria	2004	9,190	8,850	104	CRI	Costa Rica	1998	4,840	5,130	94
BGR	Bulgaria	2005	10,300	10,100	102	CRI	Costa Rica	1999	6,230	6,260	99
BGR	Bulgaria	2006	12,900	12,900	100	CRI	Costa Rica	2000	5,530	5,450	101
BRA	Brazil	1997	52,800	52,700	100	CRI	Costa Rica	2001	4,830	4,680	103
BRA	Brazil	1998	51,100	50,800	101	CRI	Costa Rica	2002	5,060	4,900	103
BRA	Brazil	1999	48,800	47,600	103	CRI	Costa Rica	2003	5,890	5,770	102
BRA	Brazil	2000	55,800	54,200	103	CRI	Costa Rica	2004	6,060	5,950	102
BRA	Brazil	2001	58,300	56,200	104	CRI	Costa Rica	2005	6,730	7,120	95
BRA	Brazil	2002	60,400	57,500	105	CRI	Costa Rica	2006	7,930	7,210	110
BRA	Brazil	2003	73,000	69,400	105	CRI	Costa Rica	2007	9,040	8,880	102
BRA	Brazil	2004	96,700	92,300	105	CRI	Costa Rica	2008	9,140	9,650	95
BRA	Brazil	2005	120,000	111,000	107	CRI	Costa Rica	2009	8,390	8,790	96

	Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio
DOM	Dominican Rep	2002	3,390	5,130	66
DOM	Dominican Rep	2003	3,730	5,350	70
DOM	Dominican Rep	2004	3,550	5,720	62
DOM	Dominican Rep	2005	3,960	5,860	68
DOM	Dominican Rep	2006	4,170	6,080	69
DOM	Dominican Rep	2007	4,460	6,400	70
DOM	Dominican Rep	2008	5,000	5,890	85
DOM	Dominican Rep	2009	4,540	4,370	104
ECU	Ecuador	2006	4,730	5,170	91
ECU	Ecuador	2007	5,510	5,510	100
ECU	Ecuador	2008	6,930	7,030	99
ECU	Ecuador	2009	7,090	6,810	104
EGY	Egypt	2006	11,400	-	
EGY	Egypt	2007	13,900	-	
EGY	Egypt	2008	17,700	14,400	123
EGY	Egypt	2009	16,100	17,200	93
EGY	Egypt	2010	18,800	18,700	100
ESP	Spain	2005	181,000	184,000	98
ESP	Spain	2006	200,000	204,000	98
ESP	Spain	2007	236,000	242,000	98
ESP	Spain	2008	253,000	261,000	97
ESP	Spain	2009	207,000	213,000	97
EST	Estonia	1997	1,860	2,750	68
EST	Estonia	1998	2,150	3,120	69
EST	Estonia	1999	2,710	2,880	94
EST	Estonia	2000	3,530	3,660	96
EST	Estonia	2001	3,580	3,840	93
EST	Estonia	2002	3,820	4,110	93
EST	Estonia	2003	5,140	5,390	95
EST	Estonia	2004	5,840	6,230	94
EST	Estonia	2005	6,790	7,650	89
EST	Estonia	2006	7,580	8,480	89
EST	Estonia	2007	9,280	10,300	90
EST	Estonia	2008	11,000	12,100	91
EST	Estonia	2009	7,880	8,730	90
GTM	Guatemala	2003	4,170	2,420	172
GTM	Guatemala	2004	4,610	2,690	171
GTM	Guatemala	2005	4,970	5,080	98
GTM	Guatemala	2006	5,480	2,920	188
GTM	Guatemala	2007	6,320	6,550	97
GTM	Guatemala	2008	7,090	7,200	99
GTM	Guatemala	2009	6,620	6,920	96
GTM	Guatemala	2010	7,800	8,080	97
IRN	Iran	2006	11,200	10,500	106
IRN	Iran	2007	12,100	-	
IRN	Iran	2008	15,000	-	
IRN	Iran	2009	16,100	-	
IRN	Iran	2010	21,000	24,300	86
JOR	Jordan	2003	1,140	2,270	50

	Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio
JOR	Jordan	2004	1,470	3,180	46
JOR	Jordan	2005	1,940	3,550	55
JOR	Jordan	2006	2,750	3,990	69
JOR	Jordan	2007	2,960	4,380	68
JOR	Jordan	2008	4,490	6,040	74
JOR	Jordan	2009	4,540	4,930	92
JOR	Jordan	2010	4,880	5,780	84
KEN	Kenya	2006	3,240	3,240	100
KEN	Kenya	2007	3,900	3,900	100
KEN	Kenya	2008	4,780	4,480	107
KEN	Kenya	2009	4,270	4,270	100
KHM	Cambodia	2000	1,050	1,390	75
KHM	Cambodia	2001	1,250	1,500	84
KHM	Cambodia	2002	1,460	1,920	76
KHM	Cambodia	2003	1,750	2,120	83
KHM	Cambodia	2004	2,140	2,800	77
KHM	Cambodia	2005	2,380	3,020	79
KHM	Cambodia	2006	2,890	3,570	81
KHM	Cambodia	2007	2,920	3,530	83
KHM	Cambodia	2008	4,330	4,360	99
KHM	Cambodia	2009	4,950	4,990	99
KWT	Kuwait	2009	2,840	3,420	83
KWT	Kuwait	2010	3,220	-	
LAO	Laos	2006	459	-	
LAO	Laos	2007	406	-	
LAO	Laos	2008	962	-	
LAO	Laos	2009	1,090	-	
LBN	Lebanon	2008	3,410	3,470	98
LBN	Lebanon	2009	3,440	3,450	100
LBN	Lebanon	2010	4,210	4,220	100
MAR	Morocco	2002	7,490	7,540	99
MAR	Morocco	2003	8,410	8,510	99
MAR	Morocco	2004	9,330	9,430	99
MAR	Morocco	2005	10,500	10,500	100
MAR	Morocco	2006	12,100	12,000	101
MAR	Morocco	2007	14,400	13,900	104
MAR	Morocco	2008	19,300	19,500	99
MAR	Morocco	2009	13,300	13,600	98
MAR	Morocco	2010	17,000	17,200	99
MEX	Mexico	2000	150,000	150,000	100
MEX	Mexico	2001	146,000	146,000	100
MEX	Mexico	2002	146,000	146,000	100
MEX	Mexico	2003	146,000	146,000	100
MEX	Mexico	2004	164,000	165,000	100
MEX	Mexico	2005	182,000	182,000	100
MEX	Mexico	2006	211,000	211,000	100
MEX	Mexico	2007	228,000	229,000	100
MEX	Mexico	2008	240,000	241,000	100
MEX	Mexico	2009	198,000	199,000	100

	Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio		Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio
MKD	Macedonia	2001	532	1,110	48	NOR	Norway	1999	21,500	22,800	95
MKD	Macedonia	2002	534	1,090	49	NOR	Norway	2000	21,000	21,600	97
MKD	Macedonia	2003	659	1,290	51	NOR	Norway	2001	22,200	22,600	98
MKD	Macedonia	2004	953	1,600	60	NOR	Norway	2002	22,800	23,400	97
MKD	Macedonia	2005	1,230	1,880	66	NOR	Norway	2003	26,300	26,400	100
MKD	Macedonia	2006	1,590	2,180	73	NOR	Norway	2004	29,700	30,000	99
MKD	Macedonia	2007	2,380	3,190	75	NOR	Norway	2005	33,400	33,500	99
MKD	Macedonia	2008	2,670	-		NOR	Norway	2006	39,100	39,300	99
MKD	Macedonia	2009	1,670	2,660	63	NZL	New Zealand	1999	11,800	12,200	97
MKD	Macedonia	2010	2,280	-		NZL	New Zealand	2000	12,600	12,400	101
MLI	Mali	2005	571	1,070	53	NZL	New Zealand	2001	13,100	12,900	101
MLI	Mali	2006	960	1,520	63	NZL	New Zealand	2002	13,700	13,500	102
MLI	Mali	2007	637	1,430	44	NZL	New Zealand	2003	15,900	15,600	102
MLI	Mali	2008	872	1,890	46	NZL	New Zealand	2004	19,500	19,200	102
MUS	Mauritius	2002	2,290	1,750	131	NZL	New Zealand	2005	20,700	20,200	102
MUS	Mauritius	2003	2,790	1,860	150	NZL	New Zealand	2006	21,400	20,600	104
MUS	Mauritius	2004	2,570	2,000	128	NZL	New Zealand	2007	25,100	24,600	102
MUS	Mauritius	2005	2,800	1,560	180	NZL	New Zealand	2008	27,300	27,200	100
MUS	Mauritius	2006	2,670	2,330	114	NZL	New Zealand	2009	22,700	22,600	101
MUS	Mauritius	2007	2,510	2,230	113	NZL	New Zealand	2010	28,600	28,200	101
MUS	Mauritius	2008	2,500	2,400	104	PAK	Pakistan	2002	6,770	-	
MUS	Mauritius	2009	2,100	1,770	119	PAK	Pakistan	2003	11,000	11,600	95
MWI	Malawi	2006	470	662	71	PAK	Pakistan	2004	12,200	12,600	97
MWI	Malawi	2007	692	868	80	PAK	Pakistan	2005	13,800	15,300	90
MWI	Malawi	2008	726	878	83	PAK	Pakistan	2006	15,100	16,000	95
NER	Niger	2008	346	429	81	PAK	Pakistan	2007	16,400	16,200	101
NER	Niger	2009	376	621	61	PAK	Pakistan	2008	18,900	18,700	101
NER	Niger	2010	432	476	91	PAK	Pakistan	2009	17,200	16,600	104
NIC	Nicaragua	2002	545	622	88	PAK	Pakistan	2010	20,300	19,800	103
NIC	Nicaragua	2003	596	596	100	PER	Peru	1997	6,200	-	
NIC	Nicaragua	2004	753	751	100	PER	Peru	1998	5,310	5,420	98
NIC	Nicaragua	2005	847	852	99	PER	Peru	1999	5,740	5,680	101
NIC	Nicaragua	2006	1,050	752	140	PER	Peru	2000	6,500	6,460	101
NIC	Nicaragua	2007	1,250	1,180	106	PER	Peru	2001	6,490	6,410	101
NIC	Nicaragua	2008	1,540	2,530	61	PER	Peru	2002	7,190	7,180	100
NIC	Nicaragua	2009	1,430	1,380	103	PER	Peru	2003	8,410	8,360	101
NIC	Nicaragua	2010	2,010	1,820	110	PER	Peru	2004	12,200	12,000	101
NIC	Nicaragua	2011	2,440	-		PER	Peru	2005	15,600	15,500	101
NOR	Norway	1997	21,700	22,400	97	PER	Peru	2006	21,900	21,900	100
NOR	Norway	1998	22,400	22,900	98	PER	Peru	2007	25,800	25,600	101

	Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio		Country	Year	Total Exports Customs Data (US$ millions)	Total Exports WITS (US$ millions)	Match Ratio
PER	Peru	2008	27,900	28,400	98	TUR	Turkey	2002	32,900	33,000	99
PER	Peru	2009	24,600	24,600	100	TUR	Turkey	2003	43,600	44,200	99
PRT	Portugal	1997	18,400	23,000	80	TUR	Turkey	2004	58,600	59,100	99
PRT	Portugal	1998	18,500	23,800	78	TUR	Turkey	2005	66,900	67,800	99
PRT	Portugal	1999	23,700	24,000	99	TUR	Turkey	2006	78,000	79,000	99
PRT	Portugal	2000	23,400	23,700	99	TUR	Turkey	2007	98,100	99,200	99
PRT	Portugal	2001	23,300	23,600	99	TUR	Turkey	2008	120,000	121,000	99
PRT	Portugal	2002	24,900	25,300	98	TUR	Turkey	2009	95,000	96,300	99
PRT	Portugal	2003	30,500	31,100	98	TUR	Turkey	2010	106,000	107,000	98
PRT	Portugal	2004	35,200	43,300	81	TZA	Tanzania	2003	1,240	1,130	110
PRT	Portugal	2005	34,800	36,500	95	TZA	Tanzania	2004	1,480	1,320	112
SEN	Senegal	2000	262	596	44	TZA	Tanzania	2005	1,670	1,500	111
SEN	Senegal	2001	345	643	54	TZA	Tanzania	2006	1,830	1,690	108
SEN	Senegal	2002	493	262	188	TZA	Tanzania	2007	2,090	1,950	107
SEN	Senegal	2003	616	922	67	TZA	Tanzania	2008	2,850	3,050	94
SEN	Senegal	2004	677	1,060	64	TZA	Tanzania	2009	2,950	2,960	100
SEN	Senegal	2005	804	1,160	69	UGA	Uganda	2000	345	343	101
SEN	Senegal	2006	708	261	271	UGA	Uganda	2001	393	390	101
SEN	Senegal	2007	848	1,250	68	UGA	Uganda	2002	350	405	86
SEN	Senegal	2008	1,140	1,430	79	UGA	Uganda	2003	470	423	111
SEN	Senegal	2009	1,280	1,580	81	UGA	Uganda	2004	637	529	120
SEN	Senegal	2010	1,200	1,650	73	UGA	Uganda	2005	819	661	124
SLV	El Salvador	2002	3,040	2,930	104	UGA	Uganda	2007	1,240	1,050	118
SLV	El Salvador	2003	3,180	3,060	104	UGA	Uganda	2008	1,150	1,280	90
SLV	El Salvador	2004	3,400	3,240	105	UGA	Uganda	2009	976	969	101
SLV	El Salvador	2005	3,530	3,370	105	UGA	Uganda	2010	1,090	1,060	102
SLV	El Salvador	2006	3,580	3,640	98	YEM	Yemen	2006	322	322	100
SLV	El Salvador	2007	4,030	3,890	104	YEM	Yemen	2007	385	406	95
SLV	El Salvador	2008	5,050	4,470	113	YEM	Yemen	2008	445	451	99
SLV	El Salvador	2009	4,050	3,750	108	YEM	Yemen	2009	434	441	99
SWE	Sweden	1997	76,000	79,700	95	YEM	Yemen	2010	477	-	
SWE	Sweden	1998	78,800	83,400	94	ZAF	South Africa	2001	24,800	22,900	108
SWE	Sweden	1999	78,400	74,000	106	ZAF	South Africa	2002	22,700	20,300	112
SWE	Sweden	2000	80,200	84,100	95	ZAF	South Africa	2003	29,300	28,500	103
SWE	Sweden	2001	71,000	73,800	96	ZAF	South Africa	2004	37,100	36,600	101
SWE	Sweden	2002	75,100	80,600	93	ZAF	South Africa	2005	42,800	42,100	102
SWE	Sweden	2003	92,100	99,200	93	ZAF	South Africa	2006	48,300	47,600	102
SWE	Sweden	2004	112,000	119,000	94	ZAF	South Africa	2007	57,900	57,200	101
SWE	Sweden	2005	116,000	124,000	94	ZAF	South Africa	2008	70,200	66,800	105
SWE	Sweden	2006	130,000	139,000	93	ZAF	South Africa	2009	43,100	47,800	90

