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Is Cultural Distance a Determinant of International Migration Flows? Evidence from Denmark, Germany, and the Netherlands

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Abstract

We examine the relationship between source-destination country cultural differences and international migration flows using data for three immigrant destination countries (i.e., Denmark, Germany, and the Netherlands) and a cohort of 66 heterogeneous immigrant source countries during the years 1997-2002. Results obtained from the estimation of our empirical specifications using the Negative Binomial regression technique indicate that, all else equal, cultural distance is negatively related to migration flows and that larger existing immigrant stocks correspond with larger subsequent migration flows. These findings are consistent with the results reported in Belot and Ederveen (2012). Extending the literature, we report that existing immigrant stocks act to offset the migration-inhibiting influences of cultural distance. Finally, we report variation across Denmark, Germany, and the Netherlands both in terms of the migration-inhibiting influence of cultural distance and in the extents to which existing immigrant stocks act to offset this influence.

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1. Introduction

While a large literature examines the determinants of migration, little attention has been paid to the potential migration-inhibiting influence of cultural differences between source and destination countries. Defining culture as an amalgam of a society's attitudes, values, behaviors and norms, it is a representation of shared habits and traditions and of collective learned beliefs. Greater cultural dissimilarity between countries may correspond with social and institutional dissimilarity and with information asymmetries. Such differences may manifest as migration costs that make the prospect of migrating less attractive, in general or that reduce to the attractiveness of more culturally-dissimilar destinations. In either scenario, greater cultural differences would hinder international migration. Existing immigrant communities may, however, facilitate migration by reducing explicit migration costs (e.g., sponsoring new arrivals, providing housing upon arrival, offering assistance finding employment, and so on). They may also counter implicit migration costs, such as those related to source-destination country cultural differences, by providing information about the destination country and its culture.

Belot and Ederveen (2012) employ multiple measures of cultural distance in their examination of migration flows between 22 OECD member countries during the years 1990-2003. The authors report that greater cultural distance does, in fact, reduce migration. They also find that larger existing immigrant communities correspond with greater subsequent immigrant inflows. However, the authors focus solely on migration between developed countries and they do not consider whether existing immigrant communities act to offset the effects of cultural distance. Likewise, they also do not consider whether variation exists in the relationship between cultural distance and international migration across source and/or destination countries. Since, to our knowledge, no other study examines the relationship between cultural distance and international migration, these issues remain open empirical questions.

We address these questions by examining annual data for three immigrant destination countries (i.e., Denmark, Germany, and the Netherlands) and a cohort of 66 heterogeneous immigrant source countries during the years 1997-2002. Following Lewer and van den Berg (2008), we apply a variant of the gravity model of international trade to international migration flows. We begin our analysis by examining the relationships reported in Belot and Ederveen (2012); namely, whether source-destination cultural differences inhibit migration and whether larger existing immigrant communities correspond with greater subsequent immigrant inflows. Extending the literature, we then consider i) whether the existing stock of immigrants from a given source country offsets the anticipated migration-inhibiting effects of cultural distance, ii) whether the influence of cultural distance on migration varies across destination countries, and iii) whether similar variation exists in the extent to which existing immigrant stocks offset the negative influences of cultural distance on migration.

Results obtained from the estimation of our empirical specifications using the Negative Binomial regression technique indicate that, all else equal, the cultural distance between source and destination countries does hinder international migration. We also find that a larger existing stock of immigrants corresponds with larger subsequent migration flows between their source and destination countries. These findings are consistent with the results reported in Belot and Ederveen (2012). Extending the literature, we find that the influences of existing immigrant stocks on subsequent migration flows are greater if the immigrants' source and destination countries are more culturally distant. This is taken as evidence that existing immigrant stocks act to offset the migration-inhibiting influences of cultural distance. Further, we report variation

across our destination countries both in terms of the migration-inhibiting influence of cultural distance and in the extent to which existing immigrant stocks offset this influence.

In the next section, we present the empirical specification and the data. This is followed in Section 3 by a discussion of our estimation methodology and the results of our analysis. Section 4 concludes.

2. Empirical Specification, Variables, and Data

Following Lewer and van den Berg (2008), we apply the gravity model of international trade to migration flows. The gravity model, as applied to trade flows, originated with Tinbergen (1962) and, in its most basic state, the model suggests that trade flows are positively related to the economic masses of the trading partners (represented by GDP values) and inversely related to the geodesic distance between partners (a measure of transportation costs). Since Tinbergen's initial application, the model has been so widely used that it has become known as the "empirical workhorse" of international trade studies.

