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What Explains the Volume and Composition of Trade? Industrial Evidence from a Panel of Countries

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WHAT EXPLAINS THE VOLUME AND COMPOSITION OF TRADE? INDUSTRIAL EVIDENCE FROM A PANEL OF COUNTRIES

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ABSTRACT/RÉSUMÉ

What explains the volume and composition of trade? Industrial evidence from a panel of countries

This paper quantifies the importance of different determinants of trade at the industry level using a sample of 54 OECD and non-OECD economies. The empirical methodology extends the approach of previous empirical studies to explicitly quantify the impact that trading partners' factor endowments and policies have on bilateral trade, and to analyse the effect of tariffs on the volume and composition of trade. We find that distance, common language, common border and regional trade agreements are important determinants of overall trade, and that factor endowments, policies and institutions, of both the exporter and its trading partners, are main determinants of what and where a country exports. By contrast, we find that trade policies based on tariffs on imported goods not only generate negative spillovers to trading partners by reducing their exports, but they are also likely to reduce exports of countries that impose the tariffs, in particular in industries that rely more on intermediate goods.

JEL classification codes: F14; F14; O57; C23.

Keywords: Trade, intermediate input tariff, industrial specialisation, factor endowments.

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Quels sont les déterminants du volume et de la composition des échanges? Analyse empirique sur des données de panel de divers pays

Ce document évalue l'importance des différents déterminants des flux commerciaux à un niveau industriel dans 54 pays membres et non membres de l'OCDE. La méthode empirique étend l'approche de travaux empiriques antérieurs à la quantification explicite de l'impact que les dotations factorielles des partenaires commerciaux et les politiques ont sur le commerce bilatéral et à l'analyse des effets des tarifs sur le volume et la composition des échanges. Nous constatons d'une part, que la distance, la langue et la frontière communes ainsi que les accords commerciaux régionaux sont autant de facteurs déterminants des échanges commerciaux et, d'autre part, que les dotations factorielles ainsi que les politiques et institutions des pays exportateurs et de leurs partenaires commerciaux ont une influence cruciale sur la composition des exportations et leur destination. En revanche, nous constatons que les politiques commerciales qui reposent sur les droits de douanes des biens importés nuisent, non seulement, aux partenaires commerciaux en réduisant leurs exportations mais peuvent aussi nuire à leurs propres exportations en particulier dans les industries qui dépendent davantage des biens intermédiaires.

Classification JEL: F14; F14; O57; C23.

Mots clés: Commerce international, tarifs sur les intermédiaires importés, spécialisation industrielle, dotations en facteurs.

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WHAT EXPLAINS THE VOLUME AND COMPOSITION OF TRADE? INDUSTRIAL EVIDENCE FROM A PANEL OF COUNTRIES

By

Åsa Johansson, Przemyslaw Kowalski, Eduardo Olaberría and Dario Pellegrino[1]

1. Introduction

1. In a globalised economy, where economic growth is increasingly sustained by trade, understanding the determinants of trade is essential for economic policy making. This paper empirically investigates the determinants of overall trade and composition of bilateral trade at the industry level and discusses the associated policy implications. The empirical analysis covers 54 OECD and non-OECD economies. The contribution of this paper is that it quantifies the impact on trade of both exporters' and importers' factor endowments and policies controlling for geographical factors. It also provides evidence of the impact of tariffs on intermediate inputs on exports of downstream industries.

2. The results suggest that while geographical factors and factor endowments remain important drivers of trade, policies and institutions also influence the overall value of trade and bilateral trade patterns. More specifically, the estimations provide evidence that input tariffs have a significant negative effect on exports of downstream industries because they increase their production costs. The results suggest that input tariffs have a larger effect on industries with longer value chains and that the negative effect has been increasing over time. These results have important implications in a world where more than half of manufactured imports are intermediate goods (primary goods, parts and components, and semi-finished products), with this shares likely to increase in the future. Therefore, input tariffs turn out to be more harmful than in the past because the domestic producer is in fact more dependent on imports.

3. Finally, we find evidence suggesting that increasing factor endowments and improving policies can also benefit trading partners. Specifically, although improvements in some of the trading partners' endowments and policies can negatively affect relative productivity in industries intensive in those endowments and policies (substitution effect), the overall effect on exports is generally positive and significant because income effects are large. Moreover, in some cases, such as financial development, improvements in policies can generate positive spillovers to trading partner by increasing demand and boosting imports in industries that depend more on external finance.

4. The remainder of the paper is organised as follows. Section 2 presents a short review of the literature on the determinants of trade. Section 3 describes the empirical methodology. Section 4 discusses

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1 Asa Johansson and Eduard Olaberria work at the OECD Economics Department, Przemyslaw Kowalski works at the OECD Trade and Agricultural Directorate and Dario Pellegrino was a consultant at the OECD Economics Department when this work was undertaken. The authors would like to thank Giuseppe Nicoletti and Jean-Luc Schneider for their valuable comments and suggestions and Sarah Michelson for excellent editorial support. Contact author: eduardo.olaberria@oecd.org

the results in light of previous theoretical and empirical works. Finally, section 5 offers, as concluding remarks, some policy implications that can be drawn from the paper's findings.

2. Determinants of trade in the economic literature

5. Conventional trade theory, most notably the Ricardo and Heckscher-Ohlin-Samuelson models of trade, posits that patterns of trade are determined by differences in relative costs of production across countries, *i.e.* by the comparative advantage.[2] While in Ricardo's model the differences in productivities are simply assumed, in the Hecksher-Ohlin-Samuelson (HOS) model they stem from differences in countries' relative abundance in various productions factors (*e.g.* natural resources, climate conditions, quantity and quality of labour and physical capital, etc.). According to the HOS model, countries produce and export products that use relatively intensively the factor of production in which the country is relatively well-endowed, and import products which use intensively the factors in which the country is relatively scarce.

6. Comparative advantage has become one of the key arguments for opening up to non-discriminatory trade under the backings of the GATT and the WTO, but also on a unilateral and regional basis. These initiatives placed emphasis on removing remaining trade barriers and other distortive policies as well as on facilitating trade-related structural adjustment so that countries can benefit from comparative advantage-driven trade. Yet, the actual measurement of comparative advantage is not straightforward and the empirical evidence for its relative importance in today's global economy is mixed. Questions have also been raised about the dynamic aspects of comparative advantage and, thus, about the ability of governments to shape it (OECD, 2011).

7. A number of alternative hypotheses which carry less *laissez faire* policy implications have been competing with comparative advantage for policy makers' attention. Theory found support for factors separate from comparative advantage in explaining trade (Helpman and Krugman, 1985). The strategic trade policy literature developed in the 1980s emphasized economies of scale and provided a theoretical case for economically-justified government intervention (*e.g.* Krugman, 1987). The so-called "new trade theory", developed in the late 1980s, showed that the bulk of trade occurs between relatively similar countries. It combined economies of scale, imperfect competition, technology differences and the role of demand factors (*e.g.* taste for variety) as key determinants of trade of economies of scale (Krugman, 1980; Helpman, 1981; 1987; 1988).

8. The economic geography literature during the 1990s emphasised factor mobility and the proposition that the structure and volume of trade can be determined by geographic agglomeration of economic activity based on initial conditions and trading costs (*e.g.* Krugman and Venables, 1995). The firm heterogeneity-based trade theory, which followed the seminal paper by Melitz (2003), have shown gains from trade which arise from trade-related competition and market entry and exit of firms characterised by different productivity characteristics.

9. The most recent research developments -- following the pioneering contribution of Eaton and Kortum (2002) -- combine the insights from the conventional and the "new trade theories". These models include the gravity features. They show that bilateral trade between two countries is proportional to their respective sizes (measured by their GDP), negatively related to the geographic distance between them and positively related to a number of factors that reduce trade costs (*i.e.* the presence of common border,

2. While trade in the Ricardian model is driven by differences in labour productivity, factor endowments determine the pattern of trade in Heckscher and Ohlin and trade occurs due to variable capital endowments resulting in endogenous variation in labour productivity.

common language, lower tariffs and non-tariffs barriers and free trade agreement). In addition to conventional sources of comparative advantage *(e.g.* factor endowments or technology) these models have also served as a basis for measurement of the so-called "new sources of comparative advantage", which stem from the interaction of policies and regulatory frameworks with needs of particular sectors of the economy (Helpman, 2010). For example, building on the work on the importance of financial institutions for development by Rajan and Zingales (1998), Beck (2003) and Manova (2008) showed that countries with better financial development export more in sectors that tend to rely more on external financing. Countries with better rule of law have been shown to export relatively more in sectors that have: lower levels of input concentration (Levchenko, 2007); lower shares of customised inputs (Nunn, 2007); or have higher levels of job task complexity (Costinot, 2009). Similarly, Cunat and Melitz (2007) demonstrated that flexible labour market policies promote exports in industries characterized by higher volatility of demand.

10. Drawing on this literature, Chor (2010) and Kowalski (2011) assessed jointly the importance of different types of interactions that may be a source of comparative advantage. They considered factors such as, for example, physical and human capital endowments, financial development, energy supply, business climate, a number of aspects of functioning of labour markets as well as trade barriers. Both of these studies showed that comparative advantage remains an important determinant of trade.

11. This paper builds on these empirical approaches, extending them to analyse how factor endowments and policies (including trade policy) affect the volume and composition of trade. In doing this, we look not only at the effect that endowments, policies and tariffs have on exports, but also look at the effect on imports. Hence, we can measure the spillovers that changes in these variables can have on trading partners.

3. Empirical approach

12. The empirical work is divided in two parts. The first part estimates the impact of factor endowments and policies on aggregate trade while the second part estimates the impact of endowments and policies on the composition of trade. In both parts, the empirical analysis employs a panel of yearly data over the period 1995-2007 for 54 OECD and non-OECD countries and 21 industries (see Appendix for a detailed data description). It ends in 2007 to avoid the great disruption to trade created by the crisis, and starts in 1995 because, although economic globalisation had been building for many decades before 1995, the pattern of globalisation has changed in important ways since the mid-1990s (see Haskel *et al*., 2012).

