

Immigration and the Product Margins of International Trade*

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Abstract

Immigration exhibits the potential to lower barriers to trade. We provide an empirical assessment of the effect of immigration on manufacturing trade at the firm level. In particular, we raise the question whether immigration changes the range and average value of traded products. Moreover, the use of a matched employer-employee panel covering the years 1995 - 2005 enables us to disentangle whether the inflow of foreign labor matters for trade due to intra-firm employment of foreign expatriates or due to the presence of regional ethnic networks. We find that regional immigration increases overall imports but exhibits no effect on total exports. The local presence of immigrants fosters the exported and imported product range. However, the employment of foreign expatriates boosts total exports. Again, the most channel is an increase in the number of traded varieties. These results have important implications for both immigration policy and firm employment decisions.

Keywords: International Trade, Migration, Firm-level analysis, Matched Employer-Employee Data

JEL-Codes: F10, F22

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1 Introduction

The economic effects of immigration on the host country are strongly debated, and their scientific exploration is essential to the ongoing political debate on immigration policy. One strand of literature has focused on the impact of immigration on international trade. Some examples include Peri and Requena (2010), Felbermayr and Jung (2009), White (2007), Combes et al. (2005), Herander and Saavedra (2005), Girma and Yu (2002), Rauch and Trindade (2002), Dunlevy and Hutchinson (1999), Head and Ries (1998) and Gould (1994). Foreign expatriates have the potential to lower barriers to trade, as they carry relevant market-specific information, may improve contract enforcement (Rauch 2001) and help firms to discover business opportunities abroad due to their superior knowledge about their home market (Casella and Rauch 2002). In a nutshell, immigration exhibits the potential to lower both variable and fixed trade costs, which in turn matter for both firm entry into trade as well as the value and range of traded goods.

Recent theoretical and empirical research documents the dominant role played by multi-product firms in the economy in general, and in trade in particular (Bernard et al. 2010b, Goldberg et al. 2010). The theoretical and empirical literature in the tradition of heterogeneous firm models in the spirit of Melitz (2003) extends earlier work on multi-product firms, which comprises among others Brander and Eaton (1984), Shaked and Sutton (1990), Eaton and Schmidt (1994), as well as Johnson and Myatt (2003). Examples of more recent contributions include Ottaviano and Thisse (2010), Eckel and Neary (2010), as well as Nocke and Yeaple (2008). A recent paper by Bernard et al. (2010a) highlights the intra-firm reallocation across products and destination countries. The authors show - *inter alia* - that the within-firm composition of exports is decisively affected by variations in variable and fixed trade costs. Immigration and foreign employment may affect these costs.

This paper combines the two different streams of literature and provides a first attempt to assess how immigration affects trade and trade composition within the firm. It contributes to the existing literature by distinguishing two channels by which immigration may matter for firm trade: It discriminates between foreign employment in the trading firm and the gen-

eral regional presence of foreigners and assesses the relative importance of these two channels for import and export composition. It exploits the panel structure of a matched employer-employee data set, which contains information of Danish manufacturing exports and imports for 168 destination markets for the years between 1995 and 2005. In particular, it accounts for taste similarity between Denmark and its trade partner countries, which is essential for identification of the immigration effect.

Our major results are in line with both, the literature which empirically assesses the migration-trade nexus as well as the recent theoretical advances on multi-product firms: Immigration into Danish regions increases firm-level trade. In particular, we find that the regional presence of immigrants fosters firm-level imports. Importantly, both regional migrant networks and employees with a different ethnic background encourage an adjustment of the traded product portfolio by increasing the range of traded varieties. Our results are qualitatively and quantitatively robust to several variations of the empirical specification, in particular we account for reverse causality and sample selection.

Section 2 provides a theoretical motivation and a brief literature review. Section 3 presents the data. The empirical strategy is described in Section 4. Section 5 presents the results, which are discussed in Section 6. Finally, Section 7 concludes.

2 Theoretical Motivation and Literature Review

This study relates to two different theoretical and empirical strands of literature. First, this paper links to studies analyzing the interaction between trade and international labor mobility. Secondly, it is related to the literature on multi-product firms and their export behavior.

First, a broad theoretical and empirical economic literature argues that immigration exhibits the potential to benefit trade through the reduction of barriers (Gould 1994, Head and Ries 1998). The ways how migration can potentially lower trade cost are ample (see Dunlevy and Hutchinson 1999): Immigrants may be more aware of trade opportunities with their home countries which arise due to cost differentials, product differentiation or foreign demand and thereby

they may lower information cost (compare Casella and Rauch 2002). Moreover, immigrants are able to communicate in their native tongue and to translate between the domestic and foreign language, which fosters international transactions (Melitz 2008) and lowers both variable and fixed trade costs. Also, they may grease the wheels of international commerce through the provision of trust and confidence in international transactions. Trust is particularly important if economic transactions take place across national borders, as contract enforcement is difficult to ensure across distinct jurisdictions. Here, immigrants may sanction opportunistic behavior and convey information on those failing to meet contractual obligations (Rauch 2001, Herander and Saavedra 2005). For imports, in addition to these cost channels, a substantial mass of migrants may create a demand for goods which are imported from the country of origin (Combes et al. 2005).

In a nutshell, empirical evidence is supportive for a trade-creating effect of migration on trade. Most recently and at the most detailed disaggregation level available so far, Peri and Requena (2010) establish a positive effect of immigration: They use regional transaction data on exports by destination to establish that immigration encourages firms to start exporting rather than to increase the export value, i.e., that the trade creation of immigration operates via the extensive margin of trade rather than via the intensive margin. The authors also provide a short overview about earlier empirical findings. The estimated immigration elasticity of exports spans between 0.08% and 0.57%, whereby the majority of studies finds an elasticity around 0.1%. With few exceptions, these studies are cross-sectional (among the exceptions: Bandyopadhyay et al. 2008, Girma and Yu 2002, Peri and Requena 2010). The network effects of migration has been found to differ across ethnic networks (Felbermayr et al. 2009). Immigration into Denmark and its connection to Danish trade has been assessed by White (2007). Using aggregate trade data between Denmark and 170 countries spanning from 1980 to 1990, he finds a positive connection, where the immigration elasticity is estimated at 0.328% for imports and 0.572% for exports. These elasticities occupy the top end of effects estimated for other countries. The majority of empirical studies finds that migration matters more for imports than for exports. Often this finding is interpreted in favor of the prominent role of the preference channel, meaning in favor of a stimulation of import demand due to specific consumption desires of immigrants.

