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1. INTRODUCTION

A LARGE volume of literature documents a link between immigrants and trade. However, the effect that cultural differences between the immigrants' host and home countries' may have on trade flows and the extent to which immigrants may counteract this effect has received scant coverage. We hypothesise that immigrants counter the trade-inhibiting influences of cultural differences between their host and home countries and, as a result, both initiate trade and increase the intensity of existing trade, which in turn has pro-development effects. Our work thus extends the literature by relating the influences of cultural distance and its component dimensions on host–home country trade flows with the effects that immigrants may have in counteracting the trade-inhibiting effects of cultural differences.

The existing literature indicates that immigrant preferences for home country products increase host country imports from their home countries if immigrants arrive to find neither desired home country products nor reasonable substitutes available. Additionally, immigrants increase host country imports from and exports to their home countries as they are able to exploit connections to social and/or business networks in their home countries or possess knowledge of home country customs or social norms that are expected to be adhered to when conducting business. This may include knowledge of the initiation and execution of informal contract structures or personal connections that decrease the search costs associated with matching potential trading partners or that convey reputation-based assurances and, thus, reduce the risk of opportunistic behaviour (Rauch, 1999, 2001; Rauch and Trindade, 2002; Rauch and Watson, 2002). Effectively, immigrants function as conduits; however, their ability to bridge trade gaps between their host and home countries may be influenced by cultural differences

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(distance) that may reduce the likelihood of trade taking place and, thus, the level of aggregate trade flows.

Gould (1994), examining US data, first reports an immigrant–trade link, positing that the presence and magnitude of such links diminish in likelihood and strength, respectively, as immigrants assimilate to the home country. This suggests that host–home country dissimilarity, cultural and otherwise, may engender opportunities for immigrants to exert pro-trade influences. Subsequent research has identified positive relationships between immigrants and trade for several countries. Helliwell (1997), Head and Ries (1998) and Wagner et al. (2002) document positive links for Canada. Similarly, Ching and Chen (2000) report a link between immigrants and Canada–Taiwan trade. Blanes (2003), Piperakis et al. (2003) and Bryant et al. (2004) find pro-trade immigrant influences for Spain, Greece and New Zealand, respectively. Emphasising the role of networks, Combes et al. (2005) report a sub-national intra-France migrant–trade relationship. Similarly, several recent studies focus on the role of immigrant/ethnic networks in promoting US state-level exports (Co et al., 2004; Bardhan and Guhathakurta, 2005; Herander and Saavedra, 2005; Bandyopadhyay et al., 2006; Dunlevy, 2006).

Considering variation in the effects of immigrants on trade across home countries, White (2007) finds immigrants from low-income countries drive the US immigrant–trade link. Girma and Yu (2002), White (2006a) and White and Tadesse (2007a) suggest, for the UK, the US and Australia, respectively, that social and/or institutional dissimilarity between host and home countries may underlie the immigrant–trade relationship. If a nation's culture is an amalgam of its population's shared habits and traditions, learned beliefs and customs, attitudes, norms and values, it follows that cultural dissimilarity may correspond with social/institutional dissimilarity. Examining the US immigrant–trade link, White (2006b) finds an amplified effect of immigrants on trade in cultural products. Despite reporting the pro-trade effects of immigrants at various levels, only one study (White and Tadesse, 2007b) considers the potential effects of cultural distance. Employing an aggregate measure of cultural distance, these authors find that US state-level exports to immigrants' home countries decrease significantly as the cultural distance between the US and the immigrant home countries increases. Immigrants, however, are found to partially offset the influence of cultural distance, contributing to the initiation of exporting and the intensification of existing exports.

Employing data that span the years 1997–2004, we first examine the influence of immigrants and cultural distance on US imports from and exports to 54 home countries.[1] We then decompose the measure of cultural distance to examine the relative influences of the 'Traditional authority vs. Secular-Rational authority'

[1] The Appendix lists the home countries included in the dataset.

(*TSR*) and 'Survival values vs. Self-Expression values' (*SSE*) dimensions of culture on trade flows between the US and immigrants' home countries. Confirming the results of prior studies, our analysis shows that while cultural distance inhibits trade flows, immigrants exert positive influences on host–home country trade flows that partially offset the influence of cultural distance. Extending the literature, we also find that differences in the (*TSR*) dimension of culture inhibits trade between the US and immigrants' home countries, while differences in the *SSE* dimension reduce US import levels and increase US exports. While immigrants ameliorate the trade-inhibiting influences of both dimensions of cultural distance and increase US imports from their respective home countries, our findings suggest that the pro-trade effects of immigrants more prominently counter the trade-inhibiting effects of the *TSR* dimension in terms of increasing US exports.