3.1 Estimating the determinants of aggregate trade

13. To estimate the impact of factor endowments and policies on aggregate trade (volume), for each country we sum the value of gross exports across all industries to arrive at a measure of aggregate exports per country. Then, we estimate the following regression:

$$\ln Exp_{ijt} = \alpha + \gamma Gravity_{ij} + \beta_1 Endowment_{it} + \beta_2 Policy_{it} + \beta_3 Endowment_{jt} + \beta_4 Policy_{jt} + \theta_i + \theta_j + \theta_t + \varepsilon_{ijt}, \quad (3.1)$$

where *Exp* are total gross exports from exporting country *i* to importing country *j*. *Gravity* denotes a set of variables that impose an iceberg type of trade cost, including common border, common language, distance, as well as a dummy variable that equals 1 if countries have a regional trade agreement and 0 otherwise. *Endowment* is a set of factor endowment indicators measured at the country level, such as the stock of physical capital per worker, energy supply per capita and stock of human capital. *Policy* denotes the policy and institutional variables *(e.g.* financial development, institutional quality, etc.) measured at the country level. (θ_i), (θ_j) and (θ_i) are exporter, importer and time fixed effects. The exporter and importer fixed effects capture unobserved country-specific characteristics such as the size of exporter's GDP, its GDP per

capita or exchange rate. The time fixed effects capture unobserved time effects that are common to all countries and industries like changes in international interest rates, world growth, etc., that can affect exports in all countries.

3.2 Estimating the determinants of the composition of trade

14. To estimate how factor endowments and policies affect the composition of trade, we broadly follow Chor (2010) and Kowalski (2011), but modify their approach it in three important dimensions. First, we explicitly account for determinants of trade on both the exporter and the importer side. Second, we offer a more comprehensive assessment of the impact of input tariffs at the industry level exports. More precisely we construct a measure of input tariffs measured as the weighted average of tariffs on the intermediate goods used in the production of the final goods in that industry. And, third, due to a better time series coverage we are able to assess the stability of different effects over time as well as a distinction between the average and differential effects across industries.

15. Chor (2010) extended the aggregate Eaton-Kortum model of trade (Eaton and Kortum, 2002) to account for industry trade flows. In his approach the non-random component of the productivity level of firms operating in a given industry is determined by the interaction between country and industry characteristics. The derived exports equation incorporates distance and other bilateral barriers to trade (gravity features) and comparative advantage factors stemming from relative endowments and policy and institutional performance. It can be written in the following simplified form:

$$\ln Exp_{ijs} = \alpha + \gamma Gravity_{ij} + \beta_1 Endowment_i * Intensity_s + \beta_2 Policy_i * Sensitivity_s + \theta_i + \theta_{js} + \varepsilon_{ijs} \qquad (3.2)$$

where Exp_{ijs} is exports of products of industry s from exporting country i to importing country j. *Gravity* is the same as in equation (3.1). The main changes in (3.2) as compared with equation (3.1) are that *Endowment* is interacted with *Intensity*, which is a measure of the intensity with which industry s uses the specific factor of production, and *Policy* is interacted with *Sensitivity*, which is a proxy measure of dependence of the given industry on the given policy. The identification strategy relies on the exogenous differential impact that factor endowments and policies have across industries, based on each industry's salient need for the use of the specific factor endowment or its dependence on a given policy. (θ_i) represents exporter fixed effects while (θ_{jS}) represents importer-sector fixed effects.

16. Our empirical approach improves upon Chor (2010) and Kowalski (2011) in that we consider not only how exports are affected by exporters' factor endowments and policies, but also how they are affected by factors endowments and policies of the importer. The previous studies focused solely on the question of the importance of comparative advantage in explaining trade flows. Therefore, they accounted only for supply-side factors and measured them on one side of the trading relationship, while controlling for importer effects with appropriate fixed effects. The current approach explicitly includes importers' factor endowments and policies to model fully the supply side effects *(e.g.* exporter's factor endowments relative to importer's endowments) and to explicitly measure demand-side income and preference effects. As the description of the results will show, such an approach is justified empirically—the estimated factor endowment and policy effects are not symmetric between exporters and importers. Our approach is also a better tool for the evaluation of hypothetical experiments. For example, while the comparative advantage hypothesis would suggest that an increase in human capital in China would decrease Chinese imports of products intensive in human capital, other theories predict the opposite. Linder (1961), for example, suggests that changes in the level of human capital can create specific patterns of taste and increase demand (imports) of good intensive in human capital. Hence, whether the size of the effect of trading partner's factor endowments and policies is similar to the one generated by domestic endowments and policies is an empirical question that our approach helps answer.

17. Second, the regression equation (3.2) specified originally by Chor (2010) for a cross-section does not allow distinguishing between the average and differential effects of factor endowments and policies. Kowalski (2011) uses two cross sections for years 1995 and 2005 as well as a panel consisting of observations for 1995 and 2005, but he does not exploit the times series dimension of the data to distinguish between average and differential effects. This is a shortcoming because some factor endowments and policies could plausibly increase exports in all industries while generating a differential effect on industries that use these factors or policies intensively in the production process. For example, increases in human capital are likely to increase productivity in all industries, but they may have a stronger effect on industries that use skilled labour more intensely. The current study better exploits the time series coverage by using a panel over the period 1995-2007, rather using two separate cross-sections. In addition, the time-series dimension of the dataset makes it possible to study whether the importance of the different determinants of trade has changed over time.

18. Third, our empirical approach offers a more sophisticated analysis of tariffs than previous studies. It does so by incorporating the effects of regional trading agreements (RTAs) and by measuring separately the impact of output tariffs faced by exporters in foreign markets and input (import) tariffs levied on imports of intermediate inputs used for production and exports. It is well accepted that costs of production depend, among other things, on the cost of intermediate inputs (*e.g.* Eaton and Kortum, 2002) and, since many of the intermediate inputs are imported, input tariffs affect the cost of intermediate inputs and reduce export competitiveness in industries that depend more on intermediate inputs (*e.g.* Miroudot, *et al.*, 2009). Therefore, firms in countries with higher input tariffs face higher production cost than firms in countries with low input tariffs. The analysis does not only consider the effect of average tariffs, as done in Kowalski (2011), but it also considers the tariff structure (the different input tariffs imposed across industries). Higher production costs that an industry faces due to input tariffs are proxied by constructing an index where tariffs are weighted by the importance of each good in the production of each industry. Input tariffs are expected to disproportionately hamper exports of firms that rely more on imported intermediate inputs facing higher input tariffs.

19. Incorporating these three modifications results in the following modified bilateral export equation:

$$\begin{aligned}\ln Exp_{ijst} = {} & \alpha + \gamma Gravity_{ijt} + \beta_1 Endowment_{it} * Intensity_s + \beta_2 Policy_{it} * Sensitivity_s \\ & + \beta_3 Endowment_{jt} * Intensity_s + \beta_4 Policy_{jt} * Sensitivity_s \\ & + \delta_1 Endowment_{it} + \delta_2 Policy_{it} + \delta_3 Endowment_{jt} + \delta_4 Policy_{jt} \\ & + \gamma_1 InputTariffs_{si} + \gamma_2 OutputTariff_{sj} + \theta_i + \theta_j + \theta_s + \theta_t + \varepsilon_{ijst}\end{aligned} \tag{3.3}$$

where the first line of this equation is equal to equation (3.2), *i.e.* it includes the gravity variables and the interactions between exporter's factor endowments and policies interacted with the intensity and industry sensitivity indicators. The second line adds the corresponding interactions of factor endowments and policies with the intensity and sensitivity indicators for importers. The third line of the equation introduces the exporter's and the importer's factor endowments and policies without the interactions, making it possible to measure the common impact of these variables across all industries. The total impact of a factor endowment (policy) on exports of industry *i* is (δ_l+β_l**Intensity*$_i$), where δ_l is an effect that is common across all industries, and β_l is an effect specific to industry *i*.[3] The industry-specific effect depends on the intensity (sensitivity) with which the industry uses (responds to) that endowment (policy). If δ_l>0 and

3. The intensities are mean centred.

$\beta_1>0$, an increase in the endowment (policy) increases exports across all industries, and the effect is increasing with the intensity (sensitivity) with which the industry uses (responds to) that endowment (policy). While if $\delta_1<0$ and $\beta_1>0$, the common effect is negative, but there can be a boost to exports in a specific industry depending on the intensity (sensitivity) with which it use (responds to) that endowment (policy).

20. The fourth line of equation (3.3) collects variables which capture the effects of tariffs. *OutputTariffs* are average tariffs that importer *j* imposes on imports of industry *s*. A higher level of such output tariffs is expected to lower the demand for *i's* exports (γ_2 is expected to be negative). *InputTariffs* denote import tariffs levied on imported intermediate inputs used by industry *s* weighted by the importance of those goods in the production of industry *s*. To construct the index of Input-tariffs, the paper draws on recent work by Bas *et al*. (2013). Input-tariffs at the industry level are constructed for each country and industry as the weighted average of tariffs on the intermediate goods used in the production of final goods in that industry. For each exporter *i*, *InputTariffs* for the manufacturing sector *s* and year *t* are computed as:

$$InputTariffs_{sit} = \sum_{z} \alpha_{s,z}\tau_{i,z,t}$$

where $\alpha_{s,z}$ is the share of input *z* in the production of the final output in sector *s* in the United States. The value share of the Unites States is used in order to reduce endogeneity problems.[4] The intuition for this index is simple: When the index is high, it means that the goods that industry *s* uses as main inputs are heavily taxed and, therefore, production costs are relatively higher hurting export competitiveness. Therefore, γ_1 is expected to be negative.

21. As in the aggregate analysis, the regression includes fixed effects for exporter Θ_i, importer Θ_j, time Θ_t and it also includes industry fixed effects Θ_s. The industry fixed effects capture unobserved industry characteristics such as how tradable those goods are (*e.g.* the fact that some industries produce goods that are more costly to transport than others) or changes in relative prices among industries that are common in all countries.[5]

Estimation Method

22. Bilateral export data, particularly at the industry-level, contain a large number of zero values, therefore, exports (the dependent variable) is undefined when converted into logarithms to use the log-linear specification. As a result OLS could yield biased and inconsistent estimates (see Santos-Silva and

4 The endogeneity problem would arise because firms in countries with high tariffs on input s would use a lower share of this input in production. But this would be because of the tariff and not because of a technical requirement. To mitigate this problem, the industry value shares are based on data for the United States, assuming that the United States is a low regulation (i.e. "frictionless") country. Thus, these value shares reflect the underlying industry structure in a frictionless environment.

5. A more stringent fixed-effects structure controlling for importer-product specific features (for instance, aiming at capturing specific importer demand effects of a certain product not explained by importers factor endowments and characteristics) gives similar results as controlling for importer and goods fixed-effects separately for the main variables concerning the exporter. However, including importer-product fixed effects would preclude identifying the coefficients of the impact of importers endowments and policies on trade, which are key variables of interest in this study.

Tenreyro (2006) for a detailed discussion of this problem).[6] This bias is critical for the assessment of the impact of different determinants of bilateral exports. To avoid this problem, the estimation relies on a Poisson-estimator, which is the most widely used model for count data and multiplicative models. This model belongs to the category of count data models in which the dependent variable is discrete, with a distribution that only places probability mass at nonnegative integer values, and it is estimated by Maximum Likelihood. The Poisson regression may suffer from the presence of over-dispersion, which can lead to deflated standard errors and inflated t-statistics (*e.g.* Philippidis *et al.,* 2013). Hence, inference relies on a robust covariance matrix estimator, which is robust to different patterns of heteroskedasticity, providing consistent and unbiased estimators of bilateral exports.