Appendix 3: Database Measures, GDP and Export Share

Appendix 3 Figure 1: Selected Database Measures and GDP
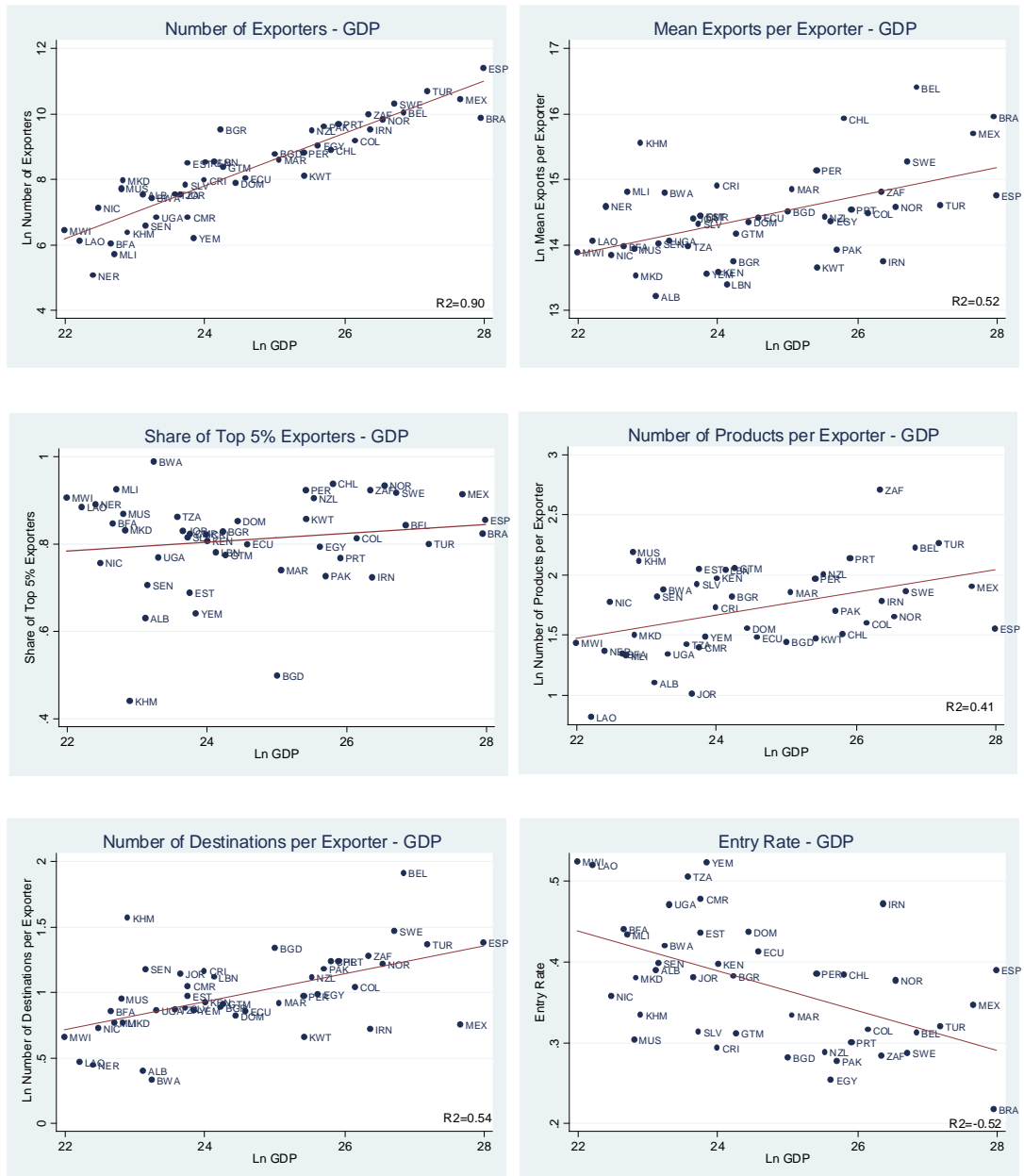
Notes: The measures plotted are based on measures in the country-year level dataset (file CY.dta) averaged across the 2006-2008 period for each country for each country except Kuwait for which averages are across the period 2009-2010 and Portugal for which averages are across the 2003-2005 period. GDP per is in current USD.
