THE MIGRATION-TRADE LINK: IMMIGRANTS OR EMIGRANTS?

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Abstract

Most empirical studies have examined the pro-trade effects of immigrants from the host country perspective, and conclude that immigrants exert a positive and robust influence on trade between their host and home countries. This paper extends the related literature by examining the pro-trade effect of both immigrants and emigrants. To do so, we use country-level data that combines world bilateral exports and world bilateral migrant stocks. The results suggest that the pro-trade effect of emigrant networks is as important as those of immigrant networks. Second, if one of the trading partners is developing country, the pro-trade effect of both immigrants and emigrants show a large impact. Third, when the other trading partner is a developed country, emigrants exhibit a larger impact on trade. Fourth, the migration-trade links occurs mainly through the transaction cost channel; the exception is the North-South trade where the preference channel is also important. Finally, there is no difference of magnitudes in the migration-trade link between differentiated and homogenous goods, so the information channel is not corroborated in our data.

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1. INTRODUCTION

Globalization and technological advances have reduced transport costs and time spent in product exchanges enhancing international trade. Despite this is a general fact, trade partner characteristics such as political, social and cultural aspects as well as institutional, regulatory and legal requirements act simultaneously as determinants and as costs of transport for trade. Under these considerations, information about those characteristics and requirements in international markets would be a factor reducing transaction costs.

Exporters need specific information about destination markets to determine the best one for their products. They also need to establish commercial and trust relationships with importers in those destination markets. On the other side, importers need information about foreign suppliers of products demanded in their domestic market. Thus, the absence, scarcity or asymmetry of this kind of information would imply an additional barrier for trade across economies. With these ideas in mind, recently a number of studies have analyzed the role of migration networks as a trade-enhancing factor. Since migrant diasporas have specific knowledge about their home and host countries, they could facilitate establishing trust relationships with foreign trade partners that would reduce transaction costs. Moreover, since immigrants maintain some preferences for products from their origin countries, imports in their host country could be increased to fulfill such demand (Gould, 1994; Rauch, 2001).

When the kind of traded products is considered, other hypothesis arises about the trade-enhancing effect of information exchanges. Focusing on the superior knowledge of migrants on their home markets and its business practices, and their superior capacity to create trustworthy relationships because of that knowledge of both home and host markets, mainly when institutions and social infrastructures fail, it is expected that their impact is more relevant for trade in differentiated goods. The complexity of differentiated products make more difficult for trading partners to obtain adequate information about the adequate characteristics, quality and price in each destination market, while these aspects are easily available for homogeneous goods. Thus the information channel is expected to appear as relevant in trade in differentiated products and therefore the trade-enhancing effect of migration should be stronger for this type of products. Under this perspective, Rauch and Trindade (2002) looked at the business networks created by ethnic Chinese migrants around the world, concluding that ethnic networks facilitate trade by helping to match buyers and sellers in characteristic space, as well as deterring opportunistic behavior though community sanctions, and that the effect is greater for differentiated products.

The ability of migrant networks to provide market information and to compensate for the lack of contract enforcement in international trade has been a prolific area of empirical research in the last decade. Most papers examine the impact of immigrant stocks on trade between a developed host country and immigrants' developing countries of origin and find predominantly a significant and positive relationship between immigrant stocks and bilateral trade flows. However, little has been explored about the emigration effects on trade and empirical papers that focus on developing countries as host countries of immigrants are scarce.

In this paper we examine the pro-trade effect of immigrants and emigrants stocks using bilateral migrant stocks and bilateral export flows for 118 reporting countries and 178 trading partners in year 2005. Our first goal is to investigate how these links are established by migrants from developed countries residing in developing economies and how such links work between developing countries by testing (and revising) a number of well-known hypotheses about the migration-trade link. Moreover, our second goal is accounting for emigration and immigration Diasporas in both trading partners by exploiting two novel features of the database: data on emigrants as well as immigrants and data on bilateral trade flows between different groups of countries (i.e. South-North trade, North-North trade, North-South trade and South-South trade).

We find that both Diasporas have a positive impact on bilateral exports. In addition the migrants seems to have a major impact through the transaction cost channel, while the preference channel only appears to be relevant in exports from developed countries to developing countries. Finally, based on the fact that there are no differences in the impact of migrants on exports between homogenous and differentiated goods we find no support in favour of the information channel

The rest of the paper is structured as follows. Section 2 formulates four hypotheses about the nature of the migration-trade link. Section 3 describes the empirical model and the variables. Section 4 presents the results and Section 5 concludes.

2. FOUR HYPOTHESES ABOUT THE MIGRATION-TRADE LINK

In this section we examine the literature on migration and trade and formulate four hypotheses when we use a dataset that contains information on immigrants, emigrants and bilateral exports for a large sample of developed and developing countries.

Up to now, the literature on networks has concentrated the attention on the immigration stocks, mainly due to a general scarcity of data on emigration.[1] However, a natural interpretation of network theory is that both, emigrants as well as immigrants should influence bilateral trade flows.

H1: The migration-trade link exists for both immigrants and emigrants.