4. Results

4.1 Determinants of the volume of trade

23. Table 1 presents the first set of results of the paper, which we obtained estimating equation (3.1). Column 1 shows the results including only factor endowments and policies of the exporter, while column 2 includes GDP of the exporter and the importer. Column 3 reports the results including factor endowments and policies of both the exporter and importer and column 4 adds GDP of the exporter and the importer. This section first discusses the results for gravity forces and then turns to the results for factor endowments and policies.

Geography and cultural factors

24. In all specifications in Table 1, distance, contiguity (common border) and common language are significant and have the expected sign. Trade is higher between countries that share a common border and language, and decreases with physical distance. GDP of the exporter and importer have a significant and positive effect on bilateral trade, meaning that larger economies trade more with each other. This is consistent with the gravity literature as well as the arguments put forward by the firm-level literature suggesting that firms who face fixed costs export to countries that are above a certain threshold of market potential (Chor and Manova, 2012). The coefficient for the importer's GDP decreases significantly from column 2 to column 4, suggesting that in column 2, part of the explanatory power of GDP corresponds to the importer's characteristics that are positively correlated with GDP.

25. The estimates suggest that gravity forces are the main determinants of the volume of bilateral trade. For instance, all else equal, our estimates imply that Canada exports 42% more to Mexico than to France because the distance between Canada and Mexico is about half the distance than between Canada and France. Trade among countries sharing a common border is, on average, 35% higher than trade among countries without a common border. Similarly, trade among countries with a common language is 31% higher than among countries which do not have the same language. The coefficient on the indicator of RTA participation is positive and significant in all specifications. The estimates suggest that signing a free trade agreement can boost trade among countries by as much as 60%. However, the estimated impact of regional trade agreements on trade may be upward biased due to endogeneity problems (*e.g.* Egger *et al.,* 2011), thus the magnitude of the corresponding coefficients estimates should be interpreted with caution.

6. Due to Jensen's inequality a log-linearised model results in an error term that is correlated with its regressors, resulting in biased and inconsistent estimates. This bias is particularly important with data that is heteroskedastic, which is typical for trade or migration datasets with a large share of zero-flow bilateral observations.

Table 1. Effect of endowments and policies on the volume of trade

Estimation method: *Poisson* **Dependent variable:** *Gross exports (in logs)*	(1)	(2)	(3)	(4)
Gravity variables:				
Distance	-0.6553***	-0.6521***	-0.7002***	-0.6492***
	(0.014)	(0.013)	(0.015)	(0.013)
Contiguity	0.3930***	0.3700***	0.3109***	0.3575***
	(0.022)	(0.021)	(0.022)	(0.021)
Common language	0.2426***	0.2639***	0.2879***	0.2710***
	(0.024)	(0.023)	(0.024)	(0.024)
Free trade agreement	0.6024***	0.6189***	0.5883***	0.6397***
	(0.031)	(0.029)	(0.031)	(0.030)
GDP Exporter		0.5156***		0.5458***
		(0.051)		(0.049)
GDP Importer		0.8236***		0.6708***
		(0.042)		(0.048)
Exporter's endowments and policies:				
Stock of capital per worker	0.4357***	0.1718***	0.4635***	0.1591***
	(0.054)	(0.053)	(0.055)	(0.056)
Stock of human capital	1.2378***	1.0758***	1.2908***	1.1236***
	(0.231)	(0.217)	(0.238)	(0.219)
Energy supply	0.2796***	0.3542***	0.3069***	0.3492***
	(0.060)	(0.055)	(0.060)	(0.054)
Financial development	0.0855**		0.1071***	
	(0.034)		(0.034)	
Regulatory quality	0.0212	0.0936	-0.0609	0.0566
	(0.083)	(0.076)	(0.081)	(0.078)
Importer's endowments and policies:				
Stock of capital per worker			0.4954***	0.1228***
			(0.059)	(0.060)
Stock of human capital			0.6737***	0.4390**
			(0.229)	(0.210)
Energy supply			0.1002*	0.0210
			(0.061)	(0.057)
Financial development			0.2291***	
			(0.032)	
Regulatory quality			0.2365***	0.2289***
			(0.073)	(0.071)
Constant	12.0173***	-19.2837***	5.5311***	-19.7779***
	(0.941)	(1.774)	(1.346)	(1.895)
Exporter, importer, and Year Fixed effects	Yes	Yes	Yes	Yes
Observations	39,258	39,326	34,568	36,022

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Factor endowments, policies and the volume of trade

26. The results in Table 1 also show the importance of factor endowments and policies for aggregate trade. In general, the estimated coefficients on endowments and policies are significant.

27. The effect of the exporter's capital endowment is positive and significant (column 3), suggesting that a larger stock of capital per worker increases total exports. However, the estimated coefficients are lower in columns 2 and 4, when controlling for GDP. Thus, the positive common effect across all industries of capital on exports results, largely, from its effect on GDP as more capital increases output and output increases trade. Interestingly, the common effect of capital per worker of the importer remains significant even when controlling for GDP. An explanation for this is that when countries increase their endowment of capital, there is an income effect that increases imports. Human capital of both the exporter and importer has a positive and significant effect on trade volumes in all specifications, even when controlling for GDP. Finally, the exporter's energy supply has a positive and significant impact on aggregate trade in all specifications, while the estimated coefficient on the importer's energy supply is positive and significant in column 3 but not in column 4.

28. Policies and institutions also affect the volume of trade. The coefficients of both the exporter and importer suggest that financial development is positively and significantly associated with trade.[7] There is a number of possible links between financial development and international trade. The financial sector facilitates channeling of savings to the private sector and helps overcoming liquidity constraints and exploiting economies of scale (*e.g.* Beck 2002 and Beck, 2003). Recent empirical work by Chor and Manova (2012) shows that credit constraints raise the cost of exporting and prevent firms from entering some markets that they could, otherwise, profitably service. They show that financially advanced exporters have more trading partners and export more in any industry. But it can also be the case that banks of trading partners help financing exports, therefore reducing the cost of entering in those markets. In other words, independent of whether banks are located at home or in the importing country, well-functioning financial markets reduce the cost of exporting.

29. Perhaps surprisingly, the effect of the exporter's quality of institutions is in general positive but not significant. The quality of institutions therefore does not appear to have a direct impact on the volume exports, although they can have an indirect effect by fostering the accumulation of factor of productions, such as physical and human capital, and GDP (*e.g.* Helpman, 2004 and Acemoglu, Johnson and Robinson, 2005) which, as discussed above, do affect the volume of exports. Finally, the effect of the importer's quality of institutions is positive and significant in all specification, suggesting that on average exports to countries with better quality of institutions are higher than to countries with lower institutional quality. This result holds even when controlling for the GDP of both countries. For instance, institutional quality in the partner country could increase trade by improving the chances that firms can join global value chains.

4.2 Factor endowments and policies affect the composition of trade

30. Table 2 reports the results of estimating equation (3.3), analysing how endowments and policies affect the composition of exports. This specification exploits the exogenously differential impact of endowments and policies across the industries. Column 1 reports the results including only differential effects of factor endowments and policies. Column 2 adds the common effect of factor endowments and policies to ensure that the differential effects capture the compositional effect of changes in endowments and policies and not the volume effect. Finally, column 3 adds as control variables GDP of the exporter

7. Financial development is not included in the regressions that control for GDP because it is measured as private credit over GDP and, therefore, it is affected by GDP.

and the importer, which is important because of a high correlation of GDP with indicators of human capital, capital per worker, quality of institutions and financial development. Hence, controlling for GDP eliminates possible bias. The results for gravity forces are very similar to the ones reporter in Table 1, therefore, we focus the discussion on the differential effects of endowments and policies.

Factor endowments

31. The average effect of the exporter's capital endowment is positive and significant (column 2, Table 2), suggesting that a larger stock of capital per worker increases exports across all industries. However, the effect is not significant in column 3 when controlling for GDP of both countries, indicating that the positive common effect of capital on exports may work through its effect on the growth of GDP.

32. A striking feature of the results presented in Table 2 is the importance of factor endowments and policies in shaping the composition of trade. In general, with respect to changes in the exporter's endowments and policies, the differential (composition) effects are more important than the common effect, while the opposite is true for importers' endowments and policies. This is intuitive in the sense that the exporter effects mostly pick up supply side influences or comparative costs of production, while the importer effects combine the influences of supply and demand.

33. The differential effect of the capital endowment (measured as the interaction between country-level capital per worker and industry intensity in capital) is positive and significant in all the specifications. All else equal, an increase in exporter's capital endowment increases exports of industries intensive in the use of capital relative to exports of industries with low capital intensity. As expected, the corresponding coefficient for the importer is negative and significant in all specifications. All else equal, as capital endowment increases import of products intensive in capital will decrease relative to products with lower capital intensity. However, the absolute size of the importer effect is lower than that of the exporter illustrating - as discussed above - the importance of demand-side effects.

34. Similarly, international differences in the stock of human capital explain the different composition of exports across countries. The coefficient of the differential effect of the exporter's human capital (measured as the interaction between country-level average years of schooling and industry intensity in human capital) is positive and significant in all specifications. Increasing human capital endowments raises exports of industries intensive in the use of skilled labour relative to industries with lower skill intensity. On the importer's side, in line with expectations, a corresponding negative effect is found though, again, the size of the coefficient is smaller in absolute value. One explanation is that when an importer increases its endowment of human capital, the (negative) comparative advantage supply-side effect is partially offset by a (positive) demand-side effect. Brambila *et al*., (2012), for example, argue that an increase in education boosts demand for products intensive in human capital. This interpretation is supported by the differences in the estimated common effects of exporter's and importer's human capital endowments: the common effect of exporter's human capital endowment is not statistically significant while that of the importer is significant, even when controlling for both countries GDP.

35. The estimated coefficient of the differential effect of the energy endowment (measured as the interaction between country level measure of the production of energy per capita and industry intensity of the use of energy) is positive and significant in all specifications in Table 2. The opposite is true for the differential effect of the trading partner's energy endowment. These results suggest that countries which produce more energy per capita are expected to specialise in sectors which are energy-intensive, while those lacking energy sources will tend to import more energy-intensive products.

Framework policies

36. Exporters' financial development (measured as the interaction between country-level private credit to GDP and industry dependence on external finance) is positively and significantly associated with specialisation of exports in financially dependent sectors. This result is consistent with the findings or Rajan and Zingales (1998) and Manova (2008), who emphasised that resource reallocation may be differentially affected by industry characteristics. Industries that require substantial upfront external financing (relative to generated cash flow) will be less likely to grow in the presence of capital market imperfections than other industries. Thus, differences in the degree of financial development affects relative productivity and increases trade in industries that depend more on external financing. The common effect of financial development across all sectors of the exporter is not statistically significant.

