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# Assimilation and Trade between the Middle East, Europe, and North America

Hisham Foad

## Abstract

How are immigration and trade related? Migration leads to the formation of social networks across borders, driving down trade costs. Immigrants may also retain a preference for their native country's products, creating a local market for exports. I examine these two competing theories by estimating the immigration-trade linkage separately for migrants moving from the Middle East and North Africa (MENA) to Europe and North America. While these two groups originate in the same location and have similar preferences, they are quite different in terms of both income and education, with migrants to North America tending to be less numerous but more educated. The greater degree of economic assimilation for North American migrants should strengthen migrant network effects, but greater cultural assimilation weakens both network and preference effects. I find the migration-trade link to be stronger for migrants to Europe, with the strongest effect for imports. The link is stronger for differentiated goods than for homogeneous goods and strongest for differentiated goods imports into Europe. These results suggest that while network effects matter, immigrant preferences for native country goods are the key factor driving the migration-trade link.

**KEYWORDS:** migration and trade, migrant networks, Middle East

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## 1. INTRODUCTION

How are flows of labor and goods across national borders related? Mundell (1957) argues that free trade can lead to factor price equalization, thereby reducing the incentive for labor to move to countries with high wages. This view was challenged by Markusen (1983), who finds a complementary relationship under alternative assumptions to the Heckscher-Ohlin trade model. A number of recent empirical studies have supported this latter view that trade and migration are complementary. These papers have also argued that labor migration leads trade. There are two theoretical channels through which migration can affect trade. First, migration may induce trade because immigrants bring with them a retained preference for their native country's goods and services. This channel applies mainly to imports of differentiated goods from the immigrants' native countries, as these are the goods for which immigrants may not find suitable substitutes in their new homes.<sup>1</sup> Second, migration may help to reduce the transaction costs associated with international trade. Although migrants physically leave their native country behind, they do not necessarily sever all ties with people living there, leading to the formation of ethnic networks across borders. These networks can overcome informal trade barriers, such as weak contract enforcement across borders or a lack of information about formal markets. Greif (1993) presents the historical example of the Maghribi traders, a distinct social group within the Jewish Diaspora living in the Islamic Mediterranean in the 11th century. The traders shared information about foreign markets and were willing to engage in collective punishment against any rent-seeking traders, thereby reducing risk. This migrant network gave the Maghribi traders an advantage over other merchants who did not have proprietary access to local market conditions or a means of enforcing contracts.

Though the existing empirical literature on this topic has done a good job documenting the positive relationship between migration and trade, less attention has been given to the specific channel through which migration affects trade. This is an important deficiency in the literature, not only from an academic perspective but also for policy implications. If migration lowers informal trade barriers, then we must consider this positive externality when discussing the merits of open immigration. If retained preferences are driving this relationship however, then the externality benefit accrues primarily to the sending country. In this study, I attempt to resolve the question of how migration affects trade by looking at two

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<sup>1</sup> It is possible that preferences can be transmitted through migrant networks, thus affecting exports to the immigrant's native country. For example, knowledge about a product only available in an immigrant's adopted country may be transmitted back to the native country, creating a demand for that product in that native country. I ignore this channel in this study, but it is an interesting topic for further research.

groups of migrants: those moving from the Middle East and North Africa (MENA) to the European Union and those moving to North America. Though these migrants come from the same place, they are quite different in several important ways. MENA migrants to North America are more economically assimilated, with better education and higher incomes than their more numerous European counterparts. Anecdotal evidence suggests that these migrants to North America are also more culturally assimilated, with higher rates of citizenship, local language proficiency, and preferences more in line with natives.

The unique characteristics of these two immigrant groups allow us to explore in greater detail the channels through which migration affects trade. The network effects of migration should be increasing with economic assimilation, as educated immigrants are better able to lower trade costs through ethnic networks. As cultural assimilation rises however, the network effect may weaken since more culturally assimilated migrants have weaker ties with their native countries. The preference channel through which migration affects trade will also be driven by cultural assimilation. As immigrants become more assimilated into their adopted countries, they will display less of a preference for their native country's exports. This preference channel should not be nearly as strong for exports from the immigrants adopted countries to their native ones.

I find that the immigration-trade link is stronger for European migration than for North American migration. This difference is largest for imports into Europe from the MENA, suggesting that the immigrant preference channel is dominant. Immigration does have a weaker, yet still significant effect on exports to the MENA region, suggesting that network effects do matter. Disaggregating the level of trade, I find that migration induces trade most strongly for differentiated goods imports, lending further support for the preference channel as the mechanism through which immigration affects trade.

The next section examines migration from the MENA to Europe and North America, focusing on the key differences between these two groups of migrants. Section Three reviews the literature on the migration-trade link, highlighting the novelty of this study. Section Four presents the empirical specification to be used to assess the differential impact of migration to Europe or North America on trade with the MENA. The necessary correction for endogeneity between migration and trade is also presented in this section. Section Five discusses the empirical estimates and Section Six concludes.