In equation (1), the dependent variable is the natural logarithm of the immigrant flow from source country j to destination country i during year t (MPI, 2013). Our variables of primary interest include our measure of the cultural distance between source and destination country pairs (CD_{ij}). This variable serves as a proxy for institutional and/or informational barriers to migration (Inglehart et al., 2004). Also of interest, given our research questions, is the lagged (one-year) immigrant stock variable ($Immig_{ijt-1}$) which controls for interpersonal network effects (MPI, 2013). Since it is anticipated that larger existing immigrant stocks may facilitate subsequent migration, we expect the corresponding coefficient estimate to be positive. We also include a term which interacts our measure of cultural distance with the lagged immigrant stock variable. A positive coefficient for the interaction term would indicate that existing immigrant stocks exert stronger positive effects on subsequent immigrant inflows if they are from countries that are relatively more culturally distant.

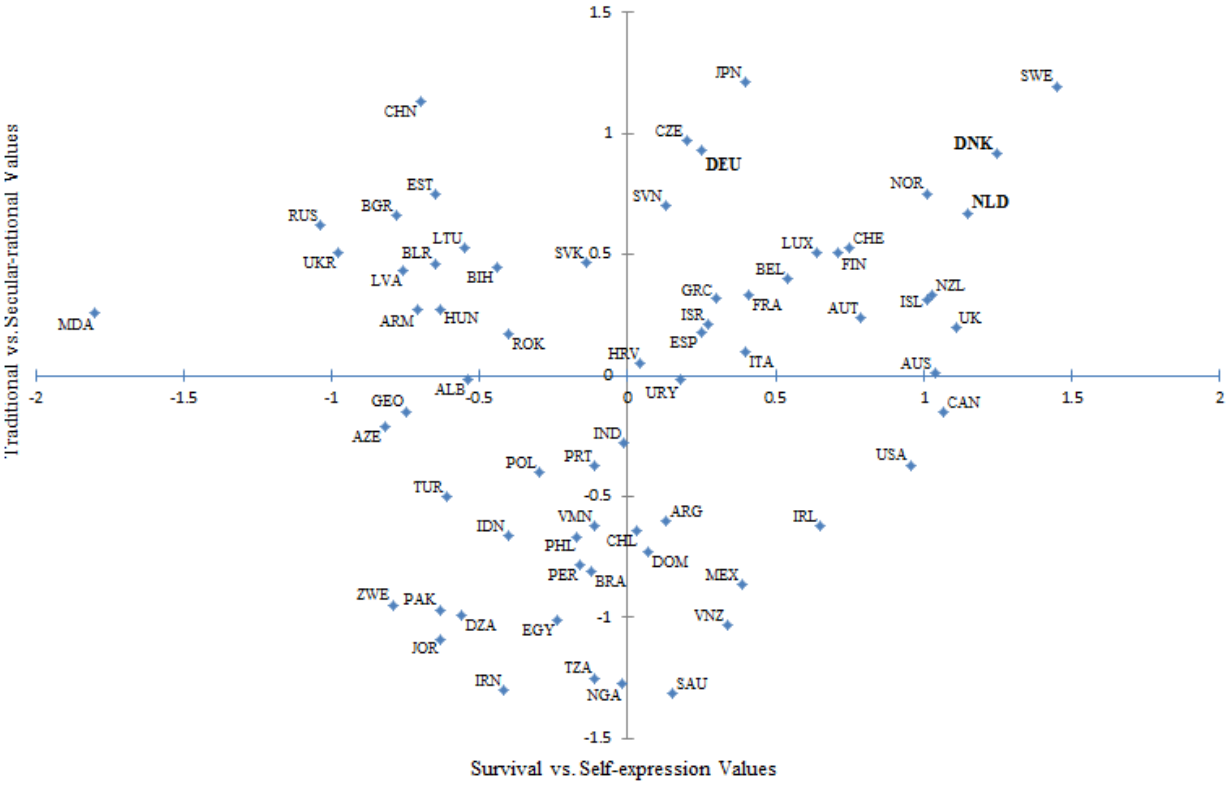
$$\begin{aligned} lnInflow_{ijt} = {} & \alpha_0 + \beta_1 lnCD_{ij} + \beta_2 lnImmig_{ijt-1} + \beta_2\left(lnCD_{ij} \times lnImmig_{ijt-1}\right) \\ & + \beta_4 lnPOP_{it} + \beta_5 lnPOP_{jt} + \beta_6 ln\frac{RGDPC_{it}}{RGDPC_{jt}} + \beta_7 lnGD_{ij} \\ & + \beta_8 Colony_{ij} + \beta_9 Comlang_{ij} + \beta_\Omega \Omega_t + \beta_\Psi \Psi_i + \beta_\Theta \Theta_j + \varepsilon_{ijt} \end{aligned} \qquad (1)$$