37. Perhaps more surprising than the previous result is the fact that the differential effect of the trading partner's financial development is positive and significant, meaning that countries export relatively more goods in industries dependent on external financing to countries with more developed financial markets. This implies that there could be "complementarities" between financial development at home and abroad, perhaps reflecting that deeper financial development in the trading partner facilitates trade, for example, by helping finance imports in industries more depending on external financing.

38. Finally, the coefficients of the differential effect of the institutional environment (measured as the regulatory quality of institutions interacted with an indicator of input concentration measured by a Herfindahl index of intermediate input dispersion based on the input-output table for the United States) are positive and highly significant in all specifications.[8] This result supports the idea that countries with a relatively better institutional and legal framework have a comparative advantage in exporting goods produced by industries using a large number of inputs in its production. Recent literature suggests that the quality of institutions matter for international trade as they affect trade costs (*e.g.* Anderson and Van Wincoop, 2004; Nunn and Trefler, 2013). Sharing similar institutional framework (*e.g.* legal system, rule of law, etc.) can foster trade by improving contract enforcement and reducing trade cost (Disdier and Mayer, 2007). Indeed, the dependence on well-functioning institutions is a technological feature of the production process in some industries. For instance, Levchenko (2007) argued that industries that rely more strongly on a few key inputs in their production are more vulnerable to hold-up problems from suppliers, and are therefore more dependent on the legal system than other industries.

39. Concerning importers' institutional environment, the coefficient on regulatory quality is negative in all specifications. Consistent with the findings reported in Table 1, the common effect of the exporter's quality of institutions is positive and significant in most specification, suggesting that countries with better quality of institutions import more than countries with lower institutional quality. This result holds even when controlling for the GDP of both countries.

Tariffs

40. The coefficients for *InputTariffs* have a negative and significant effect in all regressions suggesting that input tariffs imposed on imported intermediate inputs have a negative and statistically significant impact on exports of downstream firms and industries. This result implies that input tariffs have a negative effect on the country's exports, and that this effect is stronger in downstream industries that use

8 This index aims at capturing that greater intermediate input dispersion is associated with a higher complexity of the transactions involved in production (e.g. with intermediate goods suppliers), and thus the more important is the quality of institutions and legal framework for export performance of this industry (Levchenko 2007 and Chor 2007).

the protected good more intensively. The result is consistent with some of the recent contributions such as, for example, Bas *et al.* (2013) and Blonigen (2013). For example, Blonigen (2013) uses a new database of US industrial policies in the steel industry, which includes tariffs and subsidies, from 1975 through 2000 and finds that increases in the presence of industrial policies leads to a decline in export competitiveness for an average downstream manufacturing sector, but that the effect is larger for sectors that use steel as an input most intensively.

41. Finally, trade policy of trading partners also affects exports. Therefore, the output tariffs that importers impose on each industry (*OutputTariffs of the importing country*) are included in all regressions. As expected, output tariffs faced in foreign markets have a consistently negative and significant effect on exports. Hence, output tariffs have negative spillover effects to trading partners by affecting the demand for their goods.

Table 2. Common and differential effect of endowments and policies

Estimation method: *Poisson* **Dependent variable:** *Gross exports (in logs)*	(1)	(2)		(3)	
Gravity variables:					
Distance	-0.693***	-0.698***		-0.709***	
	(0.011)	(0.011)		(0.011)	
Contiguity	0.330***	0.313***		0.311***	
	(0.017)	(0.017)		(0.017)	
Common language	0.289***	0.291***		0.287***	
	(0.019)	(0.019)		(0.019)	
GDP exporter				0.523***	
				(0.049)	
GDP importer				0.628***	
				(0.041)	
Trade Policy:					
Free trade agreement	0.587***	0.595***		0.577***	
	(0.023)	(0.023)		(0.023)	
Output-Tariffs of the importing country	-1.876***	-1.296***		-1.223***	
	(0.150)	(0.143)		(0.142)	
Input-Tariffs	-8.605***	-7.166***		-6.973***	
	(0.464)	(0.472)		(0.475)	
	Differential	Common	Differential	Common	Differential
Exporter's endowments and policies:	effect	Effect	effect	Effect	effect
Stock of capital per worker	1.412***	0.240***	1.415***	-0.0147	1.416***
	(0.050)	(0.048)	(0.052)	(0.054)	(0.052)
Stock of human capital	24.67***	0.271	24.47***	0.0781	24.63***
	(0.949)	(0.181)	(0.958)	(0.178)	(0.958)
Energy supply	0.623***	0.264***	0.622***	0.293***	0.623***
	(0.067)	(0.057)	(0.067)	(0.056)	(0.067)
Financial development	0.738***	-0.0441	0.765***	-0.044	0.760***
	(0.060)	(0.032)	(0.062)	(0.032)	(0.060)
Regulatory quality	5.608***	-0.031	5.806***	0.065	5.885***
	(0.366)	(0.067)	(0.377)	(0.066)	(0.381)
Importer's endowments and policies:					
Stock of capital per worker	-0.473***	0.442***	-0.492***	0.145***	-0.495***
	(0.049)	(0.044)	(0.051)	(0.050)	(0.051)
Stock of human capital	-3.932***	0.598***	-3.694***	0.357*	-3.718***
	(0.918)	(0.192)	(0.925)	(0.189)	(0.920)
Energy supply	-0.0992***	0.0862*	-0.0989***	0.0938**	-0.0991***
	(0.029)	(0.045)	(0.029)	(0.045)	(0.029)
Financial development	0.285***	0.189***	0.245***	0.0514**	0.250***
	(0.038)	(0.024)	(0.040)	(0.023)	(0.039)
Regulatory quality	-0.793**	0.204***	-0.816**	0.109***	-0.802**
	(0.312)	(0.049)	(0.323)	(0.050)	(0.324)
Constant	18.91***	10.83***		-12.32***	
	(0.229)	(1.194)		(1.735)	
Exporter, importer, Industry and Year Fixed effects	Yes	Yes		Yes	
Observations	725,928	725,928		725,928	

Robust standard errors in parentheses

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

4.3 Are these results quantitatively important?

Factor endowments and framework policies

42. To get a sense of the economic significance of the effects of factor endowments and policies on trade, Figure 1 illustrates the findings graphically. Using the coefficients in Tables 1 and 2, Figure 1 Panel A shows the effect of a change in factor endowments and policies on the volume of trade, while Figure 1 Panel B shows the effect of the same change in endowments and policies on the composition of trade. In each experiment, it is assumed that the endowment (policy) increases from the median of the distribution to the 75th percentile of the country-level distribution. For example, in the case of human capital, the country at the median of the distribution is Spain and the country at the 75th percentile is Japan. Thus, the experiment assumes that Spain reaches the level of human capital of Japan and quantifies the impact on aggregate trade. Then it illustrates the differential impact across industries by quantifying the impact of the same change in endowments and policies in the median endowment intensive (policy sensitive) industry and the industry at the 90th percentile of the distribution of the intensity (sensitivity) of the endowment (policy). The estimates suggests that increasing human capital from the median level to the 75th percentile of the distribution (*e.g.* from the Spain to Japan) can increase aggregate exports by 15%, but exports in industries that are highly intensive (90th percentile of the industry distribution of human capital) in skilled-workers can increase by 22%.

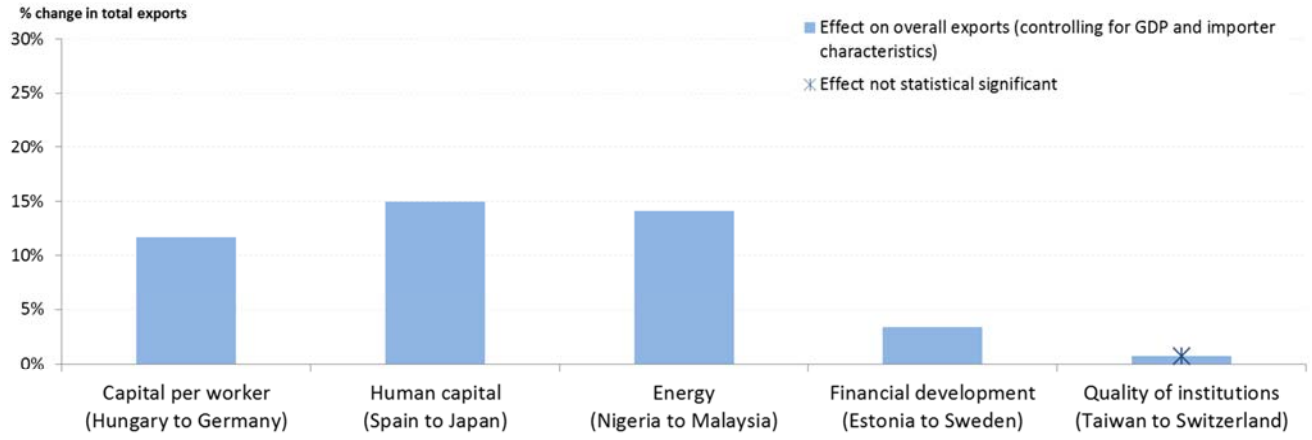
43. For an increase in capital per worker, our estimates suggest that aggregate exports can increase by 12%, but exports in industries that are highly capital intensive (90th percentile of the industry distribution of capital intensity) can increase by more than 25%. The endowment of energy is also an important determinant of the volume and composition of exports. Specifically, increasing the endowment of energy from the median level to the 75th percentile of the distribution (*e.g.* from Nigeria to Malaysia) can increase aggregate exports by 15% and exports of goods highly intensive in energy (90th percentile of the industry distribution of energy) by 17%.

44. For financial development, the estimates suggest that increasing financial development (measured by the ratio of private credit to GDP) from the median to the 75th percentile of the country-level distribution could increase aggregate export by 3%. But, this change could increase exports of industries that are highly dependent on external finance (at the 90the percentile of dependence of external finance) by 6%. Regulatory quality provides a similar result as financial development: Increasing the quality of institutions from the median level to the 75th percentile of the country-level distribution (*e.g.* from Taiwan to Switzerland), could increase exports of goods in industries with long value chains or industries that rely on a large variety of inputs (*i.e.* at the 90th percentile of the distribution of length of GVC) by 5%.

