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The Export Promoting Effect of Emigration: Evidence from Denmark*

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The theoretical claim that ethnic networks encourage trade has found broad empirical support in the literature on migration, business networks and international trade. Ethnic networks matter for the exporting firm, as they exhibit the potential to lower fixed and variable cost of exporting. This paper provides a first attempt to identify the export-promoting effect of emigration on the firm level.

Using detailed Danish firm-level data, we can parsimoniously control for export determinants other than emigration, unobserved heterogeneity at the firm level, as well as for self-selection of firms into exporting. Additionally accounting for taste similarity between Denmark and its trade partners, our findings suggest a positive effect of emigration on Danish manufacturing trade within Europe, thereby corroborating preceding studies on aggregate data. Nevertheless, as a novel insight, our analysis reveals that the only beneficiaries of emigration are small enterprises.

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1 Motivation

Denmark is confronted with a small but persistent outflow of high-skilled workers. This phenomenon is perceived as harmful due to a general shortage in supply of high-skilled labor, a lack in high-skilled immigration of similar size and due to composition effects on the labor market in particular since it is taking place simultaneously with low-skilled immigration. As a recent OECD report calls it: Denmark is subject to a "clear brain drain" (OECD 2008, p. 40). But potentially emigration may compensate the brain loss by easing export activities on international markets. A longstanding empirical literature pioneered by Gould (1994) has assessed the nexus between trade and migration, thereby establishing a positive link.

Some recent studies include Peri and Requena (2010), Felbermayr and Jung (2009), Bandyopadhyay et al. (2008), White (2007), Combes et al. (2005), Girma and Yu (2002), Light et al. (2002). In their influential paper, Rauch and Trindade (2002) study the trade promoting effect of Chinese networks. This study has been recently extended by Felbermayr et al. (2009) to cover multiple ethnic networks. Here, the Danish diaspora plays an outstanding role, as it constitutes the European network with the largest trade promoting effect.

To our best knowledge, this paper pioneers the use of firm-level data with export destinations to assess whether expatriate communities boost exports. From an international perspective, the case of Denmark is of particular interest, because the Danish network has been found to exhibit the largest trade promoting effect among European countries (Felbermayr et al. 2009). We contribute to the existing literature in three regards: First, we provide reliable estimates of the trade response to international labor movements. The reliability stems from exclusion of confounding factors unobserved at higher levels of aggregation, like unobserved heterogeneity on the firm-level and self-selection into exporting. Secondly, we provide new insights about the role of emigration for the structure of the domestic economy, by assessing which firms benefit from ethnic networks. Thereby, we acknowledge that the ability to overcome barriers to trade is different for small firms (OECD 1997), which may imply heterogeneous gains from a cost

reduction due to emigration. Thirdly, by using publicly available emigration data which exist for all countries in the world, the empirical analysis can readily be extended to firm-level data from other countries using the same migration data.

Earlier theoretical and empirical literature has elaborated ample channels through which international labor movements can affect trade: First, emigrants may be prone to consume home country products as argued by Head and Ries (1998) or to use intermediate inputs which originate from their home country. Secondly, they may be more aware of business opportunities due to preferential information on their home market, thereby their presence abroad may alleviate matching between buyers and sellers as emphasized by Gould (1994) and Rauch and Casella (1998). In the same spirit, they could lower marketing cost in the foreign country, because lower-cost communication within the expatriate community abroad could lead to easier access to more consumers along the lines of Arkolakis (2010). Third, they may provide trust and confidence in international transactions in an environment which is characterized by incomplete contracts due to their ability to sanction opportunistic behavior (Greif 1989, 1993). Rauch (2001) provides a comprehensive review on the literature on networks and trade. On the contrary, the relation between the labor outflow and trade may also be substitutional rather than complementary: If emigrants carry technological knowledge and specific working skills abroad, where they enter the labor force or engage in entrepreneurial activities, they may modify the structure of production towards a substitution of previously imported goods and thereby reduce exports. Importantly, these channels may be active within firms rather than across firms: Related work emphasizes that emigration - in particular among high-skilled workers - partially reflects the allocation of workers within multinational firms across different plants in different countries (see e.g. Salt 1992, Tzeng 1995, Peixoto 2001, Larch and Lechthaler 2011). Multinational firms can relocate their workers, and thereby directly exploit the emigrants' knowledge advantage or benefit from enhanced exchange of information across plants in different countries.

Guided by recent theoretical work on the determinants of exporting (Melitz 2003, Jørgensen and Schröder, 2008), we parsimoniously control for export determinants other than emigra-

tion, and establish a robust effect of emigration on Danish firm-level exports. Thus, we confirm the earlier finding that migration fosters trade on the basis of a micro-level data set. In some more detail, we find that a 1% increase in the emigrant stock increases Danish manufacturing exports to this country by 0.052%. However, emigration fosters exports only for major emigrant recipient countries with an estimated elasticity of 0.149%. Importantly, the emigration effect is robust to the inclusion of a proxy for taste similarity. Nevertheless, the benefits from emigration do not accrue to all firms: Only enterprises which are small in terms of employment experience an increase in their exports in response to emigration. More precisely, for this type of businesses, a 1% increase in the Danish emigrant stock implies an increase in export sales of 0.132%.

Section 2 presents our data and Section 3 discusses the empirical strategy. Section 4 presents the empirical results and Section 5 concludes.

2 Descriptive Statistics

Our data set combines Danish firm-level data with macroeconomic variables in order to assess how emigration affects manufacturing exports. The availability of emigrant stock data allows a cross-sectional analysis for the year 2001.¹ Importantly, data on the emigration stock is reliable, as it is obtained from bilateral immigration matrix compiled by the World Bank, and immigration data is of substantially better quality than emigration data. In particular, as it comprises a huge bilateral matrix of migration, it opens up to be used in a similar framework for other countries which is important to understand the cross-country pattern of the trade-migration nexus on the firm-level. Firm-level data is provided by Statistics Denmark and combines destination-specific export information with business account information (REGNSKAB).

