Economics

Faculty Publications & Research

3-2011

Emigrant Effects on Bilateral Trade: Reexamining the Immigrant-Trade Link from the Home Country Perspective

Roger White
Franklin & Marshall College, rwhite1@whittier.edu

Bedassa Tadesse
University of Minnesota - Duluth, btadesse@d.umn.edu

Emigrant Effects on Trade: Re-examining the Immigrant-trade Link from the Home Country Perspective

Bedassa Tadesse[a] and Roger White[b]

[a]University of Minnesota — Duluth, Duluth, MN 55812, USA.
E-mail: btadesse@d.umn.edu
[b]Franklin and Marshall College, Lancaster, PA 17603, USA.
E-mail: roger.white@fandm.edu

A voluminous literature examines the immigrant-trade link. Available studies evaluate the link largely from the host country perspective and generally indicate that immigrants exert positive influences on trade between their host and home countries. Few studies, however, explore the effects of emigrants on trade. Using data representing the stocks of emigrants from 131 home countries that resided in 110 host countries during the year 2005, we examine the immigrant/emigrant-trade link from both the home country perspective and the host country perspective. Doing so, we provide the first comprehensive estimates of pro-trade emigrant effects for each home country in our study.
Eastern Economic Journal (2011) **37**, 281–302. doi:10.1057/eej.2010.47

INTRODUCTION

The objective of this study is to re-examine the effects of immigrants on trade from the perspectives of their home countries. Beginning with the seminal work of Gould [1994], a large literature examining the effects of immigrants on trade flows has emerged.[1] An empirical regularity established by these studies is that immigrants indeed affect trade flows between their host and home countries through direct and indirect channels. White [2007a] and Dunlevy and Hutchinson [1999], for example, indicate that through their preferences for goods from their home countries immigrants directly increase their host countries' imports from their respective home countries, particularly if acceptable substitutes are unavailable in host country markets. Likewise, Tadesse and White [2008] and Rauch and Trindade [2002], respectively, indicate that by bridging cultural differences and by matching exporters with importers, and/or informally enforcing contracts, immigrants facilitate the initiation and completion of trade deals. Bryant et al. [2004], Girma and Yu [2002] and Gould [1994] similarly conclude that because of their knowledge of the languages spoken in both their home and host countries and their understanding of business practices in both countries, immigrants remedy communication gaps and/or reduce search costs; thus, directly contributing to increased trade flows between their host and home countries.

Immigrants may also indirectly affect their host country's imports if their consumption of home country-produced goods influences the preferences of native-born residents or those of immigrants from other countries who reside in the host country such that they too consume home country goods. Through remittances and direct investment flows to their home countries, they may also enable home country residents to consume and/or produce at higher levels than would otherwise be

possible; thus, indirectly affecting the home country's trade with the host country or other countries [Gupta et al., 2007; Murat and Pistoresi, 2009b]. Finally, immigrants may also influence trade, generally, since migration has a positive impact on global income levels which, in turn, increases the aggregate demand for tradable goods and services [Lewer and Van den Berg, 2009].

These observations on the direct and indirect impacts of immigrants on trade emerge from two types of studies: (a) those that examine the link from the perspectives' of the home countries, and (b) those that examine the link from the perspectives' of the host countries. A significant proportion of the available studies, however, are of the latter type. Typically employing immigration data for a single host country, these studies estimate the impact of the size of immigrant populations on bilateral trade flows between the host country and home countries of the various immigrant groups. On the other hand, only a small number of studies [Ehrlich and Bacarreza, 2006; Murat and Pistoresi, 2009a] undertake similar exercise from the standpoint of a home country — that is, how the size of a home country's emigrant flows to multiple host countries impacts the volume of trade between the home and hosts.

Although the findings from host country-oriented studies indicate that immigrants have significant positive effects on their host countries' trade with their home countries, the magnitudes of the observed effects of immigrants vary greatly across the host and home country cohorts examined. It is also questionable as to whether the positive effect of immigrants on their host country's trade is consistent across home countries. While one country's immigrant population is another's emigrant population (just as one country's imports are another country's exports), that a larger immigrant population within a host country generally encourages imports from the immigrants' home countries does not imply the existence of an equivalent effect in terms of greater emigrant flows from a particular home country encouraging exports from the home country to all host countries. There are several reasons why this is the case. First, as the source countries for an immigrant population in a given host may differ, the destinations of an emigrant population from a given home could vary. Second, contrary to the extrapolations often made about the effect of emigrants on their home countries exports from the findings based on host country-oriented studies, immigrants may reduce their home country's exports to a given host if immigration from the home country increases the production of the home country's exportable goods in the host countries [Bryant et al., 2004]. Third, by increasing the relative prices of the home country's non-tradable goods and, in turn, reducing the production and exports of the home country's tradable goods, increased remittances from immigrants to a given home country may have a "Dutch-disease" effect on the country's exports to the world [World Bank, 2006].[2] Fourth, the extent to which immigrants (emigrants) affect trade flows may vary according to the anthropogenic make-up of the immigrant (emigrant) population. Head and Ries [1998] and White and Tadesse [2010], for example, report significant differences in the extents to which refugee and non-refugee immigrants affect their home countries' trade with Canada and the USA, respectively. Likewise, Epstein and Gang [2006] indicate that immigrants who are aware of developments that influence trade or who have persistent cultural/ethnic ties to their home countries play greater roles as trade facilitators, and the tendency of immigrants to maintain regular contacts with individuals in their home countries and the persistence of such ties may also differ across emigrant populations from different home countries. Finally, Rauch and Trindade [2002] find that immigrants of Chinese origin exert pro-trade influences on their host countries' trade with their home countries due to their strong ethnic (emigrant-to-emigrant)

networks that give them the power to enforce sanctions in the face of default on agreements. However, in the presence of well-functioning legal and institutional frameworks, the trade-facilitating role of emigrants' ethnic networks may not be as strong. In short, there is potential for heterogeneity in migrant-trade links to exist and such heterogeneity is less likely to be accounted for when the immigrant-trade relationship is examined solely from the perspectives of the host countries.

As a result, we expect the extent to which emigrants from different countries influence their respective home countries' trade to differ across home countries and across host countries. Given that many prior studies have examined the relationship from the host country perspective, our interest is in re-examining the effect of immigrants on trade from the perspectives' of their home countries. Our study makes important contributions to the literature. We determine whether the effects of emigrants on their respective home countries' trade coincide with the assessments often extrapolated from host country-oriented studies and, more generally, provide information that contributes to a better understanding of the avenues through which emigrants/immigrants influence trade flows between their home and host countries. To this end, using data that represent the stock of emigrants from 131 home countries that reside in 110 host countries (a number that is significantly larger than any previous study), we examine the immigrant-trade link from the perspectives of both the home country and the host country and provide comprehensive estimates of emigrants' effects on trade for each home country in our study.

Complementing the pro-trade effects of immigrants reported in previous studies, our results indicate that a 1 percent rise in the stock of immigrants increases the typical host country's exports to and imports from the typical home country by 0.15 and 0.17 percent, respectively. Estimating home country-specific emigrant-trade effects, however, reveals positive influences of emigrants on their home country's trade in 100 (for imports) and in 96 (for exports) of the 131 home countries included in our study. The magnitudes of the estimated effects also vary significantly across the individual home countries considered. Our results suggest that while projections of the pro-trade effects of emigrants from previous studies that have examined the link from the host country perspective are valid, the observed variation in the effects of emigrants on trade across their home countries suggests a need for further examination of what determines the ability of emigrants to influence their home country's trade.

The paper proceeds as follows. We next present the empirical specification, discuss the data and the explanatory variables included in the analysis and indicate our *a priori* expectations of the signs of respective coefficients. We then discuss the results obtained from our analysis and conclude.

THE EMPIRICAL MODEL, DATA AND ESTIMATION EQUATION

Following the immigrant-trade link literature, we employ a variant of the gravity model in which the volume of bilateral trade flows (exports or imports: TR_{ijt}) between an immigrant's home and host countries (i and j, respectively) during a given year t is presented as an increasing function of the countries' combined economic mass and as a decreasing function of the geodesic distance (GD) between the two countries. Equation (1) illustrates this theoretical model:

$$(1) \qquad TR_{ijt} = \kappa \frac{Y_{it}^{\alpha} Y_{jt}^{\beta}}{GD_{ijt}^{\lambda}}$$

Gross Domestic Product (GDP) values, denoted as Y_{it} and Y_{jt}, respectively, represent the economic masses of the home and host countries. Geodesic distance (GD_{ij}) between the capital cities of each home and host country pairing serves as a proxy for transportation costs. Trade data are from the International Trade Centre [2009], GDP data are from the World Bank [2008], geodesic distances are calculated using the great circle method, and κ is the constant of proportionality.