## **2. A PROFILE OF MENA MIGRATION**

Tables 1 and 2 present a clearer picture of migration from the Middle East and North Africa. Looking at Table 1, we see that MENA migration to North America and Europe has substantially increased between 1990 and 2000, rising from 3.9

million emigrants to nearly 5.5 million. By far, Europe gets more MENA migrants than North America, with over 80% of total MENA migrants to these regions going to Europe.

While MENA migrants to Europe are much more numerous, migrants to North America tend to be better educated. In 2000, 65.1% of MENA migrants to North America held post-secondary degrees, compared with only 12.6% of migrants to Europe. This reflects the relatively lower migration costs to Europe, ensuring that only the migrants with the highest expected earnings would be willing to move to North America. For relatively low-skilled migrants, the marginal increase in wages that they get following migration may be enough to overcome the low migration costs to Europe, but not the high costs of moving to North America.

**Table 1A: MENA Migration to Europe and North America, 1990**

	Emigration	NA Share	EU Share	Tertiary NA	Tertiary EU
Algeria	504,133	1.60%	98.40%	69.50%	3.90%
Bahrain	2,101	38.10%	61.90%	84.60%	24.50%
Egypt	155,708	54.70%	45.30%	73.70%	28.30%
Iran	345,891	53.90%	46.10%	71.10%	39.20%
Iraq	83,129	49.50%	50.50%	46.50%	27.80%
Israel	99,759	74.40%	25.60%	61%	24.10%
Jordan	35,031	67.40%	32.60%	53.50%	26.90%
Kuwait	5,332	67.80%	32.20%	91.30%	20%
Lebanon	187,155	57.70%	42.30%	50.70%	27%
Libya	13,674	42.80%	57.20%	68.60%	24.80%
Morocco	730,343	4.30%	95.70%	62.70%	8.60%
Saudi Arabia	10,548	72.60%	27.40%	66.40%	22.10%
Syria	71,019	56.40%	43.60%	47.40%	27.70%
Tunisia	236,123	2.50%	97.50%	66.30%	9.20%
Turkey	1,379,650	4.40%	95.60%	46.70%	5.90%
UAE	1,077	32.90%	67.10%	74.90%	22.20%
Yemen	7,794	57%	43%	28.10%	25.40%
<i>Totals</i>	<i>3,870,847</i>	<i>17.80%</i>	<i>82.20%</i>	<i>60.90%</i>	<i>9.90%</i>

**Table 1B: MENA Migration to Europe and North America, 2000**

	Emigration	NA Share	EU Share	Tertiary NA	Tertiary EU
Algeria	605,726	3.90%	96.10%	79.50%	11.30%
Bahrain	4,176	39.20%	60.80%	71.80%	34.90%
Egypt	221,246	57.90%	42.10%	78.30%	33.30%
Iran	499,558	60.90%	39.10%	72.20%	38.30%
Iraq	224,240	40.60%	59.40%	45.60%	32.40%
Israel	133,684	76.70%	23.30%	64.80%	33.60%
Jordan	56,122	75.60%	24.40%	61.20%	37%
Kuwait	21,553	74.60%	25.40%	80.80%	33%
Lebanon	246,292	61.30%	38.70%	56.90%	35.90%
Libya	19,594	42.30%	57.70%	81%	36.90%
Morocco	1,093,598	4.70%	95.30%	67.60%	10.10%
Saudi Arabia	16,096	71.80%	28.20%	76.70%	34.70%
Syria	109,539	55.80%	44.20%	52.80%	33.90%
Tunisia	263,420	3.70%	96.30%	71.30%	12.60%
Turkey	1,940,074	4%	96%	56.40%	6.50%
UAE	2,753	58.60%	41.40%	98.10%	32.70%
Yemen	20,364	60.40%	39.60%	32.60%	35.40%
<i>Totals</i>	<i>5,482,258</i>	<i>20.00%</i>	<i>80.00%</i>	<i>65.10%</i>	<i>12.60%</i>

\* Emigration is the total number of people born in the Sending country that are residing in Europe or North America in 2000. NA Share is the share of emigrants living in North America, while EU share is the share of emigrants living in Europe. Tertiary NA refers to the percentage of migrants living in NA from each sending country who hold a tertiary degree while Tertiary EU gives the share for migrants living in Europe. Migration data is from Docquier and Marfouk (2007).

Table 2 presents evidence of the link between migration and trade. We see that MENA countries generally have disproportionately high trade linkages with the countries that receive most of their emigrants. For example, the top destination for Algerian emigrants is France. In 2000, 16.8% of Algeria's trade was with France, a remarkable number given that France only accounted for 4.7% of global trade flows. The same pattern holds true for all but one of the major migrant sending countries in the region.<sup>2</sup> Consider for example, the top two destinations

<sup>2</sup> The exception is Iran, for which the US is the top emigrant destination. Iran is clearly a special case as there was a wave of migration to the US in 1979 following the overthrow of the Shah and the subsequent trade embargo by the US has severely limited trade flows between these nations. As this trade embargo might skew the results when comparing the differential effects of North

for Moroccan emigrants in 2000: France and Spain. Of Morocco's total trade in 2000 (nearly \$19 billion), 27.7% was with France and 11.1% was with Spain (not shown in Table 2). Given that France and Spain represented only 4.7% and 3.2% of world trade flows respectively, it appears that migration and trade are at the very least affected by common factors.