Second, the literature has suggested two mechanisms through which migrants promote trade: (i) transaction costs channel and (ii) preference channel. International trade is not an easy task, especially when it involves developing countries with unsound institutions. In case of a high degree of uncertainty about contract enforcement, a high level of trust is required for transactions to happen. Thanks to cultural proximity, repeated transactions or knowledge of implicit business rules, this necessary trust may exist within migrant networks. In addition, migrants may possess exclusive knowledge about the ways dealing with border and government officials in their home country which improves their capacity to facilitate trade (Dunlevy, 2006; White and Bedassa, 2008).

[1] So far we know only four studies: Murat and Pistorese (2009) for Italy and Tai (2009) for Switzerland find that the pro-trade effect of emigrants is bigger than the one of immigrants. Ehrlich and Bacarreza (2007) find the opposite in the case of Bolivia. Hatzigeogiou (2010) cannot reject that the pro-trade effect of immigrant and emigrants is the same for a sample of 75 countries.

Migrants may have a strong preference for products from their origin country. Rauch (2001) noted that the export elasticity reflects a network effect while the import elasticity also includes a demand effect. The effect of immigrants on imports should therefore be stronger than on exports. For a sample of OECD countries, Felbermayr and Toubal (2009) identify the preference channel by assuming symmetric trust and information effects across imports and exports, while assuming a preference effect only for imports. They conclude that the preference effect of migration on bilateral trade among OECD countries is relatively small. We adopt an alternative strategy. When we examine the impact of immigrants and emigrants on bilateral exports, the transaction cost channel acts for both Diasporas but the preference channel only occurs among emigrants, that is, persons born in the exporting country and living in the importing country. Therefore the magnitude of the preference channel can be directly measured as the difference between coefficients on immigration and emigration.

H2: There is a preference channel if the impact of emigration on bilateral exports is greater than that of immigration.

Third, the vast majority of empirical research has used data on a single host developed country or group of host developed countries (i.e. OECD countries) and their trading partners.[2] The reason is that immigration statistics are collected by the host country and developed countries tend to concentrate a large proportion of world migrant population. Thus little has been analyzed on the migration-trade link using data from developing countries.[3]

We split countries into two subsets, "North" countries and "South" countries, based on the level of income per capita in year 2000. A country is defined as "North" if its GDP per capita is above percentile 80 in 2000. If information about dissimilar economies is more valuable, and the level of development is correlated with the level of cultural similarity, we expect the migration-trade links to be weaker for North-North trading relationships compared to the other combinations of trading.

[2] A partial list of these studies includes Gould (1994) for the United States, Head and Ries (1998) for Canada, Girma and Yu (2002) for the United Kingdom, Rauch and Trindade (2002) for the Chinese communities worldwide, and Wagner, Head and Ries (2002), Saavedra and Herander (2005), Dunlevy (2006), Bandyopadhyay et al. (2008), Briant et al (2009) and Peri and Requena (2010) for the international trade of the regions of a single country (Canada, US, France and Spain).

[3] So far we know only two studies: Kerayil (2007) for India and Ehrlich and Bacarreza (2007) for Bolivia.

H3: The migration-trade link should be stronger between trading partners with large income per capita differences (as a proxy for cultural differences).

Finally we test whether there is an ordering of magnitude of the pro-trade effect of migrants when we consider differentiated goods and homogenous goods. Missing information about available products and tastes has as a result the need to search for the right differentiated products, which increases trade costs and reduces trade. By providing specific knowledge about products´ supply and demand in origin and destination countries, migrants can lower the information frictions. Rauch and Trindade (2002) identified the so-called information channel by showing that the pro-trade effect of immigrants on differentiated products was statistically bigger than on homogenous products. However recent studies by Felbermayr, Jung and Toubal (2009), Peri and Requena (2010), Hatzigeorgiou (2010) and Vézina (2010) do not find a clear size ranking of networks coefficients across these two types of goods.

H4: The migration-trade link should be stronger for differentiated products than for homogenous products.

3. EMPIRICAL MODEL

Recent theories of international trade (Anderson and Van Wincoop 2001, 2003; Melitz 2003; Chaney 2008) provide the theoretical underpinnings to the analysis of trade flows in the context of a gravity equation. The basic equation says that bilateral exports depend positively on the market size of the exporting reporter and importing partner and negatively on the bilateral transports costs. In particular, bilateral transport costs between trading partners are captured by a number of observable characteristics such as physical distance, geographical factors (access to the sea, to be an island, to share a common frontier that is their contiguity) and institutional or socio-cultural barriers (language, religion, colonial relationships or trade agreements among countries). Finally, bilateral trade does not depend only on the trade costs between the two trading partners but on the entire distribution of trade costs between the two trading partners and all other countries of the world. In order to deal with the so-called multilateral resistance terms, we follow Feenstra

(2004) who argues that the use of country of origin and country of destination fixed effects in a regression model serves to control adequately for the multilateral resistance terms.

We augment the basic gravity equation by incorporating two additional variables: IMM, the stock of immigrants in the exporting reporter (country i) coming from the importing partner (country j) and EMI, the stock of emigrants from the exporting reporter (country i) living in the importing partner (country j). Both IMM and EMI should facilitate traders on their search of information or trust on new trading opportunities as well as on the reduction of fixed costs related to trading transactions (the transaction cost/network/ information channel). In addition EMI also can generate an export-enhancing effect on the exporting reporter due to the preference for products from their countries of origin (preference channel).