The gravity model presented as equation (1) predicts strictly positive realizations of imports and exports between the home and host country pairs. However, trade data often contain cases where values are equal to zero. Instead of reflecting a lack of trade between the country pairs, in some instances, such values simply result from the existing trade flows falling below the threshold level for which actual trade values are reported. Thus, following Eaton and Tamura [1994] and Head and Ries [1998], we modify equation (1) to permit the realization of zero trade values while also maintaining the gravity equation. Accordingly, augmenting the theoretical model with vectors that include continuous (X) and dichotomous (Z) trade-facilitating and/or inhibiting factors often discussed in the literature results in equation (2).[3]

$$(2) \qquad TR_{ijt} + \eta = \kappa \frac{Y_{it}^{\alpha} Y_{jt}^{\beta}}{GD_{ijt}^{\lambda}} X_{ijt}^{\gamma} \exp^{Z_{ij}^{\delta} - \eta}$$

Taking natural logarithms of the continuous variables and adding an assumed independently and identically distributed error term, ε_{ij}, yields equation (3), an empirical model that is consistent with previous studies that have examined the effect of immigrants on trade from the host country perspectives.[4]

$$\begin{aligned}
ln\ TR_{ij} = \ &\beta_0 + \beta_1\ ln\ IM_{ij} + \beta_2\ ln\ Y_i + \beta_3\ ln\ Y_j + \beta_4\ ln\ GD_{ij} \\
&+ \beta_5\ ln\ POP_i + \beta_6\ ln\ POP_j + \beta_7 \Delta\ ln\ EXR_{ij} \\
&+ \beta_8\ ln\ REM_i + \beta_9\ ln\ REM_j + \beta_{10} OPEN_i \\
&+ \beta_{11} OPEN_j + \beta_{12} RTA_{ij} + \beta_{13} LLOCK_i \\
&+ \beta_{14} LLOCK_j + \beta_{15} LANG_{ij} + \beta_{16} ADJT_{ij} + \varepsilon_{ij}
\end{aligned}$$

(3)

The explanatory variables in our empirical model include our variable of primary interest, IM_{ij}, which represents the stock of immigrants from home country i who reside in host country j. The source data for our migration series is Ratha and Shaw [2007] who update/augment the University of Sussex bilateral migration matrix to include multilateral migration values for 212 countries [Parsons et al., 2005].[5] Unfortunately, the updated/augmented matrix lacks bilateral immigration data for 43 countries. Because data for trade flows and some explanatory variables are unavailable for certain home and host countries, our final dataset is comprised of values representing 131 home countries and 110 host countries. Even so, in 2005, the countries for which we have complete data, collectively, account for more than 80 percent of the world's estimated 190.6 million international migrants.

Given that our model includes measures of the respective home and host countries' GDP, the variables POP_i and POP_j indicate home and host country population sizes, respectively, and represent the market sizes of the home and host countries [World Bank, 2008]. Calculated as $ln\ EXR_{ijt} - ln\ EXR_{ijt-1}$, the annual change in the home–host country exchange rate [$\Delta ln\ EXR_{ij}$] captures the effects of changes in the terms of trade [IMF, 2008]. Expressed as home country currency units per host country currency unit, an increase in this variable indicates a depreciation

of the home country's currency vis-à-vis the host country's currency and, thus, is expected to correspond with increased home country exports to the host country and decreased home country imports from the host country. To control for each home country's relative lack of external trading opportunities, we follow Wagner et al. [2002] and include measures of home and host country economic remoteness (REM_i and REM_j), given for country j as $1/\sum_{k=1}^{K}[(Y_{kt}/Y_{wt})/GD_{jk}]$ where Y_{wt} represents gross global product and k identifies potential trading partners for country j other than country i.[6] Lastly, following Head and Ries [1998], we capture the general propensity of each home and host country to trade ($OPEN_i$ and $OPEN_j$) by including the sum of each country's total imports and exports divided by its GDP. All values, where necessary, have been normalized to year 2000 US dollars.

The dichotomous trade-facilitating/inhibiting factors in our empirical model include RTA_{ij}, which takes the value of one if both the home and the host countries are parties to the same regional trade agreement during 2005 [Ghosh and Yamarik, 2004]. To capture the effects of geographic location, we include the dummy variables $LLOCK_i$ and $LLOCK_j$, which take the value one if the host country or the home country, respectively, are landlocked. Limao and Venables [2001] estimate land transport to be seven times more costly than water transport, and Brooks [2008] reports that every 1 percent increase in transportation costs leads to an estimated 2 percent decrease in a country's exports. Following Dunlevy [2006] and Hutchinson [2002], who indicate that common language is a determinant of trade flows in gravity specifications, we include a dummy variable ($LANG_{ij}$) which is equal to one if the home and the host countries share a common language. We also include a dummy variable ($ADJT_{ij}$), which takes a value of one if the trading partners share a common border. Data on each country's coastal access, commonly used languages and adjacency are from the CIA [2008].

While coefficient estimates of the immigrant stock variable in equation (3) inform us of the general effects that immigrants (emigrants) exert on the typical host country's exports (i.e., home country's imports) or imports (i.e., home country's exports) depending upon the dependent variable in use, it does not indicate the effect of emigrants originating from a given home country i on its trade with the host countries included in this study (or that of immigrants in a given host country j on its trade with the home countries in our data). Hence, to obtain home country-specific effects, we estimate a modified version of equation (3) which includes a term that interacts the immigrant stock variable (IM_{ij}) with a vector of home country dummy variables ($HOME_i$), each of which takes the value of one for a particular home country (i.e., $i = 1, 2, 3, …, 131$) and is otherwise equal to zero. Equation (4) illustrates the resulting specification.

$$ln\ TR_{ij} = \beta_0 + \sum_{i=1}^{131}\left[\beta_{1i}\left(ln\ IM_{ij} \times HOME_i\right)\right] + \beta_2\ ln\ Y_i$$
$$+ \beta_3\ ln\ Y_j + \beta_4\ ln\ GD_{ij} + \beta_5\ ln\ POP_i + \beta_6\ ln\ POP_j$$
$$+ \beta_7\Delta\ ln\ EXR_{ij} + \beta_8\ ln\ REM_i + \beta_9\ ln\ REM_j$$

(4) $$+ \beta_{10}OPEN_i + \beta_{16}ADJT_{ij} + \sum_{j=2}^{131}\beta_{17j}HOME_i + \varepsilon_{ij}$$

Given the differences in the home country-specific immigration policies and the composition of their emigrant population stocks, along with the potential

variation in the degree to which emigrants from different home countries maintain connections with their home countries and among themselves, we expect the country-specific effects of emigrants to differ, potentially substantially, across home countries. In equation (4), the coefficients of the interaction terms (β_{1i}) indicate the average effects of emigrants from each of the home countries in our data on its trade with the host countries in our study. We include the vector of dummy variables, $HOME_i$, to control for home country-specific factors that may affect trade flows but are not captured by the remaining explanatory variables. The results from our estimation of equation (4) also allow the evaluation of whether or not projections of emigrants' effects on their home countries' trade are consistent with the findings of previous studies that examined the link from the host country perspective. To that end, we utilize both the Ordinary Least Squares (OLS) and Tobit estimation techniques. While OLS estimation, generally, permits comparison of our results to those of prior studies, the Tobit estimation procedure is appropriate since 13.1 percent of our import values and 12.7 percent of our export values are equal to zero. An additional advantage of employing the Tobit procedure is that the McDonald and Moffitt [1980] decomposition technique can be applied. Decomposition of the Tobit-generated marginal effects produces estimates, given changes in a continuous explanatory variable, for (1) the latent dependent variable conditional on the dependent variable being uncensored, and (2) the probability that the dependent variable will be uncensored. As mentioned, the dependent variable series we employ is censored at a lower bound value of zero.[7]

EMPIRICAL RESULTS

Descriptive statistics

Although we use cross-sectional data for the year 2005 on bilateral trade flows and the stocks of emigrants from each home country in each host country, as our study involves 131 home countries and 110 host countries, our data consists of 13,370 observations; a number that is, by far, larger than that employed by any previous study of the immigrant-trade link. Thus, our study is arguably more comprehensive than any prior study. Further, our data provides expansive geographic representation: 43 home countries are in Africa; 33 are in Europe, 14 are in Central, South or East Asia, 10 are in South America, another 10 are in Central America or the Caribbean Basin, nine are in Southeastern Asia, five are in the Middle East, three each are in North America and Oceania, and one is in the Arctic. Since immigrant stock data, on a bilateral basis, are not reported for 21 of host countries, our data includes only 110 host countries. Nonetheless, given the broad coverage of the home and host countries included in our data, we consider our results comprehensive.