**Table 2: Immigration and Trade**

	Top Receiver	Emigrants	Total Trade	Trade Share	World Share
Algeria	France	511,971	28,658	16.80%	4.70%
Bahrain	UK	2,335	10,828	3.30%	4.80%
Egypt	USA	96,660	18,699	15.90%	15.50%
Iran	USA	250,785	41,853	0.60%	15.50%
Iraq	USA	72,245	18,331	31.50%	15.50%
Israel	USA	89,385	63,562	26.40%	15.50%
Jordan	USA	39,140	6,496	8.40%	15.50%
Kuwait	USA	12,505	26,592	13.80%	15.50%
Lebanon	USA	92,685	6,945	7.30%	15.50%
Libya	USA	7,024	16,429	0.10%	15.50%
Morocco	France	425,096	18,962	27.70%	4.70%
Saudi Arabia	USA	10,028	107,677	17.80%	15.50%
Syria	USA	47,660	8,448	3.60%	15.50%
Tunisia	France	184,603	14,417	26.50%	4.70%
Turkey	Germany	1,272,000	82,278	15.00%	8.10%
UAE	USA	1322	84,844	4.50%	15.50%
Yemen	USA	11609	6,403	5.50%	15.50%
<i>Totals</i>	<i>Germany</i>	<i>1,483,146</i>	<i>510,585</i>	<i>6.40%</i>	<i>8.10%</i>

\* Top receiver is defined as the country with the largest foreign-born population from the sending country. Emigrants is the total number of emigrants from the sending country residing in the top receiver. Total Trade is the total value of exports and imports in millions of dollars for the sending country. Trade Share is the share of total trade with the Top Receiver, while World Share is the Top Receiver's share of global trade. Immigration data comes from Docquier and Marfouk (2007), while trade data is from the IMF Direction of Trade Statistics.

One of the goals of this study is to explore the channels through which migration may affect trade. As stated in the introduction, this issue can be

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American and European migration, I estimate the empirical model without Iran. The results do not qualitatively change and interestingly, the conclusion that European migration has a larger trade effect is quantitatively larger when we omit Iran.

examined in the context of economic and cultural assimilation. From Table 1, we see that MENA migrants to North America are more economically assimilated, with higher education and therefore greater income. All else being equal, the immigrant network effect on trade should be higher for North American migration. However, we also have to consider cultural assimilation. Even though MENA migrants to North America are better educated, have they maintained close ties with their native countries? Do they still crave the goods and services of their native lands? If migrants to Europe are less culturally assimilated in their adopted countries, then through both stronger network effects and immigrant preferences, we should see a larger migration-trade linkage for these migrants.

Anecdotal evidence suggests that MENA migrants to Europe tend to be less culturally assimilated, maintaining closer ties to their native countries. There is only limited quantitative data to support this assertion, however. Two ways to measure cultural assimilation are by looking at an immigrant's proficiency with the local language and whether or not the immigrant has become a naturalized citizen of their new home. Table 3 presents some evidence in support of weaker cultural assimilation for MENA migrants to Europe. From the 2000 US Census, 64% of migrants from the Middle East reported that they spoke English Very Well, with little or no difficulties. Van Tuebergen and Kalmijn (2009) find that the language proficiency of Moroccan and Turkish migrants to the Netherlands is less than half this level. Dustmann (1994) finds similarly low local language proficiency for Turkish migrants living in Germany. While greater language proficiency among migrants to the US may simply reflect a greater worldwide proficiency with English as compared to Dutch or German, the conclusion regarding assimilation is the same.

Do immigrants move to a country for only a few years then go back to their native land or are they establishing a permanent residence there? One way to measure this is with the fraction of migrants that have become naturalized citizens. The second column of Table 3 shows that 54% of MENA migrants to the US are naturalized citizens, a fraction matched by MENA migrants to France and in excess of the citizenship shares of Austria and Spain. While incomplete, these figures suggest that there is greater permanence in MENA migration to the US. If this is the case, there may very well be a stronger network effect for Europe, since MENA migrants to Europe are going back and forth between their adopted and native countries.