Similarly, this may be true the case if foreign expatriates prefer to use intermediate inputs in the production process which originate from their country of origin. At the firm level, it is possible to account for the interplay between imports and exports, which recent empirical and theoretical literature acknowledges as important (Castellani et al. 2010, Kasahara and Lapham 2008). However, to the best of our knowledge, so far no study using matched employer-employee data has accounted for this feature of trading firms.

Secondly, this paper relates to recent theoretical and empirical advances on multi-product firms. This literature follows up on Melitz (2003) and incorporates the product dimension as a source of firm heterogeneity. Most recently, Bernard et al. (2010a) provide a general equilibrium model with multiple firms and destinations. Alternative roads of modeling have been taken, but they are less closely related to our analysis, because they either impose symmetry on products and firms (Ottaviano and Thisse 2010, Allanson and Montagna 2005) or allow for firms which are large relative to the market (Eckel and Neary 2010). Other important contributions include for example Nocke and Yeaple (2006), Feenstra and Ma (2008) as well as Arkolakis and Muendler (2010).

The paper perhaps closest to our current application is Bernard et al. (2010a), as it focuses strongly on the interaction between country-, product- and firm-heterogeneity: In order to export, firms participate in a lottery entailing sunk cost, upon which firm profitability is revealed. Subsequently, firms choose among a continuum of destination markets and products. Importantly, firm profitability depends on both the firm's intrinsic ability as well as product characteristics, which vary across products and potentially also across destination markets. The model of Bernard et al. (2010a) generate testable predictions on both selection across firms - i.e., whether firms are forced to exit the market, stay domestic or start to export - and on selection within the firm - i.e., the product range selection.

As the traditional literature has established, immigration lowers trade costs. According to the Bernard et al. (2010a) framework, this has the following implications for the within-firm composition of exports (predictions from Bernard et al. (2010a), proposition 2, follow in italic print). *First, if an immigrant inflow incites a drop in variable trade cost, the number of products supplied by an exporting firm to a given market (subsequently called "product extensive margin" or "product scope" as*

in Arkolakis and Muendler (2010)) increases (Bernard et al. (2010a)). In response to lower variable trade costs, it becomes profitable to export also those products with low attributes which were previously only sold in the home country, because the reduction in trade costs lowers the product price in each market, and thereby increases revenue and variable profits. As a consequence, fixed export cost for products with low attributes can be profitably covered after trade liberalization. Secondly, if an immigrant inflow incites a drop in variable trade cost the effect on the average export sales of a firm across its products on a market (subsequently called "product intensive margin" or "product scale" as in Arkolakis and Muendler (2010)) is ambiguous (Bernard et al. (2010a)). On the one hand, due to the lower price of already exported products, firms export more of those products which are already exported to a given market. On the other hand, the introduction of new goods to the market, which are exported there in low amounts, implies a fall in average exports per product. Thirdly, if instead immigration induces a reduction in fixed export cost, the effect on the extensive product margin remains is positive (Bernard et al. (2010a)): As before, lower export fixed cost make it profitable to export also products with lower product attributes (in small volumes, though). Fourth, if immigration induces a reduction in fixed export cost, the effect on the intensive product margin is unambiguously negative (Bernard et al. (2010a)). This is due to the compositional effect in favor of a small amounts of "worse" products, because a lower value of product attributes suffices to generate profitable export. Thus, the theoretical prediction - albeit detailed in the various channels - is ambiguous as the overall effect.

3 Data Description

3.1 Data Sources

In order to assess the impact of immigration and employment of foreign expatriates on trade behavior at the firm-level, we use Danish firm level data on firms that trade with at least one foreign country. Firm-level data is provided by Statistics Denmark: Data on exports is destination specific and covers around 10,500 different goods measured in value at the 8-digit level. We aggregate products to the 2-digit level and count the number of products a firm exports per

Table 1: Top 15 Origin Countries and Immigrant Employment

	Country	Immigrant Stock	Employed	
			All	With Trade
1	Turkey	23315	1410	476
2	Germany	19382	1297	1012
3	Bosnia	13104	204	93
4	Norway	10128	444	340
5	Lebanon	9498	122	32
6	Sweden	8765	507	356
7	Iran	8212	224	68
8	United Kingdom	7814	640	462
9	Poland	7753	551	348
10	Vietnam	7495	573	92
11	Iraq	6578	61	8
12	Sri Lanka	6109	685	28
13	Pakistan	4677	242	31
14	Iceland	4319	243	101
15	United States	3815	171	135

This Table depicts the number of immigrants by country of origin for the top 15 migrant sending countries, and the number of employees in the manufacturing sector. Numbers are an average over the time period from 1995 to 2005.

market and calculate their average value. The second data source is the “Integrated Database for Labor Market Research”, a longitudinal employer-employee register. The third data source are business accounts (REGNSKAB), which cover the manufacturing industry from 1995 onwards. We restrict our analysis to manufacturing trading firms, i.e., firms that are either engaged in exporting or importing or both, and use a 2-digit industry-specific deflator to deflate monetary values.

We do not include firms with negative total revenue or negative export revenue or negative import purchases as well as firms with an export revenue greater than the total revenue, because these values presumably are a mistake in the data. We obtain an unbalanced panel of 7143 manufacturing traders, which covers the time period from 1995 to 2005. This sample is merged with population data on all people registered in Denmark. From the Danish registry, we obtain the country of origin of residents in Denmark who are first generation immigrants

and match those that are in employment to our firm-level information.

Finally, this firm-destination data set is complemented with macroeconomic information on the county and country level, whereby it comprises 168 trade partners of Denmark. Excluding Bornholm and the city of Copenhagen, I consider 13 out of 15 Danish regions.¹ The GDP and GDP per capita series originate from Heston et al. (2009), whereas our measure for institutional quality, rule of law, is drawn from Kaufmann et al. (2010).

3.2 Immigration to Denmark and Immigrant Employment

On average, the immigrant stock from a particular country amounts to 1157 residents in Denmark. However, 50% of sending countries send less than 87 migrants. On average, most immigrants come to Denmark from Turkey (23315), Germany (19328), Bosnia (13104) and Norway (10128). Table 1 summarizes the top 15 countries which send migrants to Denmark. These four sending countries account for around 73% of the total immigrant stock. They are very heterogeneous, and suggest distinct migration motives ranging from refuge seeking to work related migration. Similarly, the number of immigrants employed in the Danish manufacturing sector differs considerably: 1297 Germans are employed in the manufacturing firms in our sample. Out of these, the majority, namely 1012 German foreign expatriates work in firms which trade with Germany, whereas this holds true for only 476 Turks out of 1410 employed Turks.