45. The magnitude of the estimated impact of changes in trading partner's factor endowments and policies also appears to be sizeable, although lower than the impact of exporter's endowments and policies (Figure 2). As mentioned earlier, a key difference with respect to exporter's endowment and policies is that the common effects of changes in factor endowments and policies of the trading partners are more important than the differential effect across industries. For instance, countries with more developed financial markets (75th percentile on the distribution of private credit to GDP) tend to import more than countries at the median level of financial development (the estimated difference in imports is 2% for the median industry and 4.2% for industries highly dependent on external finance). Similarly, countries with better regulatory quality tend to import more than countries with lower levels of regulatory quality (the difference in imports are 7 to 8% depending on the length of the global value chains).

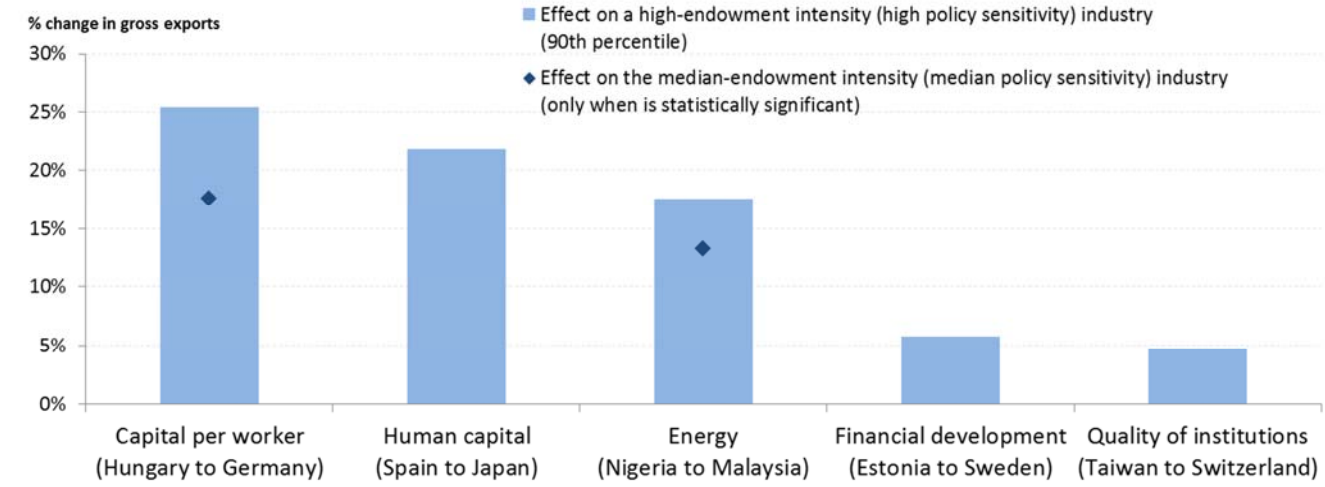
Figure 1. The impact of changes in the exporter's endowments and policies on aggregate exports and the composition of exports

A: Effect of a change in the exporter's factor endowments and policies on total exports (in %)



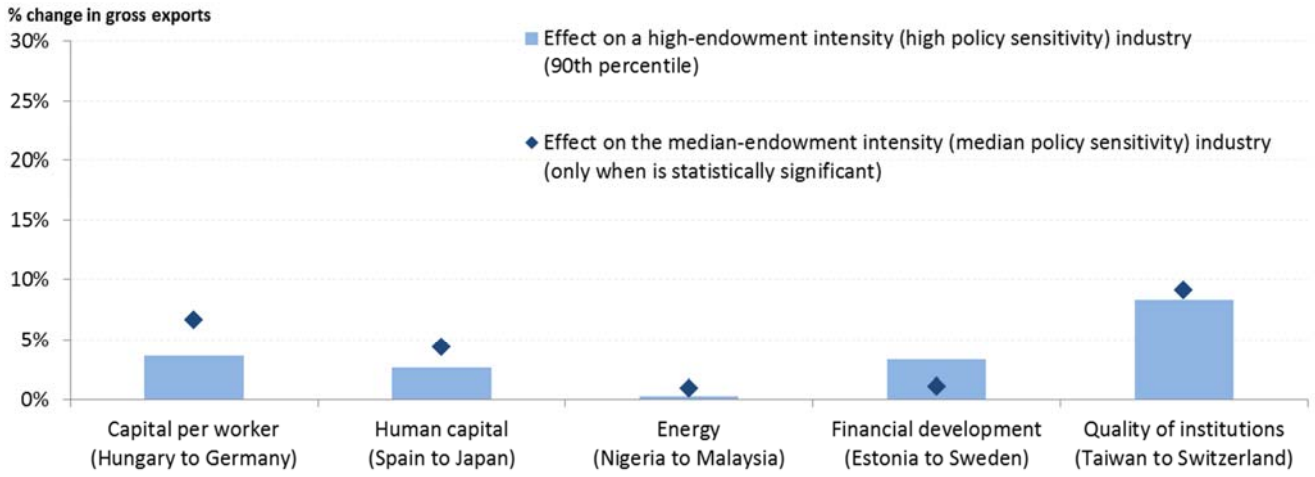
Note: The effect on aggregate gross exports is measured using equation (3.1), specifically: $\Delta Exp_{ij} = \beta \Delta Endowment_i$ where ΔEndowmenti is the change in endowment (or policy) of country i, and β is the coefficient for the respective endowments (policy). The change in endowment (or policy) is the difference between the median country and the country at the 75th percentile of the distribution of the endowments (policy). These estimates are based on the estimations reported in Table 1.

B: Effect of a change in exporter's factor endowments and policies on the composition of gross exports (in %)



Note: The effect on gross exports of industry s is measured using equation (3.2) specifically: $\Delta \text{Exp}_{ijs} = \Delta \text{Endowment}_i * (\delta + \beta(\alpha_s - \overline{\alpha}))$, where ΔEndowmenti is the change in endowment (or policy) of exporting country i, δ is the coefficient for the endowments (not interacted), β is the coefficient for the differential effect, and $\overline{\alpha}$ is average intensity and αs is the intensity of industry s. The bars in the figure represent the change in gross exports for the industry at the 90th percentile of the distribution of intensity. The change in endowment (or policy) is the difference between the median country and the country at the 75th percentile of the distribution of the endowments (policy). These estimates are based on the estimations reported in Table 2.

Figure 2. Change in gross exports created by changes in the importer's endowments and policies (in %)



Note: The effect on gross exports of industry s is measured using equation (3.2) specifically: $\Delta Exp_{ijs} = \Delta Endowment_j * (\delta + \beta(\alpha_s - \bar{\alpha}))$, where ΔEndowmentj is the change in endowment (or policy) of the importing country j, δ is the coefficient for the endowments (not interacted), β is the coefficient for the differential effect, and $\bar{\alpha}$ is average intensity and αs is the intensity of industry s. The bars in the figure represent the change in gross exports for the industry at the 90th percentile of the distribution of intensity. The change in endowment (or policy) is the difference between the median country and the country at the 75th percentile of the distribution of the endowments (policy). These estimates are based on the estimations reported in Table 2.

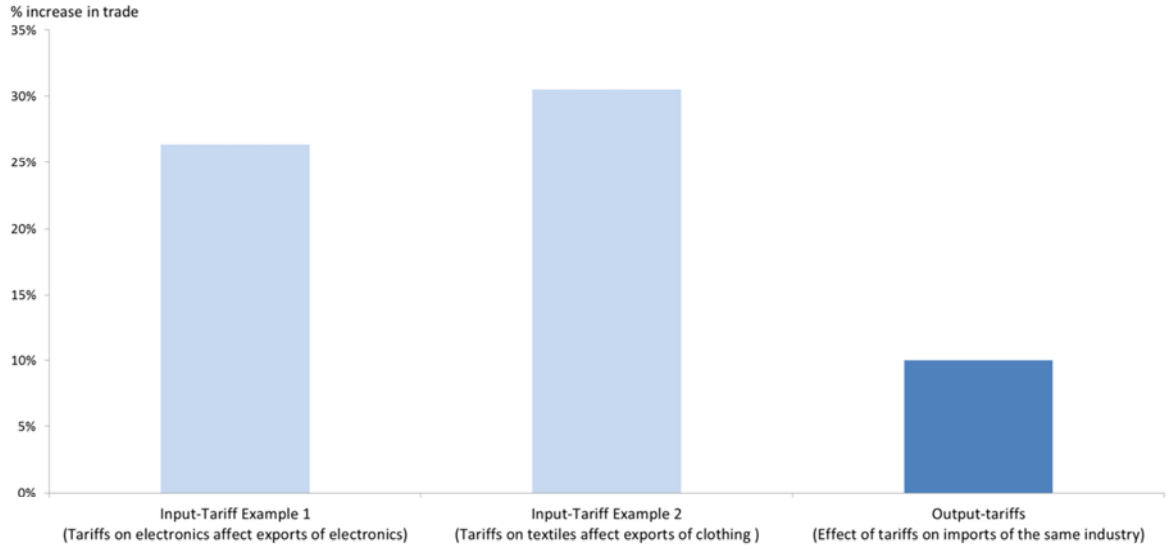
Tariffs

46. Figure 3 illustrates graphically how important the estimated effects of input tariffs are quantitatively. Two experiments are conducted in order to quantify the impact of input tariffs on exports of downstream industries. First, the electronics industry is considered because it relies heavily on inputs from the same industry. Since electronics rely heavily on inputs from the same industry, input tariffs on electronic intermediate inputs hurt the competitiveness of the industry and can reduce exports of the same industry. To quantify this, a hypothetical example considers what would happen to exports of electronic goods in a country with relatively high tariffs on electronic goods (*e.g.* a country at the top percentile such as Brazil) if input tariffs on these goods where to be reduced to the level observed in the median country of the distribution of input tariffs. We find that exports in the electronic industry would increase by 26% (Figure 3).

47. Second, the impact of reducing input tariffs on textiles on exports of clothing (wearing apparel) is considered in Figure 3. This example is interesting since textiles are key inputs in the production of clothing which is the most protected industry in our sample. Our results suggest that if a country with relatively high input tariffs on textiles (*e.g.* a country at the top percentile such as South Africa) would reduce tariffs on textiles to the median of the distribution of input tariffs, its exports of clothing would increase by 30%. The magnitude of these effects is comparable, but smaller, to that reported in Blonigen (2013) who found that increases in the presence of industrial policies (that includes tariffs) leads to a 50% decline in export competitiveness for sectors that use inputs from the protected industry most intensively.

48. The effect of reducing output tariffs is quantified by measuring how much exports would increase between the exporting country and its trading partner if the partner country would reduce output tariffs on average by 10%. Such a cut in output tariffs could increase exports by around 10% (Figure 3).