**Table 3: Cultural Assimilation of MENA Migrants**

Destination	Language Proficiency	Citizenship
Austria <sup>a</sup>	-	30% Naturalized Citizens
France <sup>b</sup>	-	54% Naturalized Citizens
Germany <sup>c</sup>	26.2% of Turkish men and 9.5% of Turkish women have a Good or Very Good proficiency with German	-
Netherlands <sup>d</sup>	27% of Moroccan and 21% of Turkish immigrants never have difficulty speaking Dutch	-
Spain <sup>e</sup>	-	26.6% Naturalized Citizens
USA <sup>f</sup>	64% speak English Very Well	54.2% Naturalized Citizens

<sup>a</sup> 2001 Austrian National Census

<sup>b</sup> 1990 French National Census

<sup>c</sup> Dustmann (1994)

<sup>d</sup> van Tuebergen and Kalmijn (2008)

<sup>e</sup> 2001 Spanish National Census

<sup>f</sup> 2000 U.S. National Census

### 3. THE MIGRATION-TRADE LINK

One of the first empirical studies to document complementarity between migration and trade was Gould (1994), who inserted the lagged immigrant stock from a range of countries into a gravity equation estimating exports and imports separately for the United States. He found that a 10% increase in immigration to the US raises exports to the immigrants' native country by 4.7% and imports from the native country by 8.3%. That imports are more sensitive to immigration reflects the fact that immigrants retain some preference for native country goods. Head and Ries (1998) follow up on Gould's work using Canadian data and estimated the relationship with a Tobit model to account for the large number of zeros in bilateral trade data. Though they also found a positive relationship between immigration and trade, their elasticity estimates were lower. They argued that Canada's trade is primarily in commodities or in US-bound automotive goods, which do not significantly benefit from the migration-induced reduction in transaction costs. Girma and Yu (2002) found additional evidence for the transaction costs explanation by examining immigration and trade between the

UK and 48 trading partners. They found that the migration-trade link was significantly positive only for countries that are not former British colonies. The trade promoting effects of immigration (contract enforcement, more symmetric information, etc.) do not matter so much for former colonies, as these nations already share many similarities with the UK (such as in the legal system) and information about foreign markets is plentiful.

Several studies have looked at the composition of trade, finding that immigration most strongly promotes trade in differentiated goods. This makes sense, as differentiated goods are by definition the kinds of goods that migrants may retain a preference for. At the same time, differentiated goods are more likely to encounter the sort of informal trade barriers that migrant networks can help to overcome. Rauch and Trindade (2002) show that the presence of an ethnic Chinese network in a country significantly increases differentiated goods trade with China. Further evidence of the relatively stronger effect on differentiated goods is given by Dunlevy and Hutchinson (1999) looking at immigration and trade in the late 19th century as well as Blanes (2005) and White (2008) who look at the effects of immigration on intra-industry trade for Spain and the US respectively. These studies present evidence that labor migration induces international trade, most notably for differentiated goods.

My paper adds to this literature in two ways. This study is the first I am aware of to look at how changing destinations for the same migrant group affects the migration trade link. Holding the source country constant can give us greater insights into why migration affects trade. The second contribution of my paper is to use trade linkages to examine the degree of assimilation for MENA migrants to Europe and North America. It is generally assumed that MENA migrants to Europe are less assimilated, but there is little data to support this notion. I find quantitative evidence that MENA migrants to Europe maintain stronger trade linkages with their native countries than their American counterparts. This effect is strongest for imports into Europe, suggesting that it is the retained preferences of immigrants from the MENA that drive the migration-trade link.

## **4. EMPIRICAL SPECIFICATION**

### **4.1. Baseline Model**

The existing literature suggests two channels through which migration may affect trade: network effects lower transactions costs and retained preferences create a market for imports from immigrants' native countries. The transactions cost explanation suggests that immigration should increase both exports and imports between the sending and receiving countries, while the retained preference explanation only holds for imports into the receiving country. To test these

predictions, I gather data on immigration and trade from a number of sources. Bilateral migration data is from Docquier and Marfouk (2007), covering the number of migrants born in a particular sending country that reside in a given receiving country. The database covers the foreign born population in 1990 and 2000 for 19 sending countries in the MENA region and 19 receiving countries in North America and Europe. Bilateral trade data is taken from the UN Commodity Trade Statistics. To distinguish trade across different levels of product differentiation, I use the Rauch (1999) classification for goods disaggregated at the 4-digit SITC Revision 2 level.<sup>3</sup> I then re-aggregate into the three categories to get total bilateral trade in homogeneous, reference price, and differentiated goods across the sample for 1991 and 2001. These years are chosen so that we are measuring the effects of the lagged immigrant stock on trade, an attempt to control for simultaneity in trade and migration.<sup>4</sup>

The immigration trade relationship has generally been estimated with gravity equations. These empirical models have had remarkable success in predicting trade flows and may be derived from a general equilibrium model with imperfect competition as in Bergstrand (1985). The baseline model to be estimated is:

$$Trade_{i,j,t} = e^{\beta_0} Mig_{i,j,t-1}^{\beta_1} Y_{i,t}^{\beta_2} Y_{j,t}^{\beta_3} \left( \frac{Y_{i,t}}{Pop_{i,t}} \right)^{\beta_4} \left( \frac{Y_{j,t}}{Pop_{j,t}} \right)^{\beta_5} \exp \{ \beta_7 Lang_{i,j} + \beta_8 Colony_{i,j} + u_{i,j,t} \} \quad (1)$$