Under these assumptions, we can estimate the following model:

$$lnX_{ij} = \alpha_1 lnIMM_{ij} + \alpha_2 lnEMI_{ij} + \alpha_3 NID_{ij} + \alpha_4 NED_{ij} +$$

$$\alpha_5 lnDIST_{ij} + \alpha_6 CONTIG_{ij} + \alpha_7 LANDLOCK_{ij} + \alpha_8 ISLAND_{ij} + \alpha_9 LANGUAJE_{ij} +$$

$$\alpha_{10} COLONY_{ij} + \alpha_{11} COMEX\text{-}COL_{ij} + \alpha_{12} RTA_{ij} + \Pi_i + \Pi_j + u_{ij} \qquad (1)$$

Where IMM_{ij} in the number of immigrants from the importing country i living in the exporting country j; EMI_{ij} is the number of emigrants from the exporting country i living in the importing country j.[4] Since we use the log of the number of migrants (immigrants or emigrants), when the number of migrants is equal to zero the log is undefined. To prevent it, and following Wagner, Head, and Ries (2002), we introduce two dummy variables called NID_{ij} and NED_{ij}, that take a value of one when there are no immigrants and no emigrants, respectively, between country i and j, and zero otherwise. We set our log of emigrants and our log of immigrant variables equals to zero when there are no migrants and the log of the number of migrants otherwise. The dummy variables NID_{ij} and NED_{ij} capture the change in exports that occurs when the reporter country i has exactly one migrant rather than none. It is expected the two variables to have a negligible impact on trade. The rest of variables are standard in the literature. $DIST_{ij}$ is the geodesic distance between

[4] Note that to reduce simultaneity bias we use data on emigrants and immigrants and emigrants for year 2000 while bilateral exports refer to year 2005.

the capitals of country i and country j; $CONTIG_{ij}$ is a common border dummy variable; $LANDLOCK_{ij}$ and $ISLAND_{ij}$ are geographical dummies; $LANGUAJE_{ij}$ is the common language dummy variable; $COLONY_{ij}$ and $COMEX\text{-}COL_{ij}$ are dummy variables indicating whether one of the countries was a colony and the other the colonizer or if they shared a common (ex-)colonizer; and RTA_{ij} is a regional trade agreement dummy variable. The Appendix provides a detail description of the data sources and variables construction.

Helpman, Melitz and Rubinstein (2008), henceforth HMR, highlight two bias in the estimation of a standard gravity equation such as (1). The first bias is due to the omission of the proportion of exporting firms from country i to j. Since this variable is determined as a combination of the explanatory variables in the gravity equation, its omission implies that the coefficients of trade barriers cannot be interpreted as the elasticity of a firm's trade with respect to the trade barrier, as is generally interpreted. Instead, that estimated coefficient confounds the effect of one trade barrier on firm-level trade with its effect on the proportion of exporting firms, which induces and upwards bias in the estimated coefficient. The second bias is introduced in the equation when its logarithmic specification excludes the country pairs with zero trade flows. That selection introduces a positive correlation between unobserved trade frictions (u_{ij}) and observed trade barriers, inducing a downward bias in the estimation of the trade barriers coefficients. Under these considerations, they propose a two step estimation procedure to correct both the firm-selection and the zero-trade-flows selection bias obtaining consistent estimates of the parameters of the gravity equation. The first stage consists on a Probit estimation of the probability that country i exports to country j as a function of the observable explanatory variables. Predicted components of this equation - the Mills ratio, $\hat{\eta}_{ij}$, in line with Heckman (1979) correction for sample selection, and the latent variable estimate $\hat{z}^*_{ij}$ - are used in the second step of the HMR's procedure. [5] The obtained consistent estimates are interpreted as the marginal effects of trade barriers between countries on their exports from one to the other.

[5] z^*_{ij} is interpreted as the ratio of variable export profits for the most productive firm to the fixed exports costs for exports from i to j. z^*_{ij} >0 when country i exports to j and z^*_{ij} =0 when it does not.

We therefore will estimate equation (1) by using the HMR's two step procedure. In the first step we estimate a Probit model where the decision of exporting depends on the right hand side explanatory variables in (1) plus one extra explanatory variable that solves the identification problem between the selection equation (Probit equation) and the main gravity equation. Again, following HMR we use RELIGION as identification variable.[6] The second step implies the non-linear estimation of the following transformation:

$$lnX_{ij} = \alpha_1 lnIMM_{ij} + \alpha_2 lnEMI_{ij} + \alpha_3 NID_{ij} + \alpha_4 NED_{ij} + \alpha_5 lnDIST_{ij} + \alpha_6 CONTIG_{ij} +$$

$$+ \alpha_7 LANDLOCK_{ij} + \alpha_8 ISLAND_{ij} + \alpha_9 LANGUAJE_{ij} + \alpha_{10} COLONY_{ij} +$$

$$+ \alpha_{11} COMEX\text{-}COL_{ij} + \alpha_{12} RTA_{ij} + \Pi_i + \Pi_j + \ln\{\exp[\delta(\hat{z}^*_{ij} + \hat{\eta}_{ij})]\text{-}1\} + \beta_{u\eta}\, \hat{\eta}_{ij} + e_{ij} \quad (2)$$

where e_{ij} is an i.i.d. normally distributed error term, and independent of the decision of exporting. See Heckman et al (2008) for further details.

