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Ethnic Diversity and Firms' Export Behavior

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ABSTRACT

Ethnic Diversity and Firms' Export Behavior^{*}

Selling internationally requires products that resonate with an international customer base and therefore an approach to markets that is in keeping with diverse cultures (i.e., *relational capital*). As emphasized by international business studies, this relational capital is in turn related to the successful teaming of a diverse workforce, as this process teaches employees to operate in multicultural environments. This knowledge becomes like an *intangible asset* to which firms can resort, also when engaging in international transactions. We explore this channel empirically, investigating the impact of workforce diversity on firms' exporting performances and find that ethnic diversity further justifies firms' different presence in international markets. Since hiring is not a random practice, and firms ultimately select into ethnically different labor forces, we exploit the EU enlargement of 2004 to instrument for the diversity of the pool of workers locally recruitable. Because migrants tend to settle where the attitude toward them is most favorable, we use the median voter's political ideology at firm's location to measure the hostility at time of settlement. This gives our instrument spatial variation besides time variation.

JEL Classification: J15, F14, F15, F16, D22

Keywords: ethnic diversity, export, EU enlargement, median-voter ideology

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1 Introduction

The internationalization of a firm is a complex process, and offering products or services that meet customers' needs is only part of this process, but the ability to successfully cater to multicultural environments (*relational capital*) is equally important when engaging international transactions. The novelty of the paper in relation to international business studies is that it relates such an ability intrinsically to the ethnical diversity of firms' labor forces. Although its effects on team productivity are studied the most, diversity has also implications for other firm activities.

Mohr and Shoobridge (2011) have conjectured that firms that successfully manage a diverse workforce contextually form a set of capabilities, *meta-competences* as they define them, that also favor their internationalization process. Because a diverse workforce entails learning how to operate in a multicultural environment, this knowledge becomes applicable to other scenarios (i.e., international markets) and enables the firm to, for instance, *i*) engage opportunely with individuals with different values, norms, and tastes; *ii*) understand and target specific customers' needs and niche markets; and *iii*) timely adjust its products to distinct customer and regulatory requirements in several markets. Within Dunning's famous *OLI framework*, attributes of the workforce become the firm's source of advantage which contributes to reduce the liabilities associated with operating in foreign contexts, acting as a proper *intangible asset*.¹

In spite of the importance of social trust and culture in shaping country trade and FDI flows (Guiso et al., 2009) and of the growing attention of international business studies to the strategic importance of building internationally diversified teams, international economics has devoted only meagre attention to workforce diversity as a driver for firms' internationalization. In this paper, we focus on the export status, the number of destinations and exported products (i.e., *market reach*), and foreign

¹OLI is the acronym for *ownership, location, internationalization* framework. See Dunning (1977, 1981).

sales (i.e., *market penetration*) to measure different aspects of firms' internationalization processes, and we study how they causally relate to a measure of firms' workforce (ethnic) diversity.

The direct effect that diversity has on firms' exporting performance (the “*meta-competence*” channel) stems from the development of capabilities that occurs internally within the firm in the process of managing its labor diversity. These capabilities permit companies to distill various information about foreign markets and cultures into an operative knowledge in these markets. This effect goes beyond (without being antithetical to) the theory of international trade based on high fixed costs of exporting (Montagna, 2001; Melitz, 2003), as this form of knowledge has *global scope* and is therefore applicable to multiple markets. Its implication is similar to the learning mechanism underlying the theory of *sequential exporting* (Albornoz et al., 2012). According to this theory, fledgling exporters use their first international market access as a “testing ground” to learn about their own profitability and export potential. Because this process builds the necessary confidence for operating internationally, it generates knowledge that has a global scope and becomes useful during all subsequent expansions abroad.² Likewise, in our context diversity has a global scope and gives firms the experience required to operate in a multicultural environment and respond more promptly to new opportunities arising on international markets. The key difference compared to the sequential exporting theory is that this experience does not form on the first penetrated international market, but rather on the domestic market, and internally within the firm.

The relation between diversity and trading, however, does not need to be unidirectional and positive, as this positive direct effect may be offset by other indirect effects. A large amount of macro and micro evidence points to a similar trade-off: the development of *meta-competences* and the increased problem solving potential for

²See p. 18, Albornoz et al. (2012).

creative decisions may be lost to the increased communication difficulties and distrust arising from the clash of cultures.³ Moreover, both [Grossman and Maggi \(2000\)](#) and [Osborne \(2000\)](#) show that the relation between diversity and trading is theoretically ambiguous since technology acts as a mediating factor. Because technology attributes may command teaming of workers with either different or similar abilities, or because managing diversity is costly (“bundling costs”), increasing diversity may also hamper the export performance.

This therefore remains a very interesting empirical question to analyze, with potentially different answers across different countries or sectors. Although interesting, this question has presumably been held back by the inadequacy of available data. The nature of employer-employee linked data opens to the possibility of analyzing this matter adequately: We are able to link firm level data not only to accounting information and worker characteristics but also to custom level transactions for the whole population of firms and workers between 1995 and 2007. Our estimates suggest, on average, a positive (and very robust) effect: Increasing the diversity among the employees not only improves the likelihood of exporting but it also increases the number of destinations reached or the number of products sold at a given destination.

Because firms are profit maximizing, they are likely to hire workers with specific profiles non-randomly, self-selecting into specific worker-firm matches and, ultimately, into different levels of workforce diversity. In the absence of randomized experiments we rely on IV techniques to deal with this problem and provide causal interpretations of our estimates.

To construct our instrument we opportunely combine the recent EU enlargement in 2004 with the distribution of political votes across all Danish electoral constituencies.

³See [Becker \(1957\)](#), [Lang \(1986\)](#), [Lazear \(1998\)](#), and [\(1999\)](#) for a negative impact of diversity. See [Hong and Page \(2001\)](#), and [\(2004\)](#), [Berliant and Fujita \(2008\)](#), [Glaeser et al. \(2000\)](#), [Casella and Rauch \(2003\)](#) for a positive impact of diversity. See [Alesina and La Ferrara \(2005\)](#) for a review of macro studies.

We advocate that EU’s eastward enlargement is out of the influence of a single firm, yet it affects the availability of diverse workers through the significant abatement of migration barriers. But it is unlikely that it affects all firms equally, since firms located in areas mostly hostile to migrant settlements are also benefiting the least from the increased diversity of the local pool of workers. We therefore capture the intensity of the “EU shock” with the median voter’s ideology at firm’s location under the presumption that the more open the median voter’s attitude toward immigrants is in a given area, the more favorable is the environment to immigrant settlement.⁴ We exploit the spatial variation in the course of the median voter ideology before and after the enlargement process to instrument our firm’s diversity index. Our instrumentation strategy is innovative in that it uses a methodology inspired by the two-sided linear discontinuity approach. Although it concerns a different topic, our strategy resembles the approach followed in some political economy studies ([Nannicini et al., 2013](#); [Brollo et al., 2013](#); [Bordignon et al., 2013](#)).

Our work intersects two strands of the literature: one investigating the economic effects of (cultural) diversity, the other analyzing the determinants of firms’ internationalization. Indeed, genetic or cultural inheritance as well as socialization and migration processes are all factors contributing to an ethnically diversified workforce within a country ([Bisin and Verdier, 2010](#)). While it is consolidated that productivity determines firms’ selection into exporting, recent hypotheses have started to investigate more closely the deliberate efforts undertaken by firms to become exporters (*conscious self-selection*). Some studies have explored technological investments or quality upgrading ([Alvarez and Lopez, 2005](#); [Iacovone and Javorcik, 2012](#)), while other studies have focused on human capital investments with firms building up the right expertise in preparation for exporting ([Sala and Yalcin, 2012](#); [Molina and Muendler, 2013](#)). Our paper identifies the diversity of the workforce as a driver of internationalization, which

⁴See [Waisman and Larsen \(2008\)](#).

is distinguished from networking. Networking is about prospective exporters using foreign employees' knowledge about their country of origin to overcome informational barriers ([Andrews et al., 2011](#); [Hiller, 2013](#)). We design our analysis to discern potential network effects from the channel, *meta-competences*, which is the one we are most interested in.

The paper proceeds in Section 2 with a description of the empirical strategy, and in Section 3 with a discussion of our measure of diversity of the workforce and of our instrument. In the same section we also present the firm level data, linguistic data, and electoral data that we need for our analysis in Section 4. After discussing our robustness checks, we conclude in Section 5.

2 Empirical strategy

We investigate the relation between ethnic diversity and firms' export behavior using the following linear regression model:

$$y_{it} = \alpha + \gamma ethnic_{it} + \mathbf{x}_{it}'\beta + \eta_j + \eta_k + \eta_t + \eta_{jt} + v_{it}, \quad (1)$$

where i is the index for the firm and t is the index for time. We shall adopt the notation where j indicates the industry and k the firm location (i.e., commuting area). y is the export performance, in terms of export status, or export turnover in logarithm, or number of markets and destinations. Each outcome describes a different aspect of the export activity of a company. *ethnic* is an index of the workforce diversity of a firm, and $\mathbf{x}$ is a column vector of firm and workforce characteristics. While we defer the discussion of all entries of $\mathbf{x}$ and of the methodology for computing *ethnic* to the next section, it is important to emphasize here how diversity of the labor force can affect exports directly.

The hypothesis that we deem most interesting is the one advanced in [Mohr and](#)

Shoobridge (2011), namely the *meta-competence* channel. Firms that successfully manage a diverse workforce, also develop those core capabilities, *meta-competences*, that are required to conduct international transactions with people of different cultures. Indeed, diversity plays a key role in processing information about foreign markets and transforming it into operative knowledge for these markets. This type of knowledge is clearly *non-rival* and is consequently applicable to all markets (i.e., *global scope*), but is *excludable* to other firms. Therefore, it becomes an *intangible asset* of the firm like patents or blue prints are.

However, diversity can in some realities exacerbate emotional conflicts among employees and hinder their performance or communication, but also, in other circumstances, improve the problem-solving capacity and creativity of working teams (Barkema and Shvyrkov, 2007). Without neglecting the importance of these effects, we assume that they affect exporting only indirectly through (lagged) productivity, which we shall always include in $\mathbf{x}$.⁵ Diversity can also be confounded with plausible network effects, as firms may be hiring people with specific backgrounds with the intention to start exporting to specific destinations. To discern the effects of hiring a mix of diverse workers from hiring a specific group of foreigners, we include in our vector $\mathbf{x}$ also the shares of foreign employees with common ethnic backgrounds in some of our regressions. We furthermore account for unobserved confounding factors in all regressions with industry (η_j), location (η_k), and time (η_t) fixed effects as well as industry-time (η_{jt}) fixed effects. In the fixed effects panel regressions, the error term v_{it} is assumed to be composed of a time-invariant firm specific u_i and an idiosyncratic component ε_{it} .

The *meta-competence* channel suggested in Mohr and Shoobridge (2011) may take time to build. By taking the current level of diversity rather than a lagged value, we are, if anything, underestimating the effects. However, we abstain from taking lags to avoid a plausible simultaneity with lagged productivity.

⁵See also Parrotta et al. (2014).

We exploit our custom data to round off the exporting performances of a firm, and investigate the firm’s pervasiveness in a specific market in terms of the log of export sales or number of products sold at each destination. Our regression line changes to

$$y_{itd} = \alpha + \gamma ethnic_{it} + \mathbf{x}_{it}'\beta + \eta_j + \eta_k + \eta_t + \eta_{jt} + \eta_d + v_{itd} \quad (2)$$

as the outcome becomes destination specific, and we add destination fixed effects (η_d). While the latter can account for idiosyncratic shocks at destinations, they cannot capture plausible spillover effects occurring in the domestic market. Indeed, both employees with origins from d and firms within the same industry already exporting into d may be valuable sources to reduce the liability to trade with these countries. To control for these possible network effects in our analysis, we include in our vector of firm characteristics two additional variables: the number of foreign employees from each export destination (*employee network*) and the number of firms in the same industry that export to the same destination (*firm network*).⁶

When the export status is our dependent variable in (1), we estimate our coefficients with the linear probability model (LPM). While such an approach is not obviously inferior to a probit or logit model, at least if the “right” non-linear model is unknown (Angrist and Pischke, 2010), it eases the comparability of the effects of diversity across all outcomes considered, and it is more suitable for addressing econometric issues like endogeneity and omitted variable bias (Miguel et al., 2004).⁷ This is of extreme importance in our context: Not only may the diversity of the workforce develop in response of the internationalization process of a firm (reverse causality), but it may also reflect specific technology needs of firms (selection). Whether it is sub- or super-modular technologies (Grossman and Maggi, 2000), technology adoption (Yeaple, 2005), or pro-

⁶See Krautheim (2012) for such effects.

⁷The linear probability model (LPM) also tends to give better estimates of the partial effects on the response probability near the center of the distribution of a generic $x\beta$ than at extreme values (i.e., close to 0 and 1).

duction complementarities between natives and immigrants ([Peri and Ottaviano, 2012](#)) that act as the driver for firm-worker idiosyncrasies, our estimates would be biased without appropriately addressing these issues.

This discussion leads us to present our IV approach below.

2.1 Instrumental variable approach

The ideal instrument in our context would be a shock external to the firm that would trigger a change in the diversity of its labor force.

We regard the EU enlargement process of 2004 as having some of the desired properties in our context. From the perspective of a single enterprise, we can think of it as an exogenous labor supply shock, as barriers to international labor mobility were selectively reduced within Europe. Because negotiations were carried at the EU level, the influence of single Danish firms on the outcome of the whole process is likely irrelevant. The best these firms could have hoped for was lobbying at the national level for introducing (or avoiding) the optional temporary restrictions that each member state could have resorted to for a maximum period of eight years and which are anyway subject to approval by the European Commission. Even with such restrictions in place between 2004 and 2008, the enlargement process meant ample facilitations in obtaining legal working permits for all workers from the new member states. Although the process was not quite as liberal in Denmark as in Sweden, the UK or Ireland, where no restrictions applied, our descriptive statistics below show that migrant inflow into Denmark between 2004 and 2007 was nevertheless substantial, with a greater presence of temporary and permanent migrants from the new member states.

While such a shock applies to all of Denmark, it is unlikely to affect all firms equally. As migrants prefer to settle in areas where locals' "attitudes" toward them are historically less negative ([Waisman and Larsen, 2008](#)), we postulate that firms located in areas that are more open to migrants, become exposed to a more diverse pool of work-

ers. “Politically open” areas therefore become the locations where the “intensity of the shock” is greater. To measure the degree of openness of a given area to the settlement of migrants, we look at the median voter ideology prevailing in that area. Collecting election data for the Danish National Parliament all the way back to 1981, we can therefore infer the median voter’s political position at each electoral constituency from the political distribution of votes. Opportunely combining this information with the EU enlargement timing, we can build an instrument that has both time and spatial variation.

In the data section below, we shall present how exactly electoral cycles map into years and electoral seats map into a median voter ideology. However, to discuss the properties of our instrument, it is only important to know that the index of the (local) *attitude toward immigrants* (*ati*), henceforth labelled as $\overline{ati_index}$, is constructed from the median voter ideology and comprises at least two electoral outcomes in the last decade. As an example, the index expressing the attitude toward immigrants in 2004 reflects all preceding elections in the last decade; that is, national elections held in 2001, 1998 and 1994. Likewise, the same index for 1998 constructs the attitude toward immigrants from the outcomes of elections held in 1994, 1990 and 1988. While the most recent electoral round reflects the current geographical distribution of the attitude toward immigrants more accurately (good instrument), we would like our attitude index to partly reflect the historical local sentiment, too, and therefore also include past electoral outcomes in the computation of our index.

