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# An Examination of the Danish Immigrant-Trade Link

Roger White\*

## ABSTRACT

This paper investigates the influence of immigrants on Danish imports and exports. As public and political debates concerning immigration policy are expected to continue, the findings presented here provide valuable information. Prior to 2002, Denmark's immigration policy was among the most liberal in Europe. However, concerns regarding terrorism, social services depletion, and detrimental labour market effects, all purported to stem from immigration, led the Danish government to severely tighten its policy. In examining Denmark, we explore the immigrant-trade relationship in a small host country that is globally well-integrated, open to trade, and proximate to both major trading partners and primary immigrant source nations. Further, as the share of the Danish population constituted by immigrants increased from 2.6 to 5.6 per cent between 1980 and 2000, Denmark presents an opportunity to consider immigrant-trade links for an increasingly diverse population that was initially relatively homogenous.

We consider a number of variations regarding home countries and trade values to estimate immigrant-trade links using a Tobit specification. The findings presented here, when considered in relation to prior research, suggest that the presence and magnitude of immigrant-trade links vary according to host country population homogeneity.

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## INTRODUCTION

Prior to 2002, Denmark's immigration policy was among the most liberal in Europe. However, concerns regarding terrorism, social services depletion, and detrimental labour market effects, all purported to stem from immigration, led the Danish government to severely tighten its immigration policy. The immigration policy debate is expected to continue as low birth rates in developed nations and persistent economic disparity between developed and developing countries increase migration pressures. By examining a link between immigrants and Danish trade with their home countries, we hope to help inform the public debate. Since trade is assumed to be, on net, a welfare-improving factor, a positive immigrant-trade link may generate benefits for the host country. While immigrant-trade links have been documented for several large, relatively closed and/or geographically isolated countries, Denmark is interesting since it is small, open to trade, globally well-integrated, and proximate both to major trading partners and primary immigrant source nations.<sup>1</sup> Further, since the proportion of the Danish population constituted by immigrants increased from 2.6 percent in 1980 to 5.6 percent in 2000, Denmark represent an opportunity to consider immigrant-trade links for an increasingly diverse population that, initially, was homogenous.

Gould (1994), in examining the United States, first reports a link between immigration and aggregate trade flows. Subsequent research reports that US immigrant-trade links vary significantly by home country income classifications (White, 2007) and product types (White, 2008 Mundra, 2005; Rauch, 1999). Several studies document immigrant-trade links for Canada (Wagner et al., 2002; Head and Ries, 1998; Helliwell, 1997). Ching and Chen (2000) report a positive immigrant-trade relationship between China and Taiwan. Likewise, Girma and Yu (2002), Blanes (2003), Piperakis et al. (2003) and Bryant et al. (2004) report the immigrants increase trade between their home countries and the UK, Spain, Greece, and New Zealand, respectively. Examining US data, Dunlevy (2006) and Co et al. (2004) find that immigrants exert positive effects on state-level exports to their respective home countries, while Combes et al. (2005) report that immigrants generate increases in intra-France trade.

Immigrants are hypothesized to influence trade via two channels. First, immigrants may arrive in the host country with preferences for home country products. If neither the desired home country products nor reasonable substitutes are available, this "preference effect" may increase host country imports from the home country. Second, immigrants may enter the host country in possession of information related to home country markets and/or connected to business or social networks that reduce transaction costs (Rauch and Trindade, 2002; Rauch, 1999). This second channel, referred to as a "network effect", implies

potential increases in both host country exports to and imports from the home country. Information may take the form of knowledge regarding political or social obligations required to conduct business in the home country (Globerman, 2001). Business and social network connections may lower transaction costs, reduce lax contract enforcement, convey information regarding trading opportunities and/or deter opportunistic behaviour (Rauch and Watson, 2004; Rauch and Trindade, 2002; Rauch, 2001, 1999).

As both the preference effect and the network effect would be expected to yield greater proportional increases in trade flows as host-home country dissimilarity increases (and likewise yield proportional decreases as host-home country similarity increases), we undertake examination of Danish data allowing for variation across home countries by relative level of development. The implicit assumption is that Denmark-home country similarity increases with home country economic development. This study employs data for 170 countries (classified as high, upper middle, lower middle, or low income) that span the years 1980-2000.<sup>2</sup> We also consider variation in immigrant-trade links by degree of product differentiation. Trade values, coded at the 4-digit Standard Industrial Trade Classification industry level, are classified as differentiated, reference-priced, or organized exchange goods. In the analysis to follow, we employ both “conservative” and “liberal” trade classifications developed by Rauch (1999). The reference-priced classification consists of goods for which prices are listed in trade publications. Organized exchange goods are products that are traded on actual exchanges. As the characteristics of goods included in these classifications are relatively uniform across producers, the products in these classifications are considered to be homogenous. All other products are sufficiently differentiated with respect to other products as to not be traded on exchanges or to have prices listed in trade publications. We consider these goods to be differentiated.

We report positive links between immigration and aggregate Danish imports from and exports to immigrants’ respective home countries. Overall, the typical immigrant increases annual Danish exports to their home country by US\$ 352 to US\$ 426. Similarly, annual imports from the home country increase, on average, by US\$ 394 to US\$ 407. However, variation in the magnitude of immigrant-trade links is reported across both home country income classifications and product classifications. Further, while immigrants are typically found to exert positive effects on Danish trade with their home countries, in a small number of instances we fail to find a significant immigrant-trade relationship. We observe links of greatest magnitude when we consider trade with high income countries, links are considered weakest, yet still positive, when we examine trade with low income countries. When considered in relation to the findings of prior research,

the results reported here extend the literature and suggest that the presence and magnitude of immigrant-trade links may depend on relative host country population homogeneity.

The rest of the paper proceeds as follows. The second section discusses the data and specification used in the study. The third section presents our econometric analysis. We conclude with a summary and potential policy implications.

## DATA AND METHODOLOGY

Prior studies have generally employed aggregate bilateral trade data and augmented gravity specifications.<sup>3</sup> We follow White (2008, 2007), Girma and Yu (2002) and Head and Ries (1998) in assuming constant elasticity of trade effects over the period for which data are available. We estimate the immigrant-trade relationship using a Tobit specification. This estimation strategy, also employed by Dunlevy (2006), is necessitated by the prevalence of observations (6.6% of all pairings wherein trade values, by product classification, are employed) where no trade is recorded. The estimation equation is presented below.<sup>4</sup>

$$\begin{aligned} \ln \text{TRADE}_{ijt} = & \alpha_0 + \beta_1 \ln \text{IMMIGRANTS}_{ijt} + \beta_2 (\ln \text{IMMIGRANTS}_{ijt} \times \text{LDC}_j) + \beta_3 \ln \text{TRADE}_{ijt-1} \\ & + \beta_4 \ln \text{DISTANCE}_{ij} + \beta_5 \Delta \ln \text{EXCHANGE RATE}_{ijt} + \beta_6 \ln \text{GDP}_{jt} \\ & + \beta_7 \left( \frac{\text{NET FDI Flows}_{jt}}{\text{GDP}_{jt}} \right) + \beta_8 \ln \text{REMOTE}_{jt} + \beta_9 \text{EUROPE}_j + \beta_{10} \text{MILITARY}_{jt} \\ & + \beta_{11} \text{NUMBER OF ADDITIONAL FTAS}_{jt} + \beta_{12} \text{SEAPORT}_{jt} + \gamma \Omega_t \\ & + \delta \text{LDC}_j + \varepsilon_{ijt} \end{aligned}$$

The vector of dependent variables,  $\text{TRADE}_{ijt}$ , includes aggregate import and export values and, to allow for possible variation in links across product types, import and export values for differentiated, reference-priced, and organized exchange goods. All monetary values have been normalized into 1995 US dollars using GDP deflators (World Bank, 2003). The number of immigrants from country  $j$  residing in Denmark (country  $i$ ) during year  $t$ ,  $\text{IMMIGRANTS}_{ijt}$ , is included to capture any effects of immigration on trade flows. Allowing variation in immigrant-trade links across home country income classifications, a vector of dummy variables, indicating home country income classification (upper middle, lower middle, or low income) is included and interacted with the  $\text{IMMIGRANTS}_{ijt}$  variable.