Figure 3. Impact of input tariffs and output tariffs on exports



Note: The effect on gross exports of industry s of changes in input tariffs in industry k is measured using equation (3.2) specifically: $\Delta Exp_{is} = \Delta InputTariff_{ik} * \beta * \alpha_k^s$, where ΔInputTariffi is the change in input tariff of the exporting country i, β is the coefficient for the InputTariffs from table 2, and α_k^s is the intensity with which industry s employs inputs from industry k. The bars for example 1 in the figure represents the change in gross exports for the electronics industry is Brazil reduces input tariffs on electronics to the level observed in the medina country. The bar for example 2 represents the change in gross exports of clothing if South Africa decreases input tariffs on textiles to the median country. Finally, "Output-tariffs" measures how much (in percentage terms) exports from country i to country j would increase if country j reduces average output tariffs by 10 percent, that is $\Delta Exp_{is} = \Delta InputTariff_{js} * \beta$. Again, the estimation is based on the coefficients from Table 2. It should be noticed that the marginal effects of input tariffs are not directly comparable with that of output tariff since the underlying specification.

4.4 Stability of determinants of trade over time

49. Given the important changes that took place in the world during the last two decades (*e.g.* the fragmentation of production processes, the increasing role of emerging economies and the decrease in barriers to trade), studying the stability of the determinants of trade patterns is warranted. Therefore, this section exploits the time series dimension of the panel by running year by year cross-section estimation of equation (3.3). These estimations investigate whether the estimates found in Table 2 reflect a stable long-term pattern or whether there are changing trends.

50. Table 3 presents the estimation results focusing on gravity variables and factor endowments for the years 1995, 2000, 2005, 2006 and 2007.[9] The basic specification always contains the geographical (gravity) variables but GDP of importer and exporter are not included because they are perfectly correlated with country fixed effects. Table A4 in the appendix tests whether the change in the magnitude of the coefficients of interest between 1995 and 2007 is statistical significant. In this estimation the two years (1995 and 2007) are pooled with the explanatory variables interacted (multiplied) with year dummies in order to be able to determine if the size of the coefficients have changed significantly between the two years. For brevity, the table only presents the results of the interaction between the year dummy and the variable of interest.

9. The regressions were run for all years between 1994 and 2007, but are not shown for space considerations.

51. The most interesting result is that the negative effect of input-tariffs increased over time -- the size of the coefficient has doubled and in some cases more than tripled between 1995 and 2007. This may reflect the increasing importance of global value chains, with the unbundling of production magnifying the impact of input tariffs (Koopman *et al.,* 2010). In an integrated value chain, imposing input tariffs at one stage on a foreign product affects the whole chain of suppliers through backward and forward linkages. Koopman *et al.,* (2010) calculate so-called "tariff-magnification ratios" for manufacturing products and show that taking into account tariffs along all stages of the supply chain raises the effective input tariff protection.

52. The results suggest there has been no significant change in the importance of distance in reducing bilateral exports. This result is related to the so-called "distance puzzle", namely despite increased trade integration and globalisation, the role of distance in empirical gravity equations has remained unchanged over time (Buch *et al.,* 2004)[10] The coefficients on both exporter and importers physical and human capital endowments as well as energy appear rather stable. As shown in Table A4 Appendix, the difference in the magnitude of the coefficients between 1995 and 2007 is in general not significant. The importance of exporter's regulatory and institutional quality appears to have remained fairly stable or increased as in the case of regulatory quality.

10 Empirical gravity models find little change in distance coefficients and some even finds an increase in the absolute value of the coefficient (Buch et al., 2004; Frankel, 1997). Even though the average cost of distance has decreased over time, the marginal cost per kilometre may not have fallen, which is what the distance coefficient in gravity models captures (Frankel, 1997).

Table 3. Conditional Poisson fixed effects regression model of industry trade flows year by year[1]

Dependent variable: *Gross exports (in logs)*	(1)	(2)	(3)	(4)	(5)
Year:	1995	2000	2005	2006	2007
Gravity variables:					
Distance	-0.705***	-0.535***	-0.733***	-0.736***	-0.715***
	(0.0517)	(0.0475)	(0.0391)	(0.0387)	(0.0356)
Contiguity	0.306***	0.337***	0.278***	0.256***	0.273***
	(0.0548)	(0.0565)	(0.0552)	(0.0538)	(0.0518)
Common language	0.331***	0.234***	0.167**	0.180***	0.196***
	(0.0712)	(0.0630)	(0.0711)	(0.0691)	(0.0648)
Trade agreement	0.565***	0.994***	0.559***	0.544***	0.563***
	(0.0996)	(0.0949)	(0.0808)	(0.0793)	(0.0715)
Trade Policy:					
Input-Tariffs	-2.399*	-10.65***	-16.64***	-15.00***	-14.78***
	(1.328)	(2.253)	(2.681)	(2.958)	(2.760)
Output-Tariffs of the importing country	-0.907**	-2.107***	-1.393*	-1.917**	-1.909***
	(0.376)	(0.660)	(0.792)	(0.831)	(0.739)
Exporter's endowments and policies:					
Stock of capital per worker	1.308***	1.165***	1.241***	1.438***	1.586***
	(0.229)	(0.217)	(0.158)	(0.165)	(0.163)
Stock of human capital	26.03***	25.83***	23.96***	25.03***	23.79***
	(3.025)	(3.515)	(3.343)	(3.376)	(3.174)
Energy supply	0.742**	0.641***	0.666***	0.676***	0.724***
	(0.294)	(0.194)	(0.250)	(0.226)	(0.205)
Financial development	0.0207***	0.0134***	0.00775***	0.00508***	0.00496***
	(0.00254)	(0.00228)	(0.00167)	(0.00160)	(0.00141)
Regulatory quality	-0.00992	0.0470**	0.0727***	0.0923***	0.0906***
	(0.0292)	(0.0229)	(0.0226)	(0.0209)	(0.0204)
Importer's endowments and policies:					
Stock of capital per worker	-0.355**	-0.637***	-0.715***	-0.622***	-0.793***
	(0.212)	(0.194)	(0.174)	(0.192)	(0.180)
Stock of human capital	-2.980	-1.315	-3.745	-3.820	-3.716
	(3.004)	(3.690)	(3.268)	(3.240)	(2.973)
Energy supply	-0.634***	-0.370***	-0.236**	-0.290***	-0.297***
	(0.117)	(0.0879)	(0.0933)	(0.0949)	(0.0882)
Financial development	0.00479***	0.00461***	0.00199	0.00108	0.00193
	(0.00177)	(0.00170)	(0.00182)	(0.00179)	(0.00172)
Regulatory quality	-0.0376	-0.00153	-0.0213	-0.0324**	-0.0360**
	(0.0239)	(0.0185)	(0.0192)	(0.0163)	(0.0155)
Constant	7.727***	3.928*	8.195***	6.653***	7.217***
	(2.559)	(2.170)	(1.599)	(1.586)	(1.500)
Observations	41,580	41,580	41,580	41,580	41,580

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1. Pooled estimates with year dummies interacting

4.5 Robustness check and other determinants of trade specialisation

53. A number of robustness checks were carried out. As already mentioned, the country dimension provides a comprehensive coverage of world trade: it encompasses all OECD economies, emerging economies (BRIICS) that are key in terms of trade volumes and some selected minor emerging economies. Nevertheless, it is important to understand whether there is any bias related to the country set. Therefore, robustness analysis excluding selected countries was carried out. First, the United States is excluded from the regression motivated by the fact that the sector intensities have been constructed using data from the United States, which could generate endogeneity bias. Table A5, column 1 presents the results for this regression. The two following regressions in Table A5 (columns 2-3), respectively, drop the four smallest and the four biggest economies in terms of GDP volumes from the regression. The results are robust to excluding the United States and the four smallest economies. However, they are less robust to dropping the four largest economies. This is not surprising as dropping the four largest countries implies dropping countries (*i.e*. the United States, Japan, China and Germany) who account for a large share of trade, leading to a biased sample of exports.

54. A second robustness analysis concerns the impact of tariffs on exports. The input tariff measure in the main regression only considers ad valorem tariffs using TRAINS data on MFN tariffs weighted by the use of each input in the production. However, exports are also affected by a number of other provisions including preferential treatment and exceptions, quotas, etc. which raise trade costs. Due to a vast cross-country variation in the provisions provided, it is difficult to get comparable time-series data on these types of policy barriers. One comprehensive measure of policy induced trade barriers is a measure sourced from CEPII's MacMap database (Guimbard *et al.,* 2012). On top of ad valorem tariffs, this measure of tariffs takes into account preferential trade agreements and exceptions to usual WTO rules, thus it gives a comprehensive measure of trade cost. However, these data are only available for one year (2004), limiting the scope of the empirical analysis. As shown in Table A6, using this broader measure of tariff barriers confirms the earlier findings that tariffs reduce bilateral trade (for the year 2004).

55. As part of the empirical exercise, the effects on trade of additional policies were also estimated, such as labour and product market regulation and taxes. A problem with these policies is that data cover mainly OECD countries and, therefore, when estimations include them, the sample becomes smaller and some of the coefficients change significantly, reducing the comparability with the main results.

5. Conclusion

56. This paper empirically investigates the determinants of overall trade and composition of bilateral trade at the industry level using a sample of 54 OECD and non-OECD economies. The paper finds strong evidence confirming that factor endowments, policies and institutional settings are important determinants of the size and composition of trade of countries. Moreover, the study finds evidence that increasing factor endowments and improving policies can also benefit trading partners. Specifically, although improvements in some of the trading partners' endowments and policies can negatively affect relative productivity in industries intensive in those endowments and policies (substitution effect), the overall effect on exports is generally positive and significant because income effects are large.

57. Furthermore, the analysis provides evidence that input tariffs have a significant negative effect on exports of downstream industries because they increase their production costs. The adverse effect of input tariffs is found to increase over time, possibly reflecting a greater fragmentation of production with expanding global supply chains magnifying the effect of input tariffs at one stage of the production. Given that the integration of production and supply chains are likely to continue in the future, input tariffs can turn out to be more harmful than in the past because the domestic producer is in fact more dependent on intermediate imports.

58. One main policy recommendation implied from the results of this paper is that countries seeking to promote trade in specific industries should be careful in using input tariffs to protect those industries because they can hurt firms both in the same industry and in downstream industries. Instead, the results suggest that providing well-functioning institutions and framework policies such as access to education, improving the quality of institutions and facilitating the access to credit can enhance trade and specialisation. According to the findings of this paper, if a country succeeds in doing this, it will likely result in a re-orientation of its exports toward industries highly sensitive to such factors. Moreover, good framework conditions could also create positive spillovers to other countries by increasing the demand for imports, boosting, therefore, trading partners' exports.