The importance of this study is magnified when one considers that, owing to global economic integration and increased fragmentation of production processes, an ever-increasing number of firms now rely on production chains that straddle politically and culturally distinct areas. As a result, raw materials and components originating in one culturally distinct area are manufactured in another area, while assembly, marketing and distribution are taking place in other venues. Consumption decisions made in one culturally distinct area thus provide important information that impact, almost immediately, the production of goods elsewhere in the world. While such intercultural dependence may promote economic development, it also increases risk and transaction costs for certain cultural regimes. For instance, economic integration of small countries, such as Ghana or Nepal, with culturally distinct and larger economies, such as the US or China, may promote the economic development of the former countries as trade and finance may reduce resource and market size constraints. However, heavy cultural interdependence may also render the small countries more susceptible to exogenous shocks as cultures that emphasise traditional authority may face greater transaction costs when conducting trade with societies that stress self-expression. Understanding the role immigrants could play in bridging this gap to promote trade flows is, thus, important for policy makers.

The paper proceeds as follows. Section 2 introduces the cultural distance variable and discusses its calculation and component dimensions. Section 3 presents the estimation strategy and regression specification. Section 4 details the econometric results, and Section 5 concludes.

2. CULTURAL DISTANCE VARIABLES: CALCULATION AND COMPONENTS

We use data from the World Values Surveys (WVS) and the European Values Surveys (EVS) (Inglehart et al., 2004; Hagenaars et al., 2003) to calculate the

cultural distance between the US and each country in our sample.[2] The surveys, conducted between 1998 and 2001, provide standardised data from representative national samples for a broad and varying set of topics that relate to economics, politics, religion, sexual behaviour, gender roles, family values, communal identities, civic engagement, ethical concerns, environmental protection, and scientific and technological progress (Inglehart et al., 2004).[3] Factor analysis, applied by Inglehart et al. (2004), results in classification of respondents along the two dimensions of culture mentioned above: (1) Traditional authority vs Secular-Rational authority and (2) Survival values vs Self-Expression values.

The *TSR* dimension of culture reflects the contrast between societies in which deference to the authority of a God, the nation or to the family is considered important or an expectation, and those societies in which individualism and self-expression are stressed. Traditional authority is characterised by an emphasis on obedience to religious authority, adherence to family or communal obligations, national pride and norms of sharing. It is common for members of such societies to view large families and large numbers of children as positive, or desirable, achievements. Divorce, abortion, euthanasia and suicide are all viewed in a very negative light. Members of Secular-Rational societies tend to hold opposing views on these topics. Secular-Rational societies adhere to rational–legal norms and tend to emphasise economic accumulation and individual achievement.

The *SSE* dimension of culture reflects differences between societies that emphasise hard work and self-denial (Survival values) and those that place greater emphasis on quality of life issues, such as women's emancipation and equal status for racial and sexual minorities (Self-Expression values). Societies in which individuals focus more on survival tend to emphasise economic and physical security more than autonomy. Generally speaking, members of these societies find foreigners and outsiders, ethnic diversity and cultural change to be threatening. This correlates with an intolerance of homosexuals and minorities, adherence to traditional gender roles, and an authoritarian political outlook. Members of societies in which Self-Expression values are emphasised tend to hold opposing preferences on these issues.

We calculate average *TSR* and *SSE* values for the US and each trading partner in our dataset and then calculate each home country's cultural distance from the US (country *i*) as

$$CDIST_{ij} = \sqrt{\left(\overline{TSR_j} - \overline{TSR_i}\right)^2 + \left(\overline{SSE_j} - \overline{SSE_i}\right)^2}.$$

[2] The number of trading partners in our analyses is determined by the availability of data on cultural distance.

[3] Additional information regarding the surveys is available at www.worldvaluessurvey.com.

Figure 1 illustrates this process and the cultural distances constructed from the WVS/EVS data.[4] Placing the US at the centre of the cross-plot, vertical and horizontal distances from the origin represent US–home country variation along the Survival values vs. Self-Expression values ($dSSE = SSE_j - SSE_i$) and Traditional authority vs. Secular-Rational authority ($dTSR = TSR_j - TSR_i$) dimensions of culture, respectively. For example, Denmark is estimated to be more culturally distant ($CDIST = 1.32$) from the US than is Venezuela ($CDIST = 0.90$), yet Denmark ($dSSE = 0.29$, $dTSR = 1.29$) is nearer the US in terms of the *SSE* dimension and Venezuela is nearer in terms of the *TSR* dimension ($dSSE = -0.62$, $dTSR = -0.66$).

Table 1 presents *SSE* and *TSR* values for each trading partner and corresponding cultural distances from the US. Generally speaking, many European nations, along with Canada, Australia and Mexico, are estimated to be culturally nearest to the US. While Macedonia, Russia, China, Morocco and Moldova are estimated to be the most culturally distant nations, 14 of the 20 most distant nations are former Soviet states and Soviet satellites in Eastern Europe. It is important to note, however, that the values are estimates and, as such, strict ordinal interpretation of the rankings may prove problematic.

In addition, while many European nations appear culturally similar to the US, the observation that countries such as India, Mexico, Uruguay and Venezuela appear to be less culturally distant from the US as compared to Denmark, Germany, Sweden and many Eastern European countries may be puzzling. It is possible that this observation is due to our composite measure of cultural distance assigning equal weight to both dimensions of culture. Among industrialised nations, the US has the highest traditional authority score (i.e. God, state, authority, family values are important). As a result, the cultural distance between the US and Latin American and South Asian countries is less than the cultural distance between the US and some Northern European countries. At the same time, most Eastern European countries appear relatively culturally distant from the US because of their particularly high levels of survival values (e.g. 'being unhappy' is one of the questions included to determine the survival values score and it appears that people in Eastern Europe are among the unhappiest in the world, while Americans are among the happiest).