The identifying assumption for the validity of $\overline{ati_index}$ as an instrument is that the location of firms should be exogenous, or at least pre-determined, to the distribution of political votes across Denmark, so that the increase in the foreign labor force in a given location occurs for factors external to the firm. The example of a worldwide famous Danish company will help to put things into a context. Our assumption is implying that a firm like LEGO should not choose its headquarter location in Billund because

of political factors (i.e. median voter ideology) but that agglomeration economies or historical reasons should be more prominent factors in such a choice.⁸

While we deem such a scenario highly plausible, we recognize that there are instances in which such an assumption is vulnerable to unobservables that we cannot properly account for. One example will be again clarifying. Assume that firms that are more inclined to take risks are also more likely to export and to locate in areas with a more liberal ideology toward foreigners. Under this assumption, the failure to adequately account for the firm’s attitude toward risk in the analysis would render a traditional IV strategy invalid. To render our instrument less prone to failures of our identification assumption, we propose an approach inspired by the regression discontinuity design.

To motivate our IV strategy, it is instructive to look at Figure 1: For each year the left panel plots the average firm-level ethnic diversity (averaged across all firms), and the right panel plots the average index for the attitude toward migrants (across all locations k). The vertical dashed line marks the EU enlargement year. While it is clear that on average firms’ labor forces have become increasingly diverse, we note that average diversity has a jump in 2004 and accelerates its growth with time: It increases at decreasing rates prior to 2004 and at increasing rates in the post-accession period. Contextually, the attitude toward immigrants peaks in 2004, after a jump from the previous year, and inverts its upward trend afterwards.

[Insert Figure 1 about here]

Therefore, similarly to a regression discontinuity design (RDD), our IV strategy can exploit both the jump and the change in the course of the attitude toward immigrants

⁸See [Fujita and Thisse \(2013\)](#) on how agglomeration economies determine industrial location. LEGO’s recent opening of a plant in northern Mexico hardly responds to a political consideration, but rather to the company’s need for a timely supply of toys onto US distributors’ shelves at times of peak demand around Christmas.

around the accession year to explain the changes in firm level diversity. Inspired by the two-sided linear regression design, we specify the IV first stage as follows:

$$\begin{aligned}
ethnic_{it} = & cons + \delta [\overline{ati_index}_{kt} \star I(t \geq 2004)] + \zeta_1 [\overline{ati_index}_{kt} \star (t - 2004)] \\
& + \zeta_2 [\overline{ati_index}_{kt} \star I(t \geq 2004) \star (t - 2004)] + \zeta_3 [\overline{ati_index}_{kt} \star I(t \geq 2004)]^2 \\
& + \zeta_4 [\overline{ati_index}_{kt} \star (t - 2004)]^2 + \zeta_5 [\overline{ati_index}_{kt} \star I(t \geq 2004) \star (t - 2004)]^2 \\
& + \mathbf{x}_{it}'\beta + \eta_j + \eta_k + \xi_{it}, \quad t \in [2001, 2007],
\end{aligned} \tag{3}$$

where $\overline{ati_index}_{kt}$ measures the “attitudes towards immigrants” in the commuting area k where firm i is located, and $I(t \geq 2004)$ is the post-EU accession dummy. The logic is that we are using a quadratic polynomial approximation of $\overline{ati_index}_{kt}$ centered in 2004 to instrument labor diversity at the firm level. The first addendum in the right-hand side of the equation after the constant term captures the jump of our index in 2004; the second addendum is the trend of our index; the third addendum is the post-2004 trend that, as shown in the figure, could potentially differ from the pre-2004 course. The quadratic terms follow the same logic and simply allow a functional approximation of higher order. The exogenous regressors and the battery of location and industry fixed effects complete our specification.

As the variation in the course of $\overline{ati_index}_{kt}$ around the timing of the “EU shock” is essential to the success of this method, we restrict time t in equation (3) to a time window between the election years 2001 and 2007. The longer this window is, the less likely can the change in diversity be ascribable to the EU enlargement, and the less precise becomes our $\overline{ati_index}$ as a measure of the attitude towards immigrants around 2004. Spatial variation of the attitude towards immigrants index is also important for the success of our strategy. In Figures 2 and 3 we map the growth of the local average firm diversity and attitudes towards immigrants between the triennia 2001-2003 (pre-EU) and 2005-2007 (post-EU). Even eyeball evidence suggests that the small size of

Denmark is not a limiting factor for our analysis as there is considerable variation across all Danish commuting areas.

[Insert Figures 2 and 3 about here]

The advantage of this formulation over the more traditional IV approach of using solely $\overline{ati_index}$ as an instrument for diversity is a greater solidity to unobservables.⁹ To illustrate this point, let us refer again to the example above where firms that are more prone to risk taking are more likely to export and to locate in politically liberal areas. To invalidate our identification assumption, it is no longer enough that the firm's attitude toward risk is unobservable. Because we are using only the variation of firms' labor force diversity explained by the variation of $\overline{ati_index}$ along the time window centered in 2004, invalidation of our strategy also requires that any unobservable (e.g., the risk attitude) should have an analogous variation in the same time window as $\overline{ati_index}$. While it is likely, as shown in our example, that the unobserved firm's attitude toward risk would challenge the validity of a traditional approach to IV, it is less plausible that the firm's attitude toward risk changes dramatically in correspondence of our time window, and even less plausible that it changes in the same way as our instrument around 2004.

One final concern in our approach is the contextual trade liberalization that the EU enlargement process entails, and that affects exports of firms. Econometrically, we believe that the post-accession dummy as well as the industry dummies in (3) effectively capture these effects.¹⁰ However, there are also economic reasons to believe that these effects are of little concern. After the fall of the Iron Curtain, the European Council in 1993 declared its intention to enlarge the EU to include the Central and Eastern

⁹To strengthen our identification assumption, in the robustness checks we also drop firms founded after the start of our time window in 2001.

¹⁰Indeed, including a specific time dummy for the year 2001 to control for trade liberalization and the introduction of the euro currency does no change any of the results presented below. It is, however, clear from equation (3) that the inclusion of time-fixed effects is not compatible with our specification of the first stage.

European Countries (CEEC). As part of the EU expansion goal, a number of bilateral agreements, known as European Associations (EAs), facilitated the elimination of trade barriers between the EU and CEEC countries before accession, and set the date of January 1, 2002 as the limit for the completion of the liberalization process.¹¹ The rolling program of reforms in CEEC countries seems to indicate that the trade effects associated with the EU enlargement were gradually realized before 2004, possibly even before the start of our time window (2001), “pre-empting”, at least partially, the full trade potential of the EU extension.

3 Data

Before we can explain our measures for the firms’ labor force diversity and local citizens’ attitudes toward migrants in detail, it is necessary to briefly describe our data and sources.

3.1 Data sources

Our data has four pillars: firm level data from Danish registries, ethnic and language data from “Ethnologue: Language of the World”, political ideology data from the “Manifesto Research Group/Comparative Manifestos Project”, and finally electoral outcomes data from the Danish parliamentary elections.¹² The Ethnologue data is necessary for our measure of workforce diversity, while data from the Comparative Manifestos Project and Danish elections are combined together to construct our instrument.

¹¹See [Baldwin \(1995\)](#), [De Benedictis et al. \(2005\)](#), and [Baas and Bruecker \(2011\)](#).

¹²But for Danish registry data, all sources are freely available on the web. More details about “Ethnologue” can be found at “<http://www.ethnologue.com>”. The Manifesto Research data and Danish Election data can be downloaded at “<https://manifestoproject.wzb.eu/>” and “<http://valgdata.ps.au.dk/Kontakt.aspx>”, respectively. Danish registry data are exclusively administered by the official Danish statistical institute, “Statistics Denmark”.

Firm level information is collected from different registers: the Integrated Database for Labor Market Research (*IDA*), the “Accounting Statistics Registers” (*REGNSKAB* and *FIRE*), and the “Foreign Trade Statistics Register” (*UDENRIGSHANDELSSTATISTIKKEN*).

IDA is a longitudinal employer-employee register, containing information on the age, gender, nationality, place of residence and work, education, labor market status, occupation, and wage of each individual aged 15-74 between 1980 and 2007. The information is updated once a year in week 48: Apart from deaths and permanent migration, there is no attrition in the data.

For each firm *REGNSKAB* and *FIRE* provide the annual value of capital stock, the turnover, the industry affiliation, an indicator of foreign ownership, a multi-plant establishment indicator, the year of establishment, and the possible closure date.¹³

The “Foreign Trade Statistics Register” shows export-sales, and the number of exported products at the firm level. These data are available both at specific destinations and aggregated over all destinations. Exports are recorded in Danish kroner (DKK) according to the 8-digit Combined Nomenclature as long as the transaction is at least worth 7500 DKK or involves goods whose weight is at least 1000 kg.¹⁴ To make the classification of products consistent across time and to minimize potential measurement errors, we aggregate these flows to the 3-digit level.

We exclude firms with fewer than 10 employees to avoid both self-employment and typical migrant businesses.¹⁵ We end up with 14,065 firms over the period 1995-2007 (about 157,586 observations).

Given the linked employee-employer nature of this data, we use individual infor-

¹³The capital stock comprises the sum of the values (in Danish krone) of land, buildings, machines, equipment and inventory. We deflate all monetary values using the World Bank’s GDP deflator with 2000 as the base year.

¹⁴7500 DKK are about 1000 euros at the time of writing. Since the introduction of the euro currency, the Danish Central Bank has adopted a fixed exchange rate policy vis--vis the euro.

¹⁵A similar sampling is implemented in other studies concerning labor diversity and using Danish register data. See [Parrotta et al. \(2014\)](#) and [Marino et al. \(2012\)](#).

mation in *IDA* to infer (at the firm level) the share of workers with secondary and post-secondary education (*skill1* and *skill2*); the percentage of male employees (*men*); the share of blue-collar workers; the share of middle managers and managers; the share of non-Danish employees (*foreigners*); and the share of differently aged workers in each quartile of the firm’s age distribution (*age1* to *age5*). Because we can track people along the years, we can also establish the average tenure of all employees (*tenure*). Combining the individual data with the “Ethnologue” data, we also know the share of foreigner workers with the same ethnical or linguistic background. All in all, this information is as good as it gets to control for both the composition and the quality of the firms’ workforce in our vector $\mathbf{x}$ in equation (1).

As mentioned above, it is important to account for plausible network effects: *employee network* is the share of workers from the same destinations to which a firm exports, and *firm network* is the number of firms within the same industry (2 digits) exporting to the same destination.

It is important to control for the relevant firm characteristics that affect exports, i.e., firm size, labor productivity, and the firm’s experience on international markets. Firm size is the total number of employees that we split into two sub-categories, *size1* (10-49 employees), and *size2* (50 or more workers); labor productivity is sales per employee in logarithmic scale. We depart from the typical approach in the literature measuring the firm’s export experience by means of the lagged export status, and compute, in any given year, the (cumulative) number of years a firm has been exporting for (*export experience*). Indicators for foreign ownership and multi-plant establishment complete the list of our controls.

The smallest unit of a firm that we can observe is the plant, and we have about twelve percent multi-plant firms. The variables in *IDA* described above are observed for each workplace and have to be aggregated at the firm level. Throughout the text we

shall use the words plant and workplace interchangeably.¹⁶ We observe the municipality where each workplace is located, and we assign to the firm the municipality of its headquarter. For reasons related to our instrumenting strategy, we map firms' location into a wider area than municipalities, known as "commuting" areas. The idea behind such an agglomeration is that people tend to reside and work within these areas: the local sentiment measured at this geographical unit therefore becomes a good measure of the hostility faced by migrants at settlement.¹⁷

Below we describe in detail the methodology we use to construct the variable of our interest, *ethnic*, and our instrumental variable $\overline{ati_index}$.

3.2 Ethnic diversity

While the percentage of employees with a given nationality is a legitimate description of the workforce composition, we deem it inadequate to capture two important features of firms' workforce ethnic diversity, namely "richness", the number of ethnic groups in a workplace, and "evenness", the balanced distribution of different ethnicities. To incorporate these dimensions of diversity, we adopt the index of *ethnic fragmentation* that [Peri and Ottaviano \(2006\)](#) have proposed to describe the cultural diversity of a city.¹⁸ Defining p_{swt} as the share of foreigners with ethnic background s in workplace w among the total number of foreigners only (i.e., $p_{swt} \equiv foreigners_{swt}/foreigners_{wt}$), we obtain our workforce diversity index, $ethnic_{it}$, for firm i at time t as

¹⁶Occasionally, we also use the words firm and establishment interchangeably.

¹⁷The commuting areas are identified using a specific algorithm based on the following two criteria: First, a group of municipalities constitute a commuting area if the interaction within the group of municipalities is high compared to the interaction with other areas; second, at least one municipality in the area must be a center; i.e., a certain share of the employees living in the municipality must work in the municipality, too ([Andersen, 2000](#)). In total 50 commuting areas are identified.

¹⁸[Parrotta et al. \(2014\)](#) similarly measure ethnic diversity at the firm level.

$$ethnic_{it} = \sum_{w=1}^W \frac{N_w}{N_i} \left(1 - \left(\sum_{s=1}^S p_{swt}^2 \right) \right), \quad (4)$$

where W is the total number of workplaces belonging to firm i , S is the total number of ethnic categories, and N_w and N_i are the number of employees in workplace w and firm i , respectively.¹⁹ The ethnic diversity has a minimum value equal to 0 if there is only one category represented within the workplace, and a maximum value equal to $(1 - \frac{1}{S})$ if all linguistic groups are represented equally.²⁰ The term in parenthesis in the ethnic diversity index represents the probability that two randomly drawn foreign employees in a workplace belong to different linguistic groups.

We exclude natives from the computation of our shares p to prevent the contamination of our measure of ethnic diversity with possible networking effects. If a firm hires specific foreign groups with the purpose of exporting to specific destinations (“networking”), the share of foreigners in the total labor force (natives and foreigners) inexorably increases, but whether ethnic diversity in the firm improves depends jointly on two factors: whether the language group of the new hires is new within the firm (richness), and whether the distribution of groups is altered (evenness).

We identify the employee’s ethnic background with the major language spoken in her or his country of origin, so that s is a specific language group and S is the collection of language groups in a given plant (see [Appendix A](#)).²¹ This choice is grounded on the argument that linguistic distance serves as a good proxy for cultural distance ([Guiso et al., 2009](#); [Adsera and Pytlikova, 2012](#)). Moreover, such an approach avoids the compli-

¹⁹Second-generation immigrants are treated as foreigners in the main analysis. However, excluding the latter in the ethnic diversity does not substantially change our main results.

²⁰When the total number of employees N is lower than the number of linguistic groups S , we adjust the ethnic diversity to take firm size into account. Specifically, we standardize the index for a maximum value equal to $(1 - 1/N)$.

²¹As different language refinements are possible, the language category s in the definition of p_{swt} corresponds to the third level of the linguistic family tree in the Ethnologue data.

cation arising with a nationality-based index weighting each nationality with some sort of “cultural” distance. Arguably, an Italian and a French employee are culturally closer than an Italian and a Mongolian. In our computation based on linguistic groups, an Italian would be closer to a French than to a Mongolian, whereas in a nationality-based index they would appear equally distant, unless a weighting scheme is introduced.