4. RESULTS

The main estimation results are presented in Table 1. We start estimating equation (1) by OLS (column 1) and POISSON (column 2). The adjusted R^2 is 0.75 and the pseudo- R^2 is 0.96, suggesting a good goodness-of-fit. The coefficients on IMM and EMI are positive and statistically significant, and we cannot reject that the two coefficients are the same. Thus, both Diasporas are important determinants of bilateral exports (*Hypothesis 1*).

Next we perform the HMR estimation method. As the HMR's theoretical model suggests, trade barriers that only affect fixed trade costs but not variable trade costs should be only used as explanatory variables in the Probit selection equation. Econometrically, this implies the necessity of including a restriction for identification in the second step of the HMR's procedure. Notice that the variable "religion" is not statistically significant in columns (1) and (2). Therefore we can use the variable "religion" as identification variable in the HMR approach (that is, the share a common religion affects the likelihood of bilateral trade but not the intensity of bilateral trade). The validation of the HMR approach comes from

[6] The variable RELIGION is defined as: (% Protestants in country *i* * % Protestants in country *j*) + (% Catholics in country *i* * % Catholics in country *j*) + (%Muslims in Country *i* * % Muslims in country *j*).

testing the joint significance of the non-linear coefficient for the firm selection term, *delta*, and the linear coefficient on the Mills ratio, *eta*, are positive and statistically significant, capturing the unmeasured heterogeneity bias when estimating the effect of trade barriers. We conclude that the HMR approach addresses adequately the problem of sample selection bias in our data.

The results for the Probit selection equation are reported in the column (3) of Table 1. All the variables exhibit the expected sign and they are statistically significant, except NID and NED. Geographical trade barriers affect negatively the probability of bilateral trade relationships among countries. The higher distance among countries, the absence of sea accessibility of country partners and their little island location reduce the probability of bilateral trade. Sharing a common border or language, past colonial links or trade agreement membership increases the probability of positive bilateral trade. Finally, both immigrants and emigrants affect positively the probability of exports and immigration exhibits a larger coefficient than emigrants and the difference is statistically significant.

Estimation results of our baseline model specification are shown in the column (4) of Table 1. The coefficients of emigrant and immigrants are again positive and significantly significant. The elasticity of immigration and emigrants on bilateral exports is 0.14 and 0.12, respectively, but alike the Probit selection equation, we cannot reject the null hypothesis of equality of those coefficients. Therefore both emigration and immigration have the same impact on bilateral exports. The rest of explanatory variables have the expected sign.

The transaction cost channel vs. the preference channel

We continue our analysis of the migration-trade link by examining the relative importance of the transaction cost channel and the preference channel. While emigrants affect exports through the both the transaction cost channel and the preference channel, immigrants affect exports only through the transaction cost channel. Provided that we cannot reject the null of equality of coefficients on immigrants and emigrants, then the effect of the preferences channel to promote trade is negligible (*Hypothesis 2*). This is confirmed in all our estimations with different number of trading partners: the test of equality of IMM and EMI coefficients cannot be rejected in the full 118x178 matrix countries (column 4, p-value=0.30), a symmetric matrix of 118x118 countries (column 5, p-value=0.60) and a symmetric matrix of 102x102 selected countries (column 6, p-value = 0.44).

The role of differences in income per capita across trading partners

We next explore the role of economic development of the trading partner in the migration –trade link. Our exports to migration elasticity estimates, between 0.12 and 0.14, are around the estimates reviewed in the literature- estimated elasticities of exports to migrants that run from the 0.08 from Dunlevy and Hutchinson (1999), the 0.10 of Head and Ries (1998) and Peri and Requena (2010), and the 0.16 of Girma and Yu (2002) among others. Despite we obtain a slightly higher coefficient for emigrants than for immigrants, the difference between the two coefficients is not significant. Then our main finding remains: both emigration and immigration are equally relevant to promote exports indicating the dominance of the information network effect and the little relevance of the preferences channel. However this result should not be surprising. Exports from developed countries are internationally oriented and their inhabitant tastes have been internationalised too, then preference channel -understood as an “ethnic” or ”cultural” component of the foreign demand of the country- should have little relevance on exports from developed countries, while it should have more relevance in the less developed economies’ exports. The idea is that the preference channel in particular, and the network effects in general should be larger the more dissimilar the trade partners are (Dunlevy, 2006; Girma and Yu, 2002). The underlying presumption is that dissimilarity adds to the informal barriers to trade, and hence to the value of the information provided by migrant networks. Hence the origin of migrants and its host country is a relevant question in terms of determining the effect of networks on bilateral trade.

To this aim, we split the sample of trading countries into two subsets, "North" countries (GDP per capita is above percentile 80 in 2000) and "South" countries

(GDP per capita is below percentile 80 in 2000).[7] If information about dissimilar economies is more valuable, the impact of migrant links on bilateral trade should be lower for trade partners belonging to the "North" group of countries compared to the other combinations of trading partners (North-South, South-North or South-South trading relations).

Table 2 presents the results for the 118 reporter countries and 178 partner countries. We first examine the most frequent migration-trade link, the one that explores the impact of immigrants from developing countries living in a developed country (exports from North to South). The results are displayed in the first column of Table 2. The estimation results are in line with those obtained by previous studies, the coefficient on emigrants is larger than the one on immigrants and the difference is statistically significant. If we assume the symmetry of the reduction of transaction costs in both trading partners we can evaluate the relevance of the preference channel as the difference between the impact of emigration on exports and the impact of immigration on exports. In this case, the pro-trade effect of migration is attributed to transaction cost channel represents 60% of the pro-trade effect of migrants while the preferences channel is about 40%.