Several additional variables control for factors that facilitate or inhibit trade flows. A lagged dependent variable controls for the effects of trade history/inertia (Eichengreen and Irwin, 1996). Distance, measured in kilometres, between Copenhagen and the capital of country  $j$ , is a proxy for transport costs. Remoteness is a measure of quasi-distance that controls for lack of non-Danish

trading opportunities (Wagner et al., 2002). The change in the Denmark-country  $j$  exchange rate, given as Kroner per foreign currency unit, represents potential terms of trade effects. GDP measures economic mass, with higher values implying greater potential export markets for Danish goods and an increased probability of Danish imports. The Net FDI stock-to-GDP ratio represents global financial integration. The number of additional trade agreements to which country  $j$  is party serves as a proxy for openness to trade.

A series of dummy variables are also included.  $EUROPE_{jt}$ , identifying members of the European Union, European Free Trade Association, or European Economic Area, captures potential trade effects associated with political, social, and economic linkages. As military conflicts may directly inhibit trade or, more generally, decrease the likelihood of successfully executing contracts,  $MILITARY_{jt}$  indicates country  $j$  involvement in a military conflict.  $SEAPORT_{jt}$  indicates whether country  $j$  has coastal access. It is anticipated that, due to increased geographic impedance, Denmark trades less with landlocked nations. Finally, a vector of time dummies,  $\Omega_t$ , captures macroeconomic fluctuations and policy changes that may influence trade and  $\epsilon_{ijt}$  is an assumed i.i.d. error term. Table 1 presents descriptive statistics.

TABLE 1. DESCRIPTIVE STATISTICS					
	All Countries	High Income	Upper Middle Income	Lower Middle Income	Low Income
Variable	N = 3,420	N = 723	N = 497	N = 971	N = 1,169
Imports	190,835 (759,015)	768,207 (1,447,530)	33,355 (61,035)	23,429 (74,364)	15,640 (86,993)
Exports	190,787 (709,346)	762,584 (1,336,630)	33,671 (53,960)	31,755 (91,959)	12,052 (40,728)
Conservative Goods Classification					
Referenced-priced Imports	43,629 (202,175)	165,091 (397,938)	18,533 (45,514)	5,884 (16,605)	5,438 (31,987)
Organized-exchange Imports	51,702 (225,704)	210,241 (437,109)	6,826 (12,079)	6,113 (19,367)	3,982 (27,265)
Differentiated Imports	96,605 (364,967)	397,736 (684,062)	7,997 (16,368)	11,432 (41,736)	6,220 (30,008)
Liberal Goods Classification					
Referenced-priced Imports	45,872 (206,528)	174,207 (404,950)	19,039 (46,081)	6,371 (17,836)	5,335 (31,178)
Organized-exchange Imports	52,865 (228,582)	215,478 (441,669)	6,668 (12,314)	5,872 (18,781)	4,188 (28,560)
Differentiated Imports	93,168 (352,857)	383,245 (661,855)	7,648 (16,109)	11,186 (41,063)	6,117 (29,469)

TABLE 1. DESCRIPTIVE STATISTICS CONT.					
	All Countries	High Income	Upper Middle Income	Lower Middle Income	Low Income
Variable	N = 3,420	N = 723	N = 497	N = 971	N = 1,169
<b>Conservative Goods Classification</b>					
Referenced-priced Exports	50,190 (206,332)	203,293 (395,481)	6,235 (12,025)	7,781 (30,306)	3,001 (12,941)
Organized-exchange Exports	54,581 (214,136)	216,978 (408,786)	11,288 (21,571)	9,078 (27,236)	3,528 (13,294)
Differentiated Exports	85,509 (309,722)	340,071 (581,067)	16,148 (26,732)	14,896 (37,690)	5,524 (15,635)
<b>Liberal Goods Classification</b>					
Referenced-priced Exports	50,968 (215,345)	204,585 (416,335)	9,093 (19,431)	8,326 (23,828)	2,734 (11,781)
Organized-exchange Exports	46,460 (198,962)	188,088 (384,830)	7,119 (12,129)	6,771 (23,402)	2,627 (11,596)
Differentiated Exports	92,872 (316,891)	367,760 (584,414)	17,458 (27,922)	16,657 (50,620)	6,691 (24,515)
Distance (km)	6,586 (3,679)	4,567 (4,451)	7,721 (3,249)	7,577 (4,163)	6,600 (1,828)
Europe	0.1450 (0.4449)	0.6252 (0.7401)	0.0000 (0.0000)	0.0065 (0.1141)	0.0046 (0.0911)
$\Delta$ In Exchange Rate (DKK/FCU)	0.1307 (0.4566)	0.0154 (0.1420)	0.1467 (0.4641)	0.1408 (0.4501)	0.1922 (0.5690)
Gross Domestic Product (GDP) (\$100,000s)	1,620,970 (6,972,960)	6,068,930 (13,658,500)	698,255 (1,423,640)	265,688 (482,350)	201,184 (871,553)
Immigrants	1,097 (3,219)	2,484 (4,642)	225 (363)	1,168 (3,636)	488 (1,712)
Military	0.2142 (0.4103)	0.1134 (0.3173)	0.0597 (0.2372)	0.2840 (0.4512)	0.2890 (0.4535)
Net FDI Flows / GDP	0.1602 (0.4296)	0.0986 (0.3565)	0.2386 (0.2849)	0.1638 (0.2250)	0.1645 (0.6136)
Number of Additional FTAs	0.3406 (0.6438)	0.3084 (0.6427)	0.7655 (0.7570)	0.4744 (0.7389)	0.0646 (0.2570)
Per Capita GDP	5,828 (9,039)	20,142 (9,237)	4,629 (1,801)	1,591 (643)	387 (199)
Seaport	0.8347 (0.3715)	0.9129 (0.2822)	0.8806 (0.3246)	0.9184 (0.2739)	0.6916 (0.4620)
Remote	7,429 (4,698)	4,894 (3,551)	8,023 (3,296)	8,870 (6,763)	7,642 (2,638)
Standard deviations in parentheses. All trade values presented in 1,000s. All monetary values are in 1995 U.S. Dollars.					

## IMMIGRANT-TRADE LINKS

Estimates generated using aggregate import and export values, respectively, as dependent variables are reported in column (a) of Tables 2 and 3. Across income classifications, we find variation in immigrant-trade links with respect to both aggregate imports and exports. The double-log functional form of the estimation equation permits interpretation of estimated coefficients as elasticities. Given the structure of the interaction variables, coefficients on the  $IMMIGRANTS_{ijt}$  variables represent links between Denmark and high income home countries, while coefficients on interaction variables represent deviations from estimated Danish-high income home country links. For example, an assumed 1 per cent increase in the immigrant stock from a high income country yields estimated increases in Danish imports from and exports to the home country of 0.328 per cent and 0.572 per cent, respectively. A similar immigrant stock increase from a lower middle income country increases Danish imports from and exports to the home country by 0.233 per cent and 0.475 per cent, respectively.