Most Danish emigrants live in Sweden (around 40000). Table 6 lists all destination countries

¹http://www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html

in our sample together with the number of Danish residents and Danish exporters in the respective market. The emigrant distribution is highly skewed: Whereas a destination country features 1502 Danes on average, the median number of emigrants is only equal to 45. The mean (median) corresponds approximately to the number of Danes residing in Luxemburg (Cameroon and Syria, respectively).

Our sample comprises manufacturing firms, which export to at least one export destination. We do not include firms with negative total revenue or negative export revenue as well as firms with an export revenue greater than the total revenue, which have been wrongly recorded. We exclude the top one percent of the labor productivity distribution in order to avoid that our results are driven by high-productivity firms. The resulting sample is composed of 2300 firms, which sell to 158 countries. It is a typical firm-level export data set (compare Lawless 2009): A firm exports to 10 markets on average, but 50% percent of all firms exports to at most five destinations. This implies that our sample comprises a considerable amount of observations, where the export value is equal to zero. We will take care of this feature of the data as discussed in Section 3. Average total export sales by a firm across its destination markets amount to approximately EUR 9,306,409. Nevertheless, half of the firms export less than EUR 859,478. Average sales of a firm per market amount to EUR 58,901.

Table 1 provides summary statistics for the three main samples we use: In addition to the full sample (*'Full'*), we consider two subsamples: The first subsample consists of all markets where at least 50 firms export to (*'Selection'*). The second subsample (*'Taste'*) consists of those countries, which have participated in the Eurovision Song Contest in 2000, because we use their votes as a proxy for taste similarity. Participant countries are indicated with an asterisk in Table 6.

— *Insert Table 1 around here* —

Based on this cross-sectional dataset and subsamples thereof, we will estimate how emigration affects export sales as described in the subsequent section.

3 Empirical Strategy

This section describes the econometric approach and discusses how we deal with some challenges in order to properly estimate how emigration affects export sales. We use the following model for firm exports V_{fd} in order to identify the effect of the emigration on the intensive margin of firm exports for a cross-section in the year 2001:

$$V_{fd} = \alpha + Z_{fd}\delta + v_{fd}, \quad (1)$$

where $f = 1, \dots, F$ indicates the firm and $d = 1, \dots, D_f$ the country of destination. Z_{fd} collects regressors that vary across destinations d and some that additionally vary within the firm f . In particular, market size, accessibility, institutions and location as well as the variable of interest, namely the Danish emigrant stock in d , are included in Z_{fd} . We include all time-variant regressors in their first lag, i.e., for the year 2000. δ is the parameter vector which is to be estimated, and α is a constant. Moreover, v_{fd} is assumed to be a composite error term such that

$$v_{fd} = c_f + c_{fd} + \epsilon_{fd}, \quad (2)$$

where c_f and c_{fd} are unobservable export determinants on the firm and the firm-destination level, respectively. Our specification allows for unobserved heterogeneity on the firm-level, even though we do not use a panel with a time dimension. It is important to account for firm heterogeneity, because export performance may be affected by unobserved factors like management practices and attitudes of the management. Similarly, we are able to account for specific ties between the firm and the export market. This enables us to avoid a potential bias originating from unobserved factors which drive firm export behavior. ϵ_{fd} is an idiosyncratic error term.

In order to account for bilateral unobserved firm-destination heterogeneity c_{fd} , we use pre-sample information on the firm's past export behavior in order to account for the importance

of fixed cost of exporting, which are partially sunk. These costs are the main driving force of state dependence as acknowledged by recent empirical work by Roberts and Tybout (1997) and Kaiser and Kongsted (2008) as well as by recent theoretical contributions (Jørgensen and Schröder, 2008). Since entry costs are heterogeneous across destination markets and presumably firm-specific, we use pre-sample information to approximate pair-specific unobserved heterogeneity c_{fd} by a firm's export history, which we measure as $S_{fd} = \frac{1}{6} \sum_{t=1995}^{2000} E_{fd}^t$, such that E_{fd}^t is equal to one if firm f exports to market d in time t (and zero else).

In our application, the number of firms F is large relative to the number of their destinations D_f . Thus, we can use the within-transformation to net out unobserved firm-heterogeneity c_f in order to estimate δ :

$$(V_{fd} - \tilde{V}_f) = (Z_{fd}\delta - \tilde{Z}_f) + v_{fd} - \tilde{v}_f, \quad (3)$$

where $\tilde{V}_f = \frac{1}{D_f} \sum_{d=1}^{D_f} V_{fd}$, $\tilde{Z}_f = \frac{1}{D_f} \sum_{d=1}^{D_f} Z_{fd}$ and $\tilde{v}_f = \frac{1}{D_f} \sum_{d=1}^{D_f} v_{fd} = c_f + \frac{1}{D_f} \sum_{d=1}^{D_f} \epsilon_{fd}$. As suggested in Wooldridge (2003), we use the variance-covariance estimator suggested by Arellano (1987), since it is considered to be robust to within-group correlation and heteroscedasticity.

As an alternative estimation strategy, consistent estimation of δ can be achieved by approximating the firm fixed effect. For the proxy variable strategy, we assume that

$$c_f = a + w_f b + \zeta_f, \quad (4)$$

where ζ_f is an error term which is assumed to be uncorrelated with w_f and Z_{fd} across all $d = 1, \dots, D_f$. a and b are parameters. Then, the regression model becomes

$$V_{fd} = (\alpha + a) + Z_{fd}\delta + bw_f + \zeta_f + \epsilon_{fd}. \quad (5)$$

As Melitz (2003) suggests, firm productivity is the driving force between a firm's export behavior. Therefore, we assume that it constitutes an appropriate proxy for unobserved heterogeneity

at the firm level. In a nutshell, we will use one estimation strategy which uses the fixed effects transformation to deal with unobserved firm heterogeneity, and the alternative strategy, which relies on a proxy variable for the unobserved firm fixed effect. Importantly, we would expect the same point estimates from both strategies.