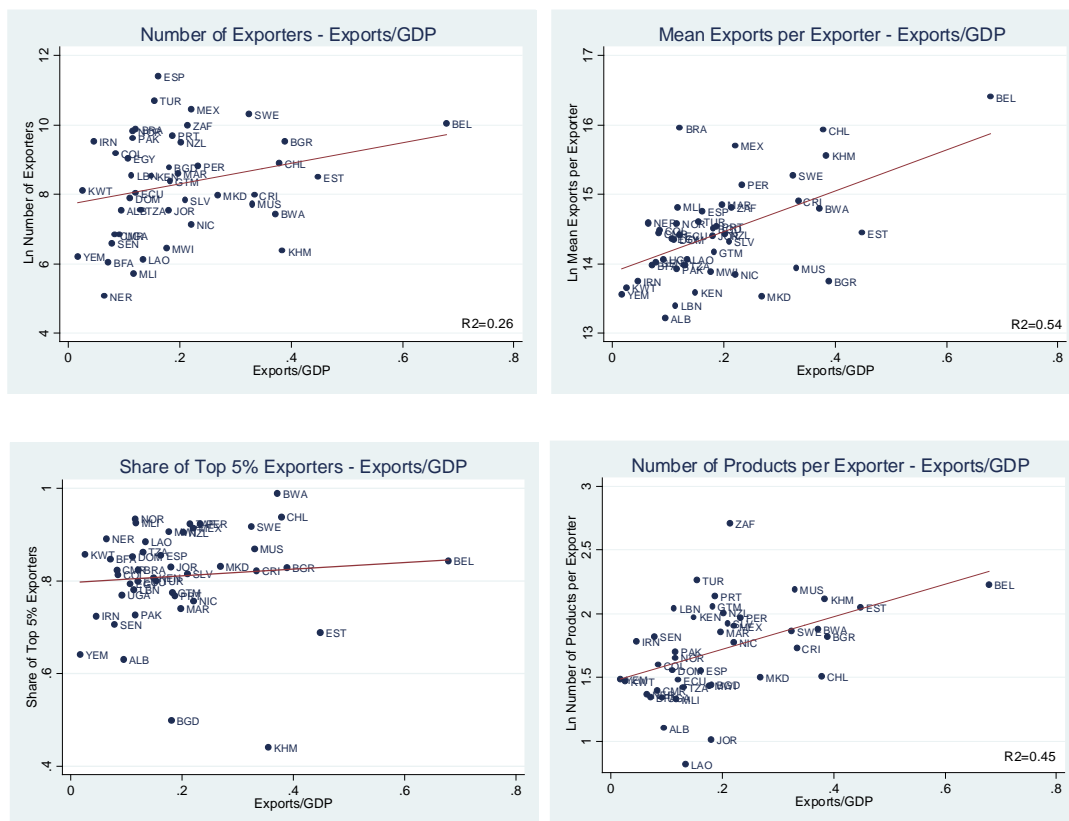
Appendix 3 Figure 2: Selected Database Measures and Ratio of Exports to GDP
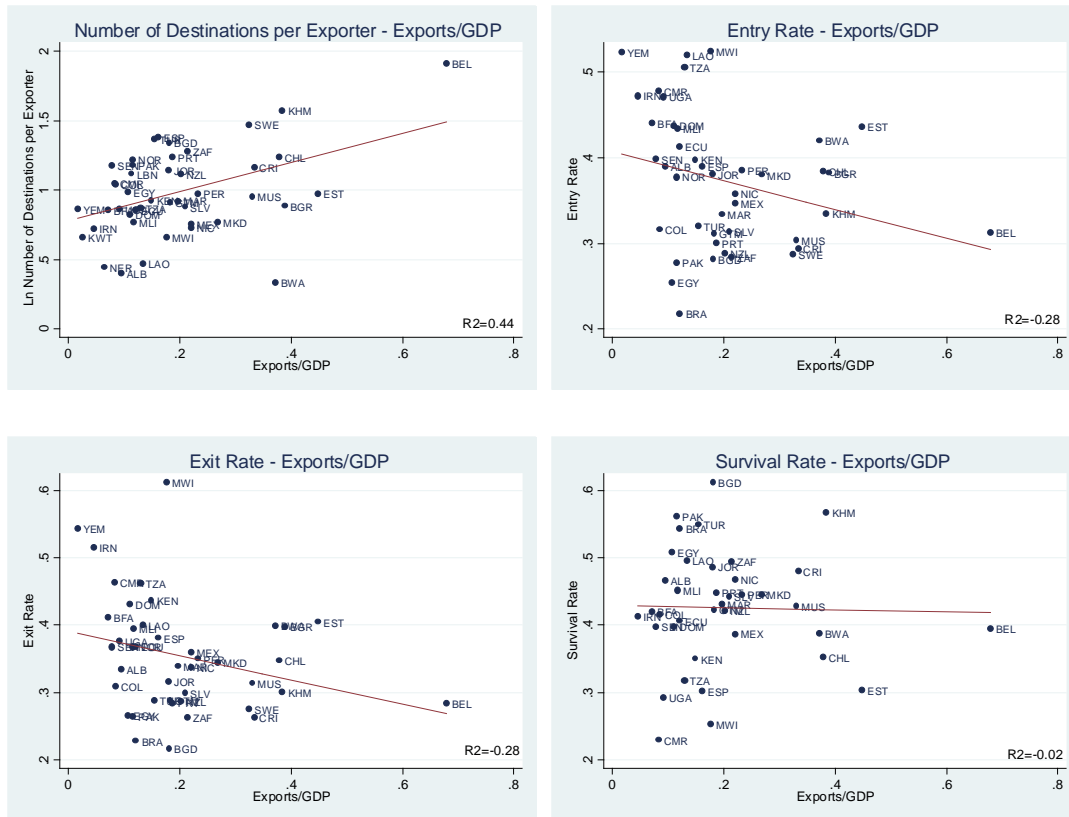
Notes: The measures plotted are based on measures in the country-year level dataset (file CY.dta) averaged across the 2006-2008 period for each country for each country except Kuwait for which averages are across the period 2009-2010 and Portugal for which averages are across the 2003-2005 period.