3. INTUITION AND EMPIRICAL SPECIFICATION

With few exceptions, studies of the immigrant–trade relationship have employed variations of the standard gravity model. Tinbergen (1962) first applied

[4] On average, the Values Surveys provide *TSR* and *SSE* values for 1,190 residents of each nation in our sample. For the US, 1,117 residents were surveyed. Mean values are unweighted arithmetic averages.

FIGURE 1
Cultural Distances from the United States

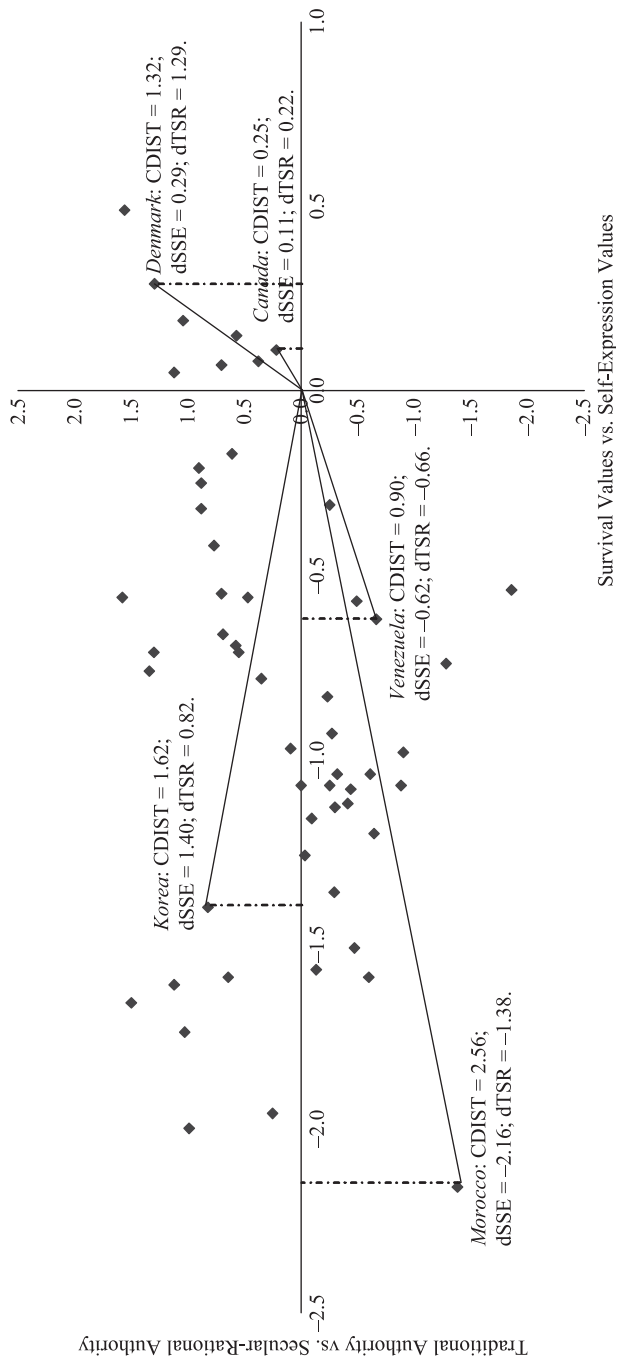

TABLE 1
Estimated US–Home Country Cultural Distances

Rank	*Country*	*TSR*	*SSE*	*Cultural Distance*	*Rank*	*Country*	*TSR*	*SSE*	*Cultural Distance*
1	Canada	–0.15	1.07	0.25	28	Brazil	–0.81	–0.12	1.16
2	Australia	0.01	1.04	0.39	29	Philippines	–0.67	–0.17	1.16
3	Ireland	–0.62	0.65	0.40	30	Peru	–0.78	–0.16	1.19
4	United Kingdom	0.20	1.11	0.59	31	Malta	–0.98	–0.08	1.21
5	Austria	0.24	0.79	0.63	32	Poland	–0.40	–0.30	1.26
6	New Zealand	0.33	1.03	0.71	33	Denmark	0.92	1.25	1.32
7	Italy	0.10	0.40	0.73	34	Nigeria	–1.27	–0.02	1.33
8	Mexico	–0.86	0.39	0.75	35	Egypt	–1.01	–0.24	1.36
9	Uruguay	–0.02	0.18	0.85	36	Tanzania	–1.25	–0.11	1.38
10	Argentina	–0.60	0.13	0.85	37	Indonesia	–0.66	–0.40	1.39
11	Belgium	0.40	0.54	0.88	38	Colombia	–1.65	0.22	1.48
12	France	0.33	0.41	0.89	39	Germany	0.93	0.25	1.48
13	Israel	0.21	0.27	0.90	40	Czech Rep.	0.97	0.20	1.54
14	Spain	0.18	0.25	0.90	41	Turkey	–0.50	–0.61	1.57
15	Venezuela	–1.03	0.34	0.90	42	Bangladesh	–0.84	–0.55	1.58
16	Finland	0.51	0.71	0.91	43	Korea, Rep.	0.45	–0.44	1.62
17	Switzerland	0.53	0.75	0.93	44	Sweden	1.19	1.45	1.64
18	Luxembourg	0.51	0.64	0.93	45	Japan	1.21	0.40	1.67
19	Greece	0.32	0.30	0.95	46	Pakistan	–0.97	–0.63	1.70
20	India	–0.28	–0.01	0.97	47	Hungary	0.27	–0.63	1.71
21	Chile	–0.64	0.03	0.97	48	El Salvador	–2.23	0.42	1.94
22	Netherlands	0.67	1.15	1.06	49	Estonia	0.75	–0.65	1.96
23	Portugal	–0.37	–0.11	1.06	50	Romania	–0.12	–1.00	1.97
24	South Africa	–0.69	–0.08	1.09	51	Bulgaria	0.66	–0.78	2.01
25	Vietnam	–0.62	–0.11	1.09	52	Russia	0.62	–1.04	2.23
26	Norway	0.75	1.01	1.12	53	China	1.13	–0.70	2.23
27	Singapore	–0.46	–0.20	1.16	54	Morocco	–1.75	–1.20	2.56