Moreover, we address two additional concerns. First, we need to account for potential endogeneity of the emigrant stock. This endogeneity can stem from two sources: First, if firms send employees abroad in order to expand their export sales in this particular market, a reverse causality problem arises. If firm behavior is anticipatory, lagging the emigrant stock does not solve this problem. We address this concern by instrumenting the emigrant stock by the emigrant flow in 1980. The second source of endogeneity stems from the omission of factors which simultaneously affect emigration and exports. The most important factor are preferences: Countries, where migrants are more prone to settle, may be the countries where preferences are most similar to Denmark (Rauch and Trindade 2002). According to Linder (1961), one would expect these countries with similar preferences to trade more with each other. The common approach to this problem is to assume that preferences are time invariant, and to include country fixed effects (Peri and Requena 2010). We cannot resort to this strategy, because our data lacks the time dimension. Instead, inspired by Felbermayr and Toubal (2010), we include the trade partner's vote for Denmark in the Eurovision Song Contest as a proxy for preferences for a subsample.

Also, our estimation is potentially subject to a sample selection bias, because we only observe firms who decide to export. We use two approaches in order to deal with sample selection. First, we use a state-of-the-art approach, namely the Poisson Pseudo Maximum Likelihood estimation as suggested by Santos Silva and Tenreyro (2006). Secondly, we map the Heckman Selection model for a panel setting as described in Wooldridge (2002, pp. 581) to a framework where selection takes place in each individual country. The estimation of country-specific probit models is not possible for all countries, since some countries do not exhibit enough Danish export firms - for example, only 46 Danish firms export to Tunisia (compare Table 6). Therefore,

in order to be able to estimate the probit models, we restrict our sample to those countries with at least 50 Danish exporters. The choice of 50 as a threshold is to some extent arbitrary, and was made in light of a) a reasonable sample size for a Maximum Likelihood estimation and b) inclusion of as many countries as possible. Using this criterion, we obtain a set of 66 potential export destinations.

4 Empirical Results

4.1 Main Results

This section presents the estimation results. In particular, Table 2 presents our baseline results. Columns 1 - 3 present OLS, IV and Poisson estimation results, whereas column 4 - 6 depict estimation results for the proxy variable strategy. The last column displays results for the sample selection Heckman correction procedure. The full estimation sample as used in the Poisson approach has 361,100 observations. The OLS regressions draw upon a subsample with positive exports and the Heckman Selection approach further restricts the sample to markets which are served by at least 50 Danish exporters.

— *Insert Table 2 around here* —

As our main result, we find that emigration positively affects firm exports throughout all specifications. The size of the effect differs and ranges from an elasticity of 0.032 in column 4 to 0.104 in column 2. Interestingly, the point estimate of both IV estimations (column 2 and 5) is larger than its OLS counterpart (column 1 and 4). This points to the potential presence of measurement error in the emigrant stock leading to an attenuation bias. The estimated elasticities are small relative to estimates in the related literature on immigration networks and exports as summarized in Peri and Requena (2010). However, these works are concerned with the response of trade to immigration rather than emigration. Moreover, in aggregate analysis,

several studies do not find an effect of immigration on imports using aggregate data (for example Gould 1994 and Light et al. 2002). But from our disaggregate perspective, the foreign countries' imports of Danish manufacturing products are indeed affected by the number of Danish immigrants.

Before moving on to a more detailed analysis of the effect of emigration on trade, we will briefly discuss the estimates for the remaining variables included in the model:

State Dependence: The longer a country's export experience with a particular destination - and thus the higher the fixed costs - the larger the export volume. Obviously, the state dependence proxy for pair-specific costs picks up bilateral characteristics like a management preference for a specific region, for example due to composition of the labor force or country of origin of the manager, and thus is not a pure fixed cost proxy. This is a merit rather than a flaw, as these unmeasurable export determinants would otherwise potentially bias the results.

Labor Productivity: As recent theoretical trade models predict (for example Melitz 2003), export sales increase in firm productivity. This holds through all specifications.

Market Size: The parameter estimate on the GDP is positive across all specifications apart from the sample selection model, but it is not always significantly different from zero. It is in line with related findings that a country's size in terms of GDP significantly increases exports (compare Lawless 2010). The size of the population exhibits a positive coefficients in all specifications, apart from the two Poisson models, where the point estimate turns negative. The area coefficient is greater than zero in all specifications apart from the two IV estimations, where it is negative but not significantly different from zero, such that generally export volume increases in the area of the destination country.

Accessibility: Unambiguously, firm exports are negatively affected by distance as it is commonly found in gravity-related literature (see for example Lawless 2010). The further away the country of destination is from all other countries in the world (multilateral resistance), the less exports from Danish companies it receives. This results from an 'extended gravity effect'

(Morales et al. 2011) as a firm can benefit from its export experience from similar markets - for example by drawing upon its own export experience in geographically close and thereby potentially culturally similar countries. Landlockedness exhibits a negative effect on export sales.

Institutions: Institutions are measured by distance from equator and rule of law (Kaufmann et al. 2010). Institutions as measured by rule of law exhibit an unambiguously positive effect on exports. Contrarily, the distance from the equator is estimated to have a negative effect on trade in three out of seven specifications.

Geography: Four out of seven estimations suggest that on average, Scandinavian countries receive a significantly higher export volume. Only in the fixed effects Poisson model (column 3), the Scandinavia dummy is statistically significant and smaller than zero. The Africa and Asia dummies are statistically significant and positive across specifications. This is presumably due to the relative ease of serving the European market, leading to market entry also for firms with low export sales, which in turn lowers average sales in Europe. Countries, which are American seem to exhibit a higher average export value as compared to Europe in all models apart from the Poisson estimations (columns 3 and 6). The coefficient on the Pacific dummy is never statistically significant and at the same time positive. It is significantly negative in all specifications apart from the IV estimation in column 5.

Summing up, we find a positive effect of emigration on firm exports, which is robust across different specifications and samples.² In particular, it is robust to corrections for sample selection. With respect to endogeneity concerns, our instrumental variable approach is comforting: We reject the null hypothesis of underidentification on basis of the Kleibergen-Paap Rank LM-Test at the 1% significance level, and on the basis of the Kleibergen-Paap Rank F-test, we also reject the null hypothesis of weakness of the instrument (Kleibergen and Paap 2006). On basis

²Conclusions remain unchanged when estimating a quantile regression at the median and for a robust regression approach. Results are available from the author on request.

of this sufficiently strong instrument, we cannot reject the Null hypothesis of exogeneity of the emigrant stock in our model.