Table 2 shows that the immigrants spread differently across Denmark. Most of the foreign population settles in Copenhagen County (44187), followed by Aarhus County (28643), Fyn (18624), Frederiksborg (17796) and North Jutland (14451).

3.3 Importers, Exporters and Two-Way Traders in Danish Manufacturing

We obtain two different samples of firms who are engaged in international trade. The sample of exporters (importers) has 218,871 (123,886) observations. These two samples have 67,706 ob-

¹In 2006, Denmark has implemented an administrative reform. The former 15 regions including 270 municipalities have been replaced by five regions and 98 municipalities. I use the terms region and county interchangeably thereby always referring to the pre-reform county.

Table 2: Immigration and Immigrant Employment by County

	County	Immigrant Stock	Employed	
			All	With Trade
1	Copenhagen	42513	1604	990
2	Aarhus	27674	1456	817
3	Fyn	18365	646	298
4	Frederiksborg	17308	660	389
5	North Jutland	13770	505	187
6	Vejle	12102	667	311
7	South Jutland	11483	755	477
8	Roskilde	9062	316	257
9	West Zealand	8214	327	89
10	Ringkjbng	7754	697	223
11	Ribe	7568	479	311
12	Storstrm	7039	118	63
13	Viborg	5203	456	249

This Table depicts the number of immigrants by county and the number of immigrant employees in the manufacturing sector by county. Copenhagen refers to Copenhagen county without Copenhagen City.

servations in common, which consist of firms which sell to and buy from a particular country in a given year. Table 3 provides extended information about these two samples. The general picture reveals the following: Export sales are greater in the importer sample than in the exporter sample, whereas import purchases are greater in the exporter sample. This reflects that on average, two-way traders sell more abroad and buy more from foreign markets. Similarly, this holds true for the number of exported and imported varieties, as well as their average value. It will be important to account for this systematic level difference in our estimation.

Moreover, importing firms seem to be more prone to employ foreigners which are born in a trade partner country as compared to exporting firms. The respective means amount to 0.181 in the exporter and 0.246 in the exporter sample. However, this presumably reflects the supply of people from the respective country in the region where the firm is located: The average immigrant stock in the exporter sample again exceeds the mean of the importer sample. Compare Section 3.2 for further description of immigration patterns into Denmark. Comparing firm characteristics across the two subsamples reveals that the importer sample exhibits larger and

more productive firms which pay higher wages on average.

Table 3: Summary Statistics: Exporter and Importer Sample

Exporter Sample $N^x=218871$				
	Mean	SD	Min	Max
ln Exports	12.795	2.386	0.000	22.426
ln Imports	12.762	2.778	0.000	20.207
ln Number of Export Products	0.338	0.581	0.000	3.497
ln Number of Import Products	0.655	0.735	0.000	3.526
ln Average Value Per Export Product	12.457	2.234	0.000	21.678
ln Average Value Per Import Products	12.107	2.465	0.000	19.376
ln Immigrant Stock	4.785	1.718	0.000	9.164
Immigrants Employed	0.181	1.358	0.000	126.000
ln Number of Employees	4.339	1.428	0.000	9.451
ln Productivity	12.965	0.468	6.908	16.922
ln Average Hourly Wage	5.155	0.192	2.944	7.722
ln Real GDP per capita	9.909	0.679	7.035	11.197
Importer Sample $N^m=123886$				
	Mean	Std.	Min	Max
ln Exports	13.899	2.499	0.000	22.426
ln Imports	12.492	2.631	0.000	21.145
ln Number of Export Products	0.615	0.742	0.000	3.497
ln Number of Import Products	0.515	0.677	0.000	3.638
ln Average Value Per Export Product	13.284	2.328	0.000	21.678
ln Number of Import Products	11.977	2.378	0.000	21.145
ln Immigrant Stock	5.234	1.579	0.000	9.164
Immigrants Employed	0.246	1.514	0.000	108.000
ln Number of Employees	4.219	1.438	0.000	9.451
ln Productivity	12.969	0.480	6.908	16.922
ln Average Hourly Wage	5.143	0.194	2.079	7.722
ln Real GDP per capita	10.028	0.598	7.035	11.197

This Table depicts summary statistics for the importer and exporter sample pooled over the sample period from 1995 - 2006. The presence of two-way traders in our sample leads to 67,706 overlapping observations.

Table 4: Product Margins and Immigrant Employment

Immigrant Employment:		Number of Products		Imported	
		Exported			
		No	Yes	No	Yes
All Firms	Mean	1.76	2.955	2.216	4.119
Two-Way Traders	Mean	2.595	3.758	2.268	4.534

Immigrant Employment:		Average Value per Product		Imported	
		Exported			
		No	Yes	No	Yes
All Firms	Mean	2427	9770	1368	2824
Two-Way Traders	Mean	4971	13008	1668	2951

This Table summarizes the product margins for all Danish firms pooled over all countries and years 1995-2005. It distinguishes samples by trade status, i.e., whether firms are engaged simultaneously in exporting and importing or not, and by foreign employment status, i.e., whether a firm employs foreigners or not. Product values are measured in 1000DKK.

3.4 Are firms who employ foreigners better traders?

This paper attempts to assess among other things the trade channel through which immigration matters. In particular, we want to know whether it increases the number of products traded by a firm (the extensive product margin) or the average value per product shipped (the intensive product margin). Table 4 provides an impression of these two margins and reveals two main points: First, two-way traders export and import more products at larger average values - no matter whether they employ foreigners from their trade partner country. Secondly, those firms who employ foreigners export and import even more products at even larger average values. Even for one-directional traders, product scale and scope exceed those from two-way traders in general when the firm employs foreigners.

In a nutshell, this section has provided some descriptive evidence of the conjecture that immigration is associated with a greater engagement of firms in international trade. The next section

presents the econometric methodology which is used to address in rigorous manner, whether immigration positively affects firm-level trade.