3.3 Attitudes towards immigrants

As mentioned above, our index for the “attitudes towards immigrants”, $\overline{ati_index}$, reflects the (political) ideology of the median voter in a given commuting area. Our starting point to define this ideology is looking at the political manifesto of each political party running for a Parliament election and at their electoral results. Accordingly, the “Manifesto Research Group/Comparative Manifestos Project” data is a particularly useful source as it comparatively measures the political preferences of (major) parties along several ideological dimensions for 25 Western democracies throughout the postwar period.²²

In particular, we focus on a restricted number of ideology dimensions, about 12 out of 25, that pertain to immigrants, internationalization and ethnic diversity. Appendix B reports the precise statements in the political Manifestos that are interpreted as being in favor or against immigration along all ideological dimensions analyzed. To each statement the data assigns a score, so that the sum of scores for all statements in favor of immigration, id_favor , can be interpreted as the percentage of all party statements that show a positive attitude toward immigration. Likewise, the total score on statements against immigration, $id_against$, can be interpreted as the share of statements with a negative attitude toward immigration.

As in [Kim and Fording \(2001\)](#), the party level ideology is then computed as the

²²Several scholars in political economy and economics have taken advantage of this database: See [Congleton and Bose \(2010\)](#), [Pickering and Rockey \(2011\)](#), [Belke and Potrafke \(2012\)](#).

party net ideological position,

$$id_party = (id_favor - id_against) / (id_favor + id_against), \quad (5)$$

a measure bounded between -1 and 1 . Accordingly, we can rank all parties in order of positive attitude toward immigrants (i.e., from the smallest to the highest value of id_party). Along with parties' percentages of received votes in a given election, we compute the median voter position in the municipality, m , as follows:

$$median_voter_m = L + [(50 - C) / F] \star W, \quad (6)$$

where L is the lower end of the interval containing the median ideology score (i.e., median id_party), C is the cumulative frequency (vote share) up to, but not including, the interval containing the median, F is the frequency in the interval containing the median, and W is the width of the interval containing the median.²³ By construction, the political position of the $median_voter_m$ also takes values between 1 (completely positive attitude towards immigrants) and -1 (completely negative attitude towards immigrants). Given that a commuting area where a firm is located comprises multiple municipalities, we have to aggregate our median voter political position across municipalities, using the share of voters in each municipality as weights. The median voter ideology in municipality m within commuting area k in electoral round t is

²³The reason why we refer to the interval containing the median is that the distribution of votes is discrete. For example, it is possible that the first two ranked parties account for 30% of votes. If the next ranked party is quite large with a high share of votes, the share of votes will add up to more than 50%, e.g., 60%, of votes. L is then the ideology score of the second ranked party, and C is 30%. F is the percentage of votes of the median party (the third ranked party in this example), whereas W is the numerical difference between *midpoint-left* (the mean between the ideology of the median party and of the party ranked just before) and *midpoint-right* (the mean between the ideology of the median party and of the next ranked party). For more details on the methodology, see [Kim and Fording \(2001\)](#).

$$ati_index_{kmt} = \sum_{j=1, j \neq m}^M \frac{V_{jt}}{V_{kt} - V_{mt}} * median_voter_{jt}, \quad j, m \in [1, \dots, M] \in k, \quad (7)$$

where V_j is the number of voters in municipality j within commuting area k , and likewise V_k and V_m is the total number of voters, in, respectively, k and m . It is clear that when computing the weighted average of the median voter position in the k -th area for municipality $m \in k$, we are excluding from the summation in (7) both the voters in and the median voter of municipality m . Such a construction is a way of dealing with the *reflection problem* (Manski, 1993), which may occur in the handful of municipalities in which a particularly large firm is the main employer of the area. In such instances, the workers of the most prominent firm are mostly residing and voting in the same municipality as where the firm is located.²⁴ Therefore, the exclusion of the municipality from our computation avoids that the firm’s native workers are in the count of voters that determine the value of our instrument.

The *ati_index* therefore varies by municipality (even within the same commuting area), by commuting area, and by (electoral) year. However, to simplify our notation and enhance readability we keep using *ati_index_{kt}* instead of *ati_index_{kmt}* in the rest of the paper.

We have collected data on 10 electoral rounds, from the most recent in 2007 all the way back to 1981.²⁵ In the years between two electoral rounds, our *ati_index* takes

²⁴The firm “Danfoss” located in Nordborg, Denmark, is a good example of this situation. Because the municipality level is the smallest administrative unit observed in the data, there would be no practical solution to attenuate the reflection problem if we had conducted our analysis at the municipality level. Whether we account for the reflection problem or not hardly has an impact on our estimates.

²⁵The election years were 1981, 1984, 1987, 1988, 1990, 1994, 1998, 2001, 2005, and 2007. The Danish parties covered for these electoral rounds are: New Alliance (2007), Left Socialist Party (1981-1984), Danish Communist Party (1981-1984), Common Course (1987), Red-Green Unity List (1994-2007), Socialist People’s Party (1981-2007), Social Democratic Party (1981-2007), Centre Democrats (1998, 2005), Radical Party (1981-2007), Liberals (1981-2007), Christian People’s Party (1981-2005), Conservative People’s Party (1981-2007), Danish People’s Party (1998-2007), Progress Party (1981-1997) and Justice Party (1981-1984).

the same value as in the past closest round: Along time, it is therefore a step-wise function. As mentioned above, we take the ten-year moving average of *ati_index* in (7), which we denoted $\overline{ati_index}_{kt}$, as our instrument. The moving average ensures that the median voter position always reflects at least two standard mandates in the past decade, so that its value in the two most recent electoral rounds (2007, 2005) also relates to a historical attitude toward migrants and not just to the recent inflow of people from the new EU accession countries. Likewise, it is desirable that the index does not reflect the outcome of current Danish governmental policies aiming at enhancing integration. Since ideology typically affects governmental actions with some lags, taking past lags into account supports some sort of *Granger causality* from our $\overline{ati_index}_k$ to governmental actions (see [Pickering and Rockey, 2011](#)).

3.4 Descriptive statistics

Table 1 groups the descriptive statistics of all our main variables: Less than half of the firms in our sample (5,333 firms) engage in some export activities, while the majority of firms (72%) are relatively small companies with less than 50 employees, a feature that is common in small open economies. Our data set shows figures that are largely consistent with abundant evidence on firm-level trade statistics: Larger firms tend to export more, export more products, export to a wider set of markets, and export for more prolonged periods of time. Moreover, they employ bigger shares of women, foreigners, and middle managers, have longer tenured employees, and have a higher proportion of workers with secondary education. Finally, they tend to have multiple plants and present a more diverse workforce. The gap in terms of workforce diversity further widens if only white-collar occupations are factored in. However, no consistent differences are registered in terms of labor productivity and foreign ownership for differently sized firms.

About 27% of firms in our sample are above the average ethnic diversity level, and their ethnic diversity of white-and blue-collar workers is on average approximately

four times larger than in the rest of the sample. These firms are relatively large enterprises, and more than half of them export. They export not only a larger number of products, but also to more destinations. This preliminary and descriptive evidence will be confirmed in our subsequent econometric analysis.

[Insert Table 1 about here]

In Table 2 we look at the evolution of ethnic diversity by industry over time. We observe both a general upward trend of our index of diversity across all industries and a remarkable increase in the growth rate of the index in the post-accession period (2004-2007) compared to the pre-accession period (2000-2003). For the manufacturing sector the growth rate in the post-accession period is 18.4% relative to 6% in the pre-accession period; for financial and business services 15.1% post-accession growth against a negative pre-accession growth of -1%; for wholesale and retail trade 26.8% growth against 10.8% growth; 48% against 4.9% for the construction sector; the only exception being the transport sector with 11.5% against 37%. Similar figures, with even more remarkable growth rates, appear in Table 3 for the share of immigrants (from all source countries): 35% post-accession (-3.3% pre-accession) growth rates for manufacturing, 32.7% (5.4%) growth rates for financial and business services, 31% (12%) for the wholesale and retail trade, 32.2% (22.1%) for transports, and 104% (-7.5%) for the construction sector. This table implicitly confirms the importance of controlling for the share of foreign workers with different ethnic backgrounds when assessing the importance of the ethnic diversity for firm's export activity.

[Insert Tables 2 and 3 about here]

Table 4 reports the migrants' areas of provenance. As mentioned above, and in line with other studies, the inflow of people after 2004 reflects the EU's eastward expansion with a greater presence of both permanent and temporary migrant workers from the

new member states.²⁶ The average share of foreign workers from the new EU members went from 0.26% prior to 2004 to 0.75% in 2007, a growth rate of about 188% in a very short time span and in spite of the implemented temporary restrictions.²⁷ None of the other groups of foreigners show a similar growth, in spite of a positive trend in migration from all over the world: In the same period the shares of South Americans and Africans have grown 66% and 52%, respectively.

[Insert Table 4 about here]

As the ten new accessing countries map into seven different language groups (Czech Republic, Poland, and Slovakia to *Slavic West*; Cyprus to *Attic*; Estonia to *Finno-Permic*; Hungary to *Ugric*; Latvia and Lithuania to *Baltic East*; Malta to *Semitic Central*; Slovenia to *Slavic South*), it is plausible that the “richness” dimension of our index picks up these changes and translates into an overall increase of our ethnic diversity index.²⁸ In Figure 1, panel a, we superimpose to the actual data points the quadratic fit of our diversity index and note a significant jump of our index. To such a rise corresponds specularly a more hostile attitude toward immigrants (panel b), confirming that the local sentiment seems to respond to migration flows. A quite reasonable explanation is that a non-negligible part of natives were worrying about the extraordinary spurt of immigrants: The most enthusiastic advocate of placing restrictions on immigration, the Danish People’s Party, was widely seen as the “big election winner”, as its share of votes and seats in Parliament rose substantially in

²⁶The expansion on May 1st, 2004, meant that ten new states joined the European Union: Eight were Central or Eastern European countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic and Slovenia), and two were Mediterranean countries (Cyprus and Malta). See [Kahanec \(2010\)](#) and [Zaiceva and Zimmermann \(2008\)](#) for detailed evidence on migration from new to old member states.

²⁷Fears of social dumping and immigration of cheap labor from the new member states lead Denmark, together with a few other member states, to restrict access to the their labor markets until 2009.

²⁸The outcome would be similar with a nationality-based index, as each new member state would represent a new nationality, and therefore “richness” would also increase.

2005 ([Statistisk Aarbog, 2005](#)).²⁹ Taking the moving average of the attitude index also mitigates the direct influence of migration flows into political outcomes.

4 Results

4.1 OLS and FE results

Table 5 presents both the OLS and FE estimates of equation (1) where the dependent variable is firms' export status. The coefficient we find is robustly positive and significant across different specifications. While columns 1 and 4 present the most parsimonious regressions, columns 2 and 5 add *labor productivity* (lagged one period) and *export experience* (the cumulative years of exports) as controls. Consistent with a large body of the empirical trade literature, firms that are more productive or draw on a longer export experience are also more likely to export. This is a further confirmation that there are no particular issues with our data set.³⁰

In columns 3 and 6 we further control for the composition and quality of the labor force. Besides skills and occupational characteristics, we include the share of workers belonging to each of the quartiles of employees' age distribution and the share of foreigners belonging to each language group. The correlation between ethnic diversity and export probability is hardly affected.

[Insert Table 5 about here]

²⁹It is worth remembering that the *Muhammad cartoons affair* started in the same year, too. The Muhammad cartoons affair began after 12 editorial cartoons depicting the Islamic prophet Muhammad were published in the Danish newspaper Jyllands-Posten on 30 September 2005. Some Islamic organizations filed a judicial complaint against the newspaper, which was dismissed in January 2006. The cartoons were reprinted in newspapers in more than 50 other countries over the following few months, further deepening the controversy. The bulk of the reprints nevertheless took place after the large-scale protests in January and February 2006.

³⁰In analogy to a vast trade literature, Tables C.1 and C.2 present the same regression without our variable of interest. This confirms that firm productivity is a strong predictor of the export status in our data set, too, even after controlling for the composition and quality of the labor force.

Quantitatively, our firm fixed effects regression suggests that a (within-firm) standard deviation increase in ethnic diversity (0.135) is associated with approximately 0.2 percentage points increase in the export probability, equivalent to a rise in the probability of export initiation of about 0.5 percent.³¹ We deem this effect sizable as it is of the same order of magnitude as improving firm’s labor productivity of one standard deviation.³² For a better understanding of our results, it is important to stress that firms with average ethnic diversity in the full sample (exporters and non-exporters) employ about nine foreign ethnic groups and that the share of these groups is between two and 23% of the foreign firm workforce. Firms characterized by an ethnic diversity equal to the “average plus a (within-firm) standard deviation increase” present about 16 language (7 more) categories with similar distribution among foreign employees.³³

In the following tables, we turn to the other export activities of firms, namely export turnover and export turnover per destination (Table 6), number of destinations (Table 7), number of products (3-digits classification), and products per destination (Table 8). Since each of these outcomes is only observable for exporters, we focus only on the relevant population of exporting firms, and all results have to be interpreted as conditional on exporting.

Overall we learn that ethnic diversity positively correlates with all outcomes, and the results are again robust across all specifications. However, the share of foreigners belonging to each linguistic group is insignificant, confirming that our diversity index is not capturing networking from employees and that diversity and network effects operate through different channels.³⁴

³¹This figure is obtained by using the average probability of exporting. From the estimates in Table 5, the average probability of exporting is approximately 39%. Therefore, the changes in the probability of exporting, in percentage terms, are $(0.002/0.39)*100=0.51$.

³²Specifically a within standard deviation increase in productivity (0.254) is associated with a 0.3 percentage points increase in the export probability.

³³Concerning the sample of exporters, we have firms with average ethnic diversity employing foreigners belonging to 14 different language categories and firms with a standard deviation above the average diversity presenting 17 ethnic (three more) groups.

³⁴Recall that there are about 35 linguistic groups, and therefore as many shares of foreigners in our

[Insert Tables 6, 7, and 8 about here]

Turning to equation (2), we consider export sales per destination (Table 6, col. 7 - col. 9) and number of products per destination (Table 8, col. 7 - col. 9) as destination-specific outcomes. Not only do we include destination fixed effects among the regressors, but also *firm network* (the number of firms that in the same industry export to the same destination) and *employee network* (the number of employees coming from the same destination to which the firm exports). Both network terms are statistically significant at conventional levels, a result that, in light of the trade literature on networks, we interpret in two ways: First, the exchange of information between firms at the formal or informal level, possibly through fairs, informal alliances, or memberships in the Danish export association, can reduce the fixed costs associated with expanding the business abroad (Krautheim, 2012; Mitchell et al., 2000); and second, employees' knowledge about their country of origin may be useful in connection with firms' expansion abroad (Hiller, 2013; Rauch, 2001).

Consistent with Mohr and Shoobridge's (2011) hypothesis, the impact of ethnic diversity should not vary with destinations, as the capabilities acquired from managing an ethnically diverse workforce have *global scope* and are in principle functional to all markets. In Table C.3 in the appendix, we distinguish between Western and non-Western destinations. Because non-Western destinations exclude Nordic countries, South and West Europe, and North America and Oceania, they are, with the exclusion of China, the least popular destinations from the perspective of Danish firms, and yet the coefficient on ethnic diversity remains qualitatively very similar.³⁵

regression.

³⁵For Denmark Germany is the most popular, and Azerbaijan the least popular destination market. The most popular non-Western destination is Lebanon with 8% of firms (22% of exporters) exporting to this market.