Table 1 presents descriptive statistics. The figures in the table reveal that during 2005 the typical country had approximately 9,595 immigrants from the typical home country; exported roughly $0.94 worth of goods ($548.8 billion) for every $1.00 worth of goods ($583.64 billion) it imported from the typical home country. On average, the typical host and home countries in our data were about 7,381 kilometers apart. While the typical home country in our study had a GDP of about $286 billion, a population of about 47.5 million, and a trade openness index of 0.96, the typical host country had a GDP of approximately $319 billion (11.53 percent larger than a typical home nation's GDP), a population of 36.7 million (23 percent less than that of a typical home nation), and a slightly higher (0.98) trade openness

Table 1 Descriptive statistics

Variable	Mean	Std. dev.
Host Imports (billions)	583.64	5,104.78
Host Exports (billions)	548.80	4,825.22
Immigrant Stock	9,595.35	127,090.40
Geodesic Distance (kilometers)	7,381.44	4,292.68
Home GDP (billions)	286.34	1,120.13
Host GDP (billions)	319.25	1,210.05
Home Population (millions)	47.50	156.00
Host Population (millions)	36.70	114.00
Change in Exchange Rate (%)	18.92	3.91
Home Remoteness	201,811.90	509,783.70
Host Remoteness	184,132.10	494,526.90
Home Openness	0.9623	0.5537
Host Openness	0.9784	0.5722
Home Landlocked (dummy)	0.2153	0.4110
Host Land Locked (dummy)	0.2201	0.4143
Home–Host Adjacency (dummy)	0.0249	0.1558
Home–Host Common Language (dummy)	0.0739	0.2616
Home–Host in Regional Trade Agreements (dummy)	0.0870	0.2818

index. Fewer than 10 percent of the home and host countries in our data have common official languages or are members to one or more of the same regional trading agreements, and only 2.5 percent of the countries share a border with another country in our data. Lastly, an equal proportion of the home countries (21.5 percent) and the host countries (22 percent) are landlocked.

Accounting for the differences that may facilitate or hinder trade flows, we begin our analysis by estimating equation (3). Doing so permits us to address whether the general immigrant-trade link reported in the literature is present in our data.

The immigrant-trade link from the perspectives of host countries

Table 2 presents coefficients obtained when estimating equation (3) using the OLS [columns (a) and (e)] and the Tobit [columns (b)–(d) and (f)–(h)] procedures. For these estimations, we employ the host country's imports from [columns (a)–(d)] and exports to [columns (e)–(h)] the immigrants' respective home countries as the dependent variable series.

While we utilize the method of OLS to allow comparison of our results to those of previous studies, our discussion focuses primarily on the coefficient estimates obtained using the Tobit method. We follow Head and Ries [1998] and Eaton and Tamura [1994] and employ the Tobit regression procedure for two reasons. First, some host countries in our data have no trade relationship with some of the home countries. This results in a zero value for the corresponding dependent variable. Second, a rise in the volume of bilateral trade between a given pair of host and home countries may result from an increase in the existing level of trade (e.g., due to a rise in the demand for goods that are commonly traded and/or a fall in associated transactions costs — both of which may be driven by immigrants) or from the initiation of trade when the home country and the host country were not previously trading or a combination of both events. The Tobit regression technique enables us to account for the prevalence of zero bilateral trade values while also allowing

Table 2 Tobit and OLS estimates of the effects of immigrants on host–home country trade

Variables	Host imports				Host exports			
	OLS		Tobit		OLS		Tobit	
	(a) Aggregate effects	*(b)* Aggregate effects	*(c)* Trade-intensification	*(d)* Trade-initiation	*(e)* Aggregate effects	*(f)* Aggregate effects	*(g)* Trade-intensification	*(h)* Trade-initiation
$\ln Immigrants_{ij}$	0.179***	0.170***	0.163***	0.001***	0.153***	0.147***	0.124***	0.002***
	(0.0078)	(0.0097)	(0.0093)	(5E-05)	(0.0084)	(0.0104)	(0.0097)	(0.0001)
$\ln Geodesic\ Distance_{ij}$	−1.321***	−1.435***	−1.377***	−0.009***	−1.387***	−1.544***	−1.432***	−0.019***
	(0.0295)	(0.0364)	(0.0349)	(0.0002)	(0.0324)	(0.0392)	(0.0366)	(0.0005)
$\ln GDP_j$ (Home)	1.727***	1.846***	1.771***	0.011***	0.914***	0.972***	0.901***	0.012***
	(0.0460)	(0.0576)	(0.0552)	(0.0003)	(0.0521)	(0.0621)	(0.0582)	(0.0008)
$\ln GDP_i$ (Host)	0.388***	0.377***	0.361***	0.002***	0.923***	0.965***	0.966***	0.013***
	(0.0521)	(0.0632)	(0.0607)	(0.0003)	(0.0517)	(0.0678)	(0.0634)	(0.0009)
$\ln Population_j$ (Home)	0.045**	0.0640***	0.061***	0.0003***	0.093***	0.122***	0.121***	0.002***
	(0.0190)	(0.0220)	(0.0211)	(0.0001)	(0.0200)	(0.0238)	(0.0223)	(0.0003)
$\ln Population_i$ (Host)	0.250***	0.286***	0.274***	0.002***	0.225***	0.262***	0.237***	0.003***
	(0.0217)	(0.0251)	(0.0241)	(0.0002)	(0.0235)	(0.0272)	(0.0254)	(0.0003)
$\Delta \ln Exchange\ Rate_{ij}$	0.004	0.006	0.006	3E-05	−0.036***	−0.045***	−0.038***	−0.001***
	(0.0064)	(0.0072)	(0.0069)	(4E-05)	(0.0066)	(0.0078)	(0.0073)	(10E-05)
$\ln Economic\ Remoteness_j$ (Home)	0.442***	0.449***	0.430***	0.003***	−0.001	−0.053	−0.038	−0.001
	(0.0437)	(0.0545)	(0.0522)	(0.0003)	(0.0495)	(0.0588)	(0.0551)	(0.0007)
$\ln Economic\ Remoteness_i$ (Host)	−0.443***	−0.545***	−0.522***	−0.003***	−0.268***	−0.413***	−0.299***	−0.004***
	(0.0462)	(0.0563)	(0.0540)	(0.0003)	(0.0452)	(0.0602)	(0.0563)	(0.0008)
$Trade\ Openness_j$ (Home)	1.018***	1.147***	1.100***	0.007***	0.382***	0.488***	0.416***	0.006***
	(0.0393)	(0.0480)	(0.0460)	(0.0003)	(0.0439)	(0.0518)	(0.0486)	(0.0007)
$Trade\ Openness_i$ (Host)	0.505***	0.567***	0.544***	0.003***	1.213***	1.423***	1.293***	0.018***
	(0.0423)	(0.0481)	(0.0462)	(0.0003)	(0.0406)	(0.0516)	(0.0484)	(0.0007)
$Landlocked_j$ (Home)	−0.506***	−0.629***	−0.599***	−0.005***	−0.761***	−0.858***	−0.827***	−0.014***
	(0.0551)	(0.0618)	(0.0592)	(0.0004)	(0.0560)	(0.0666)	(0.0625)	(0.0008)

Landlocked$_i$ (Home)	−0.560***	−0.624***	−0.595***	−0.005***	−0.654***	−0.447***	−0.666***	−0.011***
	(0.0534)	(0.0634)	(0.0608)	(0.0004)	(0.0616)	(0.0686)	(0.0645)	(0.0009)
Adjacent$_{ij}$ (Home and Host)	0.109	0.124	0.120	0.001	0.239	0.122	0.242	0.003
	(0.150)	(0.170)	(0.163)	(0.001)	(0.177)	(0.182)	(0.170)	(0.0023)
Common Language$_{ij}$	0.934***	1.090***	1.059***	0.004***	1.152***	1.237***	1.335***	0.011***
	(0.0750)	(0.0934)	(0.0896)	(0.0006)	(0.0808)	(0.101)	(0.0940)	(0.0013)
Regional Trade Agreement$_{ij}$	0.587***	0.546***	0.527***	0.003***	0.710***	0.697***	0.616***	0.007***
	(0.0741)	(0.0936)	(0.0897)	(0.0006)	(0.0827)	(0.101)	(0.0942)	(0.0013)
Constant	−39.09***	−41.03***	−39.36***	−0.247***	−29.73***	−30.34***	−30.93***	−0.419***
	(2.214)	(2.746)	(2.634)	(0.0166)	(2.324)	(2.948)	(2.761)	(0.0375)
Observations	13,370	13,370	13,370	13,370	13,370	13,370	13,370	13,370
R-squared (OLS)	0.760	0.229	—	—	0.745	0.2219	—	—
PR-squared (Tobit)/								
Log likelihood ratio	−30,113	−28,786	−28,786	−28,786	−30,785	−28,885	−28,735	−28,735
F-statistic	3,457***	17,175***	17,175***	17,175***	3,261***	16,138***	16,138***	16,138***
Sigma (St. error)	—	2.639	—	—	—	2.878	—	—
		(0.0183)***				(0.0207)***		

Robust standard errors are in parentheses.