Note:
See text for details regarding cultural distance variable calculation. Corresponding *TSR* and *SSE* values for the US are –0.37 and 0.96, respectively.

the gravity specification to trade data and more recent research has established theoretical foundations for the model (Anderson, 1979; Bergstrand, 1985; Helpman and Krugman, 1985; Davis, 1995; Deardorff, 1998; Feenstra et al., 2001; Eaton and Kortum, 2002; and Anderson and van Wincoop, 2003). The model posits that trade between two countries i and j during year t (T_{ijt}) increases with the countries' combined economic mass ($Y_{it}Y_{jt}$) and decreases with geodesic distance (D_{ij}). Higher levels of home country GDP (Y_{jt}) imply greater potential export markets for the US (country i) goods and increased levels of US imports. Similarly, higher US GDP (Y_{it}) signals an increased capacity to export and import. Geodesic distance between Washington, DC, and the capital city of country j, measured in miles using the great circle method, is a proxy for transport costs. Λ is the constant of proportionality. Equation (1) illustrates.

$$T_{ijt} = \Lambda\left(\frac{Y_{it}Y_{jt}}{D_{ij}}\right). \tag{1}$$

We augment equation (1) to allow for additional factors that may enhance or inhibit trade. Taking natural logarithms of the continuous variables on both sides of the resulting equation and adding an assumed independently and identically distributed error term, ε_{ijt}, produces our estimation equation:

$$\begin{aligned}\ln T_{ijt} = {} & \alpha_0 + \beta_1 \ln\left(\frac{T_{ijt-1}}{T_{ijt-2}}\right) + \beta_2 \ln IMM_{ijt} + \beta_3(\ln IMM_{ijt} \times \ln CDIST_{ij}) \\ & + \beta_4 \ln CDIST_{ij} + \beta_5 \ln D_{ij} + \beta_6 \ln Y_{jt} + \beta_7 \ln\left(\frac{Y}{POP}\right)_{jt} \\ & + \beta_8 \ln\left(\frac{XRATE_{ijt}}{XRATE_{ijt-1}}\right) + \beta_9 \ln OPEN_{jt} + \beta_{10} ENGLISH_j \\ & + \beta_{11} FTA_{ijt} + \beta_{12} OPEC_{jt} + \beta_\Omega \Omega_t + \varepsilon_{ijt}. \end{aligned} \tag{2}$$

The vector of dependent variables includes both aggregate imports and aggregate exports. A vector of time dummies, Ω_t, is included to absorb macroeconomic fluctuations and trade-influencing policy decisions. As country i is the US, its GDP does not vary across trading partners, and the respective effects are subsumed into the time dummies. All monetary values, trade flows and otherwise, have been normalised to 2000 US dollars using GDP deflators. GDP data are from the World Bank (2006), while trade data are from the USITC Trade database.

We begin our analysis by examining the influence of immigrants on imports and exports, separately, while excluding the cultural distance variable ($CDIST_{ij}$) from the estimation equation. We then augment our estimation equation with the cultural distance variable and a term that interacts the immigrant stock with the measure of cultural distance. Finally, we decompose the cultural distance variable into *dTSR* and *dSSE* components. This permits development of an understanding of the links between immigration, cultural distance and host–home country trade flows and a detailed grasp of the relationships between dimensions of cultural distance and immigrant–trade links.

We estimate equation (2) using the random effects feasible generalised least squares (FGLS) method.[5] While the IMM_{ijt} variable controls for a potential

[5] Given the panel nature of the data, we first employ the random effects regression method. Both the Breusch and Pagan and the Lagrangian multiplier tests indicate problems of panel-level heteroscedasticity and first-order autocorrelation within the data. To correct for both problems, we employ the random effects FGLS method.

pro-trade effect of immigrants, the corresponding coefficient in equation (2) represents a base effect of immigrants on trade. The coefficient on the term that interacts the IMM_{ijt} variable and the $CDIST_{ij}$ variable captures deviations from this estimated base effect. The proportional influence of immigrants from the typical home country, in countering the trade-inhibiting effect of cultural distance, is thus given by the sum of the two coefficients.