Dependent Variable:	All Imports (a)	Conservative Classification			Liberal Classification		
		Differ-entiated Imports (b)	Reference-Priced Imports (c)	Organized Exchange Imports (d)	Differ-entiated Imports (e)	Reference-Priced Imports (f)	Organized Exchange Imports (g)
$\ln$ Immigrants <sub>ijt</sub>	0.328** (0.043)	0.195** (0.036)	0.145** (0.038)	0.203** (0.035)	0.2** (0.038)	0.154** (0.041)	0.211** (0.036)
$\ln$ Immigrants <sub>ijt</sub> x Upper Middle Income <sub>j</sub>	0.011 (0.06)	-0.08# (0.044)	-0.07 (0.06)	-0.051 (0.039)	-0.093* (0.045)	-0.077 (0.059)	-0.047 (0.042)
$\ln$ Immigrants <sub>ijt</sub> x Lower Middle Income <sub>j</sub>	-0.095* (0.041)	-0.102** (0.033)	-0.101** (0.036)	-0.127** (0.033)	-0.102** (0.034)	-0.109** (0.037)	-0.127** (0.033)
$\ln$ Immigrants <sub>ijt</sub> x Low Income <sub>j</sub>	-0.137** (0.043)	-0.112** (0.037)	-0.078* (0.038)	-0.151** (0.037)	-0.114** (0.038)	-0.088* (0.039)	-0.148** (0.037)
$\ln$ Distance <sub>ij</sub>	-0.18* (0.078)	-0.359** (0.066)	-0.364** (0.069)	-0.375** (0.069)	-0.386** (0.068)	-0.351** (0.071)	-0.408** (0.069)



TABLE 2. EFFECTS OF IMMIGRATION ON IMPORTS, AGGREGATE AND BY PRODUCT CLASSIFICATION (TOBIT SPECIFICATIONS) CONT.

Dependent Variable:	Conservative Classification				Liberal Classification		
	All Imports (a)	Differ-entiated Imports (b)	Reference-Priced Imports (c)	Organized Exchange Imports (d)	Differ-entiated Imports (e)	Reference-Priced Imports (f)	Organized Exchange Imports (g)
$\Delta \ln$ Exchange Rate <sub>ijt</sub> (DKK/FCU)	-0.23** (0.077)	-0.119# (0.063)	-0.076 (0.059)	-0.1 (0.064)	-0.122# (0.065)	-0.088 (0.061)	-0.082 (0.064)
$\ln$ GDP <sub>jt</sub>	0.336** (0.041)	0.317** (0.033)	0.331** (0.033)	0.312** (0.032)	0.34** (0.037)	0.335** (0.038)	0.327** (0.032)
Net FDI Flows <sub>jt</sub> /GDP <sub>jt</sub>	0.203# (0.121)	0.206# (0.122)	0.182 (0.136)	0.204# (0.122)	0.231# (0.13)	0.186 (0.136)	0.209# (0.121)
$\ln$ Remote <sub>jt</sub>	0.034 (0.09)	0.15* (0.071)	0.215** (0.071)	0.158* (0.07)	0.173* (0.073)	0.197** (0.072)	0.185** (0.071)
Europe <sub>j</sub>	0.045 (0.101)	0.06# (0.024)	0.057# (0.027)	0.066 (0.072)	0.069# (0.027)	0.04# (0.026)	0.069 (0.073)
Military <sub>jt</sub>	-0.013 (0.097)	-0.062** (0.021)	-0.065* (0.032)	-0.032 (0.088)	-0.089** (0.024)	-0.091** (0.029)	-0.034 (0.09)
Number of Additional FTAs <sub>jt</sub>	0.171** (0.065)	0.252** (0.056)	0.247** (0.055)	0.268** (0.059)	0.23** (0.063)	0.245** (0.061)	0.276** (0.06)
Seaport <sub>ij</sub>	0.414** (0.107)	0.349** (0.105)	0.27** (0.091)	0.419** (0.118)	0.346** (0.111)	0.289** (0.098)	0.408** (0.119)
Lagged Dependent Variable	0.705** (0.028)	0.699** (0.022)	0.709** (0.021)	0.68** (0.024)	0.68** (0.028)	0.705** (0.031)	0.663** (0.024)
Upper Middle Income <sub>j</sub>	0.457 (0.312)	0.432# (0.254)	0.502# (0.275)	0.422# (0.233)	0.459# (0.255)	0.558# (0.286)	0.356 (0.242)
Lower Middle Income <sub>j</sub>	0.205 (0.27)	0.379# (0.226)	0.589* (0.239)	0.511* (0.215)	0.396# (0.228)	0.623* (0.244)	0.459* (0.215)
Low Income <sub>j</sub>	0.631* (0.281)	0.666** (0.231)	0.854** (0.247)	0.835** (0.226)	0.676** (0.241)	0.872** (0.26)	0.793** (0.226)
Constant	-5.18** (1.215)	-4.988** (0.899)	-5.872** (0.967)	-4.825** (0.87)	-5.371** (0.979)	-5.88** (1.02)	-4.981** (0.885)
N	3,420	3,420	3,420	3,420	3,420	3,420	3,420
Adjusted R <sup>2</sup>	0.84	0.85	0.85	0.86	0.84	0.84	0.85

Heteroskedasticity-consistent robust standard errors in parentheses. Statistical significance denoted as follows: “\*\*\*”, “\*\*” and “#” represent significance at the 1%, 5%, and 10% levels, respectively. A vector of year dummy variables was included in the specification; however, corresponding coefficients are not presented.

TABLE 3. EFFECTS OF IMMIGRATION ON EXPORTS, AGGREGATE AND BY PRODUCT CLASSIFICATION (TOBIT SPECIFICATIONS)

Dependent Variable:	Conservative Classification				Liberal Classification		
	All Exports (a)	Differ-entiated Exports (b)	Reference-Priced Exports (c)	Organized Exchange Exports (d)	Differ-entiated Exports (e)	Reference-Priced Exports (f)	Organized Exchange Exports (g)
ln Immigrants <sub>ijt</sub>	0.572** (0.055)	0.136** (0.037)	0.212** (0.039)	0.14** (0.033)	0.1** (0.025)	0.181** (0.04)	0.165** (0.035)
ln Immigrants <sub>ijt</sub> x Upper Middle Income <sub>j</sub>	-0.138# (0.076)	-0.019 (0.031)	-0.038 (0.049)	-0.03 (0.036)	-0.009 (0.03)	-0.07 (0.045)	-0.047 (0.034)
ln Immigrants <sub>ijt</sub> x Lower Middle Income <sub>j</sub>	-0.097# (0.057)	-0.015 (0.026)	-0.034 (0.035)	-0.039 (0.028)	-0.009 (0.022)	-0.049 (0.034)	-0.05# (0.026)
ln Immigrants <sub>ijt</sub> x Low Income <sub>j</sub>	-0.34** (0.061)	-0.072* (0.033)	-0.157** (0.042)	-0.088* (0.038)	-0.053# (0.031)	-0.136** (0.046)	-0.098* (0.039)
ln Distance <sub>ij</sub>	-0.553** (0.09)	-0.224** (0.059)	-0.539** (0.075)	-0.296** (0.067)	-0.185** (0.056)	-0.359** (0.077)	-0.355** (0.072)
Δ ln Exchange Rate <sub>ijt</sub> (DKK/FCU)	0.059* (0.024)	0.079** (0.029)	0.014 (0.073)	-0.024 (0.065)	0.073** (0.023)	-0.061 (0.068)	-0.014 (0.062)
ln GDP <sub>jt</sub>	0.481** (0.042)	0.187** (0.032)	0.37** (0.042)	0.215** (0.034)	0.143** (0.025)	0.275** (0.039)	0.222** (0.036)
Net FDI Flows <sub>ijt</sub> /GDP <sub>jt</sub>	0.393** (0.134)	0.114 (0.101)	0.283** (0.105)	0.122 (0.102)	0.108 (0.115)	-0.187 (0.287)	0.069# (0.042)
ln Remote <sub>jt</sub>	-0.154 (0.127)	0.06 (0.056)	0.257** (0.073)	0.065 (0.064)	0.049 (0.054)	0.142* (0.063)	0.119# (0.062)
Europe <sub>j</sub>	-0.907** (0.133)	-0.118 (0.076)	-0.203* (0.086)	-0.155* (0.074)	-0.097 (0.065)	-0.172* (0.078)	-0.17* (0.075)
Military <sub>jt</sub>	-0.386** (0.097)	-0.193* (0.077)	-0.225* (0.109)	-0.099 (0.075)	-0.153* (0.063)	-0.084 (0.087)	-0.112 (0.083)
Number of Additional FTAs <sub>jt</sub>	0.113* (0.056)	0.098* (0.043)	0.013 (0.084)	0.055 (0.06)	0.072# (0.04)	0.017 (0.062)	0.085 (0.059)
Seaport <sub>tj</sub>	1.107** (0.13)	0.277** (0.087)	0.628** (0.132)	0.433** (0.111)	0.217** (0.073)	0.532** (0.123)	0.407** (0.117)
Lagged Dependent Variable	0.334** (0.022)	0.785** (0.032)	0.577** (0.041)	0.744** (0.033)	0.837** (0.016)	0.677** (0.041)	0.717** (0.039)