Appendix 4: Joint Distribution of Exporters and of Total Exports across Number of Products and Destinations in Tanzania, Colombia and Mexico

Appendix 4 Table 1: Joint Distribution of Exporters

		Number of Destinations						
		1	2	3	4 to 10	11 to 20	21 or more	Total
Number of Products	1	42.3	4.6	1.3	2.2	0.2	0.0	50.6
	2	7.8	5.5	2.3	2.0	0.2	0.0	17.9
	3	2.0	2.2	1.7	1.5	0.1	0.0	7.5
	4 to 10	5.4	3.0	1.8	5.5	0.7	0.4	16.8
	11 to 20	1.3	0.6	0.2	1.5	0.5	0.0	4.2
	21 or more	0.6	0.3	0.3	1.1	0.5	0.2	3.0
	Total	59.5	16.3	7.5	13.9	2.2	0.5	100.0

Panel B. Colombia

		Number of Destinations						
		1	2	3	4 to 10	11 to 20	21 or more	Total
Number of Products	1	32.0	4.5	1.4	2.3	0.5	0.1	40.7
	2	8.5	4.1	1.6	2.0	0.2	0.1	16.4
	3	4.1	2.3	1.4	1.7	0.2	0.0	9.8
	4 to 10	8.1	4.1	2.5	6.0	1.2	0.2	22.1
	11 to 20	1.9	0.8	0.6	2.2	0.9	0.2	6.5
	21 or more	1.0	0.4	0.4	1.6	0.8	0.4	4.6
	Total	55.5	16.2	7.8	15.7	3.7	1.0	100.0

Panel C. Mexico

		Number of Destinations						
		1	2	3	4 to 10	11 to 20	21 or more	Total
Number of Products	1	40.3	1.8	0.5	0.5	0.1	0.0	43.2
	2	10.6	2.5	0.6	0.6	0.1	0.0	14.4
	3	5.5	1.5	0.6	0.6	0.1	0.0	8.3
	4 to 10	11.0	3.3	1.9	3.1	0.5	0.1	19.8
	11 to 20	3.4	0.9	0.6	1.7	0.5	0.2	7.1
	21 or more	2.8	0.8	0.4	1.7	0.9	0.6	7.2
	Total	73.5	10.7	4.6	8.2	2.1	0.8	100.0

Note: Each cell in a panel of the table represents the share of firms exporting a given number of products (shown in the row) to a given number of destinations (shown in the column) in 2007.

Appendix 4 Table 2: Joint Distribution of Total Exports

Panel A. Tanzania

		Number of Destinations						
		1	2	3	4 to 10	11 to 20	21 or more	Total
Number of Products	1	4.2	0.8	0.7	1.8	2.0	0.0	9.5
	2	0.5	1.7	1.8	2.4	2.0	0.0	8.4
	3	0.1	0.3	0.4	1.8	0.0	0.0	2.7
	4 to 10	0.7	2.0	0.8	8.8	3.7	9.9	25.9
	11 to 20	0.5	0.1	0.2	6.9	4.8	0.0	12.5
	21 or more	0.2	0.8	0.3	12.6	22.4	4.7	41.1
	Total	6.2	5.7	4.3	34.2	34.9	14.6	100.0

Panel B. Colombia

		Number of Destinations						
		1	2	3	4 to 10	11 to 20	21 or more	Total
Number of Products	1	2.7	1.2	0.6	2.3	1.8	1.0	9.5
	2	2.0	1.8	0.5	2.3	0.6	4.0	11.1
	3	1.7	1.1	0.3	1.3	0.2	1.6	6.3
	4 to 10	2.7	1.2	0.9	7.4	14.4	5.8	32.5
	11 to 20	0.6	0.3	0.4	2.6	6.3	3.2	13.4
	21 or more	2.0	0.5	0.4	8.0	8.7	7.6	27.0
	Total	11.7	6.1	3.1	23.9	31.9	23.3	100.0

Panel C. Mexico

		Number of Destinations						
		1	2	3	4 to 10	11 to 20	21 or more	Total
Number of Products	1	1.1	0.2	0.1	0.2	0.0	0.0	1.6
	2	1.1	0.2	0.1	0.3	0.1	0.0	1.8
	3	0.7	0.2	0.1	0.2	0.1	0.1	1.4
	4 to 10	3.4	1.5	0.6	2.4	2.1	1.2	11.3
	11 to 20	4.2	0.9	0.4	2.1	2.0	1.1	10.7
	21 or more	13.9	4.6	2.4	10.4	14.0	27.9	73.1
	Total	24.4	7.6	3.8	15.7	18.3	30.2	100.0

Note: Each cell in a panel of the table represents the share of total exports in 2007 accounted for by firms exporting a given number of products (shown in the row) to a given number of destinations (shown in the column).