4.2 Heterogeneity of the Trade-Emigration Link

The remainder of this section explores, whether the link between firm-level exports and emigration is homogeneous across the emigration level, the institutional level in the host country and the size of the exporting firm. Estimation results are summarized in Table 3 and rely on Fixed Effects OLS (henceforth FE OLS), which appropriately accounts for unobserved firm heterogeneity. We do not use Poisson Pseudo Maximum Likelihood, because it does not converge for all subsamples. The specification is the same as in Table 2, but to save space, we only report the estimated emigration coefficient.³

— *Insert Table 3 around here* —

First, we split our sample in three groups according to which tercile of the emigrant stock the country of destination falls. In the list of countries (Table 6), these groups are separated by dashed horizontal lines. Note that the way of subsampling implies different sample sizes for the three groups, because the number of firms exporting to one of these countries is not necessarily the same. On the contrary, the number of firms exporting to the country group increases with the size of the emigrant stock, such that the number of observations is equal to 1172, 3504 and 17785, respectively. We find that only countries with a high level of Danish residents, i.e., with more than 154 Danes, matter for Danish manufacturing exports. For this group of countries, a 1% increase in the emigrant stock brings about a 0.149% increase in Danish export sales. For all other minor receiving countries, the presence of Danes does not significantly affect export sales. This finding is similar to Peri and Requena (2010) who find that the immigrant share

³Full results can be obtained from the author upon request.

needs to be greater than 10% until there is a positive and significant effect of immigration on exports in the time period between 1995 - 2001.

If emigration helps firms to overcome barriers to trade, it is not necessarily clear whether this benefit would accrue to different firms in the same extent. The ability to overcome barriers to trade may differ according to the organizational capacity and size of the firm (OECD 1997), and the internationalization strategies of businesses depend on firm size (Nkongolo-Bakenda et al. 2010). For this reason, we expect that the response of exports to ethnic networks which reduce barriers to trade is not symmetric across small and large firms. In order to explore this conjecture, we split the sample along firm size, and thereby distinguish micro firms with less than 10 employees, small firms with at most 50 employees, medium firms with less than 200 employees and large firms with more than 200 employees. The definition of size groups originates from Volpe Martincus and Carballo (2008). As Table 3 shows, the emigration effect is statistically different from zero only for those samples which contain firms with at least 11 employees. A potential reason for the insignificant effect in the case of micro firms, is that they simply lack labor capacity to actively exploit an emigrant network abroad, or that they are serving a very narrow market segment. For the three larger groups of firms, the effect of emigration on exports ranges between 0.034% for medium sized firms and 0.095% for small firms.

In a nutshell, this allows two intermediate conclusions: First, only large emigrant communities matter for Danish manufacturing exports. Secondly, the main beneficiaries of emigration are small enterprises with less than 50 employees. But in order to substantiate these conclusions, it is necessary to reconsider the possibility that a third - unobserved - factor drives our result. In particular, it may be that the effect of emigration on trade exclusively captures preference similarity between Denmark and the foreign country of residence.

In order to account for this potentially important factor, we include the partner country's vote for Denmark in the Eurovision Song Contest in 2000. This approach is inspired by Felbermayr

and Toubal (2010), who use the votes in the Eurovision Song contest in order to assess the link between cultural proximity and trade. In our case, this strategy requires that we restrict our sample to participating countries (indicated by an asterisk in Table 6). Already the participation of the countries in this contest imposes a certain cultural similarity as compared to the rest of the sample. However, Russia and Israel stand out as the only two Asian participants. Therefore, Table 4 summarizes our estimations for the full Eurovision Sample and the Eurovision Sample without Israel and Russia. As for the estimation methodology, we report both FE OLS and Heckman estimates.

— *Insert Table 4 around here* —

Without inclusion of the taste proxy, we find that emigration fosters exports, whereby the estimated elasticity ranges between 0.056% and 0.113%. This is very similar to the point estimate obtained for the sample with an emigrant stock above 154 emigrants, which has been estimated to be equal to 0.149, and reflects that only in five out of the 22 Eurovision countries, the emigrant stock is below this threshold. The proxy for taste similarity enters all specifications with the expected positive sign and is always statistically significant. We conclude therefore that the proxy is well-suited to our purpose. Including a measure for similar preferences leads to statistical insignificance of the emigrant stock in both, the Heckman and the FE OLS estimation, when considering the full sample. But restricting the sample to non-Asian participants in the Eurovision Song contest, the coefficient drop slightly from 0.113 to 0.065 in the FE OLS estimation and from 0.109 to 0.065 in the Heckman model, and retains its statistical significance at the 10% significance level.

In light of this finding, we would like to assess whether our conclusion with respect to the question, which firms are the main beneficiaries of emigration, remains unaffected when properly accounting for taste similarity. Table 5 summarizes our results for both, the FE OLS and the Heckman Selection model. When using FE OLS, we find that for the Eurovision sample, only small firms which employ between 10 and 50 people benefit from emigration. Without

accounting for taste similarity, the elasticity is equal to 0.102, and inclusion of the proxy leads to a drop in coefficient size to 0.095, and the coefficient is now marginally insignificant at the 10% level. For the more homogeneous sample, which excludes Russia and Israel, we find that initially, only small and large firms export more due to an outflow of Danish workers. When we include the proxy for taste similarity, only small firms keep benefitting from Danish emigrant networks abroad. An 1% increase in the emigrant stock abroad leads to a 0.11% increase in manufacturing exports of small Danish firms. These findings are corroborated by the Heckman Selection model, where the main beneficiaries also turn out to be small firms: A 1% increase in the emigrant stock is associated with a 0.12% (0.132%) increase in firm exports for the full sample (excluding Russia and Israel) when accounting for taste similarity.

Thus, we can conclude that emigration matters on top of taste similarity even in a sample, which comprises countries which are already rather homogeneous. Zooming in even further, we find that the only beneficiaries of the outflow of Danish workers are those firms who - according to the OECD (1997, p. 57) "have greater difficulties in handling practical export management and adjusting organizationally to international challenges". In this spirit, emigration can be understood as helping to promote small and medium sized enterprises in the internationalization process.