4.2 IV results

Although the numerous controls included in our FE regressions account for many confounding factors, in this section we present IV estimates that address further econometric issues, such as reverse causality and self-selection into employer-employee matching.

We first present in Table 9 the estimates of the first stage as specified in equation (3) above. The first three columns present specifications with an increasing number of controls: The first column is just the polynomial of the $\overline{ati_index}$ center in 2004, whereas the last column also includes all exogenous variables used in the second stage.

[Insert Table 9 about here]

The results we obtain are very interesting *per se*: they show that both the jump in 2004 and the change in the trend of the attitude index can explain the variation of firm level workforce diversity. Therefore, the local attitude towards immigrants affects migrants' settlement and ultimately the diversity of firms' local labor supply, consistent with the work of [Waisman and Larsen \(2008\)](#).

Columns 4 and 5 of Table 9 perform some robustness checks. Column 4 just uses the current value of our attitude index, ati_index , to show that the moving average process is not driving any of the results. Column 5 entirely gives up the polynomial approximation and simply uses $\overline{ati_index}$ as an instrument (traditional IV-approach). It is apparent that the results are very robust and similar across all these specifications.

Tables 10 and 11 condense the IV estimates for all outcomes considered. For each outcome, we present five specifications, each corresponding to the respective column of the first stage regression presented in Table 9. Coherent with all the estimates presented, for a given outcome each column includes progressively more controls with the third column being the most complete. The fourth and fifth columns are always the same specification as column 3, but with the correspondent variation of the first stage specification as presented in Table 9.

[Insert Tables 10 and 11 about here]

Overall, ethnic diversity improves firms' export performances, but the coefficient remains at the 1% statistical significance level only when export status, the number of destinations, or the number of products are the dependent variables, and becomes not significant with the logarithm of export sales. Taking [Mohr and Shoobridge's \(2011\)](#) *meta-competence* argument to its logical consequence, we should expect that the skills developed along with diversity management are facilitating the engagement into international activities. If we regard export status as well as number of destinations and products pertaining to the engagement stage, as these are more closely related to the extensive margins of firm's internationalization, our results would again be consistent with that prediction. In the trade literature export turnover, on the contrary, is often associated with the intensive margin of the firm's expansion abroad as it presupposes a presence into foreign markets already.³⁶

Taking the third column as our preferred specification, the quantitative implications of our findings is that on average a standard deviation increase in ethnic diversity enhances the probability to export by 3.3% and induces firms to export approximately two more products to two additional markets.

The tests for *weak instruments* are all well within the comforting range ([Stock and Yogo, 2005](#)), further confirming the good fit of our first stage and indicating that the estimates of our coefficients are not possibly inflated by a weak instrument. As is often the case, we find the IV point estimates to be larger than the FE estimates presented above. We can offer two plausible interpretations. First, besides ethnic diversity, other forms of investment, such as technological investments ([Alvarez and Lopez, 2005](#); [Atkeson and Burstein, 2010](#)), quality upgrading ([Iacovone and Javorcik,](#)

³⁶In our text we avoid to refer to the “number of products exported” as the proper extensive margin of the firm because we do not measure it dynamically as the result of product creation and destruction, as in [Iacovone and Javorcik \(2010\)](#). In our case it is a yearly stock measure that clearly (cor)relates with the proper extensive margin. In some instances the number of destinations has been associated with “market reach”, whereas sales abroad have been linked to “market penetration”.

2012), and human capital investments (Molina and Muendler, 2013, Sala and Yalcin, 2012, Mion and Oromolla, 2011), affect exporting and the traded product mix. If these activities are substitutes (complements) to ethnic diversity, but unobservable to the econometrician, the substitutability (complementarity) can induce a negative (positive) bias in the estimates of the parameter of our diversity index. Second, a LATE interpretation of our instrument could be at play (Imbens and Angrist, 1994; Card, 2001; Angrist and Krueger, 2001; Imbens and Wooldridge, 2009). Given that the growing hostility toward immigrants mirrors the increased diversity of the pool of workers, the firms that are more likely to increase the diversity of their workforce are arguably the least diverse. If our estimated marginal effect reflects the “return” of increasing diversity for these firms, it is likely to exceed the average return for the whole population. Indeed, the highly diversified firms, regardless of time (before and after 2004) and local labor supply conditions (attitude toward immigrants), gain less at the margin than the subgroup of firms most affected by the variation of our instruments.

A final note is that the shares of foreigners in the third column are also likely to be endogenous and ought in principal to be instrumented. As we are not interested in quantifying the effect of networking, just controlling for the effect, the properties of the LPM come in handy. Because of linearity, the coefficient of our interest will not be affected by other potentially endogenous regressors.³⁷ Indeed, comparing the third column to the other columns that do not include the shares of foreigners among the regressors, we do not observe worrying jumps of our point estimates.³⁸

4.3 Robustness checks

In this section we expand our results in three directions. First, we assess whether the effect of diversity differs across various groups of Danish firms. Second, we confirm

³⁷See Wooldridge (2002).

³⁸We have also estimated the third column with and without the shares of foreigners (not reported), and the main result hardly changes.

our results using alternative variants to our diversity index. Finally, we perform a sensitivity analysis for our IV results.

In Table 12, we first consider whether firms of different size are able to reap more benefits from investing in ethnic diversity. Not only may large firms dispose of the resources necessary to activate “diversity awareness training programs”, but just because they face the challenge of organizing numerous employees, they are already remunerating and implementing career policies that reward contributions made by employees with different backgrounds. We therefore proceed by splitting our sample into small firms (less than 50 employees) and large firms (50 and more employees). As the coefficient of ethnic diversity is more precisely estimated and larger in the sub-sample of large firms, the benefits of diversity can vary with size.

To test whether the effects of diversity change with the share of non-native workers, we split firms into two alternative subsamples, depending on whether their share of foreign employees is above or below the average in the industry. Sub-panels 4 and 5 of Table 12 show that the effects of diversity are neither less precisely estimated nor of lower magnitude for below average firms, dismissing the hypothesis that the benefit of diversity ought to coincide with a large share of non-native workers.

While the available evidence on firm level trade is mostly confined to the manufacturing sector, we have presented our estimates for the whole Danish firm population. We present our estimates distinctively for the manufacturing and service sectors, in sub-panels 6 and 7 respectively. While the statistical significance of ethnic diversity remains similar across all export outcomes in the manufacturing sector, in the service sector it is markedly high only for the outcomes “number of destinations” and “number of products”. The lower significance of the effect of diversity for companies’ sales found above is most likely driven by the pooling together of these two broad sectors. Looking closer at the sectoral characteristics helps to rationalize our findings. Not only is the share of aggregate output that is exported in the service sector substantially lower than

in manufacturing, but it is also heavily concentrated in the transportation sector. Exports in the manufacturing sector are more evenly distributed with a slight prevalence in the electronic industry. As the number of products and destinations varies greatly within the transportation sector, and this variation is larger than in any other sector, our findings are perhaps not surprising.

[Insert Table 12 about here]

Now we turn our attention to testing the solidity of our firm level measure of diversity.

First, we investigate if the aggregation of our Herfindhal index across all workplaces that we apply to obtain the firm level diversity has an influence on our results. Because the plant and the firm unit coincide for mono-establishment firms, no aggregation is necessary, but our results do not change significantly if the effects of diversity are estimated only with these firms in our sample (third panel of Table 12).

Since our diversity index distinguishes workers by linguistic groups, but not by work categories, in Table 13 we control whether the effect of diversity differs for white-collar and blue-collar occupations. As white-collar workers are typically more influential on firms' business plans and export strategies, ethnic diversity in senior occupations may promote firms' export activities more effectively. The first two sub-panels of Table 13 report evidence supporting this conjecture for all the export dimensions: The estimated coefficients of diversity referring to white-collar workers are generally larger and more precisely estimated than those for blue-collar workers.

Language grouping constitutes an implicit form of aggregation in our measure of diversity. While the main analysis refines language groups to the third level of the linguistic family tree (35 language groups), we experiment here with a less detailed linguistic classification. Restricting ourselves just to the first linguistic tree level, Germanic West, Germanic North, and Romance languages are classified under the same

group of “Indo-European languages”, and in total there are 20 such language groups. With this formulation, people from Western Europe, Nordic countries, and Romania - a large fraction of the EU-27 - would be considered as having identical ethnic backgrounds.

Furthermore, we also give up on a language-based index and recompute the index based on foreign employees’ nationalities. As numerous nationalities pose data dimensionality challenges, for practical matters and based on the UN’s regional maps, we group nationalities into the following eight categories: North America and Oceania, Central and South America, Africa, West and South Europe, former Communist countries, Asia, East Asia, and Muslim countries.³⁹ We deem this distinction sufficient to test whether a nationality based index would change our figures dramatically.

Overall, our results (third and fourth sub-panels of Table 13) prove robust to different formulations of our diversity index, eliminating any concern that data aggregation issues may be driving our findings.

[Insert Table 13 about here]

Finally, we provide further sensitivity analysis on the IV findings. First, we check whether using a narrower time window around 2004, i.e. from 2002 to 2006, affects the IV estimates. The first sub-panel of Table 14 indicates that the IV results obtained

³⁹Based on the UN regional maps, the nationality groups are as follows: i) North America and Oceania: United States, Canada, Australia, New Zealand; ii) Central and South America: Guatemala, Belize, Costa Rica, Honduras, Panama, El Salvador, Nicaragua, Venezuela, Ecuador, Peru, Bolivia, Chile, Argentina, Brazil; iii) Former Communist countries: Armenia, Belarus, Estonia, Georgia, Latvia, Lithuania, Moldova, Russia, Tajikistan, Ukraine, Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Rep. of Macedonia, Montenegro, Serbia, and Slovenia; iv) Muslim countries: Afghanistan, Algeria, Arab Emirates, Azerbaijan, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Comoros, Chad, Djibouti, Egypt, Eritrea, Gambia, Guinea, Indonesia, Iran, Iraq, Jordan, Kazakhstan, Kyrgyzstan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malaysia, Maldives, Mali, Mauritania, Morocco, Nigeria, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Senegal, Sierra Leone, Somalia, Sudan, Syria, Tajikistan, Tunisia, Turkey, Turkmenistan, Uzbekistan, Yemen; v) East Asia: China, Hong Kong, Japan, Korea, Korea Dem. People’s Rep. of, Macao, Mongolia, Taiwan; vi) Asia: all the other Asian countries non included in both East Asia and Muslim countries categories; vii) Africa: all the other African countries not included in the Muslim countries; viii) Western and Southern Europe: all the other European countries not included in the Former Communist countries category.

from a shorter sample period do not substantially differ from those reported in Tables 10 and 11, even though the coefficient on ethnic diversity is less precisely estimated in the export status equation. The next check is about the potential endogeneity of firms' location within our identification strategy. As we explained above, firms' location should be unrelated to the median voter ideology of that area. Given that our IV uses the time window 2001-2007, the location of firms founded prior to 2001 is predetermined. Were our identification assumption to fail, we should be observing a clear difference in our results using only firms founded prior to 2001. But our results in the second sub-panel of Table 14 are qualitatively similar to the IV results reported above.

We further consolidate our results by changing our IV strategy *tout court*, and instrument the firm diversity with the attitude toward immigrants registered before the 2001-2007 time window. In the vein of a difference in difference (DiD) approach, we modify the first stage regression (3) to:

$$\begin{aligned} ethnic_{it} = & cons + \delta_0 \overline{ati_index}_{k90s} + \delta_1 I(t \geq 2004) + \delta_2 \overline{ati_index}_{k90s} * I(t \geq 2004) \\ & + \mathbf{x}'_{it} \beta + \eta_j + \eta_k + \xi_{it}, \end{aligned} \quad (8)$$

where $\overline{ati_index}_{k90s}$ denotes the moving average of ati_index_{kmt} in (7) over the whole 90s. All results prove robust to this specification, too (Table 14, last panel), and the coefficient of ethnic diversity for the outcomes “number of export markets” and “number of exported products” are even very close in magnitude to the ones reported with our other strategy inspired by regression discontinuity analysis.

We turn to evaluate the robustness of our findings to different computations of our “attitudes towards immigrants” index, $\overline{ati_index}$.

A first concern is that the median voter position also reflects statements in parties' manifestos which concern trade policy, so that our hostility measure to migrant settle-

ments in practice also reflects a liberal or protectionist attitude of the median voter. To sterilize our index from any possible trade influence, we exclude from equation (5) all statements (pro or con) related to trade.⁴⁰

A second concern is related to the computation of our index. We expect the time variation of our $\overline{ati_index}$ in equation (7) to respond largely to vote shifts across parties in different electoral cycles rather than to modifications of parties' manifestos. The reason for such vote swops could be what the electoral base takes as a poor political performance, but in fact it is an idiosyncratic downturn at the municipality level. Then, our strategy would confound changes in local economic conditions with modifications of the local attitudes towards immigrants if the location fixed effects that we include in the first stage are not enough to factor out local business cycles. We propose a slight alteration of our index to account for this possibility: We recompute equation (7) using the political ideology of the 90th percentile voter rather than the 50th percentile voter (i.e., the median voter).⁴¹ Extreme voters are indeed not pivotal and hardly modify their political preferences based on economic conditions.

The results are reported in Table 14 and do not differ qualitatively from the main findings.

[Insert Table 14 about here]

5 Conclusions

Motivated by [Mohr and Shoobridge's \(2011\)](#) hypothesis that firms learn to operate internationally by managing a diverse workforce, we have investigated at the firm level the causal effect of increasing labor force (ethnic) diversity on different exporting

⁴⁰Specifically we rule out all the statements pertaining to the European community, internationalism, and protections.

⁴¹In analogy with equation (6), we let the extreme voter be computed as $extreme_voter_m = L + [(90 - C) / F] \star W$. We then replace the $median_voter_m$ in (7) with $extreme_voter_m$.

performances, namely export status, export turnover, number of destinations, number of products exported, and number of products exported per destination.

Using employer-employee data for the whole Danish population of firms (and workers) between 1995 and 2007, we find that on average more ethnically diversified firms perform better on the international market along all measures considered. The effect is stronger for those outcomes that are more strictly connected with firms' adjustments at the extensive margin (export status, number of products and destinations).

Even if we cannot directly observe firms' efforts at managing their employee diversity, our results are in line with [Mohr and Shoobridge's \(2011\)](#) conjecture, and therefore reinforce it. They do establish that productivity is not the only driver of firms' selection into international markets, but other characteristics of the workforce, in this case diversity, are just as important and deserve closer attention by (trade) economists, as they become proper intangible assets for the firm and determine their success. We have pointed out how technology mediates the effects of workforce diversity in [Grossman and Maggi \(2000\)](#). Similarly, in [Yeaple \(2005\)](#), different technologies induce firms to hire workers with different abilities. It is therefore not surprising that selection on productivity is ultimately conjunct with the selection on workforce characteristics. More theoretical and empirical future research is necessary to deepen our understanding of how these channels interact and shape the internationalization process of firms.

In the absence of randomized experiments, we rely on the EU enlargement process of 2004 as quasi-experimental evidence for the diversity of the pool of workers locally recruitable by firms. The value added of our instrumental strategy is, however, that it combines this one time event with the attitude toward immigrants at firm's location, as measured by the political median voter ideology. Indeed, if migrants tend to settle in the areas least hostile to them, firms located in these areas are the ones that benefit the most in terms of "employable diversity".