4 Empirical Strategy

Theoretical considerations as outlined in Section 2 and descriptive evidence have lead to the conjecture that immigration fosters a firm's engagement into international transactions by lowering trade costs. In order to explore this link between trade and immigration systematically, we use a linear OLS regression model given by

$$\ln v_{ijt}^x = \beta' X_{ijt} + \phi_r + \theta_k + \eta_t + \psi_i + \xi_j + \epsilon_{ijt}, \quad (1)$$

where v_{ijt}^x is a firm i 's export sales to country j at time t . r indicates the Danish region and k indicates the 2-digit manufacturing industry. ϕ_r , θ_k , η_t , ξ_j and ψ_i are region, industry, time, country and firm fixed effects. For practical implementation, we follow Andrews et al. (2006), and firm-country pair fixed effects and include dummy variables for industry, region and time fixed effects. ϵ_{ijt}^k is an idiosyncratic error. β is a parameter vector. X_{ijt} is a set of regressors which includes our variables of interest, namely the stock of immigrants from country j residing in region r at time t and the number of immigrants from country j employed in firm i at time t originating from country j . Moreover, it accounts for several confounding factors: At the firm level, we include firm size, the average wage and labor productivity measured by value added per worker. This allows us to account for firm size and skill composition, and to approximate the firm's ability to integrate workers with a non-Danish ethnic background and thereby the propensity to hire foreign workers. Moreover, we account for the source country characteristics by inclusion of GDP per capita. We estimate the corresponding model for import purchases, which we shall denote by v_{ijt}^m subsequently.

To address how immigration affects the composition of trade, we decompose the aggregate export value into the number of traded products, n_{ijt}^x , and the average value per product traded

with a partner country, \bar{z}_{ijt}^x . The value of an export shipment at the firm level, v_{ijt}^x , is defined as:

$$v_{ijt}^x = n_{ijt}^x \bar{z}_{ijt}^x, \quad (2)$$

Again, we define these margins accordingly for firm-level imports as indicated by superscript m . Then, we can assess how the intensive and extensive product margin are affected by employment of foreigners and the presence of immigrants in the surroundings of the firm by estimating

$$r_{ijt}^x = \beta' X_{ijt} + \phi_r + \theta_k + \eta_t + \psi_i + \xi_j + \epsilon_{ijt}, \quad (3)$$

where $r_{ijt}^x = \ln \bar{z}_{ijt}^x$ ($r_{ijt}^x = \ln n_{ijt}^x$) for the intensive export product margin (extensive export product margin), and accordingly for imports.

Our model measures the intensive and extensive margin without an explicit modeling the dynamics at the product margin. A recent paper by Iacovone and Javorcik (2010) considers the dynamics of product creation and destruction within firms. Our definition of the extensive product margin at the firm-country level corresponds to "net churning", i.e., the difference between products created and destroyed within a firm.

The identification of the immigration effect on trade is subject to two major caveats: First of all, as raised by Rauch and Trindade (2002), migrant networks may approximate similar preferences across countries, and this taste similarity per se may lead to a larger amount of trade (in differentiated goods) between countries as put forward by Linder (1961). We assume that preferences are time invariant, and therefore taken into account for implicitly by inclusion of country fixed effects. A second source of endogeneity stems from the demand for foreign labor in economically dynamic and internationalized environments. Peri and Requena (2010) tackle this challenge by instrumenting the regional immigrant stock by its prediction based on historical migration levels, arguing that immigrant communities tend to agglomerate for non-economic reasons. In our case, we have the chance to observe the behavior at the firm level,

and consider the regional immigrant stock as exogenous to the firm, given that we can capture the level of immigrant employment at the firm.

5 Empirical Results

Table 4 summarizes our main results. Column (1) and (2) show the estimation results for overall exports and imports, column (3) to (4) contain results for the extensive product margin, column (5) and (6) refer to the intensive product margin. Below the point estimate, we report p -values and base inference on a cluster-robust variance-covariance matrix.

5.1 Main Results

Immigration: We find that immigration exhibits no statistically significant positive effect on total export sales. But it is positively associated with firm imports: A 1% increase in the immigrant stock in country j leads to a 0.1% increase in import purchases from the partner country. On the contrary, the employment of immigrants in the manufacturing firm exhibits no significant effect on import purchases, but leads to an increase in export sales: The employment of one additional foreigner from a trade partner country increases exports to his country of origin by 1.2 %. The channel which drives the immigration effect on trade for both regional immigration and employment is the extensive product margin in both cases. More precisely, the number of imported products (exported products) increases by 0.07% (0.04%) in response to a 1% increase in the immigrant stock. Both increases are statistically significant at the 1% significance level. Similarly immigrant employment matters exclusively via the extensive product margin. In this case, the employment of an additional foreigner increases the number of exported products by 0.5% and the number of imported product by 1%.

Trade Status: As foreshadowed in Section 3.3, we find that two-way traders have a higher level of export sales and import purchases than their one-directional trading counterparts. The level difference manifests itself in both, product scale and scope, whereby for both directions of trade, the intensive margin plays the more important role.

Table 5: Main Results (Firm-Country FE OLS)

	Total		Extensive		Intensive	
	v_{ijt}^x	v_{ijt}^m	n_{ijt}^x	n_{ijt}^m	\bar{z}_{ijt}^x	\bar{z}_{ijt}^m
	1	2	3	4	5	6
ln Immigrant Stock ($t - 1$)	0.018 0.357	0.103 0.002	0.040 0.000	0.070 0.000	-0.022 0.218	0.034 0.280
Immigrants Employed ($t - 1$)	0.012 0.068	0.010 0.283	0.005 0.048	0.010 0.013	0.007 0.202	0.000 0.995
Two-Way Trader ($t - 1$)	0.117 0.000	0.140 0.000	0.045 0.000	0.048 0.000	0.072 0.000	0.093 0.000
ln Real GDP per capita ($t - 1$)	1.221 0.000	1.663 0.000	0.141 0.000	0.293 0.000	1.080 0.000	1.369 0.000
ln Number of Employees ($t - 1$)	0.444 0.000	0.432 0.000	0.049 0.000	0.098 0.000	0.395 0.000	0.334 0.000
ln Productivity ($t - 1$)	0.114 0.000	0.089 0.000	0.012 0.000	0.018 0.001	0.101 0.000	0.071 0.000
ln Average Hourly Wage ($t - 1$)	0.311 0.000	0.120 0.120	-0.012 0.294	0.102 0.000	0.323 0.000	0.019 0.795
R^2						
within	0.017	0.016	0.031	0.026	0.013	0.017
between	0.086	0.025	0.049	0.088	0.067	0.013
overall	0.102	0.030	0.047	0.096	0.076	0.013
N	218871	123886	218871	123886	218871	123886
Groups	57328	36602	57328	36602	57328	36602

This Table presents regression results. The specification is given in equation 1. The variance-covariance matrix is cluster-robust, the level of clustering is the observational unit, i.e., firm-country pairs. Two-sided p -values are reported below coefficient estimates. All specifications include year-, region-, and industry fixed effects.