TABLE 3. EFFECTS OF IMMIGRATION ON EXPORTS, AGGREGATE AND BY PRODUCT CLASSIFICATION (TOBIT SPECIFICATIONS) *CONT.*

Dependent Variable:	Conservative Classification				Liberal Classification		
	All Exports (a)	Differ-entiated Exports (b)	Reference-Priced Exports (c)	Organized Exchange Exports (d)	Differ-entiated Exports (e)	Reference-Priced Exports (f)	Organized Exchange Exports (g)
Upper Middle Income <sub>j</sub>	0.481* (0.227)	0.111 (0.176)	-0.114 (0.258)	0.155 (0.195)	0.054 (0.175)	0.323 (0.257)	0.157 (0.176)
Lower Middle Income <sub>j</sub>	0.012 (0.374)	0.034 (0.157)	-0.199 (0.229)	0.085 (0.177)	0.002 (0.147)	0.156 (0.228)	0.078 (0.154)
Low Income <sub>j</sub>	1.86** (0.366)	0.514** (0.186)	0.757** (0.246)	0.487* (0.217)	0.36* (0.176)	0.733** (0.269)	0.5* (0.219)
Constant	-2.197 (1.446)	-1.961** (0.68)	-4.277** (0.923)	-2.206** (0.725)	-1.372* (0.6)	-3.356** (0.8)	-2.064** (0.685)
N	3,420	3,420	3,420	3,420	3,420	3,420	3,420
Adjusted R <sup>2</sup>	0.73	0.78	0.86	0.89	0.83	0.85	0.91
Heteroskedasticity-consistent robust standard errors in parentheses. Statistical significance denoted as follows: “***”, “**” and “#” represent significance at the 1%, 5%, and 10% levels, respectively. A vector of year dummy variables was included in the specification; however, corresponding coefficients are not presented.							

We also report variation in immigrant-trade links across product classifications. In both Table 2 and Table 3, results presented in columns (b) through (g) indicate cleavages exist across both product classifications and home country income classifications. Links appear to increase with average home country income. In ten of the 12 estimations employing trade values classified by product type as dependent variables, the upper middle income country link does not vary from that of high income home countries. However, the effects of immigration on lower middle income and low income classifications are significantly weaker. In ten of the 12 estimations, the Danish-low income country link is weakest in magnitude and, in the remaining two estimations (the import of referenced-priced goods), the Danish-lower middle income country link is lowest.

The remaining coefficients provide additional interesting results. A depreciation of country *j*'s currency relative to the Danish Kroner increases Danish imports of differentiated goods and decreases Danish exports. Higher transport costs reduce trade, as expected, while the lack of non-Danish trading opportunities leads to an increase in Danish-country *j* trade. Similarly, if country *j* is not landlocked, Danish-country *j* trade is higher. Denmark trades more with larger economies as is evidenced by the coefficients on GDP variables. Greater international financial integration, as represented by net FDI stock-to-GDP values, corresponds to higher

trade levels. Country *j* military involvement appears to reduce Danish exports. Denmark imports more from European nations, but exports relatively less to these nations. Not surprisingly, Denmark trades more with nations that are relatively open to trade, as indicated by memberships in additional FTAs.

Regarding aggregate trade flows, the immigrant-trade link documented in prior research appears robust. However, when allowing for variation across product types and home country income classifications, the results vary from earlier research. White (2008), after examining US immigrant-trade links, reported that links increase in magnitude as average home country income declines. Further, for high income home countries, links are found only for trade in differentiated goods. For other income classifications, links generally increase with product differentiation. The Danish data reveal positive immigrant-trade links for all home country income classifications regardless of product classification and, while positive links are reported for all home country income classifications, Danish immigrant-trade links decrease in magnitude as average home country income declines.

	All Imports	Conservative Classification			Liberal Classification		
		Differ-entiated Imports	Reference-Priced Imports	Organized Exchange Imports	Differ-entiated Imports	Reference-Priced Imports	Organized Exchange Imports
High Income Country	0.328** (7.63)	0.195** (5.42)	0.145** (3.82)	0.203** (5.80)	0.2** (5.26)	0.154** (3.76)	0.211** (5.86)
Upper Middle Income Country	0.339** (5.66)	0.115** (2.87)	0.075 (1.22)	0.152** (4.41)	0.107* (2.49)	0.077 (1.30)	0.164** (4.17)
Lower Middle Income Country	0.233** (7.64)	0.093** (3.62)	0.044 (1.56)	0.076** (2.89)	0.098** (3.64)	0.045 (1.58)	0.084** (3.11)
Low Income Country	0.191** (6.28)	0.083** (2.76)	0.067** (2.53)	0.052# (1.75)	0.086* (2.79)	0.066* (2.43)	0.063* (2.07)

TABLE 4. SUMMARY OF OBSERVED IMMIGRANT-TRADE LINKS CONT.

	Conservative Classification				Liberal Classification		
	All Exports	Differ-entiated Exports	Reference-Priced Exports	Organized Exchange Exports	Differ-entiated Exports	Reference-Priced Exports	Organized Exchange Exports
High Income Country	0.572** (10.40)	0.136** (3.68)	0.212** (5.44)	0.14** (4.24)	0.1** (4.00)	0.181** (4.53)	0.165** (4.71)
Upper Middle Income Country	0.434** (6.86)	0.117** (3.36)	0.174** (3.82)	0.11** (3.24)	0.091** (3.17)	0.111** (2.83)	0.118** (3.53)
Lower Middle Income Country	0.475** (12.39)	0.121** (5.24)	0.178** (6.04)	0.101** (4.47)	0.091** (5.04)	0.132** (5.17)	0.115** (5.37)
Low Income Country	0.232** (6.29)	0.064* (2.37)	0.055# (1.74)	0.052# (1.69)	0.047** (3.62)	0.045 (1.37)	0.067# (2.07)

Coefficients (for high income home countries) and interaction effects (for all other income classifications) are presented. “\*\*\*”, “\*” and “#” denote significance from zero at the 1%, 5% and 10% levels, respectively. T-statistics are presented in parentheses. The relevant t-statistic for interaction effects is constructed as

$$t = \frac{\hat{\beta}_{\text{IMMIGRANTS}} - \hat{\beta}_{\text{INTERACTION}}}{\sqrt{\text{var}(\hat{\beta}_{\text{IMMIGRANTS}}) + \text{var}(\hat{\beta}_{\text{INTERACTION}}) + 2\text{COV}(\hat{\beta}_{\text{IMMIGRANTS}}, \hat{\beta}_{\text{INTERACTION}})}}$$

Table 4 summarizes the estimated proportional immigrant-trade links. As mentioned, immigrant-trade links for high income home countries are given by the coefficients on the immigrant stock variables. Immigrant-trade links for all other income classifications are generated as the sums of coefficients on the corresponding interaction variables and the immigrant stock coefficients. For example, a 1 per cent increase in the immigrant stock from high income countries increases Danish imports of differentiated goods (conservative classification) from these countries by 0.195 per cent. An identical increase in immigrants from low income countries increases imports of differentiated goods by 0.083 percent

$$(\hat{\beta}_{\text{IMMIGRANTS}} + \hat{\beta}_{\text{INTERACTION}} = 0.195 - 0.112).$$

The US experience may provide useful insights for Denmark. Prior to passage of the Immigration Act of 1965, US policy favoured immigrants from European nations, Canada, and Oceania. The change in immigration policy was followed by a shift in the demographic composition of subsequent immigrant inflows. Southeast Asia, Latin America, and the Caribbean Basin quickly became the

primary departure regions for the majority of immigrants arriving in the US (Martin and Midgeley, 1999). This led to more recent immigrant arrivals having found a nation more similar to Europe than their home countries. White (2008) posits that a portion of the observed increase in US imports from and exports to these home countries is attributable to immigrants' social and business network connections. Additionally, these immigrants may have possessed preferences for home country goods that, as a result of US-home country cultural dissimilarity, were unavailable and for which reasonable substitutes did not exist in US markets, thus further increasing US imports.