We log-linearize this to:

$$\begin{aligned} \ln Trade_{i,j,t} = & \beta_0 + \beta_1 \ln Mig_{i,j,t-1} + \beta_2 \ln Y_{i,t} + \beta_3 \ln Y_{j,t} \\ & + \beta_4 \ln \left( \frac{Y_{i,t}}{Pop_{i,t}} \right) + \beta_5 \ln \left( \frac{Y_{j,t}}{Pop_{j,t}} \right) + \beta_6 \ln Dist_{i,j} \\ & + \beta_7 Lang_{i,j} + \beta_8 Colony_{i,j} + u_{i,j,t} \end{aligned} \quad (2)$$

In this specification, bilateral trade depends on bilateral migration, total and per capita income in both countries, and a series of variables that represent trade costs: distance, whether or not countries share a common language, and any

<sup>3</sup> Rauch (1999) classifies goods as Homogeneous, Reference Priced, or Differentiated. A Homogeneous good is traded on an organized exchange. Reference Priced goods, while not traded on organized exchanges, have prices referenced in industry publications such as trade magazines. Differentiated goods refer to all other commodities (those not traded on exchanges and without a reference price).

<sup>4</sup> Admittedly, this is a relatively crude method given that we are using the immigrant stock which should be relatively stable from one year to the next. A more refined instrumental variables correction is discussed later in this section.

history of colonial ties that may indicate a common legal system or established trading relationship. Migration is predicted to reduce trade costs (and therefore increase trade) as well as increase exports from the sending to the receiving country due to retained migrant preferences. To assess whether or not the migration effect on trade is stronger for Europe, define a dummy variable equal to 1 if the receiving country is in Europe and 0 otherwise, then interact this with log migration:

$$\begin{aligned} \ln Trade_{i,j,t} = & \beta_0 + \beta_1 \ln Mig_{i,j,t-1} + \gamma \ln Mig_{i,j,t-1} * EU_j + \delta EU_j \\ & + \beta_2 \ln Y_{i,t} + \beta_3 \ln Y_{j,t} + \beta_4 \ln \left( \frac{Y_{i,t}}{Pop_{i,t}} \right) + \beta_5 \ln \left( \frac{Y_{j,t}}{Pop_{j,t}} \right) \quad (3) \\ & + \beta_6 \ln Dist_{i,j} + \beta_7 Lang_{i,j} + \beta_8 Colony_{i,j} + u_{i,j,t} \end{aligned}$$

The elasticity of migration to trade is thus  $\beta_1$  for North America and  $\beta_1 + \gamma$  for Europe. If the  $\gamma$  coefficient is significantly larger than zero, then migration to Europe has a bigger impact on trade than migration to North America. Estimates of this relationship for 1990 and 2000 immigration across exports and imports are given in Tables 4 and 5. Equation 3 is estimated with both OLS and Tobit to account for the relatively high number of zeros in bilateral trade data. Despite this concern, the OLS and Tobit estimates are qualitatively the same, with only minor quantitative differences.

#### **4.2 Correcting for Endogenous Migration**

A larger empirical problem is that the migrant stock variable may suffer from endogeneity. Greater trade between two countries may lead to increased familiarity and warmer political relations between these nations. This lowers the cost of migration, suggesting that bilateral trade may be leading migration. There may also be unobserved variables, such as cultural similarity or information flow that positively affect both migration and trade. Omission of such variables could lead us to falsely attribute the effects of these variables on trade to migration.

To correct for endogeneity, I follow steps used in Javorcik et al (2006) and McKenzie (2005). To address simultaneity, I instrument the migrant stock in 2000 with the migrant stock in 1990. To address any unobserved variables that may be influencing both migration and trade, I focus on instruments that should affect migration, but have little to no contemporaneous impact on trade outside of their effects through migration. I use the cost of obtaining a passport in the sending country as a percentage of gross national income, bilateral telephone traffic between sending and receiving countries (measuring the strength of a network), population density in the sending country, and two dummy variables equal to 1 if

the sending country has cultural restrictions on women traveling alone or any legal restrictions in which residents must first obtain government approval before traveling abroad. These variables (as well as all other exogenous explanatory variables in equation 3) are used to get a first stage predicted value for bilateral migration. Substituting the predicted migration variable for the actual migration data and re-estimating equation 3 should yield estimates with less of a bias. Unfortunately, this process only allows us to obtain estimates based on 2001 trade flows, as I only have migration data for 1990 and 2000. Estimates from this method are presented alongside those from OLS and Tobit in Table 5.