The cultural distance variable is constructed from the results of interviews that were conducted during the period from 1999 through 2002 as part of the World Value Surveys (WVS).[1] Survey participants complete lengthy questionnaires, and application of factor analysis to the responses to specific questions results in the categorization of survey respondents along two broad dimensions of culture: Traditional vs. Secular-rational authority (*TSR*) and Survival vs. Self-expression values (*SSE*).[2] Figure 1 illustrates the relative placement of *SSE* and *TSR* values for source countries and destination countries (bold font).[3] The horizontal and vertical axes identify countries according to their average *SSE* and *TSR* scores, respectively. The cultural

[1] Unless otherwise noted, information related to the WVS is from Inglehart and Baker (2000).
[2] The WVS questions used by Inglehart et al. (2004) to construct the SSE and TSR dimensions of culture are provided as Appendix A.
[3] ISO3 codes are noted in the country listing provided in Appendix B.

distance variable is calculated as $CD_{ij} = \sqrt{\left(SSE_i - SSE_j\right)^2 + \left(TSR_i - TSR_j\right)^2}$. For example, among the countries in our data set, the top three immigrant source countries for Germany (DEU) are Italy (ITA), Poland (POL), and Turkey (TUR). The cultural distances from Germany for these source countries are 1.06, 1.91, and 2.31, respectively.

Figure 1: Cultural Map



Source: Inglehart et al. (2004)

Traditional societies are characterized by a greater deference to the authority of the nation, a god, or family. Such deference is viewed as a general expectation, and it is common for individuals in these societies to adhere to family or communal obligations, to express a high degree of national pride and/or to have a nationalistic outlook, and to show obedience to religious authority. Large families are commonplace, since large numbers of children are viewed as a positive or desirable achievement. Correspondingly, fertility rates tend to be high, and abortion, divorce, euthanasia, and suicide are all viewed very negatively. Societies that are more secular-rational hold opposing views from those of individuals in traditional societies. Frequently, individuals in secular-rational societies adhere to rational-legal norms and emphasize economic accumulation and individual achievement.

Survival-oriented societies typically emphasize hard work and self-denial, and individuals in these societies often seek economic and physical security. It is common for foreigners and outsiders to be viewed as threatening and for ethnic diversity and cultural change to be viewed very negatively. These attributes correspond with an intolerance of homosexuals

and minorities and an adherence to traditional gender roles. It is also common for individuals in such societies to also have an authoritarian political outlook. Societies that emphasize self-expression values typically hold opposing views on these issues. It is thought that when individuals achieve requisite levels of economic security and physical security cultural diversity begins to be appreciated and sought out. This is consistent with tolerance towards deviations from traditional gender roles and sexual norms as well as greater support for equal rights.

Cultural differences between source and destination countries may inhibit migration flows if potential migrants find cross-cultural differences to be large and, thus, either the anticipated assimilation costs too great or, if seeking a destination country that is culturally similar to their source country, find more culturally-dissimilar countries to be less desirable destinations. As has been noted, we hypothesize that existing immigrant stocks may reduce these implicit migration costs and, thus, facilitate migration. Existing stocks may also positively affect migration flows if aspects of the source country's culture are adopted by, or enveloped into, the destination country's culture. This acculturation would lessen the cultural distance between source and destination countries and, by doing so, reduce related migration costs. This implies that cultural distance is dynamic and that, over time, it would be reasonable to expect changes in the values of our cultural distance measure. With this in mind, it is relevant and important to again note that the measure of cultural distance we employ is based on surveys completed between 1999 and 2002 and that our reference period ranges from 1997 through 2002. Thus, our measure of cultural distance largely corresponds with the period under study.