Country-level immigrant stock values for 1990 and 2000 are from Gibson and Lennon (1999) and the US Census Bureau (2006). Annual immigrant inflow data for the years 1991–2004 are from the US Department of Homeland Security (2004). We accept the census values as accurate and utilise inflow data to produce estimates of intra-census year immigrant stock values. For example, equation (3) illustrates the estimation of immigrant stocks for the years 1991–99:

$$IMM_{ijt} = IMM_{ij1990} + \sum_{1991}^{t} INFLOW_{ijt} + \delta_j. \tag{3}$$

δ_j is an adjustment factor accounting for return migration, death of immigrants during intra-census years and amnesties. The adjustment factor is given as the year 2000 census count of the country j immigrant stock less the sum of the 1990 country j immigrant stock and the immigrant inflow over the years 1991–2000 divided by 10. Equation (4) illustrates.

$$\delta_j = \frac{IMM_{ij2000} - \left[IMM_{ij1990} + \sum_{t=1991}^{2000} INFLOW_{ijt} \right]}{10}. \tag{4}$$

For the years 2001–04, the immigrant stock variable is constructed similarly. The adjustment made to the 2001 portion of the sample is based on the adjustment factor derived when estimating 1991–99 immigrant stocks.

$$IMM_{ij2001} = (IMM_{ij2000} + INFLOW_{ij2001}) \left(1 + \frac{\delta_j}{IMM_{ij2000}} \right). \tag{5}$$

The final term in equation (5), the adjustment percentage, is based on the difference between raw 2000 immigrant values (i.e. the 1990 immigrant stock and the 1991–2000 immigrant inflow) and the 2000 census counts. Combination of the 1991–99 and 2001–04 estimated immigrant stock values with the 1990 and 2000 counts results in a series of immigrant stock estimates spanning the years 1990–2004. Due to an inability to compile complete series for some variables early in the period, we restrict our study to the 1997–2004 period.

To capture the effects of trade inertia, we include the lagged one-year change in the dependent variable (T_{ijt-1}/T_{ijt-2}). GDP per capita $(Y/POP)_{jt}$ represents the

average standard of living in country j. The change in the annual US–country j exchange rate ($XRATE_{ijt}/XRATE_{ijt-1}$) captures terms of trade effects. Expressed as foreign currency units per dollar, an increase indicates depreciation of country j's currency and an expected increase (decrease) in US imports (exports). $OPEN_{jt}$, given as the sum of imports and exports divided by GDP, measures a country's propensity to trade (Head and Ries, 1998). The *World Development Indicators* (World Bank, 2006) provide data for the GDP per capita, exchange rate and openness variables. Capturing the effects of trade agreements, FTA_{ij} is equal to 1 if country j is in an agreement with the US for six or more months during year t. As common language has been identified as an important determinant of trade flows in gravity specifications (Hutchinson, 2002; Dunlevy, 2006), we include a dummy variable ($ENGLISH_j$) which is equal to 1 if English is commonly used in country j (CIA, 2006). $OPEC_{jt}$ controls for petroleum imports and is equal to 1 if country j was an OPEC member for six or more months in year t. Table 2 presents descriptive statistics.

4. ESTIMATION RESULTS

Results generated when estimating variations of equation (2) are presented in Table 3. The first set of results (reported in columns (a) and (b)) correspond to the specification where neither the cultural distance variable nor the term interacting it with the immigrant stock variable are included. In both estimations, we find the coefficients on the immigrant stock variables are positive and significant. We take this as confirmation of the pro-trade influence of immigrants reported in earlier studies. Since the double-log functional form of equation (2) permits interpretation of coefficients as elasticities, based on these results we can say that an assumed 1 per cent increase in the immigrant stock variable yields estimated increases in US imports from and exports to country j of 0.17 per cent and 0.1 per cent, respectively, thus indicating a greater proportional influence of immigrants on US imports relative to the influence of immigrants on exports. While it is not necessary to observe such a pattern, it is a common finding in the literature. Findings from prior studies suggest that differences in the influence of immigrants on exports and imports result from the ability of immigrants to exploit social and business connections that may generate comparable proportional increases in imports and exports, while immigrants' preferences for home country goods affect only imports.