As recently as 1980, the Danish population was relatively homogenous. More specifically, in 1980 only 2.6 per cent of the Danish population was foreign-born. By 2000, this share had increased to 5.6 per cent (World Bank, 2003). This represents an increase of the foreign-born population share of 115 per cent in only two decades. The observed pattern of Danish immigrant-trade links may result, in part, from immigrants arriving in Denmark and facing a dearth of home country goods or reasonable domestically-available substitutes. This would provide the impetus for an immigrant-induced increase in Danish imports. Similarly, immigrants may arrive in possession of information regarding home country markets or associated with networks that decrease transaction costs and, thus, increase both Danish imports and exports.

If the channels through which immigrants are thought to increase trade become increasingly operational as host-home country dissimilarity increases, the homogeneity of the Danish population in 1980 may have resulted in all immigrant arrivals being capable of increasing Danish-home country trade. That the proportional immigrant-trade links are of greater magnitude for immigrants from high and upper middle income countries suggest an increased ability for immigrants from such nations to increase trade. However, the finding of positive immigrant-trade links across all home country income classifications implies that host country population composition may be a determining factor in the presence and magnitudes of immigrant-trade links.

### **Estimated aggregate and per-immigrant effects**

To determine if immigrant-trade effects reported in Tables 2 and 3 are reasonable, we constructed estimates of annual aggregate and per-immigrant effects for each product classification and home country income classification. Table 5 presents the results. Lower middle and low income home countries accounted for 79.4 per cent of the increase in Denmark's immigrant population from 1980 to 2000 (see Panel A). The influences of immigration on trade flows, presented in Tables 2 and 3, multiplied by proportional immigrant stock changes, reveal Danish trade

with lower middle and low income countries is affected proportionally more due to immigration, compared to higher income home countries. However, Panel B shows that, in absolute dollars, trade with high income home countries is, by far, the most affected.

TABLE 5. PROPORTIONAL, AGGREGATE AND PER-IMMIGRANT EFFECTS ON TRADE

	High Income	Upper Middle Income	Lower Middle Income	Low Income
<b>Panel A: Proportional Changes, Immigrant Stocks and Trade Values (by Goods Classification)</b>				
Net changes in Immigrant Stocks: 1980-2000	14,189	2,173	43,482	19,710
Percentage change in Immigrant Stocks	16.94%	57.30%	238.66%	201.88%
Conservative Goods Classification				
Reference-Priced Exports	3.59%	9.97%	42.48%	11.10%
Organized Exchange Exports	2.37%	6.30%	24.10%	10.50%
Differentiated Exports	2.30%	6.70%	28.88%	12.92%
Reference-Priced Imports	2.46%	0.00%	0.00%	13.53%
Organized Exchange Imports	3.44%	8.71%	18.14%	10.50%
Differentiated Imports	3.30%	6.59%	22.20%	16.76%
Liberal Goods Classification				
Reference-Priced Exports	3.07%	6.36%	31.50%	0.00%
Organized Exchange Exports	2.80%	6.76%	27.45%	13.53%
Differentiated Exports	1.69%	5.21%	21.72%	9.49%
Reference-Priced Imports	2.61%	0.00%	0.00%	13.32%
Organized Exchange Imports	3.57%	9.40%	20.05%	12.72%
Differentiated Imports	3.39%	6.13%	23.39%	17.36%
<b>Panel B: Aggregate Immigration-Induced Trade Value Increases</b>				
Conservative Goods Classification				
Reference-Priced Exports	7,300,821	621,642	3,305,484	333,213
Organized Exchange Exports	5,145,850	711,483	2,188,221	370,361
Differentiated Exports	7,834,692	1,082,578	4,301,646	713,718
Reference-Priced Imports	4,055,130	0	0	735,542
Organized Exchange Imports	7,229,810	594,517	1,108,786	418,021
Differentiated Imports	13,138,413	526,962	2,537,376	1,042,226
Liberal Goods Classification				
Reference-Priced Exports	6,272,863	578,342	2,622,950	0

TABLE 5. PROPORTIONAL, AGGREGATE AND PER-IMMIGRANT EFFECTS ON TRADE CONT.				
	High Income	Upper Middle Income	Lower Middle Income	Low Income
Organized Exchange Exports	5,257,248	481,344	1,034,985	355,327
Differentiated Exports	6,229,854	910,312	3,617,577	634,866
Reference-Priced Imports	4,544,643	0	0	710,840
Organized Exchange Imports	7,701,916	626,605	1,177,186	532,648
Differentiated Imports	12,984,341	468,907	2,616,258	1,062,014
<b>Panel C: Estimated Per-Immigrant Effects on Trade</b>				
Exports (Conservative)	1,429	1,112	225	72
Imports (Conservative)	1,721	516	84	111
Exports (Liberal)	1,252	907	167	50
Imports (Liberal)	1,778	504	87	117
Proportional trade effects, by income and goods classifications, presented in Panel A are derived as the percentage change in immigrant stocks (presented in Panel A) times respective immigrant-trade effects (based on statistically significant coefficients and interaction effects presented in Tables 3 and 4). Aggregate values presented in Panel B are calculated as mean trade values (presented in Table 2) times proportional immigrant-trade effects listed in Panel A. Values presented in Panel C are derived as aggregate trade value increases (presented in Panel B) divided by the net change in the immigrant stock (presented in Panel A).				

Panel C reports per-immigrant effects, calculated as aggregate values (Panel B) divided by net immigrant stock changes (Panel A). On average, an immigrant from a high income country increases Danish exports to the home country by US\$ 1,252 to US\$ 1,429. Similarly, Danish imports from the home country rise by US\$ 1,721 to US\$ 1,778. These values are higher than estimates for other income classifications. For example, per-immigrant effects of Danish exports to and imports from low income countries range from US\$ 50 to US\$ 72 and US\$ 111 to US\$ 117, respectively. Overall, the typical immigrant is estimated to increase Danish exports by US\$ 352 to US\$ 426 and imports by US\$ 394 to US\$ 407. These estimates are similar to values reported in earlier research. Wagner et al. (2002) estimate that on average, an immigrant increases Canadian imports from and exports to the home country by US\$ 944 and US\$ 312, respectively. Similarly, in the United States, White (2007) reports that on average, an immigrant from a low income country is estimated to create US\$ 910 in additional US exports and US\$ 2,967 in imports.



## Robustness Checks

A causal interpretation of the results could be subject to an endogeneity critique. If unobservable influences affect Danish-home country trade, and are correlated with immigrant stocks, estimated immigrant-trade effects may be biased and inconsistent. A potential remedy is the introduction of home country fixed effects. To the extent that unobserved trade-influencing characteristics are time-invariant, fixed effects estimation should alleviate any endogeneity problem. Additionally, due to the ad hoc nature of gravity models, the results presented may depend on the specification employed. Testing for robustness, we estimate a variety of specifications allowing for both time and fixed effects.