We have been very careful to disentangle the effects of workforce diversity from

those induced by networking. Even allowing for different network channels (firm and employee networks), our findings on the effects of diversity are confirmed. Moreover, diversity impacts exporting regardless of the popularity of destinations. This is consistent with the notion that the acquired *meta-competences* are universal knowledge more directly transferable across different contexts.

From the perspective of firms, the challenges and costs associated with managing a diverse workforce may constitute investments rewarded with an increased ability to initiate, manage, and expand international business. These findings open new perspectives to policy makers about designing export promotion and integration policies.

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Figure 1: Ethnic diversity and median-voter's political ideology (fitted and observed) over time

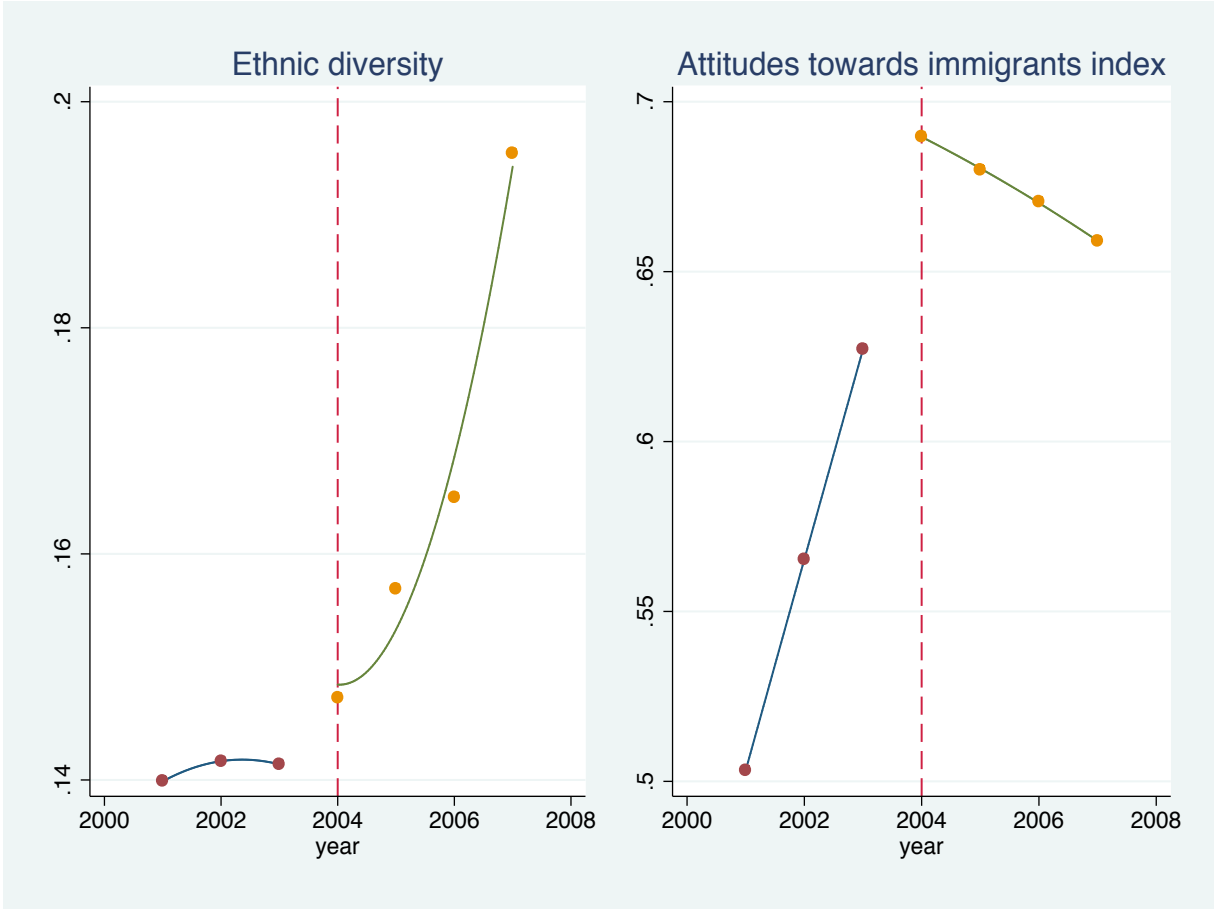
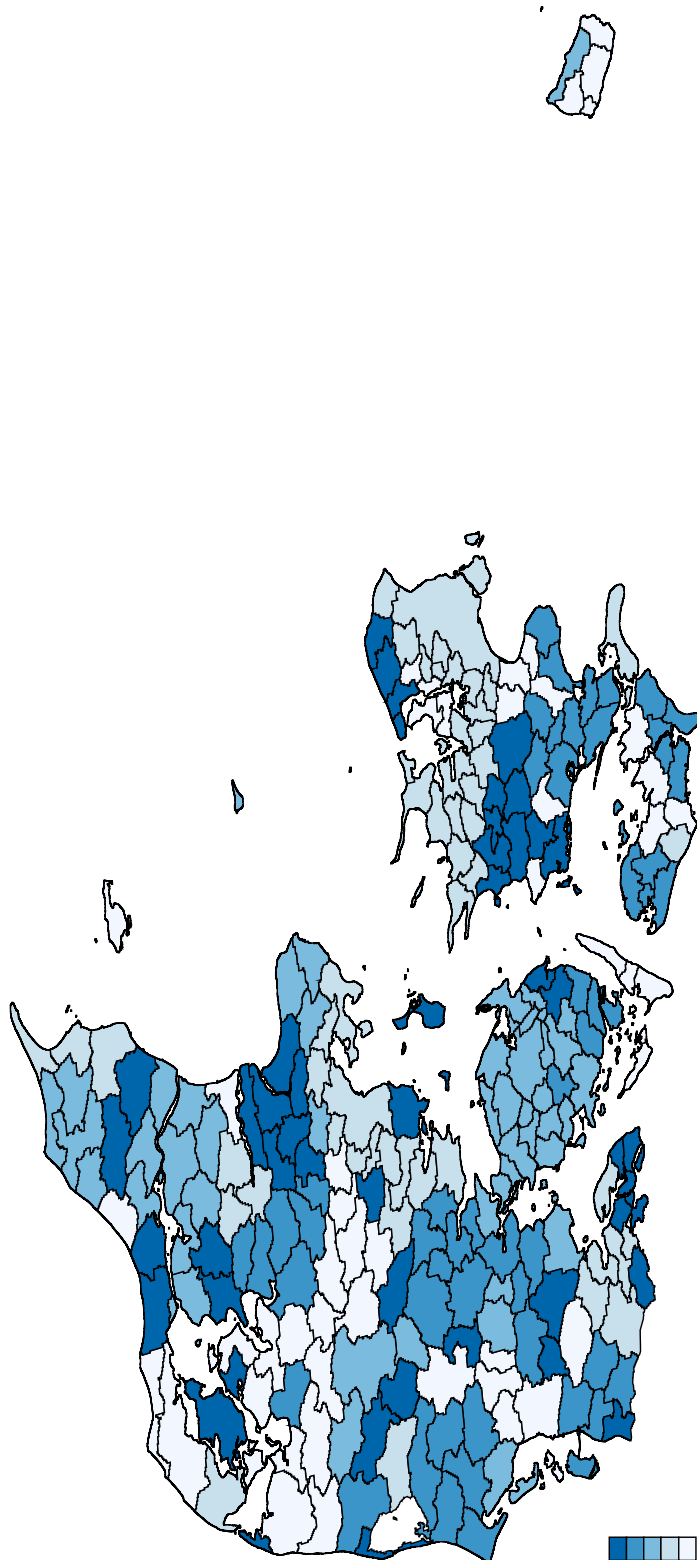
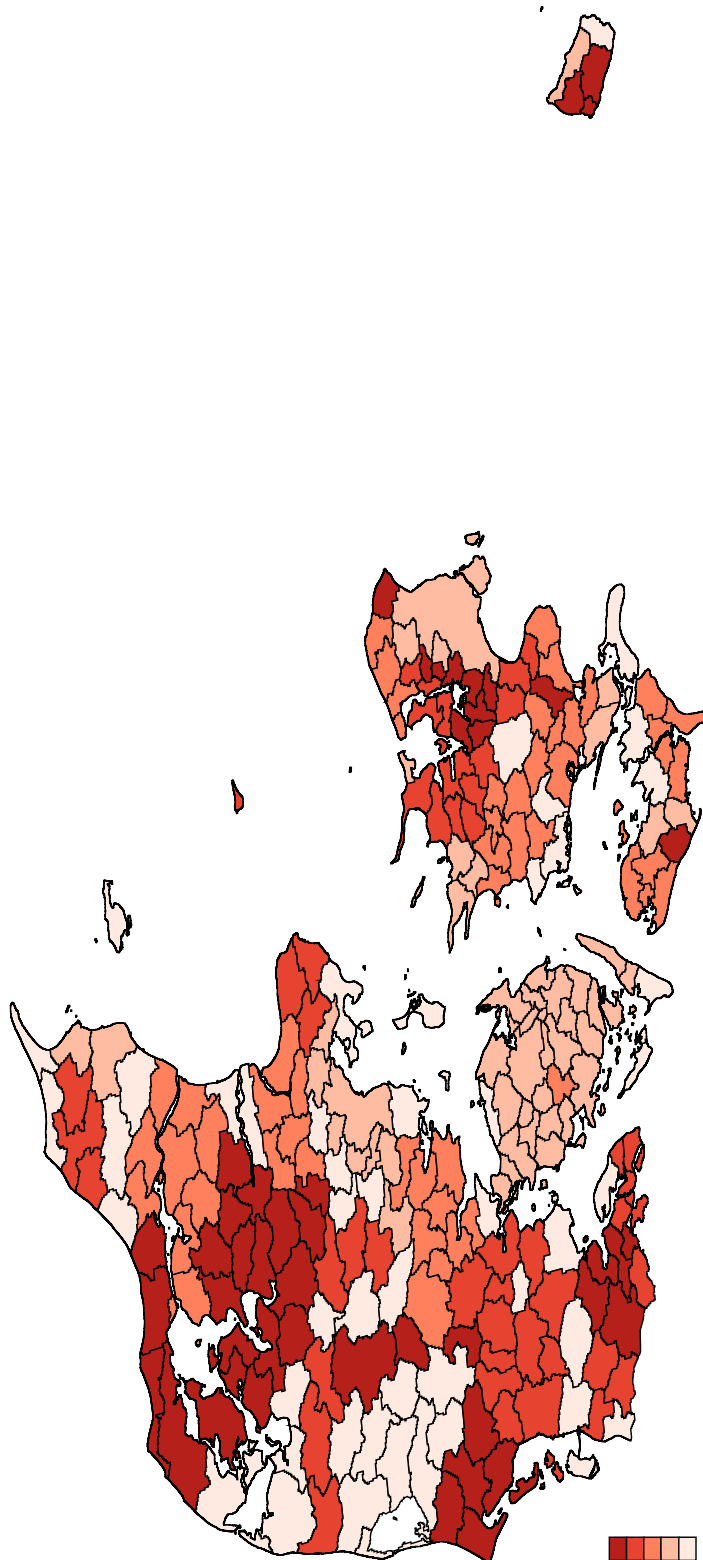


Figure 2: Changes in ethnic diversity between 2001-2003 and 2005-2007.



Note: Centiles (20, 40, 60, 80): 7.24%, 17.07%, 27.29%, 39.35%. Municipalities in the first quintile (increasing values): Neksoe, Noerre Alslev, Pandrup, Sakskoebing, Korsoer, Karup, Lemvig, Rudkoebing, Tranekær, Holeby, Maribo, Laesoe, Roenne, Aakirkeby, Hasle, Roennede, Hadsund, Aeroeskoebing, Gjern, Ribe, Holsted, Sydlangeland, Marstal, Fuglebjerg, Thyholm, Noerre Rangstrup, Hammel, Grindsted, Struer, Thisted, Hanstholm, Ikast, Valloe, Koege, Skovbo, Ulfborg-Vemb, Holstebro, Avlum-Haderup, Silkeborg, Kjellerup, Them, Spoettrup, Sundsoere, Fjends, Skive, Bramming, Broerup. *Municipalities in the last quintile (increasing values):* Billund, Brovst, Fjerritslev, Nyborg, Oerbaek, Augustenborg, Soenderborg, Broager, Sundede, Bov, Sydals, Helsing, Frederiksværk, Græsted-Gilleleje, Hundested, Morsoe, Sallingsund, Thyboreen-Harboere, Hoejer, Langaa, Noerhald, Rongsoe, Purreus, Randers, Soenderhald, Farsoe, Aars, Dianalund, Slagelse, Goerlev, Stenille, Hoeng, Soree, Hashoej, Odder, Holmsland, Broenderslev, Ringsted, Dromminglund, Aaskov, Skælskoer, Videbæk, Vojens, Gram, Ry, Noerre Snede, Mariager, Samsøe.

Figure 3: Changes in attitudes towards immigrants and internationalization between 2001-2003 and 2005-2007.



Note: Centiles (20, 40, 60, 80): 13.37%, 17.08%, 18.46%, 20.01%. Municipalities in the first quintile (increasing values): Videbæk, Skjern, Ringsted, Korsør, Holmsland, Olgod, Skagen, Moen, Fuglebjerg, Grindsted, Skærbæk, Sakskøbing, Noerre Rangstrup, Hadsten, Samsø, Marstal, Hammel, Pandrup, Bogen, Karup, Ikast, Noerre Alslev, Ringkøbing, Trehøje, Gjern, Vandrup, Thyholm, Haderslev, Hadsund, Skaelskøer, Mariager, Sydlangeland, Struer, Noerre Snede, Ry, Sydthy, Hirtshals, Egvad, Dronninglund, Thybørøen-Harboøre, Fredericia, Askov, Broenderslev, Aereskøbing, Nordborg, Neksoe, Ebeltøft, Lemvig, Vinderup, Hoejer, Laeso, Odder. Municipalities in the last quintile (increasing values): Esbjerg, Fanø, Moeldrup, Aalestrup, Viborg, Tjele, Morsoe, Salingsund, Tinglev, Aabenraa, Roedekro, Graasten, Lundtoft, Sundsoere, Fjends, Skive, Spøttrup, Bramsnæs, Gundsoe, Lejre, Ramsoe, Hvalsoe, Roskilde, Slangerup, Helle, Blaavandshuk, Blaabjerg, Varde, Hobro, Arden, Noerager, Aakirkeby, Roenne, Hasle, Roennede, Brovst, Fjerritslev, Farsoe, Aars, Hanstholm, Thisted, Bjerringbro, Hvorslev, Brande, Herning, Helsingør, Roedby, Oelstykke, Billund.