The remaining coefficients conform, generally, to *a priori* expectations. Greater geodesic distance from the US, implying higher transport costs, reduces trade. As expected, higher home country GDP corresponds with greater US imports and exports. In several estimations, higher home country GDP per capita, employed as a measure of average living standards in the home country, is found to increase trade. The coefficient on the variable representing trade openness is

TABLE 2
Descriptive Statistics

Variable	*Mean*
$Immigrants_{ijt}$	418,219.7
	(1,166,245)
$Exports_{ijt}$ (\$000s)	10,744,083
	(23,984,622)
$Imports_{ijt}$ (\$000s)	18,871,178
	(40,349,334)
$Cultural\ Distance_{ij}$	1.2313
	(0.4879)
$\mid TSR_j - TSR_i \mid$	0.6984
	(0.4433)
$\mid SSE_j - SSE_i \mid$	0.8796
	(0.5447)
$\Delta \ln Exchange\ Rate_{ijt}$	–0.0488
	(0.7204)
$Geodesic\ Distance_{ij}$ (in miles)	8,438.45
	(3,473.35)
$Gross\ Domestic\ Product_{jt}$ (\$000s)	376,127,024
	(728,217,858)
$GDP\ per\ capita_{jt}$	12,001.42
	(11,827.47)
$English_j$	0.4444
	(0.4976)
$Free\ Trade\ Agreement_{ijt}$	0.0556
	(0.2294)
$OPEC_{jt}$	0.0556
	(0.2294)
$Openness_{jt}$	0.7859
	(0.4694)

Notes:
TSR and SSE are abbreviations for 'Traditional vs Secular Rational' values and 'Survival vs Self-Expression' values, respectively. Arithmetic mean values reported with standard deviations in parentheses. Monetary values are in 2000 US dollars. See text for details regarding variable construction.

positive and significant in all estimations, indicating the US is more likely to engage in trade with nations that trade more intensively relative to the sizes of their economies. The coefficients on the English-language dummy variables are positive, confirming that common language corresponds with increased trade flows. Being party to a free trade agreement with the US or a member of OPEC generally increases both US imports and exports, with imports affected proportionally more. Although not significantly different from zero, coefficients on the annual change in the US–country *j* exchange rate are typically of the expected sign. Depreciation of country *j*'s currency corresponds to an increase in US imports and a decrease in US exports.

TABLE 3
Estimated Immigrant–Trade Links

Dependent Variable:	ln $Imports_{ijt}$ *(a)*	ln $Exports_{ijt}$ *(b)*	ln $Imports_{ijt}$ *(c)*	ln $Exports_{ijt}$ *(d)*	ln $Imports_{ijt}$ *(e)*	ln $Exports_{ijt}$ *(f)*
ln $Immigrants_{ijt}$	0.1683***	0.1011***	–0.1335***	–0.0769*	–0.1943***	–0.2441***
	(0.0124)	(0.021)	(0.0397)	(0.0394)	(0.0391)	(0.0312)
ln $Immigrants_{ijt}$ ×	..	..	0.2326***	0.1741***	..	..
$Cultural\ Distance_{ij}$	..	..	(0.0329)	(0.0387)	..	..
$Cultural\ Distance_{ij}$	..	..	–2.4624***	–2.082***	..	..
	..	..	(0.389)	(0.4656)	..	..
ln $Immigrants_{ijt}$ ×	..	..	..	..	0.3975***	0.507***
$\lvert TSR_j - TSR_i \rvert$	..	..	..	..	(0.0513)	(0.0376)
ln $Immigrants_{ijt}$ ×	..	..	..	..	0.0715***	–0.0582**
$\lvert SSE_j - SSE_i \rvert$	..	..	..	..	(0.0268)	(0.028)
$\lvert TSR_j - TSR_i \rvert$	..	..	..	..	–4.5352***	–6.0067***
	..	..	..	..	(0.6031)	(0.4807)
$\lvert SSE_j - SSE_i \rvert$	..	..	..	..	–0.925***	0.5133*
	..	..	..	..	(0.3208)	(0.3073)
Lagged Δ Dep. Variable	0.0812	–0.022	0.0587	–0.0389	0.07	–0.0119
	(0.0544)	(0.0358)	(0.0514)	(0.0346)	(0.0531)	(0.0375)
Δ ln $Exchange\ Rate_{ijt}$	–0.00001	–0.0017	0.0002	–0.0036	0.0018	–0.0064
	(0.0034)	(0.0088)	(0.0084)	(0.0084)	(0.0084)	(0.0081)
ln $Geodesic\ Distance_{ij}$	–0.2629***	–0.7035***	–0.3463***	–0.7773***	–0.1656***	–0.712***
	(0.0216)	(0.0731)	(0.0618)	(0.0702)	(0.0642)	(0.0718)
ln GDP_{jt}	0.9993***	0.811***	0.9943***	0.7836***	1.0144***	0.871***
	(0.0236)	(0.0263)	(0.022)	(0.0219)	(0.0287)	(0.0221)