5 Conclusion

In this paper, we use firm-level data for Denmark in 2001 in order to explore the link between emigration and exports. This enables us to account for unobserved heterogeneity and selection into exporting. We acknowledge that it is essential to account for taste similarity between Denmark and its trade partner countries as a major confounding factor when assessing the export-emigration nexus and include a measure of taste similarity in our model. Moreover, motivated by recent research on small and medium enterprises, we assess whether the emigration effect is heterogeneous across different firm sizes.

Our analysis corroborates the finding that migration plays a trade-promoting role on the basis of a micro-level dataset. In a nutshell, we find that the expatriate community must be large, i.e., in the upper tercile of the emigration distribution, before we find a significant and positive link between exports and emigration. Thus, lower marketing cost for Danish firms due to superior communication within the Danish network abroad and their increased demand for Danish products seems to play an important role. Importantly, this holds true for countries which are culturally similar, namely the European participants in the Eurovision Song Contest. Accounting for similar preferences, we establish a positive effect of emigration on exports. But as a new insight, this benefit does not accrue to all firms: Only small enterprises, which employ between 10 and 50 employees, experience an increase in their exports in response to emigration. More precisely, for this type of businesses, a 1% increase in the Danish emigrant stock implies an increase in export sales to that country of 0.132%. Thus, the bottom line is that those firms who face most difficulties in the internationalization process successfully use ethnic ties for expanding their sales abroad.

This paper opens up to explore whether this positive link between emigration and the exports of small firms can also be found for developing countries. Especially in these countries, the feedback effect of emigration on the internationalization of small enterprises provides a promising road to compensate potential brain losses due to high-skilled emigration.

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Table 1: Summary Statistics of Three Main Subsamples

	Full (N=22461)				Selection (N=21230)				Taste (N=12664)			
	Mean	Std.	Min	Max	Mean	Std.	Min	Max	Mean	Std.	Min	Max
Export Value in DKK (ln)	13.282	2.267	-0.013	23.255	13.331	2.280	-0.013	23.255	13.520	2.309	1.371	21.887
Emigrant Stock (ln of 1000)	0.397	2.486	-6.908	3.712	0.630	2.313	-6.215	3.712	1.579	1.794	-4.828	3.712
Labor Productivity (ln)					13.868	0.497	11.830	15.885	13.847	0.501	11.830	15.885
Song Contest Vote									10.218	2.263	0.000	12.000
State Dependence	0.725	0.309	0.167	1.000	0.733	0.307	0.167	1.000	0.762	0.301	0.167	1.000
Multilateral Resistance	6706.360	16.648	6638.750	6718.040	6707.244	16.420	6638.750	6718.040	6715.766	2.661	6706.180	6718.040
Scandinavia	0.126	0.331	0.000	1.000	0.133	0.340	0.000	1.000	0.223	0.416	0.000	1.000
America	0.089	0.285	0.000	1.000	0.079	0.270	0.000	1.000				
Asia	0.156	0.363	0.000	1.000	0.148	0.355	0.000	1.000	0.036	0.187	0.000	1.000
Africa	0.041	0.199	0.000	1.000	0.021	0.144	0.000	1.000				
Oceania	0.021	0.144	0.000	1.000	0.022	0.146	0.000	1.000				
GPP (ln)	19.564	1.617	12.788	23.128	19.682	1.550	15.841	23.128	19.561	1.457	15.841	21.594
Population (ln)	9.647	1.590	3.666	14.054	9.669	1.584	5.639	14.054	9.351	1.459	5.639	11.896
Area (ln)	12.291	1.878	3.219	16.653	12.314	1.864	5.756	16.653	12.073	1.296	5.756	16.653
Landlockedness (Dummy)	0.103	0.304	0.000	1.000	0.103	0.303	0.000	1.000	0.106	0.308	0.000	1.000
Distance (ln)	7.426	1.066	6.185	9.812	7.355	1.045	6.185	9.812	6.767	0.492	6.185	8.052
Latitude	40.828	22.723	-44.283	64.150	42.362	21.905	-44.283	64.150	52.900	7.012	32.083	64.150
Rule of Law	1.142	0.800	-2.001	1.925	1.234	0.708	-1.059	1.925	1.539	0.545	-1.059	1.925

This Table depicts summary statistics for our three main samples. *Full*: FE OLS estimation sample (positive export sales only), *Selection*: Country-Heckman Sample (including only countries with at least 50 Danish exporters), *Taste*: Includes only those countries which have participated in the Eurovision Song Contest (Subsample of *Selection*).