Turning to the remaining explanatory variables, we follow Lewer and van den Berg (2008) and Belot and Ederveen (2012) and replace the source and destination country GDP values in the gravity model of international trade with measures of population (POP_{it} and POP_{jt}, respectively) and the ratio of destination-to-source real GDP per capita values ($RGDPC_{it}/RGDPC_{jt}$). Effectively, inclusion of population and GDP per capita variables is a decomposition of the GDP series that allows for estimation of the relationships between each variable and the immigrant inflow series. Since GDP values measure both production and income in aggregate, GDP indicates an economy's ability to export and to import, respectively, and is a useful explanatory variable in gravity models for which trade flows are the dependent variable series. In a similar fashion, source and destination country population values are thought to correspond with greater emigration and immigration, respectively. The ratio of real GDP per capita values is included to capture the economic incentive to migrate. The population and GDP per capita series are from the World Bank (2013).

Completing our empirical specification, we include a measure of the geodesic distance (GD_{ij}) between source and destination country pairs, as it serves as a measure of direct migration costs. Additionally, we control for the influences of source-destination colonial links ($Colony_{ij}$) and common language ($Comlang_{ij}$), both of which are thought to facilitate greater migration flows. The source for these final three variables is the CEPII (2013). Lastly, the vectors Ω, Ψ, and Φ, control for time (i.e., year), destination country, and source country fixed effects, respectively.

Table 1 presents descriptive statistics for the full sample and for each of the three destination countries in our data set. The reference period and the composition of the destination and source country cohorts are dictated by data availability. The resulting data set is a balanced panel that includes three destination countries and a cohort of 66 heterogeneous source countries and that spans the period from 1997 through 2002. The average annual immigrant inflow across all destination countries is 2,898 persons. The average inflow for Germany (7,606 persons) is,

however, significantly higher than the overall average while average values for Denmark (335 persons) and the Netherlands (770 persons) are significantly below the overall average. Not surprisingly, the same pattern is found with respect to the lagged immigrant stock series. The typical source-destination country pair has a cultural distance value of 2.19; however, average values for Denmark (2.42) and the Netherlands (2.33) are significantly above the overall average, and the average value for Germany (1.81) is significantly less than the overall average.

Table 1: Descriptive Statistics

	All Destinations N = 1,188	Denmark N = 396	Germany N = 396	Netherlands N = 396
$Inflow_{ijt}$	2,807.70	334.73***	7,318.06***	770.32***
	(7,743.79)	(440.13)	(12,160.28)	(1,203.73)
Cultural $Distance_{ij}$	2.1876	2.419***	1.8118***	2.3319**
	(0.9855)	(1.0401)	(0.7366)	(1.0385)
$Immigrants_{ijt-1}$	33,560.32	3,050.94***	86,202.71***	11,427.31***
	(157,210.20)	(5,395.58)	(262,930.30)	(30,104.26)
Geodesic $Distance_{ij}$	4,361.73	4,378.98	4,302.42	4,403.78
	(4,218.34)	(4,194.63)	(4,254.74)	(4,215.42)
Real $GDPC_{it}$ (Destination)	25,080.35	29,265.65***	22,519.11***	23,456.28***
	(3,103.93)	(864.71)	(668.72)	(987.44)
Real $GDPC_{jt}$ (Source)	10,510.98	10,447.56	10,549.78	10,535.58
	(11,647.58)	(11,571.84)	(11,707.57)	(11,692.08)
$Population_{it}$ (Destination)	34,478,519.72	5,329,321.83***	82,081,415.83***	16,024,821.50***
(in '000s)	(33,956,836.37)	(42,098.59)	(182,281.64)	(55,572.77)
$Population_{jt}$ (Source)	72,977,424.34	73,419,078.85	72,256,168.34	73,257,025.83
(in '000s)	(200,117,435.75)	(200,212,096.46)	(200,381,663.43)	(200,262,936.58)
$Colony_{ij}$	0.0202	0.0152	0.0152	0.0303
	(0.1408)	(0.1223)	(0.1223)	(0.1716)
Common $Language_{ij}$	0.0253	0.0000***	0.0606***	0.0152
	(0.1570)	(0.0000)	(0.2389)	(0.1223)

***, "**", and "*" denote significance from the corresponding "All Destinations" mean value at the 1%, 5%, and 10% levels of significance, respectively.

3. Econometric Results

While we adopt the empirical structure employed by Lewer and van den Berg (2008), we deviate from their estimation methodology. Due to our dependent variable series being simple count data, we choose to not employ Least Squares regression or a variant of OLS as our

estimation technique. Because the unconditional mean values and variances for our dependent variable series are over-dispersed (i.e., the variance exceeds the mean), we utilize the Negative Binomial regression technique.[4]

We begin our analysis by estimating a basic version of equation (1). The results, presented in column (a) of Table 2, indicate that, all else equal, greater source-destination cultural distance corresponds with reduced migration (i.e., a smaller inflow value). All other coefficient estimates are significant with the exceptions of those for the source country population variable, which is marginally significant (p=0.121), and the relative GDP per capita variable. Specifically, greater geodesic distance between the source country and the destination country results in lower inflows, and larger destination country population values correspond with smaller inflow values. This latter finding is likely attributable to the cohort of destination countries considered. Additionally, inflows are found to be greater if the source and destination countries share a common language or have a colonial link.