## 5. DISCUSSION

Looking at Table 4, we see that immigration in 1990 only has a significant effect on trade between the MENA and Europe, while the migration-trade elasticity is not significantly different from zero for North American migration, using either exports or imports as the dependent variable. A 10% increase in migration from a MENA country to a European nation increases exports to that MENA nation by 1% and imports into the European nation by 1.25%.<sup>5</sup>

Looking at the data for 2000 in Table 5, I find that migration to North America only significantly affects exports to the MENA region and this effect drops out when controlling for potential endogeneity in migration. European migration has an excess effect only on imports from the MENA region. I estimate that a 10% increase in migration from a MENA country will raise exports to that MENA country by 0.62%-1.72% for North America, while the European export-migration elasticity is slightly larger but not significantly different. This pattern is reversed for imports, with a 10% increase in migration increasing imports to Europe by 1.84%-2.32% and having no discernible impact on imports into North America.<sup>6</sup>

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<sup>5</sup> Recall that the elasticity of trade with respect to migration is  $\beta_I$  for North America and  $\beta_I + \gamma$  for Europe. Thus, a 1% increase in migration in 1990 will lead to a  $-0.091 + 0.191 = 0.1\%$  increase in exports to the MENA from Europe according to OLS. Therefore a 10% increase in migration will lead to a 1% increase in exports. For imports and OLS, a 10% increase in migration will lead to a  $10 * (-0.081 + 0.206) = 1.25\%$  increase in imports into Europe from the MENA. From the Tobit model, the elasticities are slightly smaller, with a 10% increase in migration leading to 0.74% and 1.2% increases in exports and imports to and from the MENA respectively.

<sup>6</sup> The European migration trade elasticity was computed by adding together the coefficient on log Migration and the interaction effect between migration and the Europe dummy variable.

**Table 4: Migration and Aggregate Trade Flows: 1990**

	Exports		Imports	
	OLS	Tobit	OLS	Tobit
Migration	-0.091 [0.249]	-0.097 [0.159]	-0.081 [0.158]	-0.071 [0.107]
Mig*EU	0.191 [0.005]	0.171 [0.003]	0.206 [0.000]	0.191 [0.000]
EU	0.043 [0.971]	-0.031 [0.975]	1.158 [0.007]	1.263 [0.000]
Y <sub>i</sub>	1.579 [0.000]	1.465 [0.000]	1.004 [0.000]	0.995 [0.000]
Y <sub>j</sub>	1.176 [0.000]	1.121 [0.000]	0.708 [0.000]	0.683 [0.000]
Y <sub>i</sub> /Pop <sub>i</sub>	1.854 [0.000]	1.123 [0.007]	1.807 [0.000]	1.397 [0.000]
Y <sub>j</sub> /Pop <sub>j</sub>	0.598 [0.000]	0.535 [0.000]	0.489 [0.000]	0.443 [0.000]
Distance	-1.641 [0.000]	-1.479 [0.000]	-0.685 [0.001]	-0.59 [0.002]
Language	0.748 [0.111]	0.74 [0.066]	0.675 [0.052]	0.651 [0.014]
Colony	-0.054 [0.917]	-0.026 [0.953]	0.127 [0.740]	0.11 [0.750]
Adj. R <sup>2</sup>	0.653	-	0.625	-
Censored Obs.	-	30	-	6

\* OLS and Tobit estimates of equation 3 in the text. Migration data for 1990 and 2000 are from Docquier and Marfouk (2007). Exports refer to exports from European or North American countries to MENA countries, while imports originate in MENA countries. Trade data is from UN Comtrade, Income data is from the IFS, while distance, language, and colonial linkage data is from the CEPII Geodesic Distance Database. P-values are given in brackets.

**Table 5: Migration and Aggregate Trade Flows: 2000**

	Exports			Imports		
	OLS	Tobit	IV	OLS	Tobit	IV
Migration	0.172 [0.020]	0.109 [0.085]	0.062 [0.500]	0.025 [0.592]	0.015 [0.723]	0.036 [0.565]
Mig*EU	0.045 [0.464]	0.02 [0.697]	0.018 [0.727]	0.207 [0.000]	0.212 [0.000]	0.148 [0.001]
EU	-0.939 [0.394]	-0.879 [0.368]	-1.571 [0.060]	1.587 [0.000]	1.314 [0.000]	1.094 [0.029]
$Y_i$	1.582 [0.000]	1.53 [0.000]	1.385 [0.000]	0.943 [0.000]	0.946 [0.000]	0.938 [0.000]
$Y_j$	1.087 [0.000]	1.116 [0.000]	0.976 [0.000]	0.583 [0.000]	0.572 [0.000]	0.536 [0.000]
$Y_i/Pop_i$	-0.721 [0.088]	-0.447 [0.218]	-0.395 [0.459]	0.724 [0.006]	0.733 [0.004]	0.84 [0.012]
$Y_j/Pop_j$	0.736 [0.000]	0.673 [0.000]	0.922 [0.000]	0.51 [0.000]	0.494 [0.000]	0.818 [0.000]
Distance	-1.793 [0.000]	-1.822 [0.000]	-1.69 [0.000]	-0.475 [0.010]	-0.437 [0.013]	-0.727 [0.000]
Language	0.927 [0.034]	1.14 [0.000]	1.315 [0.001]	0.3 [0.271]	0.483 [0.065]	0.542 [0.061]
Colony	-0.445 [0.390]	-0.387 [0.374]	-0.597 [0.219]	0.148 [0.648]	0.076 [0.804]	-0.012 [0.955]
Adj. $R^2$	0.731	-	0.686	0.73	-	0.702
Censored Obs.	-	43	-	-	6	-