***, ** and * indicate significance at $P<0.01$, $P<0.05$ and $P<0.1$, respectively.

for the decomposition of the resulting coefficients into trade-intensification and trade-initiation effects.[8]

The results presented in Table 2 indicate that the coefficients of the immigrant stock variable, both in the OLS and Tobit regression estimations, are positive and highly significant ($P<0.01$). This is consistent with the results from previous studies and is taken as confirmation that the immigrants in our data exert the hypothesized pro-trade effects on their host countries' imports from and exports to their home countries. Accordingly, focusing on estimates from the Tobit estimations, we find that *ceteris paribus* a 1 percent increase in the stock of immigrants in a typical host country would result in a 0.17 percent increase in its imports from the respective home country while also increasing its exports to that home country by 0.147 percent.[9] Comparing the effects of immigrants on the typical host country's imports and exports, the results generally indicate that immigrants have greater (statistically significant at $P<0.05$) effects on their hosts countries' imports than on their exports to the typical home country. These findings correspond with results from Dunlevy and Hutchinson [1999], [2001], Wagner et al. [2002], and Bryant et al. [2004] who report greater effects of immigrants on the host country's imports relative to the corresponding effect on exports. The authors attribute this observation to immigrants' abilities to influence their host countries' imports through their tastes and preferences.[10]

Further decomposing the estimated pro-trade effects of immigrants into trade-intensification and trade-initiation effects, we find that while immigrants' intensification and initiation effects on their host countries' imports and exports are positive, their trade-intensification effects (0.163 percent for imports and 0.124 percent for exports) generally outweigh their trade-initiation effects (0.001 percent for imports and 0.002 percent for exports).[11] Accordingly, a 10 percent increase in the stock of immigrants in the typical host country would raise the likelihood that the host country imports from the typical home country by 0.01 percent and would increase the existing level of the host country's imports by about a 1.63 percent. The corresponding effects of immigrants on the likelihood that the typical host country will begin to export to the typical home country and further increase (intensify) its existing level of exports are estimated at 0.02 and 1.24 percent, respectively. While the effects on the host country' exports to and imports from the typical home country differ, the results indicate that immigrants both initiate new trade and intensifying existing trade between their host and home countries.

Turning to the coefficient estimates for the remaining variables in equation (3), we find that, with the exception of home country economic remoteness as it relates to host country imports, coefficient values are of the *a priori* expected signs. As observed from previous studies, our results also indicate that while higher GDP values correspond with increased host country exports and imports, greater geodesic distance between the typical host and home country pairing lowers the volume of bilateral trade flows. An indication of the positive contribution of market size to trade flows, coefficients of the population variables are positive and significant. Consistent with the results from previous studies, we also find that an increase in the rate at which the home country's currency depreciates against the host country's currency corresponds with a significant decline in the volume of the typical host country's exports to the typical home country and an increase (albeit statistically insignificant) in the volume of the typical host country's imports from the typical home country. While the host country's economic remoteness is detrimental to its exports and imports, as noted, the typical home country's economic remoteness

appears to have a statistically significant positive effect on the typical host country's imports and no significant influence on the typical host's exports. The coefficients of the variables representing economic openness are positive and significant across all estimations, indicating that the volume of trade between the typical host and home countries is larger the more open each of the countries is to trading in general. Similarly, host and home countries that are parties to the same regional trading agreement(s) or that share a common language tend to trade more as compared to host and home countries that do not share common language(s) and/or do not belong to the same agreement(s). Indicative of the importance of coastal access, we find that the volume of bilateral trade flows among home and host countries that are landlocked is lower than those that have coastal access.

Evaluating the immigrant-trade link from the home countries' perspectives

Our results so far indicate that immigrants generally exert positive influences on trade between their home and host countries. Having confirmed this positive relationship, we now turn to the question of whether these findings apply to emigrants from each of the home countries. For the various reasons discussed earlier, we hypothesize that the degree to which emigrants influence their respective home country's trade with the typical host country vary across home countries and likely so across host countries as well.[12] Given that our data represent 110 countries which could host immigrants from each of the 131 home countries, we test our hypothesis by estimating equation (4) and examining the coefficients of the interaction terms between the immigrant stock variable and the home country dummy variables. Estimation results are presented in Table 3.

The results in Table 3 indicate that emigrants from most home countries exert statistically significant pro-trade effects.[13] More specifically, while emigrants from 100 of the 131 countries in our data (76 percent) exert positive influences on their specific home countries' imports, emigrants from 96 countries (73 percent) exert positive influences on their home countries' exports to a typical host. For 82 of the home countries (63 percent), we observe both pro-import and pro-export emigrant effects. Where pro-trade emigrant effects are observed, however, the magnitudes of the effects (as judged from the coefficient estimates) vary greatly across the home countries. For example, we find the strongest pro-export effect for emigrants from Equatorial Guinea (0.837) and Papua New Guinea (0.638), followed by Brunei (0.57) and Trinidad and Tobago (0.557). We observe the weakest (albeit still significant) effects for emigrants from South Africa (0.01) and China (0.014). These coefficient estimates indicate that a 10 percent increase in the stock of immigrants in a typical host country from each of these particular home countries would increase the typical host country's imports from 0.1 percent for South Africa to 8.37 percent for Equatorial Guinea. A 10 percent increase in the stock of emigrants from a given home country would yield increases in host country exports ranging from 4.41 percent for Tajikistan (the strongest) to 0.52 percent for China (the weakest), again indicative of the significant differences that exist in the extent to which immigrants from different home countries are able to influence their host countries' exports to their home countries.[14]

Further comparison of estimated emigrant effects across home countries grouped broadly by development status reveals that emigrants from developing countries generally have relatively stronger effects on their home country's trade with their respective host country than do emigrants from developed countries. Accordingly,

Table 3 Home country-specific effects of emigrants on trade

Region/home name (# of host countries)	Host exports (home imports) (a)	Host imports (home exports)(b)	Region/home name (# of host countries)	Host exports (home imports) (a)	Host imports (home exports)(b)
Africa			*Africa (continued)*		
Algeria (109)	0.095 (0.0642)	0.351 (0.0923)**	Tunisia (109)	0.14 (0.0604)**	0.149 (0.0799)*
Benin (82)	0.166 (0.0767)**	0.201 (0.1)**	Uganda (107)	0.169 (0.0622)***	0.366 (0.0676)***
Botswana (108)	0.304 (0.237)	0.553 (0.116)***	Zambia (101)	0.268 (0.0631)***	0.342 (0.0697)***
Burkina Faso (82)	0.307 (0.0624)***	0.232 (0.0782)***	Zimbabwe (90)	0.25 (0.0514)***	0.224 (0.0574)***
Cameroon (106)	0.153 (0.0918)*	0.32 (0.0682)***			
Cape Verde (98)	0.194 (0.0901)**	0.112 (0.0724)	*Asia*		
Cent. Afr. Rep. (86)	−0.011 (0.0934)	0.36 (0.119)***	Armenia (100)	0.228 (0.0726)***	0.303 (0.0576)***
Chad (76)	0.182 (0.105)*	0.077 (0.151)	Azerbaijan (97)	0.409 (0.058)***	0.416 (0.072)***
Comoros (73)	0.262 (0.126)**	0.193 (0.0994)*	Bangladesh (91)	0.091 (0.0492)*	0.197 (0.0624)***
Congo, Dem. (81)	0.293 (0.081)***	0.349 (0.0757)***	Bhutan (71)	0.325 (0.0854)***	−0.027 (0.146)
Cote d'Ivoire (108)	0.148 (0.0588)**	0.319 (0.0559)***	China (110)	0.052 (0.0212)*	0.014 (0.0098)*
Djibouti (74)	0.191 (0.119)	0.21 (0.148)	Georgia (97)	0.271 (0.0665)***	0.262 (0.062)***
Egypt (92)	0.113 (0.0501)**	0.005 (0.0436)	India (109)	0.025 (0.0508)	0.01 (0.0244)
Eq. Guinea (80)	0.373 (0.0772)***	0.837 (0.207)***	Japan (109)	0.05 (0.0418)	0.063 (0.025)**
Eritrea (74)	−0.028 (0.11)	0.042 (0.0744)	Kazakhstan (108)	0.372 (0.0668)***	0.385 (0.0686)***
Ethiopia (106)	0.178 (0.0444)***	0.346 (0.0507)***	Korea, Rep. (109)	0.185 (0.0581)***	0.117 (0.036)***
Gabon (107)	0.203 (0.077)***	0.529 (0.114)***	Kyrgyz Rep. (91)	0.286 (0.0774)***	0.238 (0.108)**
Gambia, The (91)	0.078 (0.0709)	−0.106 (0.0642)*	Pakistan (110)	0.018 (0.0484)	−0.006 (0.0434)
Ghana (106)	0.142 (0.0558)**	0.21 (0.0503)***	Russian Fed. (109)	0.306 (0.0521)***	0.247 (0.042)***
Guinea (88)	0.196 (0.0681)***	0.3 (0.0673)***	Tajikistan (71)	0.441 (0.0984)***	0.203 (0.127)
Guinea-Bissau (70)	0.276 (0.103)***	−0.131 (0.115)			
Kenya (110)	0.119 (0.0458)***	0.254 (0.045)***	*Middle East*		
Lesotho (72)	−0.236 (0.18)	−0.053 (0.118)	Iran (107)	0.226 (0.0674)***	0.12 (0.0679)*
Madagascar (108)	0.173 (0.0951)*	0.466 (0.0561)***	Israel (108)	0.288 (0.0692)***	0.239 (0.056)***
Malawi (107)	0.382 (0.0712)***	0.364 (0.0676)***	Jordan (104)	0.204 (0.0642)***	0.09 (0.0613)
Mali (108)	0.172 (0.0623)***	0.041 (0.0615)	Lebanon (91)	0.179 (0.066)***	0.025 (0.0596)
Mauritania (87)	0.198 (0.0722)***	0.275 (0.113)**	Turkey (109)	0.11 (0.038)***	0.064 (0.0213)***
Mauritius (108)	0.163 (0.0865)*	0.294 (0.0645)***			