Augmenting our basic specification, we add the lagged (one-year) immigrant stock variable (column (b)) for which we report a positive and significant coefficient. This indicates that a larger existing immigrant population from a given source country in a given destination country leads to a larger subsequent immigrant inflow. The coefficient on the cultural distance variable is again negative and significant. The positive relationship between the size of the existing immigrant stock and immigrant inflows and the negative relationship found between our measure of cultural distance and inflows is taken as verification of the findings of Belot and Ederveen (2012). All other coefficients, with the exceptions of those relating to geodesic distance and the source-destination colonial link, which are no longer significant, and the coefficient for the source country population variable, which is now significant, have the same signs and significance as reported in column (a).

The positive coefficient on the lagged immigrant stock variable may indicate that existing immigrant communities encourage subsequent migration by acting to reduce explicit migration costs (e.g., by sponsoring new arrivals, providing housing upon arrival, offering assistance finding employment, and so on). It may also indicate that existing immigrant stocks counter implicit migration costs that are related to source-destination country cultural differences. To test this proposition, we estimate the fully-augmented version of equation (1). Results are presented in column (c). As before, the coefficient estimates for the cultural distance variable and the lagged immigrant stock variable are negative and positive, respectively. Thus, we can again say that cultural distance inhibits migration and that the presence of a larger existing immigrant stock facilitates migration. Turning our attention to the coefficient for the term which interacts these two variables, we see it is positive and significant. This implies that the migration-facilitating influence of the existing immigrant stock is greater if the corresponding source country is relatively more culturally-dissimilar from the destination country. These findings are consistent with the notion that cultural distance imposes a cost on immigrants and that the existing immigrant stock is able to offset both explicit and implicit migration costs, either in whole or in part.

[4] The Negative Binomial technique is a generalization of the Poisson regression technique. Both techniques model over-dispersion; however, confidence intervals from the Negative Binomial technique are likely to be narrower than those obtained using the Poisson technique. For all estimations, we use Vuong tests to determine if excess zeros are present in the dependent variable series and, if so, whether the Zero-inflated Negative Binomial technique is a more appropriate estimation technique. In all instances, the tests indicate the Negative Binomial technique is preferable.

Table 2: Cultural Distance and Immigrant Inflows

	Coef.	IRR	Coef.	IRR	Coef.	IRR
	(a)		(b)		(c)	
ln Cultural Distance$_{ij}$	-0.2023***	0.8169***	-0.0477***	0.9535***	-0.1782***	0.8368***
	(0.0180)	(0.1470)	(0.0142)	(0.0136)	(0.0561)	(0.0469)
ln Immigrants$_{ijt-1}$			0.1506***	1.1626***	0.1378***	1.1477***
			(0.0086)	(0.0100)	(0.0109)	(0.0126)
ln Cultural Distance$_{ij}$ x ln Immigrants$_{ijt-1}$					0.0138**	1.0139**
					(0.0056)	(0.0057)
ln Geodesic Distance$_{ij}$	-0.3467***	0.7070***	0.0427	1.0436	0.0169	1.0171
	(0.0307)	(0.0217)	(0.0311)	(0.0325)	(0.0351)	(0.0357)
ln Relative GDPC$_{ijt}$	0.1274	1.1359	0.2543$^{(p=0.122)}$	1.2895	0.2559$^{(p=0.12)}$	1.2916
	(0.1860)	(0.2112)	(0.1642)	(0.2118)	(0.1644)	(0.2123)
ln Population$_{it}$ (Destination)	-3.2184**	0.0400**	-3.6076***	0.0271***	-3.6287***	0.0266***
	(1.3627)	(0.0545)	(1.1681)	(0.0317)	(1.1535)	(0.0306)
ln Population$_{jt}$ (Source)	0.5637$^{(p=0.121)}$	1.7571	0.8434***	2.3244***	0.8372***	2.3100***
	(0.3634)	(0.6385)	(0.2874)	(0.6680)	(0.2873)	(0.6636)
Common Language$_{ij}$	0.1858***	1.2042***	0.0909***	1.0952***	0.1198***	1.1272***
	(0.0490)	(0.0590)	(0.0318)	(0.0348)	(0.0326)	(0.0367)
Colony$_{ij}$	0.3136***	1.3684***	0.0453	1.0464	0.0509	1.0522
	(0.0666)	(0.0911)	(0.0519)	(0.0543)	(0.0526)	(0.0554)
Constant	44.9664**	3.38E+19	42.5788**	3.10E+18	43.3085**	6.44E+18
	(21.5110)	(7.27E+20)	(17.5345)	(5.44E+19)	(17.2934)	(1.11E+20)
ln Alpha	-21.7270	-21.7270	-21.7270	-21.7270	-21.7270	-21.7270
Pseudo R^2	0.7291		0.8144		0.8159	
Log pseudolikelihood | Wald χ^2	-2,327 | 5,632***		-2,277 | 10,152***		-2,276 | 10,604***	