\* OLS, Tobit, and IV estimates of equation 3 in the text. For the IV estimation, the migrant stock in 2000 is instrumented with the migrant stock in 1990, the cost of obtaining a passport in the sending country, telephone tra\_c between the sending and receiving countries, population density in the sending country, cultural and legal restrictions on female travel in the sending country as well as all explanatory variables in equation 3. Migration data for 1990 and 2000 are from Docquier and Marfouk (2007). Exports refer to exports from European or North American countries to MENA countries, while imports originate in MENA countries. Trade data is from UN Comtrade, Income data is from the IFS, while distance, language, and colonial linkage data is from the CEPII Geodesic Distance Database. P-values are given in brackets.

We see that migration has a statistically significant impact on exports to the MENA from Europe in 1990 (though not in 2000). This result suggests that network effects may matter, as immigrant preferences could only explain the linkage for imports to Europe or North America from the MENA region. The stronger link between migration and trade for Europe implies two, non-mutually exclusive possibilities. First, MENA migrants to Europe maintain closer ties with their native countries and exert stronger network effects. The fact that the European migration-trade link is stronger for both exports and imports in 1990 supports this idea. Second, MENA migrants to Europe have stronger preferences for their native country goods. The fact that the European migration-trade link is stronger only for imports in 2000 supports this view.

We gain further insights into this analysis by looking at how migration affects trade in different categories of goods. In particular, do the effects of migration on trade vary when looking at differentiated vs. homogeneous goods? Both channels through which migration affects trade will be influenced by the degree of differentiation of the goods being traded. Homogeneous goods widely traded on organized exchanges will not benefit much from information flows through migrant networks. Trade in differentiated goods on the other hand is more likely to encounter the kind of informal trade barriers that migrant networks reduce. Immigrant preferences should only matter for trade in differentiated goods, as homogeneous goods are, by definition, the same regardless of where they are produced or consumed.

I categorize goods trade by using the classification system found in Rauch (1999). Goods are classified into one of three categories: Homogeneous, Reference Priced, or Differentiated. Homogeneous goods are traded on organized exchanges and include such classifications as crude petroleum (SITC Rev. 2 Code 3330) and cotton yarn (SITC Rev. 2 Code 6513). Reference priced goods are not traded on organized exchanges, but do have price data referenced in trade publications. Examples include Insecticides (SITC Rev. 2 Code 5911) and Calf Leather (SITC Rev. 2 Code 6113). Differentiated Products do not have a price listed either on organized exchanges or in trade publications. Examples include Jams and Marmalade (SITC Rev. 2 Code 0582) and Color Televisions (SITC Rev. 2 Code 7611).

I gather bilateral trade data at SITC 4-digit level of disaggregation then re-aggregate bilateral exports and imports into these three categories. Equation 3 is then estimated separately for six different dependent variables: exports and imports of homogeneous, reference price, and differentiated goods. Table 6 gives OLS estimates of equation 3 across the six specifications defined above for 2000 immigration data (2001 trade data) using IV estimation.

The first column looks at differentiated goods exports from Europe or North America to MENA countries. The migration-trade link is significantly

positive, with a 10% increase in migration to these regions raising exports to a MENA country by 5.24%. The European elasticity is slightly higher (5.8%), but is not significantly different from the North American elasticity. There is a significant difference for European migration when looking at differentiated goods imports, however. I estimate that a 10% increase in European migration will increase differentiated goods imports into European countries by 1.93%, while migration to North America has no discernible effect. These results suggest that network effects matter for exports to the MENA, with migrants facilitating trade by lowering informal trade barriers. For differentiated goods imports into North America, network effects do not seem to matter, nor do immigrant preferences make much of an impact. That migration does affect imports into Europe suggests that either network effects are stronger there, or that MENA migrants to Europe retain stronger preferences for native country goods.

Similar patterns hold for reference price and homogeneous goods, though the migration-trade link weakens as products become less differentiated. For reference priced goods exports to the MENA, the immigration-trade elasticity is not significantly different from zero for either Europe or North America, suggesting inconsequential network effects for these goods. Interestingly, reference priced imports into North America are significantly influenced by migration. The European import elasticity is higher, though not significantly different from the North American elasticity. That migration only affects imports of reference priced goods, suggests that preferences are the driving channel here, and for these goods the preference channel is the same between the two groups of migrants.