Table 2: Emigration and Exports: Main Results

	Fixed Effect Models			Proxy Variable Strategy			
	1	2	3	4	5	6	7
	OLS	IV	Poisson	OLS	IV	Poisson	C-Heck
Emigrant Stock	0.052 (0.000)	0.104 (0.000)	0.063 (0.003)	0.032 (0.002)	0.049 (0.004)	0.059 (0.096)	0.039 (0.001)
State Dependence	2.103 (0.000)	2.062 (0.000)	6.705 (0.000)	1.642 (0.000)	1.632 (0.000)	2.74 (0.000)	7.525 (0.000)
Labor Productivity				0.741 (0.000)	0.972 (0.000)	0.803 (0.000)	0.889 (0.000)
Market Size							
GDP (ln)	0.242 (0.000)	0.261 (0.000)	0.231 (0.167)	0.088 (0.051)	0.075 (0.133)	0.372 (0.014)	-0.007 (0.892)
Population (ln)	0.035 (0.452)	0.067 (0.143)	-0.22 (0.000)	0.169 (0.000)	0.231 (0.000)	-0.331 (0.000)	0.267 (0.000)
Area (ln)	0.058 (0.000)	-0.0004 (0.973)	0.506 (0.000)	0.029 (0.032)	-0.012 (0.377)	0.514 (0.000)	0.027 (0.000)
Accessibility							
Distance (ln)	-0.972 (0.000)	-0.865 (0.000)	-0.896 (0.000)	-0.851 (0.000)	-0.746 (0.000)	-0.799 (0.000)	-0.809 (0.000)
Multilateral Resistance	-0.042 (0.000)	-0.043 (0.000)	-0.013 (0.568)	-0.031 (0.000)	-0.027 (0.000)	-0.012 (0.671)	-0.029 (0.000)
Landlockedness (1 if landlocked)	-0.445 (0.000)	-0.368 (0.000)	-1.089 (0.000)	-0.439 (0.000)	-0.432 (0.000)	-1.050 (0.000)	-0.434 (0.000)
Institutions							
Rule of Law	0.227 (0.000)	0.152 (0.004)	1.337 (0.000)	0.138 (0.002)	0.157 (0.046)	1.322 (0.000)	0.180 (0.000)
Distance to equator (ln)	0.006 (0.000)	0.012 (0.000)	-0.033 (0.027)	0.004 (0.413)	-0.004 (0.061)	-0.034 (0.033)	0.002 (0.316)
Geography							
Scandinavia (1 if Scandinavia)	0.122 (0.049)	0.216 (0.002)	-1.012 (0.001)	-0.001 (0.981)	0.110 (0.110)	1.046 (0.001)	0.013 (0.850)
Africa (1 if Africa)	0.693 (0.000)	0.380 (0.000)	1.515 (0.000)	0.581 (0.000)	0.370 (0.093)	1.399 (0.000)	0.814 (0.000)
America (1 if America)	0.102 (0.275)	0.085 (0.351)	-1.335 (0.001)	0.355 (0.000)	0.392 (0.000)	-1.469 (0.000)	0.320 (0.001)
Asia (1 if Asia)	0.358 (0.000)	0.296 (0.000)	0.901 (0.026)	0.522 (0.000)	0.500 (0.000)	0.849 (0.064)	0.519 (0.000)
Pacific (1 if Pacific)	-0.725 (0.000)	-0.446 (0.017)	-4.643 (0.000)	-0.271 (0.127)	0.019 (0.918)	-4.749 (0.000)	-0.240 (0.253)
Obs	22461	19873	361100	22461	20419	361100	21230
Firms	2300	1681	2300	2300	2263	2300	2300
Adj R^2	0.125	0.228		0.204	0.208		0.220
Wald χ^2 (p)			0.000			0.000	0.000
Exogeneity of Emigrant Stock (p)					0.292		
Kleibergen-Paap rk LM (p)		0.000			0.000		
H_0 : Underidentification							
Kleibergen-Paap rk F (F)		11362.96			11986.5		
H_0 : Weak Identification							
Critical Value		16.38			16.38		

This Table presents the main estimation results for the full sample. Standard errors are cluster-robust (by firm) all columns apart from the Heckman Selection model, which reports bootstrapped standard errors with 399 repetitions. The Proxy Variable Strategy estimations include industry and municipality dummies. For both IV regressions, the excluded instrument is the bilateral emigrant flow in 1980. Kleibergen-Paap test for underidentification has been suggested in Kleibergen and Paap (2006).

Table 3: Emigration Intensity, Firm Size and the Emigration-Trade Link

	EMIGRATION INTENSITY			FIRM SIZE			
	Low 1-14	Medium 15-152	High >154	Micro <10	Small 11-50	Medium 50-200	Large >200
FE OLS	-0.022 (0.838)	0.065 (0.185)	0.149 (0.000)	0.094 (0.197)	0.095 (0.000)	0.034 (0.035)	0.059 (0.000)
Observations	1172	3504	17785	896	6888	8102	6575
Firms	461	913	2257	361	1104	600	235
R^2							
Within	0.277	0.144	0.281	0.209	0.206	0.272	0.363
Between	0.087	0.046	0.035	0.042	0.061	0.053	0.0001
Overall	0.142	0.065	0.132	0.096	0.139	0.209	0.196

This Table presents the FE OLS estimation results for three different groups of subsamples: The emigration intensity subsamples consist of three different and equally sized quantiles of the emigrant stock. Additionally, we consider four different size groups defined as: Micro firms: < 10 employees, Small Firms: 10 – 50 employees, Medium Firms: 50 – 200 employees, Large Firms: More than 200 employees. P-Values in brackets. Standard errors are cluster-robust (by firm).

Table 4: The Emigration Effect and Taste Similarity

	FE OLS		FE OLS excl. Russia & Israel		C-Heck		C-Heck excl. Russia & Israel	
Emigrant Stock	0.075 (0.009)	0.027 (0.401)	0.113 (0.001)	0.065 (0.064)	0.056 (0.066)	0.002 (0.945)	0.109 (0.000)	0.065 (0.078)
Taste Similarity		0.046 (0.000)		0.036 (0.008)		0.052 (0.000)		0.033 (0.040)
State Dependence	2.239 (0.000)	2.261 (0.000)	2.295 (0.000)	2.314 (0.000)	4.829 (0.041)	4.721 (0.046)	4.773 (0.047)	4.708 (0.050)
Labor Productivity					0.899 (0.000)	0.896 (0.000)	0.876 (0.000)	0.875 (0.000)
Market Size								
GDP (ln)	-0.658 (0.000)	-0.587 (0.000)	-0.959 (0.000)	-0.809 (0.000)	-1.168 (0.000)	-1.076 (0.000)	-1.604 (0.000)	-1.462 (0.000)
Population (ln)	1.279 (0.000)	1.223 (0.000)	1.433 (0.000)	1.340 (0.000)	1.758 (0.000)	1.685 (0.000)	1.984 (0.000)	1.900 (0.000)
Area (ln)	-0.082 (0.084)	-0.082 (0.084)	-0.052 (0.275)	-0.050 (0.293)	-0.148 (0.007)	-0.124 (0.027)	-0.745 (0.166)	-0.074 (0.174)
Accessibility								
Distance (ln)	-1.961 (0.000)	-2.098 (0.000)	-1.991 (0.000)	-2.082 (0.000)	-1.433 (0.000)	-1.599 (0.000)	-1.531 (0.000)	-1.617 (0.000)
Multilateral Resistance	-0.357 (0.000)	-0.384 (0.000)	0.038 (0.019)	-0.343 (0.000)	-0.271 (0.001)	-0.305 (0.000)	-0.211 (0.002)	-0.245 (0.000)
Landlockedness (1 if landlocked)	0.025 (0.828)	0.051 (0.663)	-0.239 (0.076)	-0.136 (0.337)	-0.034 (0.801)	0.004 (0.987)	-0.414 (0.004)	-0.316 (0.035)
Institutions								
Rule of Law	0.720 (0.000)	0.602 (0.000)	1.046 (0.000)	0.850 (0.000)	0.812 (0.000)	0.673 (0.000)	1.293 (0.000)	1.113 (0.000)
Distance to equator (ln)	0.071 (0.000)	0.065 (0.000)	0.038 (0.019)	0.043 (0.007)	-1.433 (0.000)	0.055 (0.001)	0.012 (0.488)	0.018 (0.316)
Geography								
Scandinavia (1 if Scandinavia)	0.368 (0.006)	0.451 (0.001)	0.207 (0.127)	0.322 (0.024)	0.363 (0.019)	0.463 (0.003)	0.129 (0.400)	0.237 (0.143)
Asia (1 if Asia)	0.151 (0.411)	-0.283 (0.203)			0.339 (0.110)	-0.158 (0.539)		
Obs	12664	12664	12202	12202	12664	12664	12202	12202
Adj R^2	0.296	0.297	0.300	0.300	0.233	0.234	0.234	0.240
Wald χ^2 (p)					0.000	0.000	0.000	0.000