N = 1,188 in all estimations. Robust standard errors in parentheses. All estimations include controls for year, destination country, and source country fixed effects. Corresponding coefficients not reported due to space limitations. ***, "**", and "*" denote significance from zero at the 1%, 5%, and 10% levels of significance, respectively. P values between 0.10 and 0.15 are noted parenthetically after the corresponding coefficients.

Table 3: Variation across Destination Countries

	Coef.	IRR	Coef.	IRR	Coef.	IRR
	(a)		(b)		(c)	
ln Cultural Distance$_{ij}$ x Denmark$_i$	-0.2207***	0.8020***	-0.0486**	0.9526**	-0.1422	0.8674
	(0.0219)	(0.0176)	(0.0197)	(0.0188)	(0.1016)	(0.0881)
ln Cultural Distance$_{ij}$ x Germany$_i$	-0.2189***	0.8034***	-0.0570***	0.9446***	-0.8582***	0.4239***
	(0.0241)	(0.0194)	(0.0179)	(0.0169)	(0.1636)	(0.0694)
ln Cultural Distance$_{ij}$ x Netherlands$_i$	-0.1366***	0.8723***	-0.0126	0.9875	-0.1844*	0.8317*
	(0.0219)	(0.0191)	(0.0179)	(0.0176)	(0.1069)	(0.0889)
ln Immigrants$_{ijt-1}$ x Denmark$_i$			0.1535***	1.1659***	0.1432***	1.1540***
			(0.0096)	(0.0112)	(0.0142)	(0.0163)
ln Immigrants$_{ijt-1}$ x Germany$_i$			0.1358***	1.1455***	0.0899***	1.0941***
			(0.0125)	(0.0143)	(0.0118)	(0.0129)
ln Immigrants$_{ijt-1}$ x Netherlands$_i$			0.1538***	1.1662***	0.1313***	1.1403***
			(0.0081)	(0.0095)	(0.0154)	(0.0175)
ln Cultural Distance$_{ij}$ x ln Immigrants$_{ijt-1}$ x Denmark$_i$					0.0114	1.0115
					(0.0117)	(0.0118)
ln Cultural Distance$_{ij}$ x ln Immigrants$_{ijt-1}$ x Germany$_i$					0.0779***	1.0810***
					(0.0155)	(0.0167)
ln Cultural Distance$_{ij}$ x ln Immigrants$_{ijt-1}$ x Netherlands$_i$					0.0218*	1.0220*
					(0.0126)	(0.01289)
ln Geodesic Distance$_{ij}$	-0.3827***	0.6820***	0.0222	1.0224	-0.0347	0.9659
	(0.0304)	(0.0207)	(0.0318)	(0.0325)	(0.0384)	(0.0371)
ln Relative GDPC$_{ijt}$	0.1276	1.1361	0.2508$^{(p=0.125)}$	1.2850	0.2570$^{(p=0.144)}$	1.2930
	(0.1853)	(0.2105)	(0.1633)	(0.2098)	(0.1626)	(0.2103)
ln Population$_{it}$ (Destination)	-3.2149**	0.0402**	-3.6766***	0.0253***	-3.7255***	0.0241***
	(1.3622)	(0.0547)	(1.1432)	(0.0289)	(1.1428)	(0.0275)
ln Population$_{jt}$ (Source)	0.5627$^{(p=0.121)}$	1.7555	0.8344***	2.3034***	0.8201***	2.2707***
	(0.3626)	(0.6365)	(0.2895)	(0.6669)	(0.2847)	(0.6465)
Common Language$_{ij}$	0.1458***	1.1570***	0.0725**	1.0752**	0.0592*	1.0610*
	(0.0483)	(0.0559)	(0.0309)	(0.0333)	(0.0311)	(0.0330)
Colony$_{ij}$	0.2966***	1.3452***	0.0592	1.0610	0.0584	1.0601
	(0.0644)	(0.0867)	(0.0550)	(0.0583)	(0.0563)	(0.0597)
Constant	45.1972**	4.25E+19**	43.9184***	1.18E+19***	45.3789	5.10E+19***
	(21.5630)	(9.17E+20)	(17.1379)	(2.03E+20)	(17.1315)	(8.74E+20)
ln Alpha	-21.7270	-21.7270	-21.7270	-21.7270	-21.7270	-21.7270
Pseudo R^2	0.7312		0.8165		0.8197	
Log pseudolikelihood | Wald χ^2	-2,325 | 5,657***		-2,276 | 11,414***		-2,273 | 12,045***	