GDP per capita: The foreign country's GDP per capita is an important push factor for international labor mobility (Mayda 2010). Moreover, it captures market size. We find a positive association between the foreign GDP and firm level exports (1.221%), whereby the decomposition reveals that this is largely due to an increased value per product exported (1.080) rather than a higher number of goods shipped (0.141%). Similarly, the foreign country's GDP per capita exhibits a significant effect on the total value of imports (1.663%), which mostly stems

from a higher average value per product (1.080%).

Firm Size: Unsurprisingly, firm size is positively related to export sales (0.444%). It affects mostly the average value per product exported (0.395%) rather than the number of products (0.049%). Also, import purchases are positively affected by the level of employment in a firm. As for export sales, the link runs through the intensive rather than the extensive product margin, as indicated by the estimated elasticities, which amount to 0.334 and 0.098, respectively.

Firm Productivity: Interestingly, we find that labor productivity, measured as value added per worker, increases overall export sales through both increasing the number of products exported (0.012%) as well as the average value per product (0.101%), whereby the latter channel outweighs the former in quantitative importance. The positive link between the range of exported varieties and firm productivity is in line with Bernard et al. (2010a): Firms which exhibit a higher ability can more easily overcome the fixed cost of exporting new products as they generate sufficient variable profits, even if the product exhibits lower value attributes. However, the (clearly dominating) effect on the intensive margin is theoretically ambiguous (Bernard et al. 2010a). The effect of firm productivity on imports is qualitatively similar, but less pronounced in terms of magnitude. The estimated elasticities amount to 0.089% for total import purchases, 0.018% for the extensive product margin and 0.071 for the intensive product margin.

Average Hourly Wage: In order to capture other time variant factors, like the skill-composition within the firm, we include the average hourly wage. We find that it is positively linked to total export sales (0.311%). In the decomposition between product scale and scope, it is statistically significant only in the latter case with point estimates of -0.012 and 0.323, respectively. With respect to imports, we find no significant effect on import purchases. However, there is evidence for an increase in the number of products in response to a higher average hourly wage. The statistically significant estimate is 0.102.

In a nutshell, we find that the presence of immigrants in the region where a firm is located fosters immigrant purchases from the migrants' country of origin. Contrastingly, we do not find that the presence of immigrants matters for firm exports. But those foreigners who are employed in a firm lead to an economically and statistically significant increase in firm-level

exports without increasing import purchases. The next section aims at analyzing the robustness of this link between foreign employment, regional presence of immigrants and firm-level trade.

5.2 Robustness Checks

As the previous section has indicated, immigration has been found to foster the engagement of Danish manufacturing firms in international trade. In this section, we illustrate the robustness of our results by changing the country coverage of the sample, considering subperiods of the time span, and including a measure for institutional quality. Moreover, we discuss some other modifications that we have implemented. For the sake of brevity, we focus exclusively on the estimates of immigration and immigrant employment rather than on all coefficients, unless they differ tremendously from the results shown in Table 5.

Table 6 excludes Denmark's largest neighbor and second-largest immigrant sending country from the sample. The main conclusions remain unchanged: Regional immigration matters for imports but not for exports. However, for this subsample, we cannot reject the Null hypothesis that the effect of foreign employment has no impact on firm trade. But we find evidence for a change in the composition of trade: Employment of a foreigner significantly increases the number of imported products (1.6%). But as it simultaneously decreases the average value per product (-1.7%), the overall effect turns out not to be significantly different from zero.

Not only the geographical coverage may matter for the trade migration nexus in the case of Denmark. During the sampling period, the country has undergone substantial policy changes relating to immigration. In particular, Denmark conducted an immigration reform in 2001, which has followed up on a tendency of tightening up immigration rules in the 1990. Pedersen and Smith (2002) describe the reform in detail, and highlight the four main ideas of the reform: Immigrants from other Nordic countries maintain the right to move to Denmark without applying for a residence permit. EU/EEA citizens are allowed to come to Denmark for three months without a residence permit. If they seek a job in Denmark, this period extends to half a year. For most of European citizens, it is possible to obtain a residence permit if they are expected to be able to cover their cost of living or if they are a relative of someone who is expected to make his

Table 6: Additional Results (Firm-Country FE OLS): Exclusion of Germany

	Total		Extensive		Intensive	
	v_{ijt}^x	v_{ijt}^m	n_{ijt}^x	n_{ijt}^m	\bar{z}_{ijt}^x	\bar{z}_{ijt}^m
	1	2	3	4	5	6
ln Immigrant Stock ($t - 1$)	0.012 0.524	0.118 0.000	0.039 0.000	0.068 0.001	-0.026 0.152	0.049 0.121
Immigrants Employed ($t - 1$)	0.012 0.140	-0.001 0.931	0.004 0.192	0.016 0.000	0.008 0.247	-0.017 0.300
Two-Way Trader ($t - 1$)	0.120 0.000	0.149 0.000	0.044 0.000	0.046 0.000	0.076 0.000	0.103 0.234
ln Real GDP per capita ($t - 1$)	1.181 0.000	2.150 0.000	0.126 0.000	0.250 0.000	1.054 0.000	1.900 0.000
ln Number of Employees ($t - 1$)	0.432 0.000	0.390 0.000	0.047 0.000	0.087 0.000	0.384 0.000	0.303 0.000
ln Productivity ($t - 1$)	0.109 0.000	0.078 0.000	0.012 0.000	0.016 0.007	0.097 0.000	0.062 0.003
ln Average Hourly Wage ($t - 1$)	0.309 0.000	0.109 0.191	-0.013 0.243	0.093 0.000	0.322 0.000	0.015 0.842
R^2						
within	0.016	0.017	0.033	0.028	0.012	0.019
between	0.076	0.011	0.043	0.064	0.059	0.005
overall	0.093	0.012	0.044	0.071	0.070	0.004
N	206494	111041	206494	111041	206494	111041
Groups	54840	33857	54840	33857	54840	33857

This Table presents regression results which exclude Germany from the sample. The specification is given in equation 1. The variance-covariance matrix is cluster-robust, the level of clustering is the observational unit, i.e., firm-country pairs. Two-sided p -values are reported below coefficient estimates. All specifications include year-, region-, and industry fixed effects.

own living in Denmark. Other people who aspire immigration can only base their permanent or temporary residence permits on their status as a refugee or asylum seeker, or family reunion. Additionally, special permits are issued for short term work contracts or studies in Denmark. These rules restrict in particular immigration from non-European countries, and presumably foster a different quality of the immigrant inflow. Thus, the reform has potentially also affected

the trade migration nexus.