In the columns 2, 3 and 4, the coefficients on immigrants are greater than those on emigrants but the difference is not statistically significant. Thus the preference channel is not playing any role in promoting exports from South countries to other South or North countries as well from North countries to other North countries.

Homogeneous vs. differentiated products: the information channel

The last part of the study explores the migration-trade link when countries exchange either differentiated goods or homogenous goods. Migration networks reduce the information, communication, transaction and contracting costs between locations by providing channels of knowledge diffusion, and enforcement mechanisms. If information about the idiosyncratic characteristics of the markets is a key factor for migration to have a positive impact on exports, the pro-trade effect of migration should be greater for goods with lower substitutability (more differentiated) because these goods are more complex and price is not enough

[7] The correlation between the GDP per capita in year 2000 and the corruption perception index published by Transparency International in year 2010 is 0.779 for our sample of 178 countries.

marketing variable. This uneven effect of migrants on differentiated and homogeneous goods was addressed by Rauch and Trindade (2002), which used trade data for different types of goods (homogenous goods, reference price goods, and differentiated goods). They found that migrant networks have a larger trade-enhancing effect for differentiated goods. We follow a similar approach but split exports into differentiated products and homogenous products using the classification proposed by Broda and Weinstein (2006) to characterize the degree of differentiability of products according to the elasticity of substitution of US imports over the period 1971-2001: goods with an elasticity below 2 are classified as highly differentiated products and the rest of goods are classified as homogenous (more precisely, less differentiated) products.

Table 3 column 1 shows the elasticity of exports with respect to emigrants and immigrants by type of goods traded. The immigration elasticity is 0.189 and the emigration elasticity is 0.162, magnitudes that are slightly greater than those obtained for all goods (0.144 and 0.125 in Table 1, column 4) and for homogenous goods (0.162 and 0.159 in Table 3, panel B). However we cannot reject that the coefficients are the same by type of good or by type of migrant, so we find little support for the importance of the information channel in the migration-trade link when we analyse all countries together.

We analyse exports of differentiated goods, the reduction of transaction costs plays a key role in all the bilateral trade relationships considered, and only the preferences channel enhance exports in the North-South cross country. The same occurs when considering trade in less differentiated goods. The results are the same when we repeat the analysis with a symmetric sample of 102*102 OECD-Non-OECD trading partners in Table 5. We conclude that the information channel cannot be identified in our data and that only we can separate the preference channel and the transaction cost channel based on the level of development of the trading partners: in the North-South trade the preference channel is important; for the rest of cross-country analyses the information channel is negligible.

CONCLUSIONS

This paper has addressed the empirical question on the relationship between immigration, emigration and trade in a thorough cross country framework that includes North-South trade (the most frequently analysed in past studies), North-North, South-North and South-South in year 2005.

Using an augmented gravity equation that includes the stock of immigrants and emigrants as additional explanatory variables we find that both Diasporas have a positive impact on bilateral exports. In addition the migrants seems to have a major impact through the transaction cost channel, while the preference channel only appears to be relevant in exports from developed countries to developing countries. Finally, based on the fact that there are no differences in the impact of migrants on exports between homogenous and differentiated goods we find no support in favour of the information channel.

APPENDIX. VARIABLES, DATA AND SOURCES.

We merge two databases to study the world trade-migration link. Information about bilateral migration stocks comes from World Bank bilateral migration stock matrix which is available for 226 countries and territories around year 2000. Bilateral trade flows come from COMTRADE for year 2005. Using export flows we have information on bilateral trade flows for 118 reporting countries and 178 partner countries (Appendix A1 lists the 178 countries).

Notice that we have a 118x118 symmetric matrix when we restrict the sample to reporting countries only. Moreover the sample is reduced to 102x102 when we remove non-OECD countries with income per capita above percentile 80 in year 2000 (ANT, ARE, BHS, BMU, TWN) and countries whose GDP per capita is below percentile 20 in year 2000 (BDI, CAF, GHA, GMB, MDG, MOZ, MWI, NER, STP, TGO, UGA).

The variable Distance between countries is calculated using the great circle distance formula (expressed in kilometres) between the capitals of both country partners. Contiguity is a dummy variable that takes value of 1 if trade partner countries share a common border. Landlock is a dummy variable that takes value of 1 when one of partner countries doesn't have sea accessibility. Island is a dummy variable that takes value of 1 if one of the countries is a small island (smaller area than 5130 km2). Colony is a dummy variable that takes value of 1 when the countries have ever had colonial ties. ComCol is a dummy variable that takes value of 1 when both partner countries have been colonies of the same country after 1945. RTA is a dummy variable that takes value of 1 if the trade partners have either a bilateral or a multilateral trade agreement. Common language is a dummy variable that takes value of 1 if the trade partners have the same official language.

Variables "distance", "contiguity", "historical colonial links", "common official language" are obtained from CEPII database, variables "landlocked" and "island" are obtained from CIA's World Factbook; variable "Regional Trade Agreements" (RTA) data come from www.PTAS.mcgill.ca. GDP per capita in year 2000 is obtained from World Bank's World development indicators.