See Table 2 notes.

For all estimations, to facilitate interpretation we have converted the reported coefficient values to incident rate ratios (IRR values). This allows for more straightforward inference of the effects for each variable and allows comparison of effects across variables. For example, based on the functional form of our estimation equation, the IRR values, and the signs of the corresponding coefficient estimates presented in column (c) of Table 2, we can say that, all else equal, a 1 percent increase in the source country population would enhance the rate of immigrant flows to the destination country by 2.31 percent. Interpretation of the IRR values and the estimated coefficients for each of the remaining continuous variables can be done similarly. The IRR values that correspond to the dummy variables, however, represent the effect of the presence of the attribute represented by the variable on the inflow as compared to the absence of the attribute. For example, in column (c), the significant and positive coefficient on the dummy variable representing common language implies that, as compared with source-destination country pairs that do not share a common language, the rate of immigrant inflows between source and destination countries is 1.13 percent higher.

Coefficient estimates and IRR values for the cultural distance variable confirm our initial expectation that, all else equal, greater cultural distance between source countries and destination countries negatively influences migration flows. Specifically, depending on the specification considered, a one percent increase in cultural distance corresponds with a 0.82 to 0.95 percent decrease in the rate of the immigrant inflow. A larger existing immigrant stock from a given source country corresponds with a higher subsequent inflow. Specifically, a one percent increase in the existing immigrant stock is estimated to result in about a 1.15 percent increase in the rate of immigrant inflows during the following year.

Having identified a negative influence of cultural distance, generally, on immigrant inflows, we seek to determine if the migration-inhibiting effects of cultural differences vary across the destination countries in our data. Results obtained from the estimation of variants of equation (1) are provided in Table 3. Again, we begin with a basic version of equation (1) (column (a)) and then extend incrementally to the fully-augmented model (column (c)). Focusing our attention on the results obtained from estimation of the fully-augmented model, we see that each of the estimated coefficients for the terms that interact our measure of cultural distance with the destination country-specific dummy variables are negative; however, the coefficient estimate for Denmark is not significant ($p=0.161$). The corresponding IRR values are 0.4239 and 0.8317, respectively, for Germany and the Netherlands. A Hausman test indicates that the coefficient estimate for Germany is significantly different than the coefficient for the Netherlands. Thus, we can say that a one percent increase in cultural distance between the source and destination countries corresponds with roughly a 0.83 percent decreases in the rate of immigrant inflows to the Netherlands but only decreases the rate of inflows to Germany by 0.42 percent and does not significantly affect inflows to Denmark.

The estimated coefficients for the three variables representing the existing immigrant stocks in each destination country are positive and significant. However, of the terms that interact the immigrant stock series with the cultural distance variable, we only see positive and significant coefficient estimates for Germany and the Netherlands. Thus, for these two destination countries, we can say that source-destination cultural differences correspond with lower immigrant inflow values, albeit with varying magnitudes. For all three destination countries, existing immigrant stocks facilitate subsequent inflows; however, in the cases of Germany and the Netherlands we see that existing immigrant stocks exert stronger positive

influences on subsequent immigrant inflows if their source countries are relatively more cultural distant.

4. Conclusions

This article examines the relationship between international migration and the cultural distance between migrants' source and destination countries using annual data for three immigrant destination countries (i.e., Denmark, Germany, and the Netherlands) and a cohort of 66 heterogeneous source countries that span the years 1997 through 2002. Applying the gravity model of international trade to migration flows, results obtained from the estimation of a series of econometric specifications using the Negative Binomial regression technique consistently indicate that, all else equal, source-destination country cultural distance is negatively related to international migration flows. We also find that larger existing immigrant stocks correspond with larger subsequent migration flows. These results are consistent with the findings reported in Belot and Ederveen (2012).