Morocco (108)	0.089 (0.0462)*	0.089 (0.0456)*	**North America**		
Mozambique (104)	0.272 (0.0595)***	0.350 (0.0845)***	Canada (109)	−0.007 (0.0521)	0.011 (0.0225)
Namibia (106)	0.23 (0.101)**	0.549 (0.0844)***	Mexico (109)	0.158 (0.0519)***	0.296 (0.0408)***
Rwanda (99)	0.250 (0.0589)***	0.168 (0.0738)***	United States (109)	−0.06 (0.0403)	0.029 (0.0202)
Senegal (107)	0.057 (0.0669)	0.289 (0.0707)***			
Seychelles (96)	0.118 (0.109)	0.403 (0.0932)***	**Oceania**		
South Africa (109)	0.152 (0.0579)***	0.01 (0.0467)**	Australia (109)	0.214 (0.0527)***	0.108 (0.0299)***
Sudan (105)	0.354 (0.0595)***	0.284 (0.0606)***	New Zealand (109)	0.272 (0.0581)***	0.193 (0.0391)***
Swaziland (85)	−0.219 (0.229)	0.065 (0.228)	Papua New Guinea (78)	0.241 (0.112)**	0.638 (0.0991)***
Tanzania (106)	0.195 (0.0559)***	0.405 (0.0569)***			
Togo (83)	0.27 (0.0817)***	0.339 (0.0797)***			
Central America/Caribbean			**Europe**		
Belize (91)	−0.017 (0.0877)	0.034 (0.0865)	Albania (104)	0.127 (0.0742)*	0.168 (0.0663)**
Costa Rica (107)	0.23 (0.0582)***	0.329 (0.0619)***	Austria (109)	0.038 (0.0695)	0.065 (0.0362)*
Dominica (94)	−0.047 (0.0663)	−0.146 (0.0936)	Belarus (108)	0.287 (0.0555)***	0.345 (0.0549)***
Dominican Rep. (88)	0.197 (0.0594)***	0.199 (0.0618)***	Belgium (109)	−0.149 (0.0565)***	−0.106 (0.0339)***
El Salvador (102)	0.222 (0.0584)***	0.26 (0.0476)***	Bulgaria (109)	0.163 (0.0442)***	0.134 (0.0385)***
Guatemala (106)	0.231 (0.0576)***	0.329 (0.0559)***	Croatia (109)	0.167 (0.0521)***	0.202 (0.0479)***
Honduras (101)	0.162 (0.0518)***	0.246 (0.0505)***	Czech Rep. (109)	0.073 (0.0525)	0.155 (0.0397)***
Nicaragua (103)	0.123 (0.0562)**	0.205 (0.0562)***	Denmark (109)	0.034 (0.0543)	−0.059 (0.0362)
Panama (93)	0.047 (0.0692)	0.099 (0.0729)	Estonia (107)	0.199 (0.0648)***	0.286 (0.0539)***
Trinidad & Tob. (105)	0.298 (0.0809)***	0.557 (0.0828)***	Finland (109)	0.124 (0.0617)**	0.104 (0.0436)**
			France (109)	−0.045 (0.0387)	0.009 (0.031)
Southeast Asia			Germany (109)	−0.066 (0.0392)*	−0.011 (0.0212)
Brunei (77)	0.297 (0.0871)***	0.57 (0.133)***	Greece (109)	0.019 (0.038)	0.079 (0.0376)**
Cambodia (85)	0.176 (0.0649)***	0.371 (0.0676)***	Hungary (109)	0.163 (0.0536)***	0.184 (0.0362)***
Hong Kong (109)	0.002 (0.0481)	0.023 (0.0387)	Ireland (109)	0.086 (0.0593)	0.084 (0.0427)**
Indonesia (110)	0.107 (0.0498)**	0.053 (0.0245)**	Italy (109)	−0.003 (0.0391)	0.045 (0.0253)*
Macao (84)	0.29 (0.106)***	0.342 (0.115)***	Latvia (106)	0.241 (0.0627)***	0.251 (0.0533)***
Malaysia (109)	0.12 (0.0528)***	0.096 (0.031)***	Lithuania (106)	0.227 (0.0584)***	0.234 (0.0488)***
Philippines (109)	0.133 (0.0517)**	0.237 (0.0382)***	Luxembourg (109)	0.025 (0.114)	0.115 (0.0587)*
Thailand (109)	0.074 (0.0456)	0.018 (0.0257)	Macedonia (106)	0.177 (0.0647)***	0.331 (0.046)***
Vietnam (110)	0.037 (0.0392)	0.134 (0.0324)***	Moldova (106)	0.241 (0.0589)***	0.282 (0.0556)***
			Netherlands (109)	−0.152 (0.0497)***	−0.079 (0.0286)***

Table 3 *(Continued)*

Region/home name (# of host countries)	Host exports (home imports) (a)	Host imports (home exports)(b)	Region/home name (# of host countries)	Host exports (home imports) (a)	Host imports (home exports)(b)
Arctic Region			Norway (109)	0.073 (0.0626)	0.089 (0.0368)***
Iceland (100)	0.098 (0.0831)	0.178 (0.0646)***	Poland (109)	0.077 (0.0411)*	0.157 (0.033)***
			Portugal (109)	−0.071 (0.0475)	0.114 (0.0351)***
South America			Romania (108)	0.139 (0.0394)***	0.212 (0.0386)***
Argentina (109)	0.25 (0.0504)***	0.044 (0.034)	Slovak Rep. (109)	0.117 (0.0627)*	0.166 (0.0405)***
Bolivia (107)	0.207 (0.0418)***	0.35 (0.0464)***	Slovenia (108)	0.227 (0.0644)***	0.225 (0.0502)***
Brazil (109)	0.227 (0.049)***	0.053 (0.0222)**	Spain (109)	−0.025 (0.0378)	0.022 (0.0255)
Chile (107)	0.314 (0.0531)***	0.292 (0.0483)***	Sweden (109)	0.094 (0.0501)*	0.01 (0.033)
Colombia (109)	0.16 (0.0417)***	0.272 (0.0428)***	Switzerland (108)	−0.105 (0.0554)*	0.003 (0.0496)
Ecuador (107)	0.194 (0.042)***	0.2 (0.053)***	Ukraine (109)	0.239 (0.0452)***	0.069 (0.0466)
Paraguay (104)	0.232 (0.0546)***	0.165 (0.0574)***	United Kingdom (109)	−0.052 (0.0406)	−0.034 (0.0257)
Peru (108)	0.192 (0.0472)***	0.226 (0.0436)***			
Uruguay (106)	0.049 (0.0621)	0.105 (0.053)**			
Venezuela (105)	0.288 (0.0502)***	0.442 (0.0548)***			

Robust standard errors are in parentheses.

***, ** and * indicate significance at $P<0.01$, $P<0.05$ and $P<0.1$, respectively.

while we find that emigrants from several countries have effects that are statistically significant, emigrants from Canada, Denmark, the UK and the USA do not exert significant influences on their respective home countries' trade with their host countries.[15] A similar, yet non-country-specific finding is reported by White and Tadesse [2009b] who examine variation in the immigrant-trade link across migration corridors and report that immigrants from countries classified as part of the global "south" who have migrated to other developing countries exert proportionally greater influences on home–host country trade than do immigrants who migrate from the "north" to the "south" or from the "south" to the "north." Generally, consistent with the lack of significant emigrant-trade links reported here for developed countries such as Denmark, Canada, etc., White and Tadesse [2009b] report a lack of significant immigrant-trade links for the "north-to-north" migration corridor.

Given the focus of our study and that, due to an absence of bilateral migration data for more than a single year, our analysis is restricted to the year 2005, specific reasons for why we observe differences in emigrants pro-trade effects might be difficult to pinpoint. Several plausible reasons, however, can be offered. First, for various reasons (social, cultural and economic), emigrants from countries such as Canada, France, the UK and the USA may not have/maintain ethnic networks that are as strong as those of, perhaps emigrants from Azerbaijan, Ethiopia or El Salvador. Second, significant differences exist across countries in terms of the institutional infrastructure that facilitates the flow of international trade. Hence, assuming that developed countries are characterized as having more abundant and/ or better-functioning infrastructure, the presence of such infrastructure would be expected to correspond with lower trade-related transaction costs and, thus, to potentially render the trade-facilitating capabilities of emigrants from more developed countries moot. To the contrary, emigrants from developing countries may both possess the ability to facilitate trade by acting as *de facto* trade-intermediaries and face significant transaction costs that they may act to lower; thereby, exerting discernable pro-trade influences. Finally, it may also be that emigrants from developed countries integrate/assimilate faster to their host countries relative to emigrants from developing countries and, as a result, exert weaker effects on trade via their tastes and preferences. A further examination of which of these plausible factors play significant role in determining the degree to which immigrants (emigrants) from different host (home) countries affect their respective home–host nations' trade is, however, important.