Our estimation results, which are depicted in Tables 7 and 8, suggest the following: Neither before nor after the reform does regional immigration affect total export sales, but it has slightly changed its composition by increasing the number of exported products before 2001 and after 2001 by 0.019% and 0.028%, respectively. With respect to total import purchases, they have been affected by immigrants residing in the firm's region in both periods. The elasticity has increased from 0.091% to 0.140% after the reform. The main difference in both subsample periods stems from the channel of trade promotion: Before the reform, most of the import promoting effect stems from an increase in average import purchases per product, whereas with a point estimate of 0.074, whereas after the reform, the regional immigrant presence has mattered mostly through the number of products imported from the migrants' country of origin. According to our OLS FE results, immigrant employment has not exerted a statistically significant impact on export sales in neither subsample period. We find that it has significantly increased import purchases before, but not after 2001. But after the reform, it had an impact on the composition of imports: One additional foreigner in the firm has increased the number of imported products by 0.008%.

These results point at some changes occurring subsequent to the migration reform, and they may reflect a better selection of immigrants. Still, our main conclusions remain unchanged: The trade-promoting effect of immigration stems from its impact on firm imports which operates through the extensive product margin after the immigration reform. Of course, it is not possible to ascribe all of the coefficient change to the migration reform given that the economic and political environment has changed substantially around 2001 not only in light of the launch of a common currency across in many European countries. To test this claim is also not the goal of this analysis, but could be of interest per se.

As a last robustness check, we refine the way to control for institutional quality. Our results which are reported in Table 9 remain qualitatively unchanged if we include a rule of law from Kaufmann et al. (2010) as a measure for time-variant institutional quality. We do not use this measure in all estimations, because it is not available on a yearly basis for our sample period, and we would like to avoid interpolation. Comfortingly, results remain virtually unchanged

Table 7: Additional Results (Firm-Country FE OLS): Before 2001

	Total		Extensive		Intensive	
	v_{ijt}^x	v_{ijt}^m	n_{ijt}^x	n_{ijt}^m	\bar{z}_{ijt}^x	\bar{z}_{ijt}^m
	1	2	3	4	5	6
In Immigrant Stock ($t - 1$)	-0.002 0.933	0.091 0.032	0.019 0.016	0.017 0.145	-0.021 0.379	0.074 0.069
Immigrants Employed ($t - 1$)	-0.002 0.821	0.020 0.071	0.003 0.000	0.004 0.295	-0.005 0.508	0.015 0.128
Two-Way Trader ($t - 1$)	0.054 0.001	0.084 0.001	0.034 0.259	0.030 0.000	0.020 0.223	0.055 0.019
In Real GDP per capita ($t - 1$)	0.977 0.000	0.655 0.010	0.155 0.000	0.199 0.005	0.822 0.000	0.456 0.060
In Number of Employees ($t - 1$)	0.330 0.000	0.284 0.000	0.047 0.000	0.057 0.000	0.283 0.000	0.227 0.000
In Productivity ($t - 1$)	-0.009 0.558	0.042 0.106	0.004 0.269	0.010 0.245	-0.014 0.374	0.032 0.175
In Average Hourly Wage ($t - 1$)	0.268 0.000	0.076 0.361	0.065 0.000	0.024 0.361	0.203 0.002	0.052 0.515
R^2						
within	0.011	0.012	0.007	0.005	0.008	0.009
between	0.065	0.028	0.030	0.046	0.042	0.018
overall	0.076	0.033	0.026	0.048	0.048	0.019
N	107422	58437	107422	58437	107422	58437
Groups	39374	22878	39374	22878	39374	22878

This Table presents regression results for the time before Denmark's immigration reform in 2001. The specification is given in equation 1. The variance-covariance matrix is cluster-robust, the level of clustering is the observational unit, i.e., firm-country pairs. Two-sided p -values are reported below coefficient estimates. All specifications include year-, region-, and industry fixed effects.

by its inclusion which corroborates the conjecture that institutions are sufficiently captured in the country fixed effects.

This section has discussed the robustness of our results along several modifications of our main specification. However, it remains to the subsequent section to assess whether they are robust to a correction for sample selection, and whether we can conclude that the migration effects on

Table 8: Additional Results (Firm-Country FE OLS): After 2001

	Total		Extensive		Intensive	
	v_{ijt}^x	v_{ijt}^m	n_{ijt}^x	n_{ijt}^m	\bar{z}_{ijt}^x	\bar{z}_{ijt}^m
	1	2	3	4	5	6
In Immigrant Stock ($t - 1$)	0.026 0.450	0.140 0.013	0.028 0.002	0.083 0.000	-0.002 0.959	0.057 0.291
Immigrants Employed ($t - 1$)	-0.005 0.639	-0.007 0.672	0.002 0.651	0.008 0.072	-0.007 0.528	-0.015 0.316
Two-Way Trader ($t - 1$)	0.056 0.001	0.138 0.000	0.022 0.000	0.025 0.001	0.035 0.032	0.114 0.000
In Real GDP per capita ($t - 1$)	1.290 0.000	2.067 0.000	0.061 0.150	0.393 0.000	1.229 0.000	1.673 0.000
In Number of Employees ($t - 1$)	0.406 0.000	0.353 0.000	0.048 0.000	0.103 0.000	0.358 0.000	0.250 0.000
In Productivity ($t - 1$)	0.138 0.000	0.090 0.007	0.028 0.000	0.039 0.000	0.111 0.000	0.051 0.106
In Average Hourly Wage ($t - 1$)	0.079 0.073	0.147 0.124	-0.027 0.072	0.067 0.027	0.106 0.013	0.080 0.368
R^2						
within	0.010	0.016	0.014	0.016	0.011	0.018
between	0.084	0.024	0.025	0.080	0.068	0.009
overall	0.091	0.024	0.023	0.082	0.073	0.007
N	111449	65449	111449	65449	111449	65449
Groups	40525	25978	40525	25978	40525	25978

This Table presents regression results for the time after Denmark's immigration reform in 2001. The specification is given in equation 1. The variance-covariance matrix is cluster-robust, the level of clustering is the observational unit, i.e., firm-country pairs. Two-sided p -values are reported below coefficient estimates. All specifications include year-, region-, and industry fixed effects.

Danish firm-level trade are causal.