Table 1: Descriptive statistics

Variables		Total		Firms with above av diversity		Size1		Size2	
IDA Variables:		Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
men	men as a proportion of all employees	0.713	0.234	0.657	0.225	0.721	0.238	0.686	0.218
foreigners	non-Danish employees as a proportion of all employees	0.018	0.050	0.044	0.070	0.017	0.053	0.021	0.041
employee network	number of foreign employees with origins from firm's export destinations	0.136	5.194	0.137	2.800	0.072	1.828	0.164	6.102
age1	employees aged 15-28 as a proportion of all employees	0.241	0.194	0.230	0.201	0.251	0.198	0.206	0.176
age2	employees aged 29-39 as a proportion of all employees	0.234	0.125	0.249	0.118	0.230	0.132	0.246	0.097
age3	employees aged 40-48 as a proportion of all employees	0.195	0.109	0.206	0.099	0.190	0.116	0.213	0.080
age4	employees aged 49-57 as a proportion of all employees	0.175	0.106	0.170	0.094	0.172	0.112	0.185	0.079
age5	employees aged 58-65 as a proportion of all employees	0.155	0.118	0.145	0.103	0.157	0.125	0.151	0.089
skill0	employees with compulsory education as a proportion of all employees	0.327	0.189	0.337	0.185	0.328	0.194	0.325	0.168
skill1	employees with a secondary education as a proportion of all employees	0.582	0.180	0.536	0.159	0.588	0.186	0.568	0.164
skill2	employees with a post-secondary/ tertiary education as a proportion of all employees	0.092	0.151	0.127	0.164	0.085	0.150	0.109	0.152
tenure	average tenure	14.068	5.010	13.798	5.297	14.501	5.188	15.283	4.739
managers	managers as a proportion of all employees	0.043	0.059	0.040	0.050	0.044	0.064	0.038	0.041
middle managers	middle managers as a proportion of all employees	0.170	0.215	0.205	0.231	0.155	0.210	0.216	0.221
bluecoll	blue-collar workers as a proportion of all employees	0.701	0.268	0.684	0.263	0.724	0.235	0.750	0.258
index ethnic diversity	diversity index based on employees' language (35 categories)	0.166	0.281	0.600	0.166	0.093	0.217	0.405	0.331
index ethnic diversity (white-collar)	diversity index based on white-collar workers' language (35 categories)	0.109	0.240	0.413	0.306	0.053	0.170	0.248	0.321
index ethnic diversity (blue-collar)	diversity index based on blue-collar workers' language (35 categories)	0.046	0.174	0.173	0.303	0.023	0.130	0.105	0.244
index ethnic diversity	diversity index based on employees' language (20 categories)	0.107	0.224	0.313	0.278	0.064	0.181	0.273	0.278
Accounting Variables:									
labor productivity	log of sales per employee	6.846	0.813	6.841	0.901	6.807	0.799	6.975	0.843
number of employees	firm size in full time equivalents	68.834	363.478	166.026	653.394	21.985	9.887	219.468	725.856
capital per employee	log of capital stock per employee	4.756	1.563	4.917	1.692	4.648	1.531	5.110	1.614
export	1, if the firm exports	0.408	0.491	0.569	0.495	0.332	0.471	0.654	0.476
foreign ownership	1, if the firm is foreign owned	0.004	0.062	0.006	0.078	0.004	0.062	0.004	0.064
multi	1, if the firm is multi-establishment	0.122	0.327	0.243	0.429	0.029	0.167	0.426	0.495
N		165,447		44,587		120,718		48,468	
Number of firms		14,065		3,810		10,111		3,954	
Customs Data									
export sales per employee	aggregated value of a firm's export across all products and destinations per employee	309.495	5307.692	346.632	452.249	306.299	6842.321	314.285	479.063
export markets	number of destination export markets	14.691	14.994	21.107	18.901	10.412	9.803	21.099	18.686
export products	number of products exported	9.656	17.615	13.551	6.631	10.057	14.186	24.277	
export experience	number of years that a firm has been exporting in the sample period	5.640	6.630	8.177	6.787	4.654	6.263	8.083	6.876
firm network	number of Danish firms exporting to the same destination within the same industry	354.93	466.683	295.893	417.271	459.738	527.17	308.112	430.762
N		65,964		25,373		39,615		26,317	
Number of firms		5,333		2,045		3,227		2,106	

Notes: All descriptive statistics are calculated over the period 1995-2007. The industrial sectors included in the empirical analysis are the following: food, beverages and tobacco (4.05%); textiles (2%); wood products (6.19%); chemicals (3.95%); other non-metallic mineral products (1.94%); basic metals (18.95%); furniture (3.46%); construction (15.07%); sale and repair of motor vehicles (3.64%); wholesale trade (14.67%); retail trade (6.06%); hotels and restaurants (2.08%); transport (6.12%); post and telecommunications (0.40%); financial intermediation (1.17%); and business activities (10.25%). Size1: 10 to 49 employees; Size2: 50 or more employees.

Table 2: Ethnic diversity by industry and year

Year	Industry				
	Manufacturing	Construction	Wholesale and retail trade	Transport	Financial and business service
1995	0.1682	0.0339	0.0427	-	-
1996	0.1824	0.0381	0.0509	-	-
1997	0.1917	0.0459	0.0571	-	-
1998	0.2082	0.0477	0.0949	-	-
1999	0.2112	0.0500	0.1072	0.0727	0.1810
2000	0.2290	0.0554	0.1182	0.1036	0.2039
2001	0.2378	0.0599	0.1253	0.1133	0.2008
2002	0.2424	0.0574	0.1303	0.1333	0.2006
2003	0.2425	0.0581	0.1310	0.1419	0.2019
2004	0.2490	0.0581	0.1433	0.1534	0.2054
2005	0.2566	0.0701	0.1627	0.1631	0.2176
2006	0.2728	0.0802	0.1717	0.1757	0.2329
2007	0.2949	0.0860	0.1817	0.1710	0.2364

Table 3: Share of foreigners by industry and year

Year	Industry				
	Manufacturing	Construction	Wholesale and retail trade	Transport	Financial and business service
1995	0.0160	0.0054	0.0076	-	-
1996	0.0165	0.0063	0.0093	-	-
1997	0.0170	0.0069	0.0100	-	-
1998	0.0186	0.0070	0.0147	-	-
1999	0.0180	0.0072	0.0162	0.0096	0.0249
2000	0.0184	0.0080	0.0172	0.0127	0.0243
2001	0.0190	0.0078	0.0177	0.0138	0.0233
2002	0.0186	0.0080	0.0191	0.0144	0.0244
2003	0.0178	0.0074	0.0194	0.0155	0.0256
2004	0.0180	0.0075	0.0203	0.0152	0.0254
2005	0.0196	0.0102	0.0243	0.0148	0.0277
2006	0.0213	0.0129	0.0261	0.0198	0.0309
2007	0.0243	0.0153	0.0266	0.0201	0.0337

Table 4: Share of foreigners by relevant group and year

Year	Africa	North America	North America and Oceania	Central and South America	Nordic countries	North East Europe	South West Europe	South East Asia	Other Asia	Muslim	New EU members
1995	0.0011	0.0008		0.0005	0.0041	0.0023	0.0087	0.0065	0.0053	0.0073	0.0020
1996	0.0012	0.0009		0.0004	0.0045	0.0023	0.0093	0.0070	0.0053	0.0076	0.0020
1997	0.0014	0.0009		0.0005	0.0046	0.0025	0.0106	0.0076	0.0059	0.0088	0.0021
1998	0.0016	0.0009		0.0004	0.0051	0.0027	0.0122	0.0074	0.0064	0.0092	0.0022
1999	0.0024	0.0012		0.0007	0.0057	0.0029	0.0135	0.0081	0.0064	0.0103	0.0024
2000	0.0025	0.0014		0.0009	0.0060	0.0031	0.0138	0.0087	0.0065	0.0106	0.0025
2001	0.0025	0.0013		0.0009	0.0058	0.0033	0.0141	0.0088	0.0070	0.0112	0.0026
2002	0.0026	0.0014		0.0009	0.0059	0.0033	0.0142	0.0093	0.0077	0.0120	0.0026
2003	0.0027	0.0014		0.0009	0.0060	0.0035	0.0143	0.0101	0.0077	0.0122	0.0026
2004	0.0027	0.0014		0.0009	0.0058	0.0037	0.0142	0.0103	0.0081	0.0127	0.0030
2005	0.0034	0.0015		0.0012	0.0063	0.0048	0.0152	0.0119	0.0091	0.0150	0.0041
2006	0.0035	0.0016		0.0014	0.0067	0.0058	0.0163	0.0132	0.0103	0.0168	0.0054
2007	0.0041	0.0016		0.0015	0.0063	0.0079	0.0164	0.0147	0.0110	0.0180	0.0075

Notes: Africa: all African countries; North America and Oceania: United States, Canada, Australia, New Zealand; Central and South America: Guatemala, Belize, Costa Rica, Honduras, Panama, El Salvador, Nicaragua, Venezuela, Ecuador, Peru, Bolivia, Chile, Argentina, Brazil; Nordic Countries: Island, Finland, Norway and Sweden; North East Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Montenegro, Hungary, Ireland, Poland, Rep. of Macedonia, Romania, Slovakia, Serbia, and Slovenia; United Kingdom; South and West Europe: all the other European countries; South and East Asia: Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam and Peninsular Malaysia, and Maritime Southeast Asia, comprises Brunei, East Malaysia, East Timor, Indonesia, Philippines, Christmas Island, and Singapore, China, Hong Kong, Japan, Korea, Korea Dem. People's Rep. of, Macao, Mongolia, Taiwan; Other Asia: all the other Asian countries; Muslim countries: Afghanistan, Algeria, Arab Emirates, Azerbaijan, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Camoros, Chad, Djibouti, Egypt, Eritrea, Gambia, Guinea, Indonesia, Iran, Iraq, Jordan, Kazakhstan, Kirgizstan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malaysia, Maldives, Mali, Mauritania, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Senegal, Sierra Leone, Somalia, Syria, Tadzhiistan, Tunisia, Turkey, Turkmenistan, Uzbekistan, Yemen; New EU members after the 2004 enlargement: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia

Table 5: Ethnic diversity and the export decision

	Probability of exporting					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	FE	FE	FE
index ethnic diversity	0.184*** (0.008)	0.036*** (0.006)	0.033*** (0.006)	0.020*** (0.005)	0.016*** (0.005)	0.016*** (0.005)
export experience		0.052*** (0.000)	0.052*** (0.000)		0.063*** (0.001)	0.063*** (0.001)
lagged labor productivity		0.029*** (0.002)	0.022*** (0.003)		0.013*** (0.004)	0.012** (0.004)
skill1			0.043*** (0.017)			0.008 (0.012)
skill2			0.056*** (0.009)			0.042* (0.025)
men			0.006 (0.009)			-0.009 (0.015)
middle managers			0.062** (0.023)			-0.002 (0.021)
managers			0.049*** (0.011)			0.007 (0.011)
N	165,447	118,207	118,207	165,447	118,207	118,207
R2	0.426	0.724	0.726	0.009	0.011	0.013

Notes: The dependent variable is the probability of exporting. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, and all year-industry interactions. Specifications in columns 3 and 6 also include the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Standard errors are clustered at the firm level. Significance levels: ***1%, **5%, *10%.

Table 6: Ethnic diversity and the proportion of output exported

	Log of export sales per employee								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	OLS	OLS	OLS	Pooled FE	Pooled FE	Pooled FE	Destination FE	Destination FE	Destination FE
index ethnic diversity	1.151*** (0.065)	1.112*** (0.070)	0.627*** (0.071)	0.161*** (0.037)	0.157*** (0.039)	0.141*** (0.040)	0.928*** (0.015)	0.925*** (0.017)	0.555*** (0.018)
export experience		0.109*** (0.005)	0.102*** (0.005)		0.001 (0.007)	0.002 (0.007)		0.005*** (0.001)	0.005*** (0.001)
lagged labor productivity		0.365*** (0.036)	0.343*** (0.037)		0.151*** (0.035)	0.155*** (0.035)		0.030*** (0.008)	0.045*** (0.008)
skill1			0.597*** (0.168)			-0.154 (0.134)		-0.527*** (0.052)	-0.527*** (0.052)
skill2			0.885*** (0.266)			0.240 (0.254)		0.507*** (0.075)	0.507*** (0.075)
men			-0.941*** (0.125)			-0.336** (0.150)		-1.705*** (0.030)	-1.705*** (0.030)
age1			-3.077*** (0.376)			-0.064 (0.265)		-3.160*** (0.134)	-3.160*** (0.134)
age2			-1.262*** (0.309)			0.114 (0.228)		-1.009*** (0.110)	-1.009*** (0.110)
age3			-0.647** (0.269)			0.160 (0.196)		-1.503*** (0.096)	-1.503*** (0.096)
age4			-0.121 (0.240)			0.324** (0.162)		-1.439*** (0.105)	-1.439*** (0.105)
middle managers			0.883** (0.272)			0.003 (0.174)		0.022 (0.093)	0.022 (0.093)
managers			0.176*** (0.038)			0.092 (0.111)		0.218*** (0.034)	0.218*** (0.034)
tenure			-0.087*** (0.011)			-0.003 (0.009)		-0.099*** (0.004)	-0.099*** (0.004)
employee network								0.001** (0.001)	0.001** (0.001)
firm network								0.001*** (0.000)	0.001*** (0.000)
N	65,964	51,712	51,712	65,964	51,712	51,712	3,096,502	2,651,049	2,651,049
R2	0.235	0.283	0.308	0.025	0.026	0.027	0.296	0.313	0.380

Notes: In columns 1-6, the dependent variable is the log of export sales per employee, conditional on exporting. In columns 7-9, the dependent variable is the destination specific log of export sales per employee, conditional on exporting. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, and all year-industry interactions. Specifications in columns 3 and 6 also include the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Specifications in columns 7-9 also include firm-destination fixed effects. Standard errors are clustered at the firm level. Significance levels: ***1%, **5%, *10%.

Table 7: Ethnic diversity and the number of export markets

	Number of export markets					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	FE	FE	FE
index ethnic diversity	12.973*** (0.596)	12.294*** (0.639)	11.125*** (0.649)	2.362*** (0.180)	2.010*** (0.183)	1.875*** (0.186)
export experience		0.574*** (0.031)	0.508*** (0.030)		0.094** (0.041)	0.096** (0.041)
lagged labor productivity		4.017*** (0.243)	3.405*** (0.236)		1.095*** (0.160)	1.098*** (0.159)
skill1			0.019 (0.939)			0.894* (0.546)
skill2			9.258*** (1.775)			1.476 (1.332)
men			-11.699*** (0.846)			-0.903 (0.719)
middle managers			0.426 (1.632)			-0.273 (0.723)
managers			8.951*** (0.903)			-0.144 (0.523)
N	65,964	51,740	51,740	65,964	51,740	51,740
R2	0.273	0.316	0.361	0.152	0.148	0.152

Notes: The dependent variable is the number of export markets, conditional on exporting. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, and all year-industry interactions. Specifications in columns 3 and 6 also include the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Standard errors are clustered at the firm level. Significance levels: ***1%, **5%, *10%.

Table 8: Ethnic diversity and the number of exported products

	Number of exported products								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
index ethnic diversity	OLS (0.197)	OLS 2.455*** (0.220)	OLS 2.200*** (0.223)	Pooled FE 0.618*** (0.099)	Pooled FE 0.588*** (0.111)	Pooled FE 0.549*** (0.117)	Destination FE 4.594*** (0.126)	Destination FE 4.583*** (0.148)	Destination FE 4.521*** (0.152)
export experience		0.126*** (0.013)	0.115*** (0.013)		0.037*** (0.017)	0.036*** (0.017)		-0.018* (0.011)	-0.007 (0.010)
lagged labor productivity		1.058*** (0.102)	1.012*** (0.108)		0.316*** (0.093)	0.309*** (0.094)		2.230*** (0.061)	2.640*** (0.064)
skill1			0.932** (0.389)			0.333 (0.325)			-2.160*** (0.619)
skill2			2.365*** (0.637)			0.278 (0.647)			7.015*** (0.406)
men			-4.863*** (0.353)			0.012 (0.437)			-11.229*** (0.260)
age1			1.123 (0.931)			0.317 (0.585)			12.729*** (1.013)
age2			1.241* (0.720)			0.915* (0.486)			7.526*** (0.813)
age3			0.938 (0.639)			1.076** (0.418)			-14.849*** (0.690)
age4			-0.054 (0.536)			0.930** (0.350)			-7.001*** (0.724)
middle managers			0.613 (0.666)			-0.860** (0.416)			-2.475*** (0.695)
managers			2.742*** (0.410)			0.105 (0.306)			5.306*** (0.385)
tenure			0.025 (0.028)			-0.006 (0.022)			-0.006 (0.029)
employee network									0.095*** (0.021)
firm network									0.001*** (0.000)
N	65,964	51,740	51,740	65,964	51,740	51,740	3096502	2651049	2651049
R2	0.138	0.148	0.165	0.093	0.094	0.097	0.112	0.111	0.125

Notes: In columns 1-6, the dependent variable is the number of exported products, conditional on exporting. In columns 7-9, the dependent variable is the destination specific number of exported products, conditional on exporting. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies plus all year-industry interactions. Specifications in columns 3 and 6 also include the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Specifications in columns 7-9 also include firm-destination fixed effects. Standard errors are clustered at the firm level. Significance levels: ***1%, **5%, *10%.