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APPENDIX

1. The empirical analysis uses a large dataset of bilateral trade flows, distance measures, and country and industry characteristics. The sample consists of 54 OECD and non-OECD countries and 21 manufacturing sectors (see Tables A1-A2 for a list of countries and industries, and also summary statistics of the main variables across countries and industries). The sectoral classification follows that of the Global Trade Analysis Project.[11] The analysis covers the period 1995-2007.[12]

2. *Distance* is measured as the distance between countries' capital cities and is sourced from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) database. Also from the CEPII is *Common Language*, which equals 1 if each country's population speaks a shared language. The *Common Border* dummy equals to 1 if the countries share a land border (the measure come from the CIA World Factbook. *RTA* equals to 1 if the countries are joint signatories in any of the regional trade agreements reported to the WTO. GDP (at constant US Dollars) comes from the World Development Indicators (WDI) database.

3. Data on the physical capital is measured as capital per labour and in sourced from Kowalski (2011) while the stock of human capital is measured by the average years of schooling sourced from Barro and Lee (2010). Energy is measured as energy production per capita and is sourced from the World Energy Indicators database, International Energy Agency. Financial development is proxied by the ratio of domestic credit to GDP and is drawn from World Development Indicators (WDI, 2012). Quality of institutions is proxied by the indicator "rule of law" from the World Bank Governance database, where a higher number is associated with better quality of institutions.

4. The factor intensities are based on the share of the specific factor in the sectors total purchase (use) of primary factors of production based on the GTAP database, averaged across countries in the sample. More specifically, physical capital-intensity is the share of capital in the industry's total use of factors of production; skilled-labor intensity is the share of skilled labour in the industry's total use of factors of production; and energy intensity is share of energy in the industry's total use of factors of production (see Kowalski (2011) for details).

5. Drawing on earlier studies, the sensitivity to financial development is based on the industry's dependence on external finance, measure by the degree of external financial dependence of US firms sourced from Kowalski (2011) and Braun (2003). The sensitivity to the quality of institutions is based on an index (Herfindahl) of intermediate input dispersion based on the input-output table for the United States sourced from Kowalski (2011). This index aims at capturing that greater intermediate input dispersion is associated with a higher complexity of the production, and thus the more important is the quality of institutions and legal framework for export performance of this industry (Levchenko 2007 and Chor 2007).

6. Data on tariffs comes from two datasets: (i) the Most Favourite Nation (MFN) applied tariffs by each of the 54 countries covered in the sample from the WITS/TRAINS/WTO database for the period 1994-2007 and (ii) the input-output tables for the United States sourced from GTAP (2004).

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11. This is because the measurement of several of the intensity variables relies on internationally comparable GTAP input-output data.

12. The dataset includes a broader number of sectors (44), and regressions were also run including all sectors. In general, the results are similar, but skill endowments are less significant.

Table A1. List of countries and data for factor endowments and policies (2007)

Country	Capital per worker	Human Capital: Years of education	Energy supply	Financial Development	Regulatory Quality
Argentina	4.51	0.96	-2.68	2.67	3.22
Australia	5.34	1.08	-1.86	4.77	4.56
Austria	5.47	0.97	-2.88	4.74	4.56
Belgium	5.43	1.02	-2.87	4.51	4.51
Brazil	4.43	0.86	-2.94	3.89	3.97
Canada	5.28	1.08	-1.90	4.84	4.54
Chile	4.64	1.00	-3.25	4.48	4.52
China	4.09	0.89	-2.85	4.71	3.93
Czech Republic	5.01	1.10	-2.49	3.87	4.41
Denmark	5.47	1.00	-2.30	5.32	4.61
Egypt	4.04	0.83	-2.97	3.92	3.83
Estonia	4.92	1.07	-2.48	4.54	4.51
Finland	5.45	0.99	-2.52	4.40	4.53
France	5.42	1.01	-2.66	4.66	4.47
Germany	5.40	1.07	-2.77	4.66	4.54
Greece	5.21	1.01	-3.04	4.52	4.36
Hong Kong	5.23	1.00	-5.13	4.94	4.61
Hungary	5.03	1.06	-2.99	4.12	4.45
Iceland	5.01	1.02	-1.90	3.85	4.53
India	3.84	0.69	-3.39	3.86	3.78
Indonesia	3.95	0.77	-2.85	3.24	3.74
Ireland	5.45	1.06	-3.47	5.29	4.60
Israel	5.03	1.05	-3.39	4.48	4.43
Italy	5.42	0.97	-3.35	4.62	4.36
Japan	5.48	1.06	-3.15	5.15	4.44
Kazakhstan	4.51	1.01	-2.07	4.08	3.66
Luxembourg	5.74	1.00	-3.62	5.25	4.57
Malaysia	4.63	0.99	-2.48	4.66	4.22
Mexico	4.82	0.94	-2.63	3.09	4.16
Morocco	4.29	0.67	-4.69	4.25	3.91
Netherlands	5.40	1.04	-2.43	5.25	4.58
New Zealand	5.19	1.10	-2.48	4.95	4.57
Nigeria			-2.80	3.23	2.94
Norway	5.62	1.09	-1.34	4.46	4.48
Poland	4.77	0.99	-2.72	3.67	4.28
Portugal	5.09	0.89	-3.36	5.13	4.42
Saudi Arabia		0.90	-1.64	3.99	4.01
Singapore	5.26	0.94	-4.14	4.57	4.58
Slovakia	4.84	1.05	-2.96	3.75	4.42
Slovenia	5.16	1.06	-2.77	4.37	4.29
South Africa	4.73	0.92	-2.48	5.10	4.20
South Korea	5.12	1.07	-3.06	4.11	4.37
Spain	5.29	1.00	-3.17	5.21	4.45
Sweden	5.39	1.06	-2.44	4.82	4.55
Switzerland	5.53	0.99	-2.78	5.17	4.55
Thailand	4.54	0.85	-3.04	4.73	4.04
The Russian Federation	4.37	1.06	-2.06	3.66	3.74
Tunisia	4.53	0.84	-3.11	4.16	4.03
Turkey	4.74	0.83	-3.43	3.38	4.13
Ukraine	4.10	1.04	-2.76	4.06	3.61
United Kingdom	5.34	0.98	-2.54	5.24	4.60
United States	5.35	1.11	-2.26	5.35	4.52
Venezuela	4.66	0.82	-2.13	3.16	1.95
Vietnam	3.76	0.78	-3.13	4.54	3.47
Median	5.06	1.00	-2.79	4.52	4.42
25th percentile	4.61	0.92	-3.13	3.94	4.01
75th percentile	5.40	1.06	-2.48	4.84	4.54

Table A2. List of industries and its intensities with respect to endowments and policies

Industry	Capital intensity	Human capital intensity	Energy intensity	Dependence on external finance	Input dispersion
Meat products	0.43	0.11	0.02	0.14	0.73
Processed vegetables	0.53	0.10	0.02	0.14	0.78
Dairy products	0.50	0.09	0.02	0.14	0.79
Food products nec	0.47	0.12	0.02	0.14	0.92
Beverages and tobacco products	0.63	0.08	0.02	-0.19	0.90
Textiles	0.35	0.12	0.04	0.40	0.81
Wearing apparel	0.32	0.11	0.02	0.03	0.78
Leather products	0.39	0.10	0.03	-0.14	0.87
Wood products	0.39	0.11	0.05	0.26	0.83
Paper products, publishing	0.43	0.15	0.10	0.19	0.81
Petroleum, coal products	0.67	0.09	0.74	0.04	0.66
Chemical, rubber, plastic products	0.54	0.14	0.18	0.45	0.82
Mineral products nec	0.48	0.12	0.15	0.30	0.90
Ferrous metals	0.49	0.11	0.22	0.09	0.89
Metals nec	0.52	0.11	0.18	0.01	0.84
Metal products	0.40	0.14	0.07	0.24	0.88
Motor vehicles and parts	0.44	0.15	0.02	0.31	0.88
Transport equipment nec	0.30	0.18	0.03	0.31	0.88
Electronic equipment	0.51	0.15	0.05	0.86	0.78
Machinery and equipment nec	0.42	0.18	0.05	0.45	0.90
Manufactures nec	0.47	0.12	0.10	0.47	0.91
Median	0.47	0.12	0.05	0.19	0.84
Average	0.46	0.12	0.10	0.22	0.84
10th percentile	0.35	0.11	0.02	0.09	0.79
90th percentile	0.54	0.14	0.18	0.31	0.89