TABLE 3 *Continued*

Dependent Variable:	ln $Imports_{ijt}$ *(a)*	ln $Exports_{ijt}$ *(b)*	ln $Imports_{ijt}$ *(c)*	ln $Exports_{ijt}$ *(d)*	ln $Imports_{ijt}$ *(e)*	ln $Exports_{ijt}$ *(f)*
ln *GDP per capita*$_{jt}$	–0.0011	0.2044***	0.0616***	0.2063***	–0.0391	0.0525
	(0.0175)	(0.0312)	(0.0237)	(0.0362)	(0.0486)	(0.0385)
Trade Openness$_{jt}$	0.7755***	0.1109*	0.6799***	0.1324**	0.8551***	0.3799***
	(0.0532)	(0.0588)	(0.0577)	(0.0616)	(0.0545)	(0.0661)
English$_{j}$	0.325***	0.7232***	0.4601***	0.7178***	0.3439***	0.7246***
	(0.0369)	(0.0526)	(0.0397)	(0.052)	(0.0522)	(0.0533)
FTA_{ijt}	1.2653***	0.2073	1.6024***	0.275	1.9731***	0.5066**
	(0.0628)	(0.1813)	(0.1432)	(0.1915)	(0.1536)	(0.2007)
$OPEC_{j}$	1.49***	0.3408***	1.6009***	0.4198***	1.3887***	–0.1392
	(0.1149)	(0.0912)	(0.1149)	(0.0928)	(0.1678)	(0.0981)
Constant	–4.0579***	3.8769***	–0.4463	7.3637***	–0.7658	7.83***
	(0.591)	(0.8078)	(1.0451)	(0.9511)	(1.2686)	(0.6878)
N	378	378	378	378	378	378
Adjusted R^2	0.83	0.83	0.84	0.84	0.86	0.87
Wald χ^2	21,697***	5,805***	24,131***	6,917***	22,867***	10,091***
Log Likelihood	248.55	216.33	258.6	224.15	257.43	225.85

Notes:
Heteroscedastic-consistent standard errors in parentheses.
***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.
Coefficients on 'year dummy variables' not presented. SSE and TSR are abbreviations that represent 'Survival values vs Self-Expression values' and 'Traditional authority vs Secular-Rational authority' dimensions of culture.

Having reported positive immigrant influences on imports and exports, the next step in our estimation strategy is to include the composite cultural distance variable and an interaction term between the immigrant stock variable and the measure of cultural distance. Results are reported in columns (c) and (d) of Table 3. Coefficients on the immigrant stock variables are negative, while the coefficients on the interaction terms are positive. From these estimations, the proportional influences of immigrants on US trade with the typical home country is given by the sum of the coefficient on the immigrant stock variable and the product of the coefficient on the interaction variables and the mean value of the cultural distance variable.[6] Using the coefficients reported in columns (c) and (d) and the mean value of the cultural distance variable, reported in Table 2, we estimate that an assumed 1 per cent increase in the immigrant stock increases US imports from and exports to a typical home country by 0.15 and 0.14 per cent, respectively.[7] When considered in conjunction with the negative and significant coefficients on the cultural distance variables ($\hat{\beta} = -2.46$ and $\hat{\beta} = -2.08$), the positive and significant coefficients on the interaction terms support the notion that immigrants exert positive influences on US trade with their home countries that partially offsets the trade-inhibiting influence of cultural distance.

To examine the influences of the 'Traditional authority vs Secular-Rational authority' and 'Survival values vs Self-Expression values' dimensions of cultural differences, we decompose our measures of US–home country cultural distance into the *TSR* and *SSE* dimensions of cultural distance and include each as explanatory variables. To maintain consistency, we also interact each of these variables with the immigrant stock variable. Results are presented in columns (e) and (f). The coefficients on the variables that represent the *TSR* dimension of cultural distance are both negative and significant, indicating that greater dissimilarities between the US and immigrants' home countries along the *TSR* dimension of culture lowers both US imports from and exports to the home countries. The coefficients on the variables that measure differences along the *SSE* dimension of culture are negative with respect to imports but positive when exports are employed as the

[6] Since immigrant effects are estimated by the summation of coefficients on the immigrant stock and interaction variables, determination of joint statistical significance is based on a modified *z*-statistic that accounts for the value of each coefficient, its variance and the covariance of the variable pairs:

$$z = \frac{\hat{\beta}_{IMM} + \hat{\beta}_{INTERACTION}}{\sqrt{\text{var}(\hat{\beta}_{IMM}) + \text{var}(\hat{\beta}_{INTERACTION}) + 2\ \text{cov}(\hat{\beta}_{IMM}, \hat{\beta}_{INTERACTION})}}.$$

[7] Specifically, the proportional influences of immigrants on US imports from and exports to the typical home country are calculated as $0.1527 = -0.1335 + (0.2326 \times 1.2313)$ and $0.1375 = -0.0769 + (0.1741 \times 1.2313)$, respectively.

dependent variable. In both estimations, however, the magnitudes of coefficients are relatively small when compared to coefficients on the *TSR* dimension variables. The corresponding estimates for the proportional influences of immigrants on US–home country trade are calculated, for imports and exports individually, as the sums of the coefficients on the immigrant stock variables and the products of the coefficients on the interaction terms and relevant mean values of each dimension of cultural distance. That these values are positive (0.15 for US imports and 0.06 for US exports) indicates, once more, that immigrants counter the trade-inhibiting effects of cultural dissimilarities, specifically that of differences along the *TSR* dimension on both exports and imports and the *SSE* dimension on US imports.