TABLE 6. ROBUSTNESS CHECKS - ALTERNATIVE SPECIFICATIONS

Dependent Variable:	Specification I		Specification II		Specification III	
	ln Imports (a)	ln Exports (b)	ln Imports (c)	ln Exports (d)	ln Imports (e)	ln Exports (f)
ln Immigrants <sub>ijt</sub>	0.723** (0.289)	0.697** (0.033)	0.756** (0.059)	0.71** (0.065)	0.628** (0.06)	0.715** (0.066)
ln Immigrants <sub>ijt</sub> x Upper Middle Income <sub>j</sub>	-0.44 (0.357)	-0.051 (0.033)	-0.198** (0.071)	-0.156# (0.085)	-0.083 (0.073)	-0.183* (0.085)
ln Immigrants <sub>ijt</sub> x Lower Middle Income <sub>j</sub>	-0.183** (0.037)	-0.109** (0.025)	-0.365** (0.055)	-0.084 (0.061)	-0.305** (0.06)	-0.196** (0.067)
ln Immigrants <sub>ijt</sub> x Low Income <sub>j</sub>	-0.259** (0.044)	-0.028 (0.029)	-0.363** (0.064)	-0.298** (0.069)	-0.321** (0.065)	-0.427** (0.071)
ln Distance <sub>ij</sub>			-0.292** (0.078)	-0.388** (0.076)	-0.961** (0.106)	-0.924** (0.095)
Δ ln Exchange Rate <sub>ijt</sub>	-0.161 (1.117)	0.005 (0.103)			-0.367** (0.127)	-0.094 (0.082)
ln GDP <sub>jt</sub>	1.812** (0.394)	0.776** (0.033)	1.133** (0.036)	0.816** (0.034)	1.135** (0.037)	0.86** (0.036)
Net FDI Flows <sub>jt</sub> /GDP <sub>jt</sub>	0.444 (0.382)	0.468** (0.107)			0.404* (0.175)	0.488** (0.125)
ln Remote <sub>jt</sub>	-0.218 (0.344)	-0.126 (0.086)			0.416** (0.138)	0.028 (0.144)
Europe <sub>j</sub>					0.263# (0.148)	-0.804** (0.149)
Military <sub>jt</sub>	0.137 (0.365)	-0.231# (0.119)			-0.024 (0.12)	-0.392** (0.101)
Number of Additional FTAs <sub>jt</sub>	0.504 (0.496)	-0.072 (0.081)			0.765** (0.091)	0.394** (0.095)
Seaport <sub>j</sub>					1.201** (0.155)	1.48** (0.14)

Dependent Variable:	Specification I		Specification II		Specification III	
	In Imports (a)	In Exports (b)	In Imports (c)	In Exports (d)	In Imports (e)	In Exports (f)
Upper Middle Income			1.968** (0.431)	0.988# (0.509)	1.429** (0.427)	0.942# (0.494)
Lower Middle Income			1.688** (0.381)	0.165 (0.434)	1.555** (0.39)	0.653 (0.44)
Low Income			2.326** (0.398)	1.872** (0.436)	2.847** (0.398)	2.911** (0.427)
Constant			-19.449 (1.106)	-10.331** (1.073)	-18.354** (1.526)	-8.447** (1.617)
Country/Year Fixed Effects	Yes/Yes	Yes/Yes	No/Yes	No/Yes	No/Yes	No/Yes
N	3,194	3,194	3,194	3,194	3,194	3,194
Adjusted R <sup>2</sup>	0.88	0.66	0.71	0.67	0.72	0.69

OLS was employed to generate the results presented in columns (a) through (f). Heteroskedasticity-consistent robust standard errors in parentheses. “\*\*\*”, “\*\*” and “#” denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Specification I in Table 6						
Home Country Income Classification	Differentiated Imports	Reference-Priced Imports	Organized Exchange Imports	Differentiated Exports	Reference-Priced Exports	Organized Exchange Exports
Conservative Classification						
High Income	0.215	0.156	0.219	0.133	0.248	0.147
Upper Middle Income	0.174	0.156	0.219	0.133	0.182	0.147
Lower Middle Income	0.139	0.106	0.134	0.133	0.178	0.120
Low Income	0.145	0.156	0.131	0.133	0.177	0.112
Liberal Classification						
High Income	0.225	0.161	0.234	0.101	0.183	0.176
Upper Middle Income	0.174	0.161	0.234	0.101	0.183	0.176
Lower Middle Income	0.149	0.110	0.141	0.101	0.149	0.136
Low Income	0.149	0.161	0.140	0.101	0.129	0.129

TABLE 7. SUMMARY OF ESTIMATED IMMIGRANT-TRADE EFFECTS, ROBUSTNESS CHECKS BY PRODUCT CLASSIFICATION *CONT.*

<b>Panel B: Specification II in Table 6</b>						
Home Country Income Classification	Differentiated Imports	Reference-Priced Imports	Organized Exchange Imports	Differentiated Exports	Reference-Priced Exports	Organized Exchange Exports
Conservative Classification						
High Income	0.760	0.584	0.749	0.697	0.564	0.623
Upper Middle Income	0.404	0.309	0.477	0.562	0.409	0.451
Lower Middle Income	0.358	0.193	0.303	0.697	0.467	0.505
Low Income	0.261	0.252	0.225	0.419	0.280	0.382
Liberal Classification						
High Income	0.766	0.596	0.774	0.701	0.618	0.644
Upper Middle Income	0.368	0.288	0.503	0.701	0.362	0.426
Lower Middle Income	0.349	0.194	0.317	0.701	0.481	0.466
Low Income	0.304	0.251	0.243	0.425	0.318	0.367
<b>Panel C: Specification III in Table 6</b>						
Home Country Income Classification	Differentiated Imports	Reference-Priced Imports	Organized Exchange Imports	Differentiated Exports	Reference-Priced Exports	Organized Exchange Exports
Conservative Classification						
High Income	0.642	0.447	0.620	0.686	0.526	0.597
Upper Middle Income	0.389	0.282	0.461	0.536	0.526	0.442
Lower Middle Income	0.287	0.135	0.223	0.527	0.405	0.399
Low Income	0.226	0.184	0.123	0.318	0.140	0.230
Liberal Classification						
High Income	0.653	0.468	0.650	0.692	0.600	0.626
Upper Middle Income	0.362	0.265	0.486	0.550	0.355	0.403
Lower Middle Income	0.286	0.127	0.247	0.513	0.416	0.380
Low Income	0.219	0.174	0.152	0.314	0.187	0.250

Table 6 presents results of alternative estimations wherein aggregate imports and exports are employed as dependent variables. Table 7 summarizes the resulting estimated immigrant-trade effects.<sup>5</sup> We find observed immigrant-trade links generally invariant to changes in specification or functional form. Consistently, when considering aggregate trade flows, a strong link between immigrants and imports from and exports to the home country is reported. Similarly, the results reported in Table 7 support the finding of heterogeneity across product classifications and home country income classifications. We confirm a positive link which is stronger for Danish trade with high income home countries, and weaker – although still positive – for trade with low income countries.

## CONCLUSION

This paper investigates the influence immigrants have on Danish trade. As public and political debates concerning immigration policy are expected to continue, the findings presented here provide valuable information. Immigration exerts a positive influence on aggregate Danish imports from and exports to immigrants' respective home countries. However, Danish immigrant-trade links are greatest in magnitude when considering trade with high income countries and weakest when considering trade with low income countries. While variation is reported across product classifications, positive immigrant-trade links are found for all classifications. As Denmark is a small, open, and globally well-integrated nation that is proximate both to primary trading partners and immigrant source nations, the findings presented here, when considered in relation to prior research, suggest the presence and magnitude of immigrant-trade links vary according to host country population homogeneity.

