The Export Promoting Effect of Emigration: Evidence from Denmark *

Sanne Hiller†

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Abstract

Emigration encourages firm internationalization. This claim has found empirical support in the literature on business networks and international trade. To our best knowledge, this paper pioneers the assessment of the trade creation effect of migration using firm-level data with country-specific exports. Do Danish emigrant communities boost Danish exports? We combine a linked employer-employee data set with bilateral migrant stock data. Guided by recent theoretical work, we parsimoniously control for export determinants other than emigration, and establish a robust, positive effect of emigration on Danish firm-level exports.

Keywords: International Trade, Migration, Firm-level analysis

JEL-Codes: F16, F22

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† sanh@asb.dk; Department of Economics, Aarhus School of Business, Aarhus University, Hermodsvej 22, 8230 Aabyhøj, Denmark
1 Motivation

There is good reason to believe that emigration encourages exports: First, a diaspora may ease the market access abroad, because migrants carry relevant market-specific information. Secondly, a substantial share of emigrants abroad may increase the import demand for goods from their home country by lowering the home bias of consumption in the foreign country (Combes et al. 2005). As the first channel runs through the fixed cost of exporting, it presumably affects the number of firms exporting to a particular market, whereas the second channel runs through the intensive margin of exporting.

Recent empirical evidence is supportive of a positive effect of migration on trade on different aggregation levels: According to Girma and Yu (2002), imports and exports of the UK increase in the level of non-Commonwealth immigrants on the country-level. Using bilateral data on French inter- and intraregional trade, Combes et al. (2005) find that migration networks approximately double trade within France. Felbermayr and Jung (2009) establish a robust trade-boosting causal effect of high- and low-skilled emigration into OECD countries in a gravity model. A recent analysis of Bandyopadhyay et al. (2008) finds evidence for a positive effect of immigration networks based on U.S. regional export data. Most recently, Peri and Requena (2010) establish a positive effect of immigration: They use regional transaction data on exports by destination to establish that immigration boosts exports along the intensive, but not through the extensive margin. Felbermayr et al. (2009) confirm that Chinese networks are beneficial to trade and establish a strong heterogeneity across different ethnic networks.

To our best knowledge, this paper pioneers the assessment of the trade creation effect of migration using firm-level data with export destinations. It assesses the preference channel of Danish emigration communities: Do Danes abroad boost the intensive margin of firm exports? In order to properly identify the preference channel, we account for firm-destination specific fixed costs. The unique data set combines Danish register data with bilateral migration data provided by the World Bank.\footnote{http://www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html}

Guided by recent theoretical work on the determinants of exporting (Melitz 2003, Jørgensen and Schröder, 2008), we parsimoniously control for export determinants other than emigration, and establish a robust, positive effect of emigration on Danish firm-level exports.
2 Stylized Facts

Our data set combines Danish firm-level data with macroeconomic variables as provided by Felbermayr et al. (2010). The availability of emigrant stock data requires a cross-sectional analysis for the year 2000. Firm-level data is provided by Statistics Denmark: Data on exports is destination specific and covers around 10,500 different goods measured in value. The second data source is the “Integrated Database for Labor Market Research”, a longitudinal employer-employee register for the period 1980-2005. The third data source are business accounts (RENSKAB), which cover the manufacturing industry from 1995 onwards.

For data consistency, 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. To ensure comparability across studies, we follow Wagner (2008) and exclude the top one percent of the labor productivity distribution and with less than 20 employees. The resulting sample is composed of 592 exporting firms, which sell to 74 countries. A firm exports to 8 markets on average. However, 50% percent of all firms exports to at most three destinations. Average total export sales by a firm across its destination markets amount to 14,598,936 DKK (corresponding to 1,959,588.80 EUR). However, half of the firms export less than 2,829,041 DKK. Average sales of a firm per market amount to 2,015,055 DKK, whereby the median is equal to 333,561. Most Danish emigrants live in Sweden (around 40000) - whereas some export destinations (Macedonia and Sudan) do not host Danes. The average destination in our sample features 1807 Danes, whereby the median number of emigrants is equal to 110.

3 Empirical Strategy

To identify the effect of the emigration on the intensive margin of firm exports, we use a hierarchical model for firm exports $V_{fd}$:

$$V_{fd} = \alpha + \delta'Z_{fd} + \nu_{fd},$$

(1)

where $f = 1, ..., F$ indicates the firm and $d = 1, ..., D_f$ the country of destination. $Z_{fd}$ collects regressors that vary across destinations $d$ and some that additionally vary within the firm $f$. 