Extending the literature, we consider i) whether the existing stock of immigrants from a given source country offset the migration-inhibiting effects of cultural distance, ii) whether the influence of cultural distance on migration varies across destination countries, and iii) whether similar variation exists in terms of the extent to which existing immigrant stocks offset the negative influences of cultural distance on migration. We find that existing immigrant stocks generally act to offset the migration-inhibiting influences of cultural distance; however, we also find variation across destination countries in the influence of cultural distance on migration flows and in terms of whether existing immigrant stocks offset the influences of cultural distance.

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Appendix A

Questions used to construct SSE and TSR dimensions of culture (Held et al., 2009)

I. WVS questions used to construct the Survival vs. Self-expression Values (SSE) dimension:

1. Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?

2. Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means "no choice at all" and 10 means "a great deal of choice" to indicate how much freedom of choice and control you feel you have over the way your life turns out.

3. People sometimes talk about what the aims of this country should be for the next ten years. On this card are listed some of the goals which different people would give top priority. Would you please say which one of these you, yourself, consider the most important? And which would be next most important? *The list included several goals. The response/goal used to construct the SSE dimension is: "Seeing that people have more say about how things are done at their jobs and in their communities"*.

4. If you had to choose, which one of the things on this card would you say is most important? And which would be next most important? *Several things were listed on the card. The responses used to construct the SSE dimension are: "Giving people more say in important government decisions" and "Protecting freedom of speech"*.

5. Now I'd like you to look at this card. I'm going to read out some forms of political action that people can take, and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it. *Several actions were listed on the card. The response/action used to construct the SSE dimension is: "Signing a petition"*.

6. Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between, using this card. *Several actions were included on the card. The response/action used to construct the SSE dimension is: "Homosexuality"*.

II. WVS questions used to construct the Traditional vs. Secular-rational authority (TSR) dimension:

1. Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? *The list included several qualities. The responses/qualities used to construct the TSR dimension are "Independence" and "Obedience".*

2. I'm going to read out a list of various changes in our way of life that might take place in the near future. Please tell me for each one, if it were to happen, whether you think it would be a good thing, a bad thing, or don't you mind? *The list included several changes. The response/change used to construct the TSR dimension is: "Greater respect for authority".*

3. Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between, using this card. *Several actions were included on the card. The response/action used to construct the TSR dimension is: "Divorce".*

4. Independently of whether you attend religious services or not, would you say you are: A religious person, not a religious person, or an atheist?

5. How proud are you to be [insert nationality]? *Respondents are prompted to indicate whether they are "Very proud", "Quite proud", "Not very proud", "Not at all proud", or to indicate "I am not [insert nationality]".*

Appendix B

Country listing (ISO3 codes in parentheses)

Albania (ALB), Algeria (DZA), Argentina (ARG), Armenia (ARM), Australia (AUS), Austria (AUT), Azerbaijan (AZE), Belarus (BLR), Belgium and Luxembourg (BEL), Bosnia and Herzegovina (BIH), Brazil (BRA), Bulgaria (BGR), Canada (CAN), Chile (CHL), China (CHN), Croatia (HRV), Czech Republic (CZE), Denmark (DNK), Dominican Republic (DOM), Egypt (EGY), Estonia (EST), Finland (FIN), France (FRA), Georgia (GEO), Germany (DEU), Greece (GRC), Hungary (HUN), Iceland (ISL), India (IND), Indonesia (IDN), Iran (IRN), Ireland (IRL), Israel (ISR), Italy (ITA), Japan (JPN), Jordan (JOR), Korea (Rep. of) (ROK), Latvia (LVA), Lithuania (LTU), Luxembourg (LUX), Mexico (MEX), Moldova (Rep.of) (MDA), Netherlands (NLD), New Zealand (NZL), Nigeria (NGA), Norway (NOR), Pakistan (PAK), Peru (PER), Philippines (PHL), Poland (POL), Portugal (PRT), Russian Federation (RUS), Saudi Arabia (SAU), Slovakia (SVK), Slovenia (SVN), Spain (ESP), Sweden (SWE), Switzerland (CHE), Tanzania (TZA), Turkey (TUR), Ukraine (UKR), United Kingdom (GBR), United States of America (USA), Uruguay (URY), Venezuela (VEN), Vietnam (VNM), Zimbabwe (ZWE).