## NOTES

- 1 Denmark's top five immigrant source nations – Germany (13.4%), Turkey (12.2%), Sweden (7.5%), Norway (7.2%) and the UK (5.1%) – collectively, accounted for 45.4% of Danish trade during the 1980-2000 period.
- 2 Appendix A lists the trading partners included in this study. Nations are considered “low” income if 1995 GNP per capita (GNPC) < \$765; “lower middle” if \$765 < GNPC < \$3,035; “upper middle” if \$3,035 < GNPC < \$9,385; “high” if GNPC > \$9,385 (World Bank, 1997).
- 3 See Anderson (1979), Helpman and Krugman (1985), Bergstrand (1985), Davis (1995), Deardorff (1998), Feenstra, Markusen and Rose (2001), Eaton and Kortum (2001), and Anderson and van Wincoop (2003) for theoretical foundations.
- 4 Appendix B lists variables included in this study and associated data sources.
- 5 The complete set of estimation results is available from the author upon request.

## REFERENCES

- Anderson, J.E.  
1979 “A theoretical foundation for the gravity equation”, *American Economic Review*, 69(1): 106-116.
- Anderson, J.E., and E. van Wincoop  
2003 “Gravity with gravitas: a solution to the border puzzle”, *American Economic Review*, 93(1): 170-192.
- Bergstrand, J.  
1985 “The gravity equation in international trade: some microeconomic foundations and empirical evidence”, *Review of Economics and Statistics*, 69(3): 474-481.
- Blanes, J.V.  
2003 “The link between immigration and trade in Spain”, Universidad Pablo de Olavide, paper presented at XXVIII Simposio de Analisis Economico, 11-13 December, Seville.
- Bryant, J., et al.  
2004 “Trade and migration to New Zealand”, New Zealand Treasury Working Paper, 04/18, Wellington, New Zealand.
- Ching, H.S., and L.-L. Chen  
2000 “Links between emigrants and the home country: the case of trade between Taiwan and China”, in H. Kohno et al. (Eds), *Regional Cohesion and Competition in the Age of Globalization*, Edward Elgar, Cheltenham, UK.
- Co, C.Y., et al.  
2004 “The export effect of immigration into the USA”, *Applied Economics*, 36(6): 573-583.

- Combes, P., et al.  
2005 "The trade-creating effects of business and social networks: evidence from France", *Journal of International Economics*, 66(1): 1-29.
- Davis, D.  
1995 "Intra-industry trade: a Heckscher-Ohlin-Ricardo approach", *Journal of International Economics*, 39(3-4): 201-226.
- Deardorff, A.  
1998 "Determinants of bilateral trade: does gravity work in a neoclassical world?", in J. Frankel (Ed.), *The Regionalization of the World Economy*, University of Chicago Press, Chicago, IL.
- Dunlevy, J.A.  
2006 "The influence of corruption and language on the pro-trade effect of immigrants: evidence from the American states", *Review of Economics and Statistics*, 88(1): 182-186.
- Eaton, J., and S. Kortum  
2001 "Technology, geography and trade", *Econometrica*, 70(5): 1741-1779.
- Eichengreen, B., and D.A. Irwin  
1996 "The role of history in bilateral trade flows", National Bureau of Economic Research Working Paper No. 5565, May.
- Feenstra, R.C., et al.  
2005 "World trade flows: 1962-2000", National Bureau of Economic Research Working Paper No. 11040, January.
- Feenstra, R.C., et al.  
2001 "Using the gravity equation to differentiate among alternative theories of trade", *Canadian Journal of Economics*, 34(2): 430-447.
- Ghosh, S., and S. Yamarik  
2004 "Does trade creation measure up? a reexamination of the effects of regional trade agreements", *Economics Letters*, 82(2): 213-219.
- Girma, S., and Z. Yu  
2002 "The link between immigration and trade: evidence from the United Kingdom", *Review of World Economics*, 38(1): 115-130.
- Globerman, S.  
2001 "Globalization and Immigration", paper presented at *Globalization and Immigration: Canada, China, and Beyond*, China-Canada Immigration Workshop of the Asia Pacific Foundation of Canada, Vancouver.
- Gould, D.M.  
1994 "Immigration links to the home country: empirical implications for US bilateral trade flows", *Review of Economics and Statistics*, 76(2): 302-316.
- Head, J., and T. Mayer  
2000 "Non-Europe: the magnitude and causes of market fragmentation in Europe", *Review of World Economics*, 136(2): 285-314.
- Head, K., and J. Ries  
1998 "Immigration and trade creation: econometric evidence from Canada", *Canadian Journal of Economics*, 31(1): 47-62.
- Helliwell, J.F.  
1997 "National borders, trade and migration", *Pacific Economic Review*, 3(3): 165-185.

- Helpman, E., and P.R. Krugman  
 1985 *Market Structure and Foreign Trade – Increasing Returns, Imperfect Competition, and the International Economy*, MIT Press, Cambridge, MA.
- International Monetary Fund (IMF)  
 2002 *International Financial Statistics*: CD-ROM, Washington, DC, January.
- Martin, P., and E. Midgley  
 1999 “Immigration to the United States”, *Population Bulletin*, 54, June.
- Mundra, K.  
 2005 “Immigration and international trade: a semiparametric empirical investigation”, *Journal of International Trade & Economic Development*, 14(1): 65-91.
- Piperakis, A.S., et al.  
 2003 “Immigration, trade costs and trade: gravity evidence for Greece”, *Journal of Economic Integration*, 18(4): 750-62.
- Rauch, James  
 2001 “Business and social networks in international trade”, *Journal of Economic Literature*, 39: 1177-1203.
- Rauch, J.  
 1999 “Networks versus markets in international trade”, *Journal of International Economics*, 48(1): 7-35.
- Rauch, J., and V. Trindade  
 2002 “Ethnic Chinese networks in international trade”, *Review of Economics and Statistics*, 84(1): 116-130.
- Rauch, J., and J. Watson  
 2004 “Network intermediaries in international trade”, *Journal of Economics and Management Strategy*, 13(1): 69-93.
- UNCTAD FDI database  
 2005 “Inward and outward FDI stock as a percentage of gross domestic product, by host region and economy, 1980-2003”, internet, <http://www.unctad.org/Templates/Page.asp?intItemID=3277&lang=1>.
- United States Central Intelligence Agency (CIA)  
 2005 *The World Factbook*, Bartleby, Washington, DC.
- Wagner, D., et al.  
 2002 “Immigration and the trade of provinces”, *Scottish Journal of Political Economy*, 49(5): 507-525.
- White, R.  
 2008 “Immigration, trade and product differentiation”, *Economic Issues*, 13 (2) (forthcoming).  
 2007 “Immigrant-trade links, transplanted home bias and network effects”, *Applied Economics*, 39 (7): 839-852.
- World Bank  
 1997 *World Development Indicators*, Development Data Group, World Bank International Economics Department, Washington, DC.  
 2003 *World Development Indicators: CD-ROM Version*, Development Data Group, World Bank International Economics Department, Washington, DC.

## EXAMEN DU LIEN ENTRE IMMIGRATION ET COMMERCE AU DANEMARK

Cet article étudie l'influence des immigrants sur les importations et les exportations danoises. Comme il est prévu que les débats publics et politiques sur la politique d'immigration se poursuivent, les conclusions présentées ici fournissent des informations très utiles. Avant 2002, la politique danoise d'immigration était l'une des plus libérales d'Europe. Cependant, les craintes liées au terrorisme, à l'épuisement de l'action sociale et aux effets néfastes sur le marché du travail – que l'on tend à attribuer à l'immigration, ont poussé le Gouvernement danois à durcir sérieusement sa politique. Cet examen du cas du Danemark nous permet d'étudier les liens entre immigration et commerce dans un petit pays d'accueil globalement bien intégré, ouvert au commerce et proche à la fois des grands partenaires commerciaux et des principales nations d'origine des immigrants. Par ailleurs, étant donné que la proportion d'immigrants au sein de la population danoise est passée de 2,6 à 5,6 % entre 1980 et 2000, le Danemark offre la possibilité d'étudier les liens entre immigration et commerce dans une population sans cesse plus hétérogène, par contraste avec son homogénéité d'autrefois.