Table A3. Tariffs by country industry

Country	Meat products	Processed vegetables	Dairy products	Food products nec	Beverages and tobacco products	Textiles	Wearing apparel	Leather products	Wood products	Paper products, publishing	Petroleum, coal products	Chemical, rubber, plastic products	Mineral products nec	Ferrous metals	Metals nec	Metal products	Motor vehicles and parts	Transport equipment nec	Electronic equipment	Machinery and equipment nec	Manufactures nec	Average
Argentina	7.9	11.0	15.6	14.1	17.5	16.5	20.0	18.8	13.2	10.8	1.1	8.9	11.1	9.9	6.8	16.2	25.3	5.7	10.4	9.3	18.9	12.8
Australia	0.0	0.8	0.4	2.8	3.9	10.3	15.8	6.9	4.6	3.4	0.0	2.7	4.4	4.8	0.7	5.5	6.1	0.9	0.5	3.6	2.9	3.8
Austria	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Belgium	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Brazil	11.3	10.0	22.2	11.1	18.6	16.3	20.0	20.8	16.2	9.9	0.5	7.4	9.9	10.2	6.2	15.6	23.3	2.7	9.5	12.2	17.1	12.9
Canada	10.6	3.3	6.9	4.1	5.2	11.4	16.4	10.6	4.3	0.0	2.8	3.0	2.6	0.3	0.6	3.5	5.0	1.6	0.3	1.6	3.2	4.6
Chile	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.9	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.5	6.0	6.0	6.0	5.9
China	10.7	9.9	8.8	10.8	13.6	9.1	15.4	8.1	1.3	2.0	6.6	7.1	11.8	4.8	3.2	9.1	16.2	3.2	1.7	7.0	11.9	8.2
Czech Republic	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Denmark	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Egypt	5.0	5.5	8.3	65.9		15.4	38.6	29.5	8.8	9.6	8.2	15.7	16.1	5.8	6.5	16.0	26.3	5.5	2.5	7.0	15.6	15.6
Estonia	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Finland	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
France	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Germany	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Greece	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Hong Kong	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Iceland	0.0	17.3	0.0	6.8	2.7	8.0	14.4	13.2	6.7	3.0	0.4	3.4	3.1	0.0	0.0	3.5	0.4	0.2	0.6	0.9	7.8	4.4
India	30.0	78.5	34.6	38.9	94.7	14.0	12.5	12.5	12.5	11.5	10.7	12.1	12.5	18.6	12.5	12.5	19.6	6.9	2.8	12.2	12.6	22.5
Indonesia	5.0	0.5	4.9	9.5	60.8	9.4	14.7	7.8	6.3	3.4	1.3	6.6	9.3	6.4	4.2	8.8	18.1	3.3	1.2	4.1	10.7	9.3
Ireland	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Israel	0.5	5.0	90.7	4.7	0.0	6.4	11.8	10.6	11.9	2.7	0.8	3.3	6.4	0.6	0.6	7.5	3.7	0.3	0.2	4.5	0.6	8.2
Italy	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Japan	32.7	1.5	17.2	8.8	3.5	7.4	9.7	14.6	1.3	0.0	1.0	1.7	0.9	1.1	1.2	0.8	0.0	0.0	0.0	0.2	1.4	5.0
Kazakhstan	5.0	2.3	4.3	3.4	2.9	2.9	4.9	4.6	4.4	3.3	5.0	1.8	3.0	3.8	2.1	3.4	0.5	0.1	0.3	0.4	4.0	3.0
Luxembourg	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Malaysia	0.0	1.4	0.9	4.1	8.4	10.7	17.4	5.2	4.1	8.3	1.0	6.6	12.2	21.4	3.7	11.7	18.6	2.3	0.2	4.1	5.7	7.0
Mexico	18.4	13.5	19.7	14.4	27.9	17.3	34.4	24.7	15.3	8.6	5.6	11.1	15.3	8.2	9.9	13.8	26.4	10.9	2.3	10.5	11.1	15.2
Morocco	177.9	9.8	48.7	33.1	26.9	23.8	42.8	21.4	36.1	38.1	8.8	19.3	32.6	12.0	12.3	35.6	24.3	4.3	1.6	13.8	6.8	30.0
Netherlands	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
New Zealand	0.0	0.7	2.3	4.1	1.8	8.2	16.2	9.3	6.0	0.0	1.1	2.7	4.2	2.5	2.4	4.9	8.8	1.4	0.6	4.0	4.4	4.1
Nigeria	5.7	17.4	13.9	11.6	17.8	10.1	19.0	12.9	19.9	6.6	8.7	7.3	16.4	14.1	9.0	16.4	11.3	5.8	4.4	6.4	15.8	11.9
Norway	0.0	4.2	25.8	6.8	0.0	4.9	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
Poland	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Portugal	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Saudi Arabia	3.9	3.6	5.0	4.8	15.8	5.0	5.0	5.0	5.0	4.8	5.0	3.4	5.0	5.0	4.2	5.0	5.0	2.7	0.8	4.8	5.0	4.9
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slovakia	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Slovenia	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
South Africa	25.3	8.7	1.1	11.7	11.9	20.6	38.2	25.3	11.6	5.3	4.7	4.9	6.1	1.5	0.7	8.0	20.2	0.3	0.6	3.2	5.7	10.3
South Korea	35.0	5.0	42.9	35.9	45.5	9.2	12.7	8.8	4.1	0.1	3.5	5.1	7.4	0.4	2.7	6.2	8.0	1.3	1.1	6.1	4.9	11.7
Spain	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
Sweden	2.3	6.4	7.7	12.4	11.8	9.0	11.1	9.4	1.4	0.0	2.6	3.3	3.7	0.4	3.0	2.6	7.1	2.0	1.1	1.8	2.1	4.8
Switzerland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	40.1	8.3	11.0	9.7	56.7	6.7	28.2	13.0	7.0	3.0	8.5	4.3	11.4	2.9	1.0	10.1	23.5	6.8	0.7	4.8	4.6	12.5
The Russian Federation	5.1	6.5	14.6	9.9	16.7	8.7	15.5	6.3	15.7	8.6	4.9	9.1	13.1	6.3	4.3	13.7	6.1	9.4	3.8	4.7	13.1	9.3
Tunisia	84.2	24.7	64.5	42.7	32.1	26.4	28.8	31.8	26.5	28.2	3.2	16.3	28.7	19.7	13.8	30.8	17.8	14.7	9.9	17.4	32.8	28.3
Turkey	1.3	24.0	140.4	26.0	10.6	6.0	9.6	8.0	0.9	0.1	3.0	4.6	4.3	2.5	1.5	3.0	8.0	3.0	1.2	1.7	2.9	12.5
Ukraine	16.5	3.0	8.4	6.8	17.8	4.3	11.2	9.1	5.8	2.9	0.0	2.3	8.4	1.5	3.1	4.0	16.2	2.9	2.3	3.8	5.8	6.5
United Kingdom	4.2	2.4	6.4	12.8	5.7	9.2	11.1	8.2	0.8	0.0	2.4	2.4	4.0	0.5	2.5	2.6	8.2	1.8	1.1	1.7	1.4	4.3
United States	12.8	2.9	9.0	4.0	1.5	9.3	11.6	10.0	0.4	0.0	6.2	2.2	4.0	0.4	1.5	2.5	4.0	0.5	0.3	1.6	1.7	4.1
Venezuela	19.7	38.4	35.8	18.6	18.4	22.9	32.3	30.3	17.2	9.9	9.7	10.7	14.6	11.4	10.3	15.1	26.9	6.7	8.0	10.6	18.2	18.4
Vietnam	19.8	3.1	19.3	24.6	31.6	31.5	47.0	12.6	6.2	14.9	14.4	5.5	22.8	3.9	1.0	16.8	41.5	41.1	6.1	6.7	23.4	18.8
Average	12.5	7.1	15.2	13.4	13.2	10.2	15.1	10.6	5.5	3.8	3.4	4.6	7.2	3.6	3.4	6.7	10.9	3.5	1.9	3.9	5.6	7.7

Table A4. Panel regression testing difference in coefficients between 1995 and 2007

Estimation method: *Poisson*		
Dependent variable: *Gross exports (in logs)*		
Gravity variables:		
Distance	* 2007 Year Dummy	0.0485
		(0.0442)
Contiguity	* 2007 Year Dummy	-0.0516
		(0.0754)
Common language	* 2007 Year Dummy	-0.0998
		(0.0938)
Trade Policy:		
Output-tariff of the importing country	* 2007 Year Dummy	-4.115***
		(0.838)
Input-tariff	* 2007 Year Dummy	-12.66***
		(3.178)
Exporter's endowments and policies:		
Stock of capital per worker	* 2007 Year Dummy	0.458
		(0.293)
Stock of human capital	* 2007 Year Dummy	-0.450
		(4.402)
Energy supply	* 2007 Year Dummy	-0.0261
		(0.358)
Financial development	* 2007 Year Dummy	-0.0158***
		(0.00317)
Regulatory quality	* 2007 Year Dummy	0.103***
		(0.0360)
Importer's endowments and policies:		
Stock of capital per worker	* 2007 Year Dummy	-0.445
		(0.288)
Stock of human capital	* 2007 Year Dummy	-0.329
		(4.141)
Energy supply	* 2007 Year Dummy	0.333**
		(0.147)
Financial development	* 2007 Year Dummy	-0.00105
		(0.00255)
Regulatory quality	* 2007 Year Dummy	-0.00812
		(0.0288)
Observations		80,388

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5. Robustness checks: Alternative samples of countries

Estimation method: *Poisson*	(1)	(2)	(3)
Dependent variable: *Gross exports (in logs)*	no USA	no smallest economies	no biggest economies
Gravity variables:			
Distance	-0.737***	-0.699***	-0.765***
	(0.0370)	(0.0364)	(0.0393)
Contiguity	0.178***	0.284***	0.460***
	(0.0512)	(0.0539)	(0.0622)
Common language	0.282***	0.186***	0.0940
	(0.0733)	(0.0652)	(0.0825)
Trade Policy:			
Free trade agreement	0.459***	0.582***	0.594***
	(0.0734)	(0.0726)	(0.0742)
Output-Tariffs of the importing country	-1.207*	-2.021**	-1.243**
	(0.641)	(0.802)	(0.601)
Input-Tariffs	-11.13***	-16.75***	-1.853
	(1.887)	(3.015)	(1.440)
Exporter's endowments and policies:			
Stock of capital per worker	1.576***	1.531***	0.653***
	(0.153)	(0.170)	(0.189)
Stock of human capital	19.90***	22.94***	10.81***
	(2.908)	(3.267)	(3.113)
Energy supply	0.673***	0.765***	0.375
	(0.238)	(0.207)	(0.228)
Financial development	0.00748***	0.00506***	0.00654***
	(0.00120)	(0.00143)	(0.00130)
Regulatory quality	0.105***	0.0891***	0.0705***
	(0.0180)	(0.0209)	(0.0180)
Importer's endowments and policies:			
Stock of capital per worker	-0.933***	-0.801***	-0.720***
	(0.174)	(0.188)	(0.236)
Stock of human capital	-7.708***	-3.982	0.146
	(2.883)	(3.092)	(2.847)
Energy supply	-0.279***	-0.303***	-0.175*
	(0.0980)	(0.0891)	(0.0964)
Financial development	-0.00119	0.00169	-8.16e-05
	(0.00144)	(0.00173)	(0.00131)
Regulatory quality	-0.0483***	-0.0395**	-0.0473***
	(0.0158)	(0.0159)	(0.0156)
Exporter, importer, Industry and Year Fixed effects	Yes	Yes	Yes
Observations	725,928	725,928	725,928

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A6. Robustness checks: Alternative measure of tariff, 2005

Estimation method: *Poisson*	(1)	(2)
Dependent variable: *Gross exports (in logs)*	CEPII	WITS
Gravity variables:		
Distance	-0.868***	-0.849***
	(0.0292)	(0.0297)
Contiguity	0.273***	0.275***
	(0.0543)	(0.0541)
Common language	0.185***	0.179**
	(0.0704)	(0.0698)
Trade Policy:		
Input-Tariffs	-17.60***	-17.38***
	(2.763)	(2.752)
Output-Tariff (WITS)	-3.394***	
	(0.501)	
Output-Tariff (CEPII)		-5.424***
		(0.748)
Exporter's endowments and policies:		
Stock of capital per worker	1.375***	1.397***
	(0.165)	(0.168)
Stock of human capital	25.59***	26.38***
	(3.376)	(3.345)
Energy supply	0.692***	0.667***
	(0.250)	(0.248)
Financial development	0.00742***	0.00734***
	(0.00159)	(0.00160)
Regulatory quality	0.0760***	0.0730***
	(0.0227)	(0.0226)
Importer's endowments and policies:		
Stock of capital per worker	-0.708***	-0.770***
	(0.177)	(0.178)
Stock of human capital	-2.267	-2.599
	(3.147)	(3.184)
Energy supply	-0.249***	-0.236**
	(0.0935)	(0.0925)
Financial development	0.00163	0.00146
	(0.00181)	(0.00180)
Regulatory quality	-0.0376**	-0.0448**
	(0.0178)	(0.0179)
Observations	41,580	41,580

Robust standard errors in parentheses

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

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