I estimate no discernible difference between Europe and North America in the migration-trade elasticity for homogeneous goods exports to the MENA, with a 10% increase in migration raising homogeneous goods exports by about 2.5%. However, homogeneous goods imports are only influenced by migration to Europe, with an estimated elasticity of 0.21 compared to a statistically insignificant elasticity for North America. That exports of homogeneous goods to the MENA are affected by migration suggests the importance of network effects for homogeneous goods trade. This is a surprising result, as one would expect homogeneous goods to benefit less from the trade barrier reducing effects of migrant networks. While indeed the migration-trade elasticity is larger for differentiated goods, it is still positive for homogeneous goods, suggesting that even for these goods there are trade barriers. These trade barriers do not seem to matter as much when goods are coming into North America, perhaps reflecting the greater market infrastructure in this region. Migration does affect imports into Europe, which may be due to stronger network effects or immigrant preferences. In the latter case, this suggests that homogeneous goods are viewed as differentiated goods by some migrants expressing a preference for native country products.

**Table 6: Migration and Disaggregated Trade: 2000**

	Differentiated		Reference Price		Homogeneous	
	Exports	Imports	Exports	Imports	Exports	Imports
Migration	0.524 [0.000]	-0.096 [0.144]	0.091 [0.396]	0.166 [0.012]	0.272 [0.001]	-0.01 [0.856]
Mig*EU	0.056 [0.402]	0.289 [0.000]	-0.022 [0.971]	0.061 [0.141]	-0.04 [0.313]	0.207 [0.000]
EU	0.365 [0.501]	0.967 [0.062]	-2.664 [0.033]	2.85 [0.003]	-0.247 [0.850]	1.522 [0.035]
Y <sub>i</sub>	0.88 [0.000]	1.036 [0.000]	1.226 [0.000]	0.801 [0.000]	0.239 [0.018]	0.848 [0.000]
Y <sub>j</sub>	0.352 [0.016]	0.55 [0.000]	0.67 [0.000]	0.558 [0.000]	0.287 [0.004]	0.125 [0.128]
Y <sub>i</sub> /Pop <sub>i</sub>	-0.328 [0.666]	1.405 [0.000]	-0.792 [0.226]	0.035 [0.941]	0.076 [0.835]	0.822 [0.007]
Y <sub>j</sub> /Pop <sub>j</sub>	1.582 [0.000]	0.848 [0.000]	1.124 [0.000]	0.978 [0.003]	0.73 [0.000]	0.847 [0.000]
Distance	-1.403 [0.009]	-0.492 [0.011]	-1.517 [0.000]	-1.063 [0.000]	-0.927 [0.000]	-0.624 [0.017]
Language	-0.056 [0.918]	0.694 [0.013]	1.387 [0.013]	0.513 [0.184]	-0.035 [0.906]	0.699 [0.004]
Colony	-0.401 [0.602]	-0.296 [0.287]	-0.202 [0.681]	-0.069 [0.837]	-0.182 [0.696]	-0.4 [0.224]
Adj. R <sup>2</sup>	0.517	0.71	0.52	0.585	0.454	0.604

\* See the notes for Table 5 for a description of the data. All estimates are from the IV specification described in the empirical section of the text. Bilateral trade at the 4-digit SITC Revision 2 level is collected then aggregated into Differentiated, Reference Price, and Homogeneous goods trade according to the classification given by Rauch (1999). P-values are given in brackets.

## 6. CONCLUSION

This study addresses two issues: why does migration affect trade and are MENA migrants to Europe less assimilated than their North American counterparts? Migration can lower informal trade barriers through the formation of networks across borders linking a migrant's adopted and native countries. In this case, migration should have a pro-trade effect on imports into the migrant's adopted home as well as exports back to their native country.

I do find evidence that differentiated goods exported to the MENA are positively affected by migration, suggesting that network effects do matter. These effects may be particularly important when looking at trade with developing countries for which limited information and poor contract enforcement are trade barriers that migrant networks can lower. Network effects may be less important for imports, as information about European and North American markets is plentiful. However, immigrant preferences may matter a great deal for imports. If immigrants retain a preference for their native country's goods and services, they constitute a ready-made market for MENA countries to export to. This appears to be happening in Europe, but not in North America. It has been widely accepted that MENA migrants to Europe tend to be less assimilated than their North American counterparts and the results in this study seem to confirm this.

While this study does provide good insights into both the channels through which migration affects trade and the differential experiences of migrants to the MENA and North America, there are still several unanswered questions. One such question is to what extent are North American networks with the MENA weaker than European networks? If we could hold these network effects constant, then any remaining difference would have to be due to the immigrant preference channel. One possible solution is to gather data on the length of time a migrant has lived in a country, with the idea that immigrants who have been away from their native country for a long time have weaker ties. While there is information on immigrant tenure, it is not available for all countries in this study.

Despite this shortcoming, the results in this study are relevant to both academics and policymakers. From an academic perspective, these results confirm that both network effects and immigrant preferences are viable channels through which migration induces trade, though the preference channel appears to be much more important for less assimilated migrants to Europe. This paper yields one important policy implication. Immigration creates positive externalities for receiving countries that need to be considered. Receiving countries benefit from increased information about foreign markets (network effects) while sending countries are able to capture at least some of their emigrants' consumption through increased exports.

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