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Moreover, $v_{fd}$ is assumed to be a composite error term such that

$$v_{fd} = c_f + \epsilon_{fd},$$

(2)

where $c_f$ is an intrinsic export determinant on the firm level and $\epsilon_{fd}$ is an idiosyncratic error.

Market size, accessibility, institutions and location as well as the variable of interest, namely the Danish emigrant stock in $d$, are included in $Z_{fd}$. Recent theoretical contribution highlight the importance of fixed cost heterogeneity (Jørgensen and Schrøder, 2008). Presumably, not only (periodically incurred) export fixed cost, but also unobserved sunk entry costs are specific to firm-destination couples. Their omission introduces an endogeneity problem. Inspired by Blundell et al. (2002), we exploit pre-sample information on the firm’s export history. Exporting is highly state dependent (Roberts and Tybout 1997, Kaiser and Kongsted 2008). The unobservable driving force behind state dependence is the sunk entry cost, which generates hysteresis under uncertainty along the lines of Dixit (1989). Thus, the realized degree of state dependence serves as a proxy for its underlying cause. Since entry costs are not homogeneous across destination markets, we use pre-sample information to measure state dependence, such that

$$S_{fd} = \frac{1}{4} \sum_{t=1995}^{1998} E_{fd}^t,$$

(3)

where $E_{fd}^t$ is equal to one if firm $f$ exports to market $d$ in time $t$ (and zero else).

First, 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 and estimate $\delta$ in:

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

(4)

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 is robust to any form of within-group correlation and heteroskedasticity.

Secondly, consistent estimation of $\delta$ can be achieved by approximating the firm fixed effect. For
the proxy variable strategy, we assume that

$$c_f = a + bw_f + \zeta_f,$$  \hspace{1cm} (5)

where $\zeta_f$ is an error term which is uncorrelated with $w_f$ and $X_{fd}$ across all $d = 1, ..., D_f$. Then, the regression model becomes

$$V_{fd} = (\alpha + a) + \delta Z_{fd} + bw_f + \zeta_f + \epsilon_{fd},$$  \hspace{1cm} (6)

As Melitz (2003) suggests, firm productivity is the driving force between a firm’s export behavior, and thus recommends itself to proxy the firm-specific effect.

4 Empirical Results

The empirical results are summarized in Table 1, which provides three distinct specifications for a) the within-transformation and b) the proxy variable strategy. The first specification estimates a plain firm-level gravity model. The second specification adds emigration, the third one introduces a measure for fixed entry cost of exporting to ensure proper identification of the preference channel.

Our core result is robust across both estimation strategies and specifications: A stock of Danes abroad boosts firm exports along the intensive margin. Importantly, the effect prevails on top of state dependence due to entry cost. Thus, abstracting from the market access channel, we find that emigration matters by stimulating import demand from their country of origin.

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.

As shown in equation (6), the proxy variable strategy enables us to assess the effect of labor productivity on export value. Labor productivity is measured as sales per worker, and it positively relates to export sales. However, this estimation strategy is likely to introduce a bias in
Table 1: Estimation Results