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Table 1. Baseline estimations of the world bilateral trade flows. OLS, Poisson and Two step HMR's estimation procedures.

	OLS 118 exporters 178 importers	Poisson 118 exporters 178 importers	Probit Selection	HMR 118 exporters 178 importers	HMR 118 exporters 118 importers	HMR 102 exporters 102 importers
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
immigrants	0.173***	0.097***	0.0919***	0.144***	0.130***	0.127***
	[0.0216]	[0.0160]	[0.0134]	[0.0116]	[0.0137]	[0.0154]
emigrants	0.130***	0.079***	0.0527***	0.125***	0.145***	0.140***
	[0.0237]	[0.0151]	[0.0147]	[0.0127]	[0.0142]	[0.0159]
NID	-0.719***	0.781***	-0.0300	0.0770	0.146	0.0892
	[0.105]	[0.175]	[0.0488]	[0.0738]	[0.0934]	[0.118]
NED	-0.770***	0.302	-0.0355	0.0624	0.0826	-0.00483
	[0.110]	[0.189]	[0.0501]	[0.0821]	[0.105]	[0.124]
distance	-2.297***	-0.533***	-0.862***	-1.139***	-1.007***	-1.052***
	[0.0592]	[0.0311]	[0.0386]	[0.0357]	[0.0408]	[0.0439]
contiguity	-0.894***	0.459***	-1.104***	0.238*	0.210	0.172
	[0.275]	[0.062]	[0.262]	[0.126]	[0.136]	[0.140]
landlocked	-1.031***	0.069	-0.437***	-0.760***	-0.587***	-0.473**
	[0.197]	[0.147]	[0.0865]	[0.135]	[0.174]	[0.207]
island	-0.772*	-0.562**	-0.395*	-0.229	-0.246	-0.328
	[0.452]	[0.259]	[0.222]	[0.305]	[0.313]	[0.580]
language	1.287***	0.089	0.489***	0.177***	0.154**	0.135
	[0.104]	[0.061]	[0.0625]	[0.0611]	[0.0743]	[0.0845]
colony link	0.393*	-0.005	-0.988**	0.682***	0.615***	0.522***
	[0.233]	[0.097]	[0.410]	[0.107]	[0.122]	[0.119]
common ex-colonizer	1.431***	0.430**	0.417***	0.740***	0.709***	1.299***
	[0.132]	[0.205]	[0.0630]	[0.0852]	[0.115]	[0.163]
rta	0.301***	0.483***	0.483***	0.242***	0.242***	0.216***
	[0.107]	[0.064]	[0.0888]	[0.0595]	[0.0658]	[0.0711]
religion	0.242	-0.067	0.223***			
	[0.181]	[0.099]	[0.0717]			
eta				0.601***	-0.0196	-0.0734
				[0.0834]	[0.103]	[0.134]
delta				0.233***	0.205***	0.176***
				[0.0341]	[0.0394]	[0.0441]
constant	20.62***	15.67***	5.682***	17.21***	16.68***	17.28***
	[0.659]	[0.846]	[0.402]	[0.519]	[0.577]	[0.629]
P-value [imm] = [emi]	[0.23]	[0.49]	[0.05]	[0.30]	[0.60]	[0.44]
FE origin + destination	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R squared	0.754					
Pseudo R squared		0.966				
Observations	21182	21182	19046	14607	9774	7412

Note: The standard errors in brackets are heteroskedasticity-robust and clustered by trading country pairs. Asterisks mean *** p<0.01, ** p<0.05, * p<0.1. P-value corresponding to the test for the null hypothesis of equality of immigrant and emigrant coefficients. All regressions include exporting country (origin) dummies and importing country (destination) dummies.

Table 2. Classification of countries according to income per capita (North countries=GDPpc>80pct in 2000; South countries=GDP<80pct)

Model (4) in Table 1 (118 reporters, 178 partners)					
Reporter	All (118)	North (28)	North (28)	South (90)	South (90)
Partner	All (178)	South (140)	North (38)	North (38)	South (140)
Immigrant coefficient	0.144***	0.0777***	0.135***	0.130***	0.167***
	[0.0116]	[0.0143]	[0.0196]	[0.0214]	[0.0144]
Emigrant coefficient	0.125***	0.169***	0.0607***	0.0758***	0.131***
	[0.0127]	[0.0168]	[0.0233]	[0.0212]	[0.0143]
Test of equality coefficient Immigration = Emigration					
[p-value]	[0.30]	[0.00]	[0.05]	[0.15]	[0.11]

Note: In parentheses the number of countries in each group of reporters and partners. Estimation of model (4) in Table 1. The rest of explanatory variables are omitted.