5.3 Causality and Sample Selection

All previous estimations have accounted for cross-country differences in institutional quality by inclusion of country fixed effects. In a similar manner, we have accounted for different

Table 9: Additional Results (Firm-Country FE OLS): Including 'Rule of Law'

	Total		Extensive		Intensive	
	v_{ijt}^x	v_{ijt}^m	n_{ijt}^x	n_{ijt}^m	\bar{z}_{ijt}^x	\bar{z}_{ijt}^m
	1	2	3	4	5	6
In Immigrant Stock ($t - 1$)	0.023 0.353	0.144 0.001	0.042 0.000	0.081 0.000	-0.019 0.422	0.062 0.116
Immigrants Employed ($t - 1$)	0.012 0.181	0.000 0.980	0.006 0.025	0.013 0.010	0.006 0.462	-0.013 0.237
Rule of Law ($t - 1$)	0.268 0.000	0.261 0.045	0.079 0.000	-0.099 0.005	0.188 0.001	0.360 0.004
Two-Way Trader ($t - 1$)	0.118 0.000	0.179 0.000	0.043 0.000	0.047 0.000	0.075 0.000	0.132 0.000
In Real GDP per capita ($t - 1$)	1.137 0.000	1.493 0.000	0.121 0.000	0.368 0.000	1.016 0.000	1.126 0.000
In Number of Employees ($t - 1$)	0.544 0.000	0.485 0.000	0.063 0.000	0.113 0.000	0.481 0.000	0.372 0.000
In Productivity ($t - 1$)	0.237 0.000	0.174 0.000	0.029 0.000	0.030 0.000	0.208 0.000	0.144 0.000
In Average Hourly Wage ($t - 1$)	0.208 0.000	0.078 0.395	-0.036 0.007	0.112 0.000	0.244 0.000	-0.035 0.689
R^2						
within	0.021	0.019	0.033	0.028	0.017	0.020
between	0.099	0.031	0.039	0.081	0.083	0.016
overall	0.115	0.037	0.038	0.088	0.092	0.017
N	131843	75170	131843	75170	131843	75170
Groups	48692	30471	48692	30471	48692	30471

This Table presents regression results including a time-variant measure of institutional quality, namely 'rule of law' which originates from Kaufmann et al. (2010). The specification is given in equation 1. The variance-covariance matrix is cluster-robust, the level of clustering is the observational unit, i.e., firm-country pairs. Two-sided p -values are reported below coefficient estimates. All specifications include year-, region-, and industry fixed effects.

propensities to employ foreign workers who originate from a trade partner country by using firm fixed effects throughout all estimations. Even though one may want to argue that this procedure purges all sources of endogeneity of immigrant employment, some concerns may

remain if one believes that the hiring of immigrants is a strategic measure to increase export sales by boosting either the number of traded products or their average value. In order to accommodate this concern, we estimate the model displayed in Table 10 using an Instrumental Variable approach. We use as an instrument the number of immigrants employed in the region minus the number of immigrants employed in the firm in a given year joint with the number of immigrants employed in other firms in the same industry. This measure is intended to capture the potential supply of manufacturing workers in a given region and a given industry at time t . Importantly, we assume that there is no direct effect of the supply of foreign workers on a firm's export sales or import purchases. Notably, this does not rule out the presence of geographical spillovers, because these effects are captured in the immigrant stock residing in the Danish region: If network links exists between employers in a given firm and other foreign workers in the surroundings, this is approximated by the regional immigrant stock.

First of all, the set of instruments performs sufficiently well for firm-level exports. We can reject the Null of Weak Instruments according to the Kleibergen-Paap F -test and we cannot reject the Null of joint instrument validity on conventional significance levels on basis of the Hansen J test. This is different for the import equations, where the rejection of the Hansen J test indicates instrument invalidity. Thus, we present here only results for the export equations, however, Table 10 reports full results. Based on IV regression results, we confirm that the presence of immigrants in the region where a firm is located exerts no statistically significant effect on firm exports and neither does the employment of foreign workers. But importantly, we find again an impact on the composition of trade: In response to immigrant presence, the manufacturing firm exports more products, such that a 1% increase in the regional immigrant community from the trade partner country causes the number of traded products to go up by 0.04%.

Additionally, we use a regression based test for sample selection as suggested by Wooldridge (1995). Based on this procedure, we reject the Null of no sample selection for both, the exports and also for imports on a 1% significance level. Consequently, we implement the sample selection correction procedure as suggested in Wooldridge (1995) as summarized in Table 11.

Using the sample selection correction procedure as suggested by Wooldridge (1995), our main conclusion remain qualitatively unchanged. As Table 11 shows, we find again that the local

presence of foreigners boosts imports but not export sales. In particular, a 1% increase in the regional immigrant stock increases import purchases by 0.133%. This increase stems from the import of a broader range of products (0.109). The effect of immigration on the intensive product margin is statistically insignificant. Even though total export sales remain unaffected by immigration, their composition changes: In particular, an increase of the stock of foreigners from a trade partner country increases the number of products exported by the firm to the country under consideration. The main change when correcting for sample selection is that the estimates turn slightly larger as compared to our benchmark results from FE OLS as reported in Table 5.

With respect to employment of foreign expatriates, our results are also comfortably stable. We find that the employment of one additional foreign expatriate increases export sales by 1.7%. This effect operates mostly through the extensive product margin: The number of exported products increases by 0.8% in response to the employment of one additional foreigner. The employment of foreign expatriates affects exclusively exports. Imports are totally unaffected by foreign employment.

Thus, accounting for sample selection and potential endogeneity of immigrant employment corroborates our findings, which are discussed in the next section.

6 Discussion

Our results are qualitatively and quantitatively in line with earlier empirical results on the nexus between trade and migration. The elasticity of overall firm imports exhibits an estimated elasticity of around 0.1%. This effect size occupies the lower end of previously estimated trade elasticities as summarized in Peri and Requena (2010). As outlined in Wagner et al. (2002), the finding that immigration matters more for imports rather than for exports is found in several studies (see for example Head and Ries 1998, Dunlevy and Hutchinson 1999), and this may be attributed to the fact that the preference channel matters for imports but not for exports. However, our finding contrasts Gould (1994) who finds that immigration affects exports stronger than imports in case of the United States. Similarly, White (2007) finds a stronger

Table 10: Additional Results (Firm-Country FE IV)