This Table presents the FE OLS and Heckman estimations for the Eurovision Song Contest Subsample. P-Values in brackets. Standard errors are cluster-robust (by firm) for the FE OLS estimations, and bootstrapped with 399 repetitions for the Heckman estimation.

Table 5: Firm Size and Emigration

	Full Sample		Without Israel and Russia	
	without Proxy	with Proxy	without Proxy	with Proxy
FE OLS				
Micro Firms	0.134 (0.469)	0.148 (0.446)	0.145 (0.439)	0.171 (0.366)
Small Firms	0.102 (0.057)	0.095 (0.109)	0.113 (0.044)	0.111 (0.089)
Medium Firms	-0.016 (0.732)	-0.075 (0.164)	0.034 (0.479)	-0.023 (0.700)
Large Firms	0.051 (0.265)	-0.001 (0.982)	0.095 (0.039)	0.041 (0.479)
C-HECK				
Micro Firms	0.075 (0.746)	0.051 (0.834)	0.143 (0.525)	0.142 (0.561)
Small Firms	0.153 (0.005)	0.124 (0.040)	0.165 (0.004)	0.132 (0.049)
Medium Firms	0.011 (0.831)	-0.045 (0.402)	0.068 (0.203)	0.025 (0.676)
Large Firms	0.050 (0.331)	0.001 (0.990)	0.091 (0.091)	0.041 (0.516)

This Table presents point estimates and p-values (in brackets) for four different size groups. We define: Micro firms: < 10 employees, Small Firms: 10 – 50 employees, Medium Firms: 50 – 200 employees, Large Firms: More than 200 employees. Standard errors are cluster-robust (by firm). Significance at the 10% significance level indicated in bold print.

Table 6: List of Countries

	Country	Emigrant Stock	Number of Exporters				
			Total	by Firm Size			
				Micro	Small	Medium	Large
1	Sweden*	40921	1166	40	482	437	207
2	Germany*	35343	1243	43	516	471	213
3	United States of America	34089	701	57	244	256	144
4	Norway*	19756	1656	225	761	465	205
5	United Kingdom*	18869	970	30	361	388	191
6	Canada	18400	343	17	110	123	93
7	Australia	9024	308	12	80	122	94
8	France*	5864	811	21	288	319	183
9	Spain*	5749	607	16	195	237	159
10	Switzerland*	4530	733	46	267	266	154
11	Philippines	3861	92	2	9	30	51
12	Turkey*	3372	184	2	34	66	82
13	Netherlands*	3232	920	31	337	360	192
14	Belgium and Luxembourg*	2973	709	18	246	281	164
15	Pakistan	2626	49	1	4	15	29
16	Italy	2595	576	14	181	225	156
17	Iceland*	2476	578	43	201	205	129
18	Luxembourg	1526	137	1	40	58	38
19	New Zealand	1435	156	2	37	54	63
20	Kuwait	1268	83	0	8	29	46
21	Latvia*	1214	197	6	59	69	63
22	Austria*	1157	612	19	219	227	147
23	South Africa	978	188	6	35	75	72
24	Jordan	923	73	0	11	23	39
25	Greece	831	339	4	88	137	110
26	Russian Federation*	786	210	5	43	79	83
27	Poland	717	640	37	227	236	140

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Table 6: List of Countries

	Country	Emigrant Stock	Number of Exporters				
			Total	by Firm Size			
				Micro	Small	Medium	Large
28	Argentina	711	104	1	18	31	54
29	Finland*	708	772	20	279	294	179
30	Tanzania, United Rep. of	700	18	0	7	5	6
31	Ireland*	698	410	7	129	161	113
32	Uzbekistan	616	7	0	0	1	6
33	Indonesia	504	93	3	12	33	45
34	Israel*	486	252	6	74	85	87
35	Ukraine	445	65	1	7	23	34
36	Thailand	437	150	3	36	54	57
37	Portugal	387	356	6	106	140	104
38	Zimbabwe	378	15	0	6	2	7
39	Brazil	361	136	2	25	49	60
40	Nepal	355	8	0	3	1	4
41	United Arab Emirates	354	182	2	34	67	79
42	Egypt	312	112	3	14	44	51
43	Japan	311	401	19	127	142	113
44	Mexico	238	115	1	22	39	53
45	Libyan Arab Jamahiriya	237	9	0	0	2	7
46	Chile	221	115	4	16	40	55
47	Lebanon	215	78	1	11	23	43
48	Algeria	196	17	0	3	8	6
49	Burkina Faso	177	7	0	0	5	2
50	Ghana	174	24	1	2	10	11
51	Nigeria	162	37	0	5	14	18
52	Cote d'Ivoire	154	21	0	2	8	11
53	Malaysia	152	147	2	24	50	71
54	Hong Kong	143	227	13	48	81	85
55	Kenya	140	41	1	5	8	27