CONCLUSION

As mentioned at the outset, a voluminous literature examines the immigrant-trade relationship. The results from these studies indicate that immigrants generally exert positive influences on trade between their host and home countries. The magnitudes of the observed pro-trade effects, however, vary considerably across the host and home country cohorts considered; little research has been undertaken to explain such variation. To this end, using data on the stocks of emigrants from 131 home countries that reside in 110 host countries and on bilateral trade flows among the host and home countries during the year 2005, we examine the general as well as country-specific effects of immigrants from the perspectives of their home countries, and provide the first comprehensive estimates of the effects of emigrants on trade for 131 home countries for which emigrant stock data are available. A complement to

the literature, our results from the general model indicate that a 1 percent increase in the stock of immigrants in a given host raises the typical host country's exports to and imports from the typical home country by 0.15 and 0.17 percent, respectively. However, when examining the effects from the perspectives' of emigrants' home countries (by focusing on individual home countries), we find pro-export emigrant effects in 100 of the 131 home countries, and pro-import effects only in 96 home countries.

A general comparison of the home country-specific effects of emigrants across developed and developing home countries also indicates that emigrants from developing home countries exert relatively stronger effects on their respective home countries' trade with their respective host country than do emigrants from developed home countries. We offer plausible explanations for this variation in terms of differences in the institutional infrastructure that facilitates the flow of international trade, anthropogenic characteristics of migrant populations, and variations in the pace at which emigrants from different home countries are able to integrate/assimilate with their host countries. Yet, we stress the need for further research to determine the extent to which variations across home countries, particularly in the availability and quality of soft and/or hard trade-facilitating infrastructure and the compositions and anthropogenic characteristics of emigrant populations contribute to differences in the extent to which emigrants (immigrants) may influence their home and host countries' trade. Given the significantly large numbers of home and host countries included in the present study, our results can also serve as the first estimates for future and in-depth investigation of the link from the home country perspective.

APPENDIX

See Table A1.

Table A1 A summary of the immigrant-trade link literature, 1994–2009

Author(s)	Host country(ies) and study period	Home country(ies) in study	Reported effects of 1% increase in immigrant stock on the host country's	
			Exports	*Imports*
Gould [1994]	US (1970–1986)	47 trading partners	0.05%	0.08%
Helliwell [1997]	9 Canadian Provinces (1990)	49 US states	0.34%	0.06%
Head and Ries [1998]	Canada (1980–1992)	136 trading partners	0.10%	0.31%
Ching and Chen [2000]	Canada (1980–1995)	Taiwan	−0.06%	0.30%
Dunlevy and Hutchinson [1999], [2001]	US (1870–1910)	17 trading partners	0.08%	0.29%
Girma and Yu [2002]	UK (1981–1993)	48 trading partners	0.16%	0.10%
Rauch and Trindade [2002]	63 countries (1980, 1990)	63 trading partners	0.21% (homogenous), 0.47% (differentiated goods); export and imports not differentiated	
Wagner et al. [2002]	Canadian Provinces/ regions (1992–1995)	160 trading partners	0.08%	0.25%
Blanes [2003]	Spain (1981–1998)	40 trading partners	0.23%	0.03%
Piperakis et al. [2003]	Greece (1981–1991)	60 trading partners	0.20%	−0.04%

Table A1 *(Continued)*

Author(s)	Host country(ies) and study period	Home country(ies) in study	Reported effects of 1% increase in immigrant stock on the host country's	
			Exports	*Imports*
Bardhan and Guhathakurta [2004]	US states (state-level exports) (1994–1996)	51 trading partners	0.24–0.26 % (West Coast), 0.06–0.09% (East Coast)	—
Bryant et al. [2004]	New Zealand (1981–2001)	170 trading partners	0.05%	0.19%
Co et al. [2004]	US state-level exports (1993)	28 trading partners	0.27–0.29%	—
Blanes [2005]	Spain (1991–1998)	42 trading partners	0.21–0.40% (intra-industry trade (IIT))	
Combes et al. [2005]	France (1993)	94 French departments	0.25%	0.14%
Herander and Saavedra [2005]	US state-level exports (1993–1996)	36 trading partners	0.18%	—
Hutchinson [2005]	US (1971–1986)	36 trading partners	0.09%	0.12%
Jansen and Piermartini [2005]	US (2000–2002)	175 trading partners	0.20%	0.40%
Mundra [2005]	US (1973–1980)	47 trading partners	+ and −	+ and −
Parsons [2005]	EU-15 (1994–2001)	EU-15 and 15-EU expansion countries	0.12%	0.14%
Ehrlich and Bacarreza [2006]	Bolivia (1990–2003)	30 partner countries with the highest trade intensity	0.08% (immigrants); 0.03% (emigrants)	0.09% (immigrants); 0.04% (emigrants)
Blanes [2006]	Spain (1995–2003)	83 trading partners	0.35%	0.23%
Blanes and Martín-Montaner [2006]	Spain (1988–1999)	48 non-EU trade Partners	0.47% (total trade)	0.47% (total trade)
Dunlevy [2006]	US average state-level exports (1990–1992)	87 Countries	0.24–0.47%	
Hong and Santhapparaj [2006]	Malaysia (1998–2004)	16 trading partners	0.53%	0.88%
Lewer [2006]	16 OECD countries (1991–2000)	16 OECD and Non-OECD countries	0.131% (aggregate bilateral trade flows)	
Jiang [2007]	Canada (1988–2004)	125 trading partners	0.08% (on number of products); No Effect (on value of products)	
Konecny [2007]	19 OECD countries (1999–2003 average)	19 OECD and non-OECD trading partners	−0.069%	
Tai [2007]	Switzerland (1995–2000)	105 trading partners	0.27%	0.30%
White [2007a]	US (1980–2001)	73 trading partners	0.15%	0.47%
White [2007b]	Denmark (1980–2000)	170 trading partners	0.23–0.57%	0.19–0.34%
White and Tadesse [2007]	Australia (1989–2000)	101 trading partners	0.46%	0.18%
Bandyopadhyay et al. [2008]	US state-level exports (1990–1992)	29 trading partners	0.27%	—
Dolman [2008]	28 OECD Countries (2000)	162 trading partners	0.18% (immigrants only); 0.09% (immigrants and expatriates)	0.15% (immigrants only); 0.09% (immigrants and expatriates)
Felbermayr and Toubal [2008]	Unspecified list of hosts	28-EU member countries	Total trade effect: 0.278% (migrants of EU origin living elsewhere); 0.154% (migrants from other countries residing in the EU)	
Ivanov [2008]	Germany (1997–1998)	27 trading partners	0.13%–0.15%	—
Morgenroth and O'Brien [2008]	26 countries (1999–2003)	179 trading partners	0.57%	0.68%
Qian [2008]	New Zealand (1980–2005)	190 trading partners	0.04%	0.17%

Table A1 *(Continued)*

Author(s)	Host country(ies) and study period	Home country(ies) in study	Reported effects of 1% increase in immigrant stock on the host country's	
			Exports	*Imports*
Tadesse and White [2008]	US state-level exports (2000)	75 trading partners	Average values of state-level exports created by 1% increase in state's immigrant stock: $2,975 (aggregate exports), $64.28 (cultural goods exports) and $2,938 (non-cultural goods exports)	
White [2008]	US (1981–2001)	62 trading partners	0.26 (IIT); 0.19–0.22 (vertical IIT); 0.39–0.45 (horizontal IIT)	
White and Tadesse [2008a]	US state-level exports (2000)	75 trading partners	0.1147% (non-cultural), 0.0554% (cultural) goods exports, 0.02%, and 0.03% effects on the initiation and intensification of cultural goods exports.	
White and Tadesse [2008b]	US (1997–2004)	54 trading partners	0.14–0.10%	0.17–0.15%
Ghatak et al. [2009]	UK (1996–2003)	6 Central and Eastern European trading partners	−0.33– −0.06%	0.30–0.33%
Iranzo and Peri [2009]	Western European EU Member Countries	Eastern European EU members	0.1% real average wage increase both in the host (Western) and Home (Eastern) European EU member countries	
Murat and Pistoresi [2009a]	Italy (1990–2005)	51 trading partners	— (immigrants); 0.13 (emigrants)	−0.10 (immigrants); 0.12 (emigrants)
Tadesse and White [2010b]	Nine OECD countries (1996–2001)	67 trading partners	0.24% (Aggregate); 0.15% (Non-Manuf.); 0.27% (Manuf.)	0.21% (Aggregate); 0.28% (Non-Manuf.); 0.22% (Manuf.)
White [2009a]	US (1980–1997)	70 trading partners	0.33 (Diff Exports to low income home countries)	0.43 (Diff imports from low income home countries)
White [2009b]	US state-level exports (1993)	28 trading partners	0.12 (OECD); 0.33 (non-OECD); 0.14 (high HDI countries); 0.36 (medium HDI countries); (0.18 high income countries); 0.20 (upper middle income countries); 0.31 (lower middle income countries); 0.52 (low income countries)	
White and Tadesse [2010]	US (1996–2001)	59 trading partners	0.27% (all immigrants), 0.24% (non-refugees); no effects (Refugees)	0.13% (all immigrants), 0.18% (non-refugees), and 0.03% (refugees)
White and Tadesse [2009a]	Italy (1996–2001)	68 trading partners	0.08%	0.04% (not significant)
Tadesse and White [2010a]	US state-level exports (2000)	75 trading partners	0.05% (aggregate state-level exports)	