In summary, the results indicate that while immigrants act to enhance US imports from their home countries by offsetting the trade-inhibiting effects of differences for both the *TSR* and *SSE* dimensions, the same cannot be stated with respect to their abilities in promoting US exports to their home countries. Accordingly, while immigrants from home countries that are culturally dissimilar from the US in terms of the *TSR* dimension of culture exert pro-export effects that transcend the negative effects of such dissimilarities, this is not the case for US exports to countries that greatly differ from the US along the *SSE* dimension of culture. The implication is that cultural dissimilarity between the US and immigrants' home countries along the *SSE* dimension is not as prohibitive as are differences along the *TSR* dimension in limiting exports and thus immigrants' abilities to promote US exports to their home countries through the use of their network connections. This result may appear surprising, given that the *SSE* dimension of culture refers to the contrast between the US and immigrant home countries in which members, generally speaking, find foreigners and outsiders, ethnic diversity and cultural change to be threatening, are often intolerant to homosexuals and minorities, and who tend to adhere to traditional gender roles and an authoritarian political outlook. However, the relatively lower costs of conducting businesses in societies that value self-expression more than survival may render moot the necessity of immigrants to offset such cultural contrast between their home countries and the US when US exports are considered.

Table 4 presents the proportional immigrant influences on imports and exports derived using the coefficients presented in Table 3 and mean values for the cultural distance and differences in *TSR* and *SSE* variables. Estimates of the proportional immigrant effects are generally consistent across specifications; however, the values presented in columns (e) and (f) may appear to vary – particularly with respect to the influence of immigrants on exports – relative to the values presented in columns (a)–(d). Comparison of estimated average per-immigrant effects also reveals striking similarity and consistency across specifications. The estimated annual per-immigrant influences on imports and

TABLE 4
Estimated Proportional and Average Per-Immigrant Effects

Control Variables Used:	ln $Imports_{ijt}$ *(a)*	ln $Exports_{ijt}$ *(b)*	ln $Imports_{ijt}$ *(c)*	ln $Exports_{ijt}$ *(d)*	ln $Imports_{ijt}$ *(e)*	ln $Exports_{ijt}$ *(f)*
No control for cultural distance	0.1683***	0.1011***	..	..	..	..
With composite cultural distance measure: *CDIST*	..	..	0.1529***	0.1375***	..	..
With decomposed cultural distance measures: *TSR* and *SSE*	..	..	..	..	0.1462***	0.0588***
Average annual per-immigrant effect	1,570.58	813.51	1,122.39	802.01	1,159.32	607.39

Notes:
Estimates correspond with results presented under same column heading in Table 3.
***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.
Values presented in columns (a) and (b) are estimated coefficients and corresponding standard errors. See text for descriptions of average annual per-immigrant effects derivation and for proportional immigrant effect calculations presented in columns (c)–(f).

exports that are presented are average values, based on annual observations during the reference period (1998–2004) for the 54 home countries in the dataset. Our results, which are based on the coefficients and the corresponding mean values of the variables, indicate the estimated per-immigrant influences on US imports range from $1,122 to $1,571, depending on the specification chosen. Similarly, the estimated per-immigrant influences on US exports range from $607 to $814, both estimates being within comparable margins of per-immigrant effects reported in related studies. For example, Gould (1994) estimates that the marginal immigrant increases US imports from and exports to their home country by $456 and $327, respectively. White (2007), considering the effects of immigrants from low-income home countries on US trade, reports per-immigrant effects of $910 for imports and $2,967 for exports. Wagner et al. (2002) report per-immigrant effects on Canadian imports and exports equal to $944 and $312, respectively. Head and Ries (1998), also studying Canada, report effects of approximately $8,000 for imports and $3,000 for exports. Finally, White and Tadesse (2007a), examining Australian data, indicate that a typical immigrant increases Australian imports by $134 to $569 and exports by $138 to $1,756.

5. CONCLUSION

By examining the influences of immigrants and cultural distance on US–home country trade, we have gleaned a deeper and more detailed understanding of the immigrant–trade relationship. Employing a composite measure of cultural distance, we confirm the findings of prior research and report that immigrants appear to exert positive influences on trade between the US and their respective home countries. This, in turn, is indicative of a pro-development effect of immigrants. These increases in trade are thought to result from preferences for home country goods that are unavailable in the US and as a result of immigrants' abilities to ameliorate information asymmetries through connections to business and/or social networks. Cultural distance is found to inhibit trade flows to the extent that the trade-enhancing effects of immigrants only partially offset the cultural distance effects.

Extending the literature, we decompose our measures of cultural distance and re-estimate the immigrant–trade relationship. Significant variation is found across the *TSR* and *SSE* dimensions of culture in terms of their respective influences on trade flows. More specifically, while the influence of immigrants on US imports from their respective home countries is similar across both dimensions of culture, we do not witness a similar relationship with regard to US exports. Immigrants from relatively dissimilar home countries, in terms of the *TSR* dimension of culture, are found to exert a positive influence on US exports. However, this is not the case with respect to the *SSE* dimension of culture.

APPENDIX: COUNTRY LISTING

Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Korea (Republic of), Luxembourg, Malta, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Poland, Portugal, Romania, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Tanzania, Turkey, United Kingdom, Uruguay, Venezuela, Vietnam.

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