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Table 6: List of Countries

	Country	Emigrant Stock	Number of Exporters				
			Total	Micro	Small	Medium	Large
56	Czech Republic	136	321	19	76	122	104
57	China	135	186	4	40	76	66
58	Mozambique	119	2	0	0	1	1
59	Venezuela	117	57	0	6	18	33
60	Morocco	110	48	2	4	14	28
61	Guinea	101	5	0	1	2	2
62	Hungary	100	259	10	57	102	90
63	Cuba	94	8	0	0	1	7
64	Colombia	94	53	0	7	14	32
65	Lithuania	89	242	20	68	77	77
66	Yemen	86	26	0	2	6	18
67	India	80	121	1	19	43	58
68	Romania*	72	99	0	19	33	47
69	Namibia	69	150	8	41	41	60
70	Bolivia	66	10	0	1	1	8
71	Taiwan	61	170	5	36	55	74
72	Ecuador	57	33	0	3	11	19
73	Peru	54	50	0	6	16	28
74	Ethiopia	51	14	0	0	5	9
75	Iraq	51	7	0	1	0	6
76	Malawi	50	6	0	1	1	4
77	Cyprus*	48	123	2	18	39	64
78	Uruguay	48	39	0	2	11	26
79	Nicaragua	46	5	0	0	2	3
80	Kyrgyzstan	45	3	0	0	1	2
81	Moldova, Rep.of	45	7	0	0	1	6
82	Panama	39	27	0	5	6	16

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Table 6: List of Countries

	Country	Emigrant Stock	Number of Exporters				
			Total	by Firm Size			
				Micro	Small	Medium	Large
83	Croatia*	39	94	0	16	33	45
84	Syrian Arab Republic	38	31	0	2	7	22
85	Cameroon	38	13	0	1	6	6
86	Costa Rica	36	20	0	4	4	12
87	Zambia	35	3	0	0	1	2
88	Dominican Republic	33	25	0	2	6	17
89	Sri Lanka	33	47	1	7	17	22
90	Bahamas	31	5	0	0	1	4
91	Angola	30	6	0	0	3	3
92	Turkmenistan	29	3	0	1	0	2
93	Bahrain	26	62	0	6	24	32
94	Singapore	26	215	8	56	73	78
95	Viet Nam	23	46	0	6	15	25
96	Togo	21	8	1	1	2	4
97	Honduras	21	8	0	0	2	6
98	Estonia*	21	247	9	68	80	90
99	Paraguay	21	12	0	0	4	8
100	Belarus	18	27	2	1	11	13
101	Slovakia	17	117	0	21	46	50
102	Antigua and Barbuda	16	4	0	0	1	3
103	Congo	16	9	0	1	5	3
104	Kazakistan	15	16	0	0	5	11
105	Swaziland	14	3	0	0	2	1
106	Madagascar	14	12	0	0	4	8
107	Iran	13	47	0	4	16	27
108	Uganda	13	9	0	1	2	6
109	Gambia	12	5	0	0	0	5
110	Oman	12	54	0	4	12	38

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Table 6: List of Countries

	Country	Emigrant Stock	Number of Exporters				
			Total	Micro	Small	Medium	Large
				by Firm Size			
111	Georgia	12	5	0	0	2	3
112	Bulgaria	12	83	1	13	26	43
113	Senegal	11	15	0	3	4	8
114	Saudi Arabia	10	157	2	31	57	67
115	Trinidad and Tobago	10	21	0	1	8	12
116	Armenia	10	5	0	0	1	4
117	Haiti	10	10	0	3	4	3
118	Djibouti	9	3	0	1	1	1
119	Malta*	8	71	0	11	24	36
120	Mali	8	3	0	1	0	2
121	Bermuda	8	5	0	1	2	2
122	Liberia	8	7	0	1	4	2
123	Albania	8	1	0	0	0	1
124	Belize	8	4	0	0	0	4
125	Slovenia	7	156	3	32	55	66
126	Papua New Guinea	6	10	1	0	3	6
127	Chad	6	1	0	0	1	0
128	Cambodia	5	3	0	0	1	2
129	Eritrea	5	6	0	1	1	4
130	Tunisia	5	46	0	6	16	24
131	Rwanda	5	4	0	0	1	3
132	Bangladesh	4	29	0	1	9	19
133	Gabon	4	6	0	0	1	5
134	Grenada	4	4	0	0	1	3
135	Suriname	3	6	0	0	1	5
136	Cape Verde	3	6	0	1	0	5
137	Benin	3	3	0	1	0	2

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Table 6: List of Countries

	Country	Emigrant Stock	Number of Exporters				
			Total	Micro	Small	Medium	Large
138	Seychelles	3	5	0	1	1	3
139	Mongolia	3	4	0	2	1	1
140	Macau (Aomen)	3	3	0	0	1	2
141	Tonga	3	1	0	0	0	1
142	Saint Kitts and Nevis	2	2	0	0	0	2
143	Barbados	2	19	0	0	6	13
144	Korea	2	196	3	49	70	74
145	Sierra Leone	2	10	0	2	4	4
146	Lesotho	2	1	0	0	1	0
147	El Salvador	2	11	0	0	5	6
148	Mauritius	2	32	0	6	10	16
149	Fiji	2	4	0	0	3	1
150	Brunei Darussalam	2	2	0	0	1	1
151	Dominica	1	2	0	0	0	2
152	Guatemala	1	27	0	5	7	15
153	Bosnia and Herzegovina	1	23	0	1	8	14
155	Maldives	1	6	0	0	0	6
157	Guinea-Bissau	1	2	0	0	1	1
158	Jamaica	1	15	0	1	5	9
TOTAL	158	237440	22461	896	6888	8102	6575

This Table lists all countries included in our sample ranked by the number of Danish residents. Moreover, it adds the number of Danish manufacturing firms serving the market in 2001. An asterisk indicates participation in the Eurovision Song Contest. Dashed lines separate the 33.3% terciles.