Notes

1. A summary of this literature is provided as an Appendix.
2. Likewise, while immigrants' remittances may increase the home countries' imports, these imports may come from countries other than those from which the remittances were sent.
3. Since bilateral migration data are available only for the year 2005, we drop the time subscript from equation (2).
4. The gravity equation was first applied trade by Tinbergen [1962]. Anderson and van Wincoop [2003], Feenstra et al. [2001], Eaton and Kortum [2002], Deardorff [1998], Davis [1995], Bergstrand [1985], Helpman and Krugman [1985] and Anderson [1979] provide theoretical foundations for the model.
5. The bilateral migration matrix is available at http://go.worldbank.org/HO0EXUQVV0. For a detailed description of the additions/modifications made to the University of Sussex matrix, see Ratha and Shaw [2007].
6. Internal distance, when $k = j$, is derived as 0.4 times the square root of the country's land mass [Head and Mayer, 2000].
7. For example, given a Tobit model, where $y_i = \beta_X X + \varepsilon$ and the dependent variable series is censored at the lower bound value of zero, we have that $y_i^* = y_i$ if $y_i > 0$, and $y_i^* = 0$ if $y_i \leqslant 0$. The McDonald-Moffitt decomposition recognizes that the expected value of y is equal to the product of the probability that the ith value of y is uncensored and the predicted value of y of those above zero; that is, $E(y_i^*) = P(y_i^* > 0)E(y_i^*|y_i^* > 0)$. Since a change in any continuous explanatory variable, χ, all else constant, produces an expected change in y of $P(y_i^* > 0)\partial E(y_i^*|y_i^* > 0)/\partial \chi + E(y_i^*|y_i^* > 0)\partial P(y_i^* > 0)/\partial \chi$, the expected effect on y consists of two parts: (a) the change in the expected value of y_i^* for those y values greater than zero, weighted by the probability the y is greater than zero, and (b) the change in the probability that y_i^* is greater than zero, weighted by the conditional expected value of y.
8. Most prior studies have utilized panel data or multiple cross sections. Since our use of cross-sectional data carries a risk of endogeneity or simultaneous causation, a formal test of potential endogeneity was conducted and the results show that the immigrant stock is not endogenous to trade flows.
9. Given the double-logarithmic functional form of the estimated equation, the coefficient can be interpreted as elasticity.
10. While this difference in effects of immigrants on the host's imports and exports is often a perception, it is not theoretically driven to be always so. Girma and Yu [2002] and White [2007a], for example, find greater effects of immigrants on their host country exports than imports.
11. Note that the numerical decomposition of the change in the dependent variable resulting from small incremental change in the value of the independent variable of interest is carried out at the mean of the independent variable when the variable is continues. When the variable of interest is dummy variable, however, the numerical decomposition is done for change in the value of the dummy variable from 0 (e.g., home country has access to a sea port) to 1(the home country is landlocked).
12. Given that previous studies have examined the immigrant-trade link for various host country cohorts, we choose to focus on the home countries.
13. Note that in estimating equation (4), while retain all variables included when estimating equation (3); however, in Table 3 we report only the coefficients of interaction terms between the immigrant stock (IM_{ij}) variable and the home country-specific dummy variables ($HOME_i$), which represent the ethnic network effects of immigrants from different home countries.
14. Under the assumption that the year-to-year difference in the stock of emigrants is minor, we also repeat our analysis using 2006 trade data. While there are minor differences in the number of home countries in which the effect is significant, our findings from the 2005 trade and emigration data generally remains unchanged when we used the 2006 trade data as well.
15. Although, previous host country oriented studies show that immigrants in the USA, Canada, Germany and UK have pro-trade effects on each of these host nations trade with various immigrants home countries, our study is the first to examine the effects of emigrants from these nations on their respective trade flows with other host countries.

References

Anderson, James E. 1979. A Theoretical Foundation for the Gravity Equation. *American Economic Review*, 69(1): 106–116.

Anderson, James E., and Eric van Wincoop. 2003. Gravity with Gravitas: A Solution to the Border Puzzle. *American Economic Review*, 93(1): 170–192.

Bandyopadhyay, Subhayu, Cletus C. Coughlin, and Howard J. Wall. 2008. Ethnic Networks and US Exports. *Review of International Economics*, 16(1): 199–213.

Bardhan, Ashok D., and Subhrajit Guhathakurta. 2004. Global Linkages of Subnational Regions: Coastal Exports and International Networks. *Contemporary Economic Policy*, 22(2): 225–236.

Bergstrand, Jeffrey H. 1985. The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence. *The Review of Economics and Statistics*, 67(3): 474–481.

Blanes, Jose V. 2003. The Link between Immigration and Trade in Spain, Paper presented at XXVIII Simposio de Analisis Economico, Seville: Universidad Pablo de Olavide, December 11–13.

———. 2005. Does Immigration Help to Explain Intra-industry Trade? Evidence for Spain. *Review of World Economics (Weltwirtschaftliches Archive)*, 141(2): 244–270.

———. 2006. Immigrant's Characteristics and their Different Effects on Bilateral Trade. Evidence from Spain, WP#06.08, Universidad Pablo de Olavide, Departamento de Economía.

Blanes, Jose V., and Joan A. Martín-Montaner. 2006. Migration Flows and Intra-industry Trade Adjustments. *Review of World Economics*, 142(3): 567–584.

Brooks, Douglas H. 2008. *Infrastructure and Asia's Trade Costs*, Asian Development Bank Policy Brief No. 27, June, http://www.adbi.org/research-policy-brief/2008/06/25/2598.infrastructure.asia.trade.costs/ (accessed December 2008).

Bryant, John Robert, Murat Genc, and David Law. 2004. Trade and Migration to New Zealand, New Zealand Treasury Working Paper 04/18.

Ching, Hsianghoo S., and Li-Lu Chen. 2000. Links between Emigrants and the Home Country: The Case of Trade between Taiwan and China, in *Regional Cohesion and Competition in the Age of Globalization*, edited by Hirotada Kohno, Peter Nijkamp and Jacques Poot. Cheltenham, UK: Edward Elgar.

Co, Catherine Y., Patricia Euzent, and Thomas Martin. 2004. The Export Effect of Immigration into the USA. *Applied Economics*, 36(6): 573–583.

Combes, Pierre-Philippe, Miren Lafourcade, and Thierry Mayer. 2005. The Trade Creating Effects of Business and Social Networks: Evidence from France. *Journal of International Economics*, 66(1): 1–29.

Davis, Donald R. 1995. Intra-industry Trade: A Heckscher-Ohlin-Ricardo Approach. *Journal of International Economics*, 39(3–4): 201–226.

Deardorff, Alan 1998. Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World? in *The Regionalization of the World Economy*, edited by Jeffrey Frankel. Chicago, IL: University of Chicago Press.

Dolman, Ben. 2008. Migration, Trade and Investment, Australian Government Productivity Commission Staff Working Paper, Canberra, February.

Dunlevy, James A. 2006. The Impact of Corruption and Language on the Pro-trade Effect of Immigrants: Evidence from the American States. *Review of Economics and Statistics*, 88(1): 182–186.

Dunlevy, James A., and William K. Hutchinson. 1999. The Impact of Immigration on American Import Trade in the Late Nineteenth and Early Twentieth Centuries. *Journal of Economic History*, 59(4): 1043–1062.

———. 2001. The Pro-trade Effect of Immigration on American Exports During the Late Nineteenth and Early Twentieth Centuries, IZA Discussion Paper No. 375.

Eaton, Jonathan, and Akiko Tamura. 1994. Bilateralism and Regionalism in Japanese and U.S. Trade and Direct Foreign Investment Patterns. *Journal of the Japanese and International Economies*, 8(4): 478–510.

Eaton, Jonathan, and Samuel Kortum. 2002. Technology, Geography and Trade. *Econometrica*, 70(5): 1741–1779.

Ehrlich, Laura, and Gustavo J. Canavire Bacarreza. 2006. The Impact of Migration on Foreign Trade: A Developing Country Approach. *Latin American Journal of Economic Development*, 6: 125–146.

Epstein, Gil S., and Ira N. Gang. 2006. Ethnic Networks and International Trade, in *Labor Mobility and the World Economy*, edited by Federico Foders and Rolf J. Langhammer. Berlin: Springer Verlag.

Feenstra, Robert C., James Markusen, and Andrew Rose. 2001. Using the Gravity Equation to Differentiate among Alternative Theories of Trade. *Canadian Journal of Economics*, 34(2): 430–447.