L'auteur considère plusieurs variations en fonction des pays d'origine et des valeurs commerciales afin d'évaluer les liens entre immigration et commerce grâce au modèle Tobit. Les résultats présentés, ajoutés aux travaux de recherche précédents, suggèrent que l'existence et l'importance des liens entre immigration et commerce varient en fonction de l'homogénéité de la population du pays d'accueil.



## EXAMEN DEL VÍNCULO ENTRE INMIGRACIÓN Y COMERCIO EN DINAMARCA

En este documento se investiga la influencia de los inmigrantes sobre las importaciones y exportaciones danesas. Dado que se espera una continuación de los debates públicos y políticos sobre la política de inmigración, las conclusiones que aquí se presentan son de gran utilidad. Con anterioridad a 2002, la política de inmigración de Dinamarca era una de las más liberales de Europa. Sin embargo, inquietudes relacionadas con el terrorismo, el agotamiento de los servicios sociales y los efectos perjudiciales para el mercado laboral, todo lo cual supuestamente se debe a la inmigración, condujeron al Gobierno danés a adoptar una política mucho más estricta. Al examinar la situación en Dinamarca, exploramos la relación entre la inmigración y el comercio en un pequeño país de acogida que, en términos globales, puede decirse que goza de un buen nivel de integración y apertura al comercio y proximidad a los asociados comerciales más importantes y a los principales países de origen de la primera inmigración. Por otro lado, teniendo en cuenta que el porcentaje de la población danesa constituido por inmigrantes aumentó del 2,6 al 5,6 por ciento entre 1980 y 2000, la situación en Dinamarca es una oportunidad para examinar los vínculos entre la inmigración y el comercio con respecto a una población cada vez más diversa, que inicialmente era relativamente homogénea.

Se han considerado una serie de variaciones en relación con los países de origen y los valores del comercio para estimar los vínculos entre la inmigración y el comercio, utilizando una especificación Tobit. Las conclusiones que se presentan, al examinarse en relación con anteriores trabajos de investigación, sugieren que la presencia y la magnitud de los vínculos entre la inmigración y el comercio varían según la homogeneidad demográfica del país de acogida.

## APPENDIX

APPENDIX A. COUNTRY LISTING, BY INCOME CLASSIFICATION				
High	Upper Middle	Lower middle (cont.)	Low	Low (cont.)
Australia	Antigua and Barbuda	Egypt	Albania <sup>f</sup>	Moldova
Austria	Argentina	El Salvador	Angola	Mongolia <sup>h</sup>
Bahamas	Barbados	Fiji	Azerbaijan <sup>f</sup>	Mozambique
Bahrain	Botswana	Grenada	Bangladesh	Nepal
Belgium	Brazil	Guatemala	Benin	Nicaragua
Brunei	Chile	Guyana	Bhutan	Niger
Canada	Costa Rica	Indonesia	Bosnia and Herzgva <sup>k</sup>	Nigeria
Cyprus	Croatia <sup>g</sup>	Iran	Burkina Faso	Pakistan
Finland	Czech Republic <sup>g</sup>	Jamaica	Burundi	Rwanda
France	Dominica	Jordan	Cambodia <sup>f</sup>	Sao Tome and Principe
Germany	Estonia <sup>g</sup>	Kazakhstan <sup>h</sup>	Cameroon	Senegal
Greece	Gabon	Latvia <sup>f</sup>	Ken. African Republic	Sierre Leone
Hong Kong	Hungary	Lebanon <sup>c</sup>	Chad	Sri Lanka
Iceland	Malaysia	Lithuania <sup>f</sup>	China	Sudan
Ireland	Malta	Marshall Islands	China	Tajikistan <sup>f</sup>
Israel	Mauritius	Morocco	Comoros	Tanzania
Italy	Mexico	Namibia	Cote d'Ivoire	Togo
Japan	St. Kitts and Nevis	Panama	Dem. Rep. of the Congo	Uganda
Kuwait	Saint Lucia	Papua New Guinea	Eq. Guinea	Uzbekistan <sup>i</sup>
Luxembourg	Saudi Arabia	Paraguay	Ethiopia	Vietnam <sup>b</sup>
Macao	Seychelles	Peru	Gambia	Zambia
Netherlands	Slovakia <sup>g</sup>	Philippines	Georgia <sup>j</sup>	Zimbabwe
New Zealand	Trinidad and Tobago	Poland <sup>d</sup>	Ghana	
Norway	Uruguay	Rep. of the Congo	Guinea	
Portugal	Venezuela	Romania	Guinea-Bissau	
Puerto Rico		Russian Federation <sup>g</sup>	Haiti	
Rep. of Korea		St. Vincent and Grenadines	Honduras	
Singapore		Samoa	India	
Slovenia <sup>e</sup>	<b>Lower middle</b>	Solomon Islands	Kenya	
Spain	Algeria	Suriname	Kiribati	
Swede	Armenia <sup>g</sup>	Swaziland	Kyrgyzstan <sup>h</sup>	
Switzerland	Belize	Syrian Arab Rep	Laos	
UAE	Belarus <sup>i</sup>	Thailand	Lesotho	
UK	Bolivia	Tonga	Liberia	
US	Bulgaria <sup>a</sup>	Tunisia	Madagascar	
	Cape Verde	Turkey	Malawi	
	Colombia	Turkmenistan <sup>h</sup>	Mali	
	Djibouti	Ukraine <sup>g</sup>	Mauritania	
	Dominican Rep.	Vanuatu		
	Ecuador	West Bank and Gaza <sup>g</sup>		

All countries are included in the sample for all years during the 1980-2000 period unless noted: a 1986-2000; b 1987-2000; c 1988-2000; d 1990-2000; e 1992-2000; f 1993-2000; g 1994-2000; h 1995-2000; i 1996-2000; j 1997-2000; k 1998-2000.

APPENDIX B. VARIABLE LISTING		
Variable	Description	Source(s)/Data
Imports and Exports	Danish bilateral imports and exports, classified at the 4-digit SITC, Rev. 2 level of detail.	Feenstra et al. (2005)
Differentiated, Reference-Priced and Organized Exchange Imports and Exports	Danish bilateral trade, with trade of SITC, Rev. 2 industries classified as either differentiated, reference-priced (i.e. prices available in trade publications) or traded on organized exchanges.	Product classifications: Rauch (1999); Trade data: Feenstra et al. (2005)
Immigrants	Immigrant stock of country j in Denmark during year t	Danmarks Statistik (Statistics Denmark) <a href="http://www.statistikbanken.dk">http://www.statistikbanken.dk</a>
Distance	Distance of country j from Denmark (Great Circle Method) in kilometres.	Authors calculations. Geographic coordinates from CIA (2005)
Exchange Rate	Danish Kroner per foreign currency unit.	IMF IFS (2002) and Oanda.com (2005)
GDP	Country j Gross Domestic Product in real terms (1995 US Dollars).	World Bank (2003)
Net Foreign Direct Investment	Sum of inward and outward FDI stocks as a share of Real GDP.	UNCTAD FDI database (2005)
Remote	Measure of quasi-distance, given as $\sum \frac{Y_j}{D_{jk} Y_{wt}}$ , where $Y_j$ and $Y_w$ are country j and global GDP, respectively, and $D_{jk}$ is the distance between countries j and k. If k = j, internal distance, $D_{jj}$ , is the square root of the country's mass times 0.4 (Head and Mayer, 2000).	Authors calculations using data from World Bank (2003), Feenstra et al. (2005) and CIA (2005)
Europe	Dummy variable signaling that country j is (or was) a member of the EU (EFTA or EEA).	Ghosh and Yamarik (2004)
Military	Dummy variable indicating that country j is involved in a military conflict.	GlobalSecurity.org (2005): <a href="http://www.globalsecurity.org/military/world/war/past.htm">http://www.globalsecurity.org/military/world/war/past.htm</a> .
Number of Additional Trade Agreements	Number of trade agreements that country j is party to, exclusive of European trade associations.	Ghosh and Yamarik (2004)
Seaport	Dummy variable indicating that country j is not landlocked.	n.a.