Table 3. Differentiated vs Homogenous goods. North vs. South countries (North countries=GDPpc>80pct in 2000; South countries=GDP<80pct)

Differentiated goods (sigma <2)					
Reporter	All (118)	North (28)	North (28)	South (90)	South (90)
Partner	All (178)	South (140)	North (38)	North (38)	South (140)
Immigrant coefficient	0.189***	0.0958***	0.137***	0.123***	0.162***
	[0.0166]	[0.0155]	[0.0225]	[0.0240]	[0.0299]
Emigrant coefficient	0.162***	0.166***	0.0157	0.0663**	0.162***
	[0.0182]	[0.0182]	[0.0261]	[0.0232]	[0.0161]
Test of equality coefficient Immigration = Emigration					
[p-value]	[0.44]	[0.01]	[0.00]	[0.12]	[0.68]

Homogenous (sigma >=2)					
Reporter	All (118)	North (28)	North (28)	South (90)	South (90)
Partner	All (178)	South (140)	North (38)	North (38)	South (140)
Immigrant coefficient	0.162***	0.0761***	0.163***	0.167***	0.183***
	[0.0243]	[0.0219]	[0.0264]	[0.0339]	[0.0229]
Emigrant coefficient	0.159***	0.181***	0.0935***	0.108***	0.146***
	[0.0255]	[0.0266]	[0.0137]	[0.0322]	[0.0229]
Test of equality coefficient Immigration = Emigration					
[p-value]	[0.40]	[0.01]	[0.15]	[0.31]	[0.32]

Note: Differentiated goods are those goods with elasticity of substitution below 2 (based on Broda and Weinstein (2006) HS6 classification).

Table 4. Classification of countries (OECD vs non-OECD countries. Symmetric matrix 102*102 trading partners.

All goods. Model (6) in Table 1					
Reporter	All (102)	OECD (22)	OECD (22)	No-OECD (80)	No-OECD (80)
Partner	All (102)	No-OECD (80)	OECD (22)	OECD (22)	No-OECD (80)
Immigrant coefficient	0.127***	0.0439**	0.100***	0.0725***	0.132***
	[0.0154]	[0.0194]	[0.0340]	[0.0263]	[0.0168]
Emigrant coefficient	0.140***	0.200***	0.0112**	0.111***	0.116***
	[0.0159]	[0.0191]	[0.0383]	[0.0282	[0.0164]
Test of equality coefficient Immigration = Emigration					
[p-value]	[0.42]	[0.00]	[0.85]	[0.41]	[0.52]

Note: Non-OECD countries excludes countries with GP

Table 5. Differentiated vs. Homogenous goods. OECD vs Non-OECD countries. Symmetric matrix 102*102 trading partners.

Differentiated goods (sigma <2)					
Reporter	All (102)	OECD (22)	OECD (22)	No-OECD (80)	No-OECD (80)
Partner	All (102)	No-OECD (80)	OECD (22)	OECD (22)	No-OECD (80)
Immigrant coefficient	0.138***	0.0711***	0.150***	0.0846***	0.146***
	[0.0156]	[0.0209]	[0.0425]	[0.0309]	[0.0196]
Emigrant coefficient	0.137***	0.202***	0.0144	0.0947***	0.152***
	[0.0160]	[0.0215]	[0.0467]	[0.0323]	[0.0186]
Test of equality coefficient Immigration = Emigration					
[p-value]	[0.91]	[0.00]	[0.10]	[0.85]	[0.83]

Homogenous goods (sigma >=2)					
Reporter	All (102)	OECD (22)	OECD (22)	No-OECD (80)	No-OECD (80)
Partner	All (102)	No-OECD (80)	OECD (22)	OECD (22)	No-OECD (80)
Immigrant coefficient	0.143***	0.0745**	0.137***	0.0818**	0.145***
	[0.0291]	[0.0302]	[0.0462]	[0.0371]	[0.0261]
Emigrant coefficient	0.152***	0.200***	0.182***	0.155***	0.0924***
	[0.0299]	[0.0289]	[0.0492]	[0.0423]	[0.0260]
Test of equality coefficient Immigration = Emigration					
[p-value]	[0.85]	[0.01]	[0.59]	[0.29]	[0.21]

Note: Estimation of model (6) in Table 1. The rest of explanatory variables are omitted. Differentiated goods are those goods with elasticity of substitution below 2 (based on Broda and Weinstein (2006) HS6 classification).

Appendix.

Table A.1 List of countries included in the sample.

"Rich" countries (GPD pc > 80 pct in year 2000)	OECD members (reporter country)	AUS, AUT, BEL, CAN, CHE, DEU, DNK, ESP, FIN, FRA, GBR, GRC, IRL, ITA, JPN, KOR,NLD, NOR, NZL, PRT, SWE, USA
	No-OECD members (reporter country)	ANT, ARE, BHS, BMU, TWN
	No-OECD members (no reporter country)	BHR, BRB, CYP, HKG, ISL, ISR, KWT, MAC, NCL, QAT, SGP, SVN
"Poor" countries (GDPpc <80 pct in year 2000)	GDPpc >20 percentile in year 2000) & >20 pct in year 2000 (reporter country)	ALB, ARG, ARM, ATG, AZE, BEN, BGR, BIH, BLR, BOL, BRA, CHL, CHN, CIV, CMR, COL, CPV, CRI, CZE, DMA, ECU, EGY, EST, FJI, GAB, GEO, GUY, HND, HRV, HUN, IDN, JAM, JOR, KAZ, KGZ, KNA, LCA, LTU, LVA, MAR, MDA, MDV, MEX, MKD, MLT, MNG, MUS, MYS, NAM, NIC, OMN, PAN, PER, PHL, PNG, POL, PRY, ROM, RUS, SAU, SDN, SEN, SVK, THA, TTO, TUN, TUR, TZA, UKR, URY, VCT, VEN, YEM, ZAF, ZMB
	GDPpc <20 pct in year 2000 (reporter country)	BDI, CAF, GHA, GMB, MDG, MOZ, MWI, NER, STP, TGO, UGA
	GDPpc between [20, 80] pct in year 2000 (no reporter country)	AGO, BFA, BGD, BTN, BWA, COG, COM, DJI, DOM, DZA, ERI, GIN, GNB, GNQ, GRD, GTM, HTI, IND,IRN, KEN, KHM, KIR, LAO, LBN, LBR, LBY, LKA, LSO, MMR, MRT, NGA, NPL,PAK, SLB, SLE, SLV, SOM, SUR , SWZ, SYC, SYR, TCD, TJK, TKM, TON, UZB, VNM,VUT, YUG, ZAR, ZWE
	GDPpc <20 pct in year 2000 (no reporter country)	ETH, MLI, RWA