Felbermayr, Gabriel J., and Farid Toubal. 2008. Revisiting the Trade-migration Nexus: Evidence From New OECD Data, Working Paper, Germany: University of Tubingen.

Ghatak, Subrata, Monica Ioana Pop Silaghi, and Vince Daly. 2009. Trade and Migration Flows between Some CEE Countries and the UK. *Journal of International Trade and Economic Development*, 18(1): 61–78.

Ghosh, Sucharita, and Steven Yamarik. 2004. Are Regional Trading Arrangements Trade Creating? An Application of Extreme Bounds Analysis. *Journal of International Economics*, 63(2): 369–395.

Girma, Sourafil, and Zhihao Yu. 2002. The Link between Immigration and Trade: Evidence from the U.K. *Review of World Economics*, 138(1): 115–130.

Gould, David M. 1994. Immigration Links to the Home Nation: Empirical Implications for US Bilateral Trade Flows. *The Review of Economics and Statistics*, 76(2): 302–316.

Gupta, Sanjeev, Catherine Pattillo, and Smita Wagh. 2007. Making Remittances Work for Africa. *Finance and Development*, 44(2): 1–8.

Head, Keith, and John Ries. 1998. Immigration and Trade Creation: Econometric Evidence from Canada. *Canadian Journal of Economics*, 31(1): 47–62.

Head, Keith, and Theirry Mayer. 2000. Non-Europe: The Magnitude and Causes of Market Fragmentation in Europe. *Weltwirtschaftliches Archive*, 136(2): 285–314.

Helliwell, John F. 1997. National Borders, Trade and Migration. *Pacific Economic Review*, 3(3): 165–185.

Helpman, Elhanan, and Paul R. Krugman. 1985. *Market Structure and Foreign Trade — Increasing Returns, Imperfect Competition, and the International Economy*. Cambridge, MA: MIT Press.

Herander, Mark G., and Luz A. Saavedra. 2005. Exports and the Structure of Immigrant-based Networks: The Role of Geographic Proximity. *Review of Economics and Statistics*, 87(2): 323–335.

Hong, Tan Chuie, and A. Solucis Santhapparaj. 2006. Skilled Labor Immigration and External Trade in Malaysia: A Pooled Data Analysis. *Perspectives on Global Development and Technology*, 5(4): 351–366.

Hutchinson, William K. 2002. Does Ease of Communication Increase Trade? Commonality of Language and Bilateral Trade. *Scottish Journal of Political Economy*, 49(5): 544–556.

———. 2005. Linguistic Distance as a Determinant of Bilateral Trade. *Southern Economic Journal*, 72(1): 1–15.

International Monetary Fund (IMF). 2008. *International Financial Statistics: CD-ROM*. Washington, DC: International Monetary Fund.

International Trade Centre. 2009. *Trade Map — Trade Statistics for International Business Development*. http://www.trademap.org (accessed January 2009).

Iranzo, Susana, and Giovanni Peri. 2009. Migration and Trade: Theory with an Application to the Easter-Western European Integration, Working Paper Series No. 05/09, Center for Research and Analysis of Migration.

Ivanov, Andrey V. 2008. Informational Effects of Migration on Trade, Center for Doctoral Studies in Economics Discussion Paper No. 42, University of Manheim, May.

Jansen, Marion, and Roberta Piermartini. 2005. The Impact of Mode 4 Liberalization on Bilateral Trade Flows, CEPR Discussion Paper No. 5382.

Jiang, Shan 2007. Immigration, Information, and Trade Margins, Department of Economics Working Paper No. 2007-16, University of Calgary.

Konecny, Tomas 2007. Can Immigrants Hurt Trade?, CERGEI-EI Working Paper Series 329.

Lewer, Joshua J. 2006. The Impact of Immigration on Bilateral Trade: OECD Results from 1991–2000. *Southwestern Economic Review*, 33(1): 9–22.

Lewer, Joshua J., and Hendrick Van den Berg. 2009. Does Immigration Stimulate International Trade? Measuring the Channels of Influence. *The International Trade Journal*, 23(2): 187–230.

Limao, Nuno M., and Anthony J. Venables. 2001. Infrastructure, Geographical Disadvantage, Transport Costs and Trade. *World Bank Economic Review*, 15(3): 451–479.

McDonald, John F., and Robert A. Moffitt. 1980. The Uses of Tobit Analysis. *The Review of Economics and Statistics*, 62(2): 318–321.

Morgenroth, Edgar, and Martin O'Brien. 2008. Some Further Results of the Impact of Migrants on Trade, DYNREG Working Paper No. 26.

Mundra, Kusum. 2005. Immigration and International Trade: A Semiparametric Empirical Investigation. *Journal of International Trade & Economic Development*, 14(1): 65–91.

Murat, Marina, and Barbara Pistoresi. 2009a. Migrant Networks: Empirical Implications for the Italian Bilateral Trade. *International Economic Journal*, 23(3): 371–390.

———. 2009b. Emigrant and Immigrant Networks in FDI. *Applied Economics Letters*, 16(2): 1261–1264.

Parsons, Chris 2005. Quantifying the Trade-migration Nexus of the Enlarged EU, Sussex Migration Working Paper No. 27.

Parsons, Chris R., Ronald Skeldon, Terrie L. Walmsley, and L. Alan Winters. 2005. Quantifying the International Bilateral Movements of Migrants, Globalisation and Poverty Working Paper T13, Development Research Centre on Migration, University of Sussex.

Piperakis, Andromachi S., Chris Milner, and Peter W. Wright. 2003. Immigration, Trade Costs and Trade: Gravity Evidence for Greece. *Journal of Economic Integration*, 18(4): 1–13.

Qian, Mingming. 2008. The Economic Relationship between Trade and Immigration in New Zealand, Massey University — Albany Integration of Immigrants Programme Working Paper No. 1.

Ratha, Dilip, and William Shaw. 2007. South-South Migration and Remittances, World Bank Working Paper No. 102.

Rauch, James, and Vitor Trindade. 2002. Ethnic Chinese Networks in International Trade. *The Review of Economics and Statistics*, 84(1): 116–130.

Tadesse, Bedassa, and Roger White. 2008. Do Immigrants Counter the Effect of Cultural Distance on Trade? Evidence from US State-level Exports. *Journal of Socio-Economics*, 37(6): 2304–2318.

⸻. 2010a. Cultural Distance as a Determinant of Bilateral Trade Flows: Do Immigrants Counter the Effect of Cultural Differences. *Applied Economic Letters*, 17(2): 147–152.

⸻. 2010b. Does Cultural Distance Hinder Trade? A Comparative Study of Nine OECD Member Nations. *Open Economies Review*, 21(2): 237–261.

Tai, Silvio H.T. 2007. Immigration and Trade: What is the Difference between Exportations and Importations, Working Paper.

Tinbergen, Jan. 1962. *The World Economy*. Suggestions for an International Economic Policy. New York: Twentieth Century Fund.

United States Central Intelligence Agency (CIA). 2008. *CIA World Factbook*. https://www.cia.gov/cia/publications/factbook/index.html.

Wagner, Don, Keith Head, and John Ries. 2002. Immigration and the Trade of Provinces. *Scottish Journal of Political Economy*, 49(5): 507–525.

White, Roger. 2007a. Immigrant-Trade Links, Transplanted Home Bias and Network Effects. *Applied Economics*, 39(7): 839–852.

⸻. 2007b. An Examination of the Danish Immigrant-trade Link. *International Migration*, 45(5): 61–86.

⸻. 2008. Exploring a US Immigrant — Intra-industry Trade Link. *Eastern Economic Journal*, 34(2): 252–262.

⸻. 2009a. Immigration, Trade and Product Differentiation. *Economic Issues*, 14(1): 43–63.

⸻. 2009b. Immigration, Trade and Home Country Development: State-level Variation in the US Immigrant-export Link. *Journal of International Migration and Integration*, 10(2): 121–143.

White, Roger, and Bedassa Tadesse. 2007. Immigration Policy, Cultural Pluralism and Trade: Evidence from the White Australia Policy. *Pacific Economic Review*, 12(4): 489–509.

⸻. 2008a. Cultural Distance and the US Immigrant-trade Link. *The World Economy*, 31(8): 1078–1096.

⸻. 2008b. Immigrants, Cultural Distance and US State-level Exports of Cultural Products. *North American Journal of Economics and Finance*, 19(3): 331–348.

⸻. 2009a. East-West Migration and the Immigrant-trade Link: Evidence from Italy. *The Romanian Journal of European Studies*, 5–6/2007: 67–84.

⸻. 2009b. Does the Immigrant-trade Link Vary Across Migration Corridors?, Working Paper.

⸻. 2010. Refugee and Non-refugee Immigrants, Cultural Distance and US Trade with Immigrant Home Countries. *Journal of International Trade & Economic Development*, 19(2): 289–317.

World Bank. 2006. *Global Economic Prospects: Economic Implications of Remittances and Migration*. Washington, DC: World Bank.

⸻. 2008. *World Development Indicators: Online Version*, Washington, DC: Development Data Group of the World Bank's International Economics Department, http://databank.worldbank.org/ddp/home.do (accessed December 2008).