Table 9: First stage regression results

	First step(1)	First step(2)	First step(3)	First step(4)	First step(5)
$\overline{ati_index}$					0.016** (0.007)
$(year \geq 2004) * \overline{ati_index}$	0.024*** (0.011)	0.020** (0.010)	0.040** (0.020)	0.091*** (0.023)	
$((year \geq 2004) * \overline{ati_index})^2$	-0.095*** (0.022)	-0.084*** (0.025)	-0.075** (0.023)	-0.038* (0.023)	
$(year - 2004) * \overline{ati_index}$	0.065*** (0.008)	0.065*** (0.009)	0.035*** (0.008)	-0.047*** (0.009)	
$(year \geq 2004) * (year - 2004) * \overline{ati_index}$	-0.055*** (0.009)	-0.043*** (0.010)	-0.019** (0.009)	0.035** (0.013)	
$((year - 2004) * \overline{ati_index})^2$	0.014*** (0.002)	0.014*** (0.002)	0.007** (0.002)	-0.013*** (0.002)	
$((year \geq 2004) * (year - 2004) * \overline{ati_index})^2$	-0.011*** (0.003)	-0.015*** (0.003)	-0.009*** (0.003)	0.024*** (0.004)	
export experience		0.006*** (0.000)	0.004*** (0.000)	0.006*** (0.000)	0.005*** (0.000)
lagged labor productivity		-0.009*** (0.001)	-0.000 (0.001)	0.001 (0.002)	0.004** (0.002)
skill1			-0.015** (0.006)	-0.037*** (0.006)	-0.037*** (0.006)
skill2			0.008 (0.010)	-0.018* (0.010)	-0.008 (0.010)
men			-0.014** (0.005)	-0.015** (0.005)	-0.017** (0.005)
middle managers			-0.063*** (0.013)	-0.051*** (0.014)	-0.051*** (0.014)
managers			0.034*** (0.006)	0.032*** (0.006)	0.033*** (0.006)
N	88,590	68,725	68,725	68,725	68,725
R2	0.201	0.259	0.400	0.312	0.307

Notes: The dependent variable is the ethnic diversity at the firm level. In columns 1-3 ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the ten-year moving average of the *ati_index* in the commuting area where the firm is located. In column 4 ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the current *ati_index* within the commuting area where the firm is located. In column 5 ethnic diversity is instrumented with the moving average of the *ati_index* within the commuting area where the firm is located. The estimation sample is from 2001 to 2007. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, and commuting areas dummies. Columns 3-5 also include the share of differently aged workers belonging to the employees age' distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Standard errors are clustered at the commuting area level. Significance levels: ***1%, **5%, *10%.

Table 10: Ethnic diversity effects on the firm internationalization process, IV results (1)

	Probability of exporting				Log of export sales per employee					
	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) IV	(8) IV	(9) IV	(10) IV
index ethnic diversity	0.234*** (0.040)	0.112*** (0.041)	0.097** (0.037)	0.085*** (0.034)	0.079* (0.038)	1.091*** (0.028)	0.782** (0.311)	0.670 (0.374)	0.692 (0.455)	0.483 (0.432)
export experience		0.067*** (0.001)	0.067*** (0.001)	0.067*** (0.001)	0.067*** (0.001)		0.031** (0.014)	0.030** (0.014)	0.031** (0.014)	0.031** (0.014)
lagged tfp		0.007** (0.003)	0.007** (0.003)	0.007** (0.003)	0.009** (0.003)		0.102*** (0.027)	0.102*** (0.027)	0.100*** (0.027)	0.103*** (0.029)
skill1			0.008 (0.015)	0.007 (0.015)	0.003 (0.015)		-0.337** (0.152)	-0.337** (0.152)	-0.344** (0.152)	-0.362** (0.158)
skill2			0.013 (0.026)	0.014 (0.026)	0.013 (0.026)		0.752** (0.246)	0.752** (0.246)	0.766** (0.245)	0.766** (0.246)
men			0.009 (0.017)	0.010 (0.017)	0.009 (0.017)		-0.419** (0.160)	-0.419** (0.160)	-0.415** (0.160)	-0.423** (0.161)
middle managers			-0.004 (0.023)	-0.006 (0.023)	-0.008 (0.023)		0.013 (0.194)	0.013 (0.194)	0.018 (0.193)	0.013 (0.194)
managers			-0.001 (0.011)	-0.000 (0.011)	0.003 (0.012)		-0.118 (0.103)	-0.118 (0.103)	-0.125 (0.103)	-0.119 (0.104)
F test (excluded instruments); p-value	190.52; 0.000	139.30; 0.000	179.53; 0.000	251.89; 0.000	428.01; 0.000	99.02; 0.000	81.16; 0.000	108.30; 0.000	123.17; 0.000	172.26; 0.000
N	88,590	68,725	68,725	68,725	68,725	32,080	27,420	27,420	27,420	27,420
R2	0.443	0.729	0.731	0.731	0.731	0.228	0.284	0.312	0.312	0.313

Notes: Ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the ten-year moving average of the *ati_index* in the commuting area where the firm is located. The estimation sample is from 2001 to 2007. In columns 4 and 9 ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the current *ati_index* within the commuting area where the firm is located. In columns 5 and 10 ethnic diversity is instrumented with the ten-year moving average of *ati_index* within the commuting area where the firm is located. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, and commuting areas dummies, and firm-specific unobserved fixed effects. Specifications in columns 3-5 and 8-10 also include the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Standard errors are clustered at the commuting area level. Significance levels: ***1%, **5%, *10%.

Table 11: Ethnic diversity effects on the firm internationalization process, IV results (2)

	Number of export markets										Number of exported products									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)										
index ethnic diversity	23.610*** (1.422)	15.340*** (1.345)	14.916*** (1.185)	13.857*** (1.083)	16.111*** (2.274)	17.787*** (1.013)	15.482*** (1.047)	13.168*** (0.869)	12.604*** (0.796)	16.709*** (1.803)										
export experience		0.241*** (0.060)	0.243*** (0.059)	0.245*** (0.058)	0.246*** (0.060)		0.081* (0.046)	0.084* (0.043)	0.084** (0.043)	0.087* (0.048)										
lagged tfp		1.194*** (0.107)	1.060*** (0.107)	1.043*** (0.105)	1.014*** (0.112)		0.501*** (0.083)	0.369*** (0.078)	0.351*** (0.078)	0.299*** (0.089)										
skill1			0.245 (0.658)	0.185 (0.650)	0.397 (0.697)			-0.043 (0.483)	-0.020 (0.478)	0.367 (0.553)										
skill2			1.211 (1.063)	1.394 (1.048)	1.343 (1.084)			1.522* (0.780)	1.390* (0.770)	1.482* (0.860)										
men			-0.207 (0.694)	-0.191 (0.685)	-0.101 (0.712)			-0.735 (0.509)	-0.728 (0.503)	-0.565 (0.565)										
middle managers			-0.585 (0.839)	-0.557 (0.828)	-0.489 (0.858)			-0.791 (0.615)	-0.723 (0.609)	-0.599 (0.681)										
managers			-0.667 (0.445)	-0.622 (0.439)	-0.704 (0.460)			-0.212 (0.327)	-0.177 (0.323)	-0.327 (0.365)										
F test (excluded instruments); p-value	94.41; 0.000	82.78; 0.000	109.30; 0.000	124.98; 0.000	177.37; 0.000	94.41; 0.000	82.78; 0.000	109.30; 0.000	124.98; 0.000	177.37; 0.000										
N	32,080	27,420	27,420	27,420	27,420	32,080	27,420	27,420	27,420	27,420										
R2	0.252	0.299	0.344	0.344	0.344	0.124	0.133	0.151	0.151	0.152										

Notes: Ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the ten-year moving average of the *ati_index* in the commuting area where the firm is located. The estimation sample is from 2001 to 2007. In columns 4 and 9 ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the current *ati_index* within the commuting area where the firm is located. In columns 5 and 10 ethnic diversity is instrumented with the ten-year moving average of *ati_index* within the commuting area where the firm is located. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, and commuting areas dummies, and firm-specific unobserved fixed effects. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, and commuting areas dummies, and firm-specific unobserved fixed effects. Specifications in columns 3-5 and 8-10 also include the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Standard errors are clustered at the commuting area level. Significance levels: ***1%, **5%, *10%.

Table 12: Robustness checks: estimates by size, relevant sub-samples and industry

		Probability of exporting		Log of export sales per employee		Number of export markets		Number of exported products					
		OLS	FE	IV	OLS	FE	IV	OLS	FE	IV			
Firms with 50 and more employees													
index ethnic diversity		0.031*** (0.007)	0.015** (0.005)	0.102* (0.058)	0.563*** (0.099)	0.099** (0.042)	0.363 (0.179)	3.857*** (0.576)	1.528*** (0.190)	15.329*** (1.615)	0.420** (0.187)	0.504*** (0.109)	10.890*** (1.155)
F test (excluded instruments); p-value				79.66; 0.000			39.51; 0.000			39.19; 0.000			39.19; 0.000
N		83,508	83,508	44,309	30,031	30,031	15,440	30,031	30,031	15,440	30,031	30,031	15,440
R2		0.698	0.016	0.230	0.13	0.007	0.003	0.240	0.073	0.463	0.128	0.041	0.535
Firms with more than 50 employees													
index ethnic diversity		0.070*** (0.010)	0.038*** (0.007)	0.143** (0.052)	1.180*** (0.117)	0.141** (0.062)	0.693 (0.453)	18.179*** (1.088)	3.331*** (0.327)	14.504*** (1.854)	3.786*** (0.366)	1.386*** (0.229)	15.751*** (1.363)
F test (excluded instruments); p-value				85.05; 0.000			66.30; 0.000			67.66; 0.000			67.66; 0.000
N		34,063	34,063	18,026	21,512	21,512	11,207	21,512	21,512	11,207	21,512	21,512	11,207
R2		0.664	0.018	0.102	0.209	0.010	0.007	0.223	0.103	0.078	0.164	0.064	0.331
Mono-establishment firms													
index ethnic diversity		0.033*** (0.006)	0.015*** (0.004)	0.016** (0.013)	0.788*** (0.080)	0.123** (0.043)	0.528 (0.278)	8.975*** (0.612)	1.788*** (0.195)	13.374*** (1.250)	1.132*** (0.204)	0.499*** (0.114)	9.748*** (0.842)
F test (excluded instruments); p-value				127.92; 0.000			70.31; 0.000			70.96; 0.000			70.96; 0.000
N		101,623	62,368	62,368	40,869	24,176	24,176	40,869	24,194	24,194	40,869	24,194	24,194
R2		0.710	0.022	0.220	0.162	0.004	0.004	0.326	0.249	0.249	0.179	0.440	0.440
Firms with below industry-average share of foreigners													
index ethnic diversity		0.041*** (0.008)	0.020*** (0.006)	0.125* (0.073)	0.858*** (0.105)	0.110** (0.055)	0.420 (0.260)	13.509*** (0.947)	2.293*** (0.288)	15.977*** (1.713)	2.529*** (0.341)	0.678*** (0.179)	13.603*** (1.293)
F test (excluded instruments); p-value				71.99; 0.000			56.79; 0.000			57.17; 0.000			57.17; 0.000
N		86,255	86,255	44,754	35,866	35,866	17,842	35,866	35,866	17,842	35,866	35,866	17,842
R2		0.712	0.012	0.217	0.173	0.013	0.008	0.338	0.142	0.200	0.213	0.096	0.348
Firms with above industry-average share of foreigners													
index ethnic diversity		0.047*** (0.009)	0.031*** (0.007)	0.089* (0.044)	0.953*** (0.130)	0.091* (0.043)	0.368 (0.195)	13.836*** (1.041)	1.420*** (0.352)	15.343*** (4.405)	2.285*** (0.374)	0.634*** (0.234)	12.634*** (3.301)
F test (excluded instruments); p-value				31.08; 0.000			31.31; 0.000			26.92; 0.000			26.92; 0.000
N		31,316	31,416	17,499	15,677	15,726	9,008	15,677	15,726	9,008	15,677	15,726	9,008
R2		0.688	0.011	0.141	0.164	0.012	0.006	0.273	0.120	0.149	0.167	0.057	0.140
Manufacturing sectors													
index ethnic diversity		0.033*** (0.009)	0.019** (0.007)	0.296*** (0.064)	0.615*** (0.087)	0.116** (0.047)	0.475 (0.272)	12.026*** (0.845)	1.811*** (0.213)	16.143*** (1.660)	2.290*** (0.231)	0.407*** (0.114)	10.059*** (0.963)
F test (excluded instruments); p-value				64.35; 0.000			51.57; 0.000			51.57; 0.000			51.57; 0.000
N		42,765	42,765	18,601	29,962	29,962	13,285	29,962	29,962	13,285	29,962	29,962	13,285
R2		0.608	0.015	0.249	0.158	0.015	0.263	0.407	0.165	0.263	0.284	0.118	0.430
Service sectors													
index ethnic diversity		0.014* (0.008)	0.007* (0.004)	0.138* (0.077)	0.253** (0.142)	0.117* (0.057)	0.570 (0.456)	8.059*** (0.957)	1.416*** (0.314)	14.336*** (1.783)	1.881*** (0.498)	0.609** (0.262)	16.617*** (1.547)
F test (excluded instruments); p-value				112.39; 0.000			51.56; 0.000			52.24; 0.000			52.24; 0.000
N		74,609	74,609	45,612	21,457	21,457	13,924	21,457	21,457	13,924	21,457	21,457	13,924
R2		0.622	0.016	0.141	0.111	0.011	0.005	0.399	0.090	0.169	0.276	0.085	0.442

Notes: Ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the ten-year moving average of the *ati_index* in the commuting area where the firm is located. The IV estimation sample is from 2001 to 2007. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. IV type regressions also include firm-specific unobserved fixed effects, but no time dummies. Standard errors are clustered at the firm level (OLS, FE) and at the commuting area level (IV). Significance levels: ***1%, **5%, *10%.