<table>
<thead>
<tr>
<th>Within-Transformation Proxy Variable Strategy</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emigrant Stock (in thousands)</td>
<td>0.029&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.027&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.027&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.028&lt;sup&gt;b&lt;/sup&gt;</td>
<td>(0.004)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>State Dependence</td>
<td>1.714&lt;sup&gt;b&lt;/sup&gt;</td>
<td>(0.142)</td>
<td>(0.124)</td>
<td>(0.150)</td>
<td>(0.152)</td>
<td>(0.137)</td>
</tr>
<tr>
<td>Labor Productivity</td>
<td>1.04&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.052&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.837&lt;sup&gt;b&lt;/sup&gt;</td>
<td>(0.150)</td>
<td>(0.152)</td>
<td>(0.137)</td>
</tr>
<tr>
<td>Market Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>GDP (ln)</td>
<td>0.645&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.505&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.353&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.490&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.356&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.256</td>
</tr>
<tr>
<td>Population (ln)</td>
<td>-0.211&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.136</td>
<td>-0.038</td>
<td>-0.091</td>
<td>-0.016</td>
<td>0.249</td>
</tr>
<tr>
<td>Area (ln)</td>
<td>-0.071&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-0.074&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-0.068&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-0.074&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-0.077&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.163</td>
</tr>
<tr>
<td>Accessibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Distance (ln)</td>
<td>-0.430&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.350&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.331&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.279&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.209&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-0.255&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Multilateral Resistance (ln)</td>
<td>0.193&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.226&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.201&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.148&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.179&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.190&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Landlockedness (1 if landlocked)</td>
<td>-0.177</td>
<td>-0.122</td>
<td>-0.134</td>
<td>-0.103</td>
<td>-0.048</td>
<td>-0.054</td>
</tr>
<tr>
<td>Institutions</td>
<td></td>
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<td></td>
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<tr>
<td>Distance to equator (ln)</td>
<td>0.910&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.853&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.892&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.003&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.902&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-1.271</td>
</tr>
<tr>
<td>Geography</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scandinavia&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.772&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.333&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.199</td>
<td>0.648&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.237</td>
<td>-0.922&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Africa&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.416&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.175</td>
<td>0.151</td>
<td>0.232</td>
<td>0.001</td>
<td>-1.133</td>
</tr>
<tr>
<td>America&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.045</td>
<td>-0.482&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-0.29</td>
<td>-0.071</td>
<td>-0.569&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-1.577</td>
</tr>
<tr>
<td>Asia&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.142</td>
<td>0.014</td>
<td>0.135</td>
<td>0.049</td>
<td>-0.069</td>
<td>-0.973</td>
</tr>
<tr>
<td>Pacific&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-0.515</td>
<td>-0.99&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.856&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-0.538</td>
<td>-0.963&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-1.742</td>
</tr>
<tr>
<td>Observations</td>
<td>4289</td>
<td>4289</td>
<td>4289</td>
<td>4289</td>
<td>4289</td>
<td>4289</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.31</td>
<td>0.32</td>
<td>0.35</td>
<td>0.14</td>
<td>0.15</td>
<td>0.19</td>
</tr>
</tbody>
</table>

All specifications include a constant and industry dummies (not reported). Cluster-robust standard errors in brackets. <sup>a</sup>, <sup>b</sup> and <sup>c</sup> indicate significance at the nominal 1, 5 and 10 % level, respectively. <sup>*</sup> Continent dummies are equal to 1 if destination is on continent.

the estimation due to a correlation between $\zeta_f$ and the state dependence of exporting. Thus, column (3) is our preferred specification and subsequently in focus.

**Market Size:** A country’s size in terms of GDP significantly increases Danish exports. The size of the population exhibits a negative, but insignificant effect, whereas export volume decreases

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<sup>2</sup>To attenuate endogeneity concerns, all time-variant variables are included in their first lag.
in the destination’s area. This presumably reflects the greater cost of distribution.

**Accessibility:** Moreover, foreign sales decrease in distance. Interestingly, the further away the country of destination is from all other countries in the world (multilateral resistance), the more exports from Danish companies it receives. This suggests that - ceteris paribus - exporters target a particular foreign national market rather than broadly targeting a region. Moreover, in these relatively remote places, import competition from other exporting countries may simply be lower. Landlockedness exhibits no significant effect.

**Institutions:** We measure institutions by a country’s distance from equator. Better institutions significantly foster exports.

**Geography:** There is no evidence for the destination’s continent to matter. This lends support to the previously discussed national market targeting.

It can be seen from column (2), (5) and (6) that this main result is robust across specifications. Anyways, the proxy variable strategy estimates of market size variables all differ in sign, where GDP and area lose their significance. Moreover, institutions turn to exhibit a negative, but insignificant effect. However, the proxy variable strategy is likely to be biased.

Quantitatively, a rise of the expatriate community abroad by 1000 Danes in an export destination raises the firm exports by 0.027 percent. For emigrant-sending countries other than Denmark, this effect via the preference channel may be read as an upper bound: As found by Felbermayr et al. (2009), the Danish diaspora ranks third after Ghana and Morocco in boosting trade.

5 **Conclusion**

This paper assesses the effect of emigration on firm exports by country of destination. Accounting for unobserved firm-destination specific fixed costs, we establish a robust and significant positive effect of emigration on firm exports through the preference channel.

This finding is particularly important for small open economies where foreign (high-skilled) labor is in demand like Denmark. Even if emigration renders skilled labor more scarce, it may still boosts exports and thus potentially give rise to welfare gains.

Upon availability of emigration data, this work opens up to explore asymmetries of the prefer-
ence channel across skill-groups and assimilation characteristics.

References