	Total		Extensive		Intensive	
	v_{ijt}^x	v_{ijt}^m	n_{ijt}^x	n_{ijt}^m	\bar{z}_{ijt}^x	\bar{z}_{ijt}^m
	1	2	3	4	5	6
ln Immigrant Stock ($t - 1$)	0.016 0.400	0.105 0.002	0.040 0.000	0.069 0.000	-0.023 0.204	0.036 0.255
Immigrants Employed ($t - 1$)	0.083 0.363	-0.102 0.807	0.037 0.161	0.051 0.688	0.046 0.601	-0.154 0.700
Two-Way Trader ($t - 1$)	0.116 0.000	0.140 0.000	0.045 0.000	0.048 0.000	0.072 0.000	0.093 0.000
ln Real GDP per capita ($t - 1$)	1.217 0.000	1.685 0.000	0.139 0.000	0.286 0.000	1.078 0.000	1.399 0.000
ln Number of Employees ($t - 1$)	0.433 0.000	0.456 0.000	0.044 0.000	0.090 0.001	0.389 0.000	0.366 0.000
ln Productivity ($t - 1$)	0.113 0.000	0.090 0.000	0.012 0.000	0.018 0.002	0.101 0.000	0.072 0.000
ln Average Hourly Wage ($t - 1$)	0.313 0.000	0.122 0.117	-0.011 0.335	0.101 0.000	0.324 0.000	0.021 0.773
R^2	0.016	0.014	0.028	0.023	0.012	0.013
N	200268	110185	200268	110185	200268	110185
Groups	38725	22901	38725	22901	38725	22901
Kleibergen-Paap (p)	0.001	0.028	0.001	0.028	0.001	0.028
Kleibergen-Paap(F)	7.493	3.588	7.493	3.588	7.493	3.588
Hansen J (p)	0.948	0.002	0.170	3.588	0.728	0.002

This Table presents regression results from an IV regression with firm-country fixed effects. The variance-covariance matrix is cluster-robust, the level of clustering is the observational unit, i.e., firm-country pairs. Two-sided p -values are reported below coefficient estimates. All specifications include year-, region-, and industry fixed effects. Critical values for the Kleibergen-Paap F -test are from Stock and Yogo (2005) and amount to 19.93, 11.59, 8.75 and 7.25 for 10%, 15%, 20% and 25% maximal IV size.

trade-promoting effect of immigration on exports rather than imports for the case of Denmark. However, this paper constitutes the first attempt to account for firm heterogeneity when es-

Table 11: Additional Results (Wooldridge (1995) Sample Selection Correction)

	Total		Extensive		Intensive	
	v_{ijt}^x	v_{ijt}^m	n_{ijt}^x	n_{ijt}^m	\bar{z}_{ijt}^x	\bar{z}_{ijt}^m
	1	2	3	4	5	6
ln Immigrant Stock (t-1)	0.034 0.253	0.133 0.036	0.060 0.000	0.109 0.000	-0.026 0.341	0.024 0.688
Immigrants Employed (t-1)	0.017 0.036	-0.014 0.346	0.008 0.005	0.008 0.117	0.009 0.222	-0.021 0.146
Two-Way Trader (t-1)	0.151 0.000	0.085 0.009	0.078 0.000	0.063 0.000	0.073 0.000	0.022 0.470
ln Real GDP per capita (t-1)	1.078 0.000	1.217 0.000	0.081 0.007	0.431 0.000	0.997 0.000	0.786 0.000
ln Number of Employees (t-1)	0.586 0.000	0.519 0.000	0.061 0.000	0.120 0.000	0.524 0.000	0.399 0.000
ln Productivity (t-1)	0.286 0.000	0.192 0.000	0.023 0.000	0.029 0.001	0.262 0.000	0.163 0.000
ln Average Hourly Wage (t-1)	0.521 0.000	0.237 0.090	-0.044 0.034	0.133 0.000	0.566 0.000	0.104 0.430
Adj R-Squared	0.288	0.218	0.271	0.281	0.238	0.178
N	218871	123886	218871	123886	218871	123886

This Table presents regression results from an estimation with sample selection correction as suggested in Wooldridge (1995). Standard errors are obtained by bootstrap with 399 replications. Two-sided p -values are reported below coefficient estimates. All specifications include year-, region-, and industry fixed effects.

timating the trade-migration nexus and thus is able to account for firm-heterogeneity.² We corroborate the finding of Peri and Requena (2010) that the regional immigrant stock affects the extensive rather than the intensive product margin.

With respect to the central predictions on the behavior of multi-product firms on export markets as exemplified by Bernard et al. (2010a), we confirm that migrant linkages indeed exert influence on trade costs and thereby affect the composition of firm-level trade. Mostly, immi-

²Unreported results show that a failure to account for unobserved firm heterogeneity leads to statistically significant effects of immigration on firm-level exports.

gration and the employment of foreign workers increases the number of exported products rather than the average value per exported good.

Our results contribute some insights relevant to both, macroeconomic and microeconomic policy making. First of all, immigration seems to benefit the Danish manufacturing sector by fostering the engagement of Danish manufacturing firms in trade activities. In particular, the presence of immigrants seems to broaden the traded product range and thereby contributes to a diversification process for both, exports and imported inputs. Importantly, this effect is seen for immigration in a very broad sense, capturing not only immigrants employed in sectors other than manufacturing, but also people who are unemployed or not yet/no longer part of the labor force. However, if Danish manufacturing firms employ foreign expatriates, they exhibit a positive effect on the firm's total export sales to the migrant's country of origin.

Thus, the trade promoting effect of immigration at the firm and in the region stresses the importance of labor market integration of foreign workers. Rosholm et al. (2006) point out that organizational change has led to an increased need in efficient communication skills, and that immigrants have presumably been adversely affected by this tendency. But communicative needs are heterogeneous across countries, and there is a chance to gain from the distinct communication and skill profile of the foreign worker through feedback effects on the trade performance of employers.

7 Conclusion

This paper assesses the trade-migration nexus on the firm level using a matched employer-employee dataset for Danish firms covering the years from 1995 to 2005. We disentangle whether the inflow of foreign labor matters for trade due to intra-firm employment of immigrants or due to the presence of regional ethnic networks. In our estimations, we account for potential endogeneity of immigrant employment and for sample selection.

Our main results are robust and in line with both, the theoretical literature on multi-product firms and the one on ethnic networks. We establish that regional immigration boosts overall

imports but exhibits no effect on total exports. We find that immigration matters for the composition of firm-level trade by increasing the number of both imported and exported varieties. As a novel insight, we find that the employment of foreign expatriates fosters total export sales mostly through the extensive product margin, whereas it does not affect import purchases.

Our results open up to three extensions: First of all, it would be desirable to explore the role of immigrant skill and occupation on the trade-migration nexus. Secondly, it would be interesting to investigate in depth the linkages within regional migrant networks and across firms. For example, regional immigration might foster trade because service firms employ foreign expatriates which communicate and interact with immigrant employed in manufacturing firms. Third, it would be insightful to explore whether the effect on the export and import value operates through price or quantity.

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