Table A2. List of Countries in the Sample (178 countries).

AGO	Angola	DZA	Algeria	LAO	Laos	RUS	Russia
ALB	Albania	ECU	Ecuador	LBN	Lebanon	RWA	Rwanda
ANT	Antillas Holandesas	EGY	Egypt, Arab Rep.	LBR	Liberia	SAU	Saudi Arabia
ARE	United Arab Emirates	ERI	Eritrea	LBY	Libya	SDN	Sudan
ARG	Argentina	ESP	Spain	LCA	Saint Lucia	SEN	Senegal
ARM	Armenia	EST	Estonia	LKA	Sri Lanka	SGP	Singapore
ATG	Australia	ETH	Ethiopia	LSO	Lesotho	SLB	Solomon Islands
AUS	Austria	FIN	Finland	LTU	Lithuania	SLE	Sierra Leone
AUT	Azerbaijan	FJI	Fiji	LVA	Latvia	SLV	El Salvador
AZE	Azerbaijan	FRA	France	MAC	Macao	SOM	Somalia
BDI	Burundi	GAB	Gabon	MAR	Morocco	STP	Sao Tome
BEL	Belgium	GBR	United Kingdom	MDA	Moldova	SUR	Suriname
BEN	Benin	GEO	Georgia	MDG	Madagascar	SVK	Slovakia
BFA	Burkina Faso	GHA	Ghana	MDV	Maldives	SVN	Slovenia
BGD	Bangladesh	GIN	Guinea	MEX	Mexico	SWE	Sweden
BGR	Bulgaria	GMB	Gambia	MKD	Macedonia	SWZ	Swaziland
BHR	Bahrain	GNB	Guinea-Bissau	MLI	Mali	SYC	Seychelles
BHS	Bahamas	GNQ	Equatorial Guinea	MLT	Malta	SYR	Syrian Arab Republic
BIH	Bosnia and Herzegovina	GRC	Greece	MMR	Myanmar	TCD	Chad
BLR	Belarus	GRD	Granada	MNG	Mongolia	TGO	Togo
BMU	Bermuda	GTM	Guatemala	MOZ	Mozambique	THA	Thailand
BOL	Bolivia	GUY	Guyana	MRT	Mauritania	TJK	Tajikistan
BRA	Brazil	HKG	Hong Kong, China	MUS	Mauritius	TKM	Turkmenistan
BRB	Barbados	HND	Honduras	MWI	Malawi	TON	Tonga
BTN	Bhutan	HRV	Croatia	MYS	Malaysia	TTO	Trinidad and Tobago
BWA	Botswana	HTI	Haiti	NAM	Namibia	TUN	Tunisia
CAF	Central African Republic	HUN	Hungary	NCL	New Caledonia	TUR	Turkey
CAN	Canada	IDN	Indonesia	NER	Niger	TWN	Taiwan
CHE	Switzerland	IND	India	NGA	Nigeria	TZA	Tanzania
CHL	Chile	IRL	Ireland	NIC	Nicaragua	UGA	Uganda
CHN	China	IRN	Iran, Islamic Rep.	NLD	Netherlands	UKR	Ukraine
CIV	Cote d'Ivoire	ISL	Iceland	NOR	Norway	URY	Uruguay
CMR	Cameroon	ISR	Israel/Palestine	NPL	Nepal	USA	United States
COG	Congo, Rep.	ITA	Italy	NZL	New Zealand	UZB	Uzbekistan
COL	Colombia	JAM	Jamaica	OMN	Oman	VCT	Saint Vincent
COM	Comoros	JOR	Jordan	PAK	Pakistan	VEN	Venezuela
CPV	Cape Verde	JPN	Japan	PAN	Panama	VNM	Vietnam
CRI	Costa Rica	KAZ	Kazakhstan	PER	Peru	VUT	Vanautu
CYP	Cyprus	KEN	Kenya	PHL	Philippines	YEM	Yemen
CZE	Czech Republic	KGZ	Kyrgyzstan	PNG	Papua New Guinea	YUG	Serbia and Montenegro
DEU	Germany	KHM	Cambodia	POL	Poland	ZAF	South Africa
DJI	Djibouti	KIR	Kiribati	PRT	Portugal	ZAR	Congo, Dem. Rep.
DMA	Dominica	KNA	Saint Kids Nevis	PRY	Paraguay	ZMB	Zambia
DNK	Denmark	KOR	Korea, Rep. (South)	QAT	Qatar	ZWE	Zimbabwe
DOM	Dominican Republic	KWT	Kuwait	ROM	Romania		