Table 13: Robustness checks: estimates under alternative definitions of ethnic diversity

	Probability of exporting		Log of export sales per employee		Number of export markets		Number of exported products					
	OLS	FE	IV	OLS	FE	IV	OLS	FE	IV			
White-collar												
index ethnic diversity	0.025*** (0.006)	0.012** (0.004)	0.033* (0.014)	0.549*** (0.069)	0.091** (0.039)	0.819 (0.425)	11.413*** (0.682)	1.964*** (0.191)	10.684*** (1.324)	1.866*** (0.213)	0.455*** (0.112)	11.180*** (0.986)
F test (excluded instruments); p-value			131.47; 0.000			72.54; 0.000			73.53; 0.000			73.53; 0.000
N	118,207	118,207	78,197	51,740	51,740	27,420	51,740	51,740	27,420	51,740	51,740	27,420
R2	0.726	0.014	0.728	0.308	0.011	0.295	0.364	0.133	0.345	0.163	0.068	0.134
Blue-collar												
index ethnic diversity	0.018** (0.007)	0.011** (0.004)	0.088 (0.052)	0.122 (0.080)	0.129*** (0.036)	0.447 (0.256)	6.656*** (0.761)	0.997*** (0.200)	7.512*** (2.320)	2.207*** (0.311)	0.363** (0.115)	9.956*** (1.773)
F test (excluded instruments); p-value			50.02; 0.000			41.64; 0.000			42.05; 0.000			42.05; 0.000
N	118,207	118,207	78,197	51,740	51,740	27,420	51,740	51,740	27,420	51,740	51,740	27,420
R2	0.726	0.011	0.731	0.307	0.012	0.311	0.346	0.130	0.326	0.164	0.068	0.146
Index based on 20 linguistic categories												
index ethnic diversity	0.051*** (0.008)	0.023*** (0.005)	0.066 (0.027)	0.975*** (0.100)	0.155** (0.051)	0.431 (0.234)	12.002*** (0.841)	1.792*** (0.342)	20.148*** (1.572)	5.727*** (0.850)	0.628*** (0.153)	17.568*** (1.146)
F test (excluded instruments); p-value			155.00; 0.000			106.73; 0.000			108.24; 0.000			108.24; 0.000
N	118,207	118,207	78,197	51,740	51,740	27,420	51,740	51,740	27,420	51,740	51,740	27,420
R2	0.706	0.013	0.730	0.168	0.027	0.310	0.298	0.151	0.344	0.133	0.125	0.151
Index based on nationality (8 categories)												
index ethnic diversity	0.044*** (0.007)	0.018*** (0.005)	0.057 (0.032)	0.948*** (0.093)	0.135** (0.048)	0.553 (0.399)	13.849*** (0.835)	1.710*** (0.227)	19.348*** (1.686)	2.332*** (0.271)	0.508*** (0.135)	17.549*** (1.264)
F test (excluded instruments); p-value			123.02; 0.000			72.51; 0.000			76.42; 0.000			76.42; 0.000
N	118,207	118,207	78,197	51,740	51,740	27,420	51,740	51,740	27,420	51,740	51,740	27,420
R2	0.706	0.013	0.730	0.168	0.027	0.310	0.298	0.151	0.344	0.133	0.125	0.151

Notes: Ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the ten-year moving average of the *ati_index* in the commuting area where the firm is located. The IV estimation sample is from 2001 to 2007. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. IV type regressions also include firm-specific unobserved fixed effects, but no time dummies. Standard errors are clustered at the firm level (OLS, FE) and at the commuting area level (IV). Significance levels: ***1%, **5%, *10%.

Table 14: Robustness checks: testing our identification strategy

Probability of exporting		Log of export sales	Number of export markets	Number of export products
Sample 2002-2006				
index ethnic diversity	0.064 (0.035)	0.573 (0.266)	14.084*** (0.795)	10.697*** (1.703)
F test (excluded instruments); p-value	1204.66; 0.000	760.26; 0.000	770.16; 0.000	770.16; 0.000
N	55,168	23,895	23,879	23,895
R2	0.731	0.335	0.293	0.133
Firms established before 2001				
index ethnic diversity	0.088* (0.045)	0.667 (0.369)	16.127*** (2.586)	19.027*** (1.894)
F test (excluded instruments); p-value	57.63; 0.000	41.33; 0.000	41.21; 0.000	41.21; 0.000
N	16,401	8,950	8,950	8,950
R2	0.126	0.006	0.102	0.572
Attitudes towards index based on the 90th percentile voter position				
index ethnic diversity	0.020* (0.011)	0.372 (0.227)	14.990*** (1.189)	13.421*** (0.876)
F test (excluded instruments); p-value	179.73; 0.000	107.84; 0.000	108.89; 0.000	108.89; 0.000
N	68,725	27,420	27,420	27,420
R2	0.194	0.004	0.188	0.433
Attitudes towards index, excluding potentially endogenous statements				
index ethnic diversity	0.022* (0.011)	0.375 (0.274)	14.894*** (1.184)	13.330*** (0.872)
F test (excluded instruments); p-value	180.28; 0.000	108.44; 0.000	109.47; 0.000	109.47; 0.000
N	68,725	27,420	27,420	27,420
R2	0.194	0.002	0.185	0.427
Difference in difference approach				
index ethnic diversity	0.014* (0.008)	0.502 (0.338)	13.317*** (1.420)	9.235*** (0.971)
F test (excluded instruments); p-value	360.05; 0.000	205.36; 0.000	209.71; 0.000	209.71; 0.000
N	68,725	27,420	27,420	27,420
R2	0.194	0.002	0.185	0.427

Notes: In the first four sub-panels ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the ten-year moving average of the *ati.index* in the commuting area where the firm is located. In the last sub-panel ethnic diversity is instrumented using the 2004 European Union enlargement dummy interacted with the average of the *ati.index* over the course of the 90s, in the commuting area where the firm is located. In all sub-panels the estimation sample is from 2001 to 2007. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, and commuting areas dummies, the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, the share of foreigners for each linguistic group, and firm-specific unobserved fixed effects. Standard errors are clustered at the commuting area level. Significance levels: ***1%, **5%, *10%.

Appendix

A Measurement of Ethnic Diversity

Linguistic groups: **Germanic West** (Antigua Barbuda, Aruba, Australia, Austria, Bahamas, Barbados, Belgium, Belize, Bermuda, Botswana, Brunei, Cameroon, Canada, Cook Islands, Dominica, Eritrea, Gambia, Germany, Ghana, Grenada, Guyana, Haiti, Ireland, Jamaica, Liberia, Liechtenstein, Luxemburg, Mauritius, Namibia, Netherlands, Netherlands Antilles, New Zealand, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and Grenadines, Seychelles, Sierra Leone, Solomon Islands, South Africa, St. Helena, Suriname, Switzerland, Trinidad and Tobago, Uganda, United Kingdom, United States, Zambia, Zimbabwe), **Slavic West** (Czech Republic, Poland, Slovakia), **Germanic North** (Denmark, Iceland, Norway, Sweden), **Finno-Permic** (Finland, Estonia), **Romance** (Andorra, Angola, Argentina, Benin, Bolivia, Brazil, Burkina Faso, Cape Verde, Chile, Columbia, Costa Rica, Cote D'Ivoire, Cuba, Djibouti, Dominican Republic, Ecuador, El Salvador, Equatorial Guinea, France, French Guinea, Gabon, Guadeloupe, Guatemala, Guinea, Guinea Bissau, Holy See, Honduras, Italy, Macau, Martinique, Mexico, Moldova, Mozambique, Nicaragua, Panama, Peru, Portugal, Puerto Rico, Reunion, Romania, San Marino, Sao Tome, Senegal, Spain, Uruguay, Venezuela), **Attic** (Cyprus, Greece), **Ugric** (Hungary), **Turkic South** (Azerbaijan, Turkey, Turkmenistan), **Gheg** (Albania, Kosovo, Republic of Macedonia, Montenegro), **Semitic Central** (Algeria, Bahrain, Comoros, Chad, Egypt, Iraq, Israel, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malta, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, Yemen, United Arab Emirates), **Indo-Aryan** (Bangladesh, Fiji, India, Maldives, Nepal, Pakistan, Sri Lanka), **Slavic South** (Bosnia and Herzegovina, Croatia, Serbia, Slovenia), **Mon-Khmer East** (Cambodia), **Semitic South** (Ethiopia), **Slavic East** (Belarus, Georgia, Mongolia, Russian Federation, Ukraine), **Malayo-Polynesian West** (Indonesia, Philippines), **Malayo-Polynesian Central East** (Kiribati, Marshall Islands, Nauru, Samoa, Tonga), **Iranian** (Afghanistan, Iran, Tajikistan), **Betai** (Laos, Thailand), **Malayic** (Malaysia), **Cushitic East** (Somalia), **Turkic East** (Uzbekistan), **Viet-Muong** (Vietnam), **Volta-Congo** (Burundi, Congo, Kenya, Lesotho, Malawi, Nigeria, Rwanda, Swaziland, Tanzania, Togo), **Turkic West** (Kazakhstan, Kyrgyzstan), **Baltic East** (Latvia, Lithuania), **Barito** (Madagascar), **Mande West** (Mali), **Lolo-Burmese** (Burma), **Chadic West** (Niger), **Guarani** (Paraguay), **Himalayish** (Buthan), **Armenian** (Armenia), **Sino Tibetan** (China, Hong Kong, Singapore, Taiwan), and **Japonic** (Japan, Republic of Korea, Korea DPRK).

B Definition of the ideological dimensions

B.1 Statements in favor of immigration, internationalization and ethnic diversity

1. **European community/union_plus**: Favorable mentions of European Community/Union in general; desirability of expanding the European Community/Union and/or of increasing its competence; desirability of expanding the competences of the European Parliament; desirability of the manifesto country joining (or remaining a member).
2. **Internationalism_plus**: Need for international cooperation; need for aid to developing countries; need for world planning of resources; need for international courts; support for any international goal or world state; support for UN.
3. **Lax citizenship_plus**: Favorable mentions of lax citizenship and election laws; no or few restrictions to enfranchisement.
4. **Multiculturalism_plus**: Cultural diversity, communalism, cultural plurality and pillarization; preservation of autonomy of religious, linguistic heritages within the country including special educational provisions.
5. **National way of life_minus**: Against patriotism and/or nationalism; opposition to the existing national state; otherwise as *National way of life_minus*, but negative.
6. **Protectionism_minus**: Negative support for the concept of free trade; otherwise as *Protectionism_plus*, but negative.
7. **Refugees_plus**: Favorable mentions of, or need for, assistance to people who left their homes because of war (for instance, in the territory of ex-Yugoslavia) or were forcibly displaced.
8. **Social justice_plus**: Concept of equality; need for fair treatment of all people; special protection for underprivileged; need for fair distribution of resources; removal of class barriers; end with discrimination such as racial or sexual discrimination, etc.

9. **Social harmony_plus**: Appeal for national effort and solidarity; need for society to see itself as united; appeal for public spiritedness; decrying anti-social attitudes in times of crisis; support for the public interest; favorable mention of the civil society
This category neither captures what your country can do for you nor what you can do for your country, but what you can do for your fellow citizens.
10. **Traditional morality_minus**: Opposition to traditional moral values; support for divorce, abortion, etc.; otherwise as *Traditional morality_plus*, but negative.
11. **Underprivileged minority groups_plus**: Favorable references to underprivileged minorities who are defined neither in economic nor in demographic terms; e.g., the disabled, homosexuals, immigrants, etc.
12. **Welfare state_plus**: Favorable mentions of need to introduce, maintain, or expand any social service or social security scheme; support for social services such as health services or social housing. *This category excludes education.*

B.2 Statements against immigration, internationalization and ethnic diversity

1. **European community/union_minus**: Hostile mentions of the European Community/Union; opposition to specific European policies which are preferred by European authorities; opposition to the net-contribution of the manifesto country to the EU budget.
2. **Internationalism_minus**: Favorable mentions of national independence and sovereignty as opposed to internationalism.
3. **Multiculturalism_minus**: Enforcement or encouragement of cultural integration; otherwise as *Multiculturalism_plus*, but negative.
4. **National way of life_plus**: In favor of patriotism and/or nationalism; suspension of some freedoms in order to protect the state against subversion; support for established national ideas.

5. **Protectionism_plus**: Favorable mentions of extension or maintenance of tariffs to protect internal markets; other domestic economic protectionism such as quota restrictions.
6. **Restrictive citizenship_plus**: Favorable mentions of restrictions in citizenship; restrictions in enfranchisement with respect to (ethnic) groups.
7. **Traditional morality_plus**: Favorable mentions of traditional moral values; prohibition, censorship and suppression of immorality and unseemly behavior; maintenance and stability of family; religion.
8. **Welfare state_minus**: Limiting expenditure on social services or social security; otherwise as *Welfare state_plus*, but negative.

C Additional results

Table C.1: Estimation of the export decision without ethnic diversity, all sample

	Probability of exporting			
	OLS(1)	OLS(2)	FE(1)	FE(2)
export experience	0.052*** (0.000)	0.052*** (0.000)	0.063*** (0.001)	0.063*** (0.001)
lagged labor productivity	0.022*** (0.003)	0.022*** (0.003)	0.013** (0.004)	0.012** (0.004)
skill1	0.047*** (0.009)	0.048*** (0.009)	0.007 (0.012)	0.009 (0.012)
skill2	0.057** (0.017)	0.055** (0.017)	0.043* (0.025)	0.042* (0.025)
men	-0.000 (0.009)	0.002 (0.009)	-0.008 (0.015)	-0.010 (0.015)
middle managers	0.059** (0.023)	0.059** (0.023)	-0.003 (0.021)	-0.003 (0.021)
managers	0.049*** (0.011)	0.050*** (0.011)	0.007 (0.011)	0.008 (0.011)
N	118,207	118,207	118,207	118,207
R2	0.725	0.725	0.013	0.013

Notes: The dependent variable is the probability of exporting. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, all year-industry interactions, the share of differently aged workers belonging to the employees' age distribution quartiles, and the firm average tenure. Columns 2 and 4 also include the share of foreigners for each linguistic group. Standard errors are clustered at the firm level. Significance levels: ***1%, **5%, *10%.

Table C.2: Estimation of the export decision without ethnic diversity, manufacturing sector

	Probability of exporting			
	OLS(1)	OLS(2)	FE(1)	FE(2)
export experience	0.052*** (0.000)	0.051*** (0.000)	0.065*** (0.002)	0.065*** (0.002)
lagged labor productivity	0.029*** (0.006)	0.029*** (0.006)	0.017** (0.006)	0.018** (0.006)
skill1	0.050** (0.021)	0.059** (0.022)	0.028 (0.024)	0.028 (0.024)
skill2	0.059** (0.026)	0.064** (0.026)	0.080* (0.048)	0.082* (0.048)
men	0.030* (0.018)	0.036** (0.018)	-0.016 (0.029)	-0.017 (0.029)
middle managers	0.028 (0.043)	0.033 (0.043)	0.011 (0.034)	0.011 (0.034)
managers	0.029 (0.029)	0.036 (0.029)	0.023 (0.024)	0.025 (0.025)
N	42,829	42,829	42,829	42,829
R2	0.618	0.618	0.022	0.022

Notes: The dependent variable is the probability of exporting. All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, all year-industry interactions, the share of differently aged workers belonging to the employees' age distribution quartiles, and the firm average tenure. Columns 2 and 4 also include the share of foreigners for each linguistic group. Standard errors are clustered at the firm level. Significance levels: ***1%, **5%, *10%.

Table C.3: Ethnic diversity effects on the firm internationalization process, estimation by destination area

	Log of export sales per employee		Number of exported products	
	Western	Non western	Western	Non western
index ethnic diversity	0.553*** (0.025)	0.561*** (0.045)	5.454*** (0.260)	3.836*** (0.283)
export experience	-0.001 (0.002)	0.009** (0.004)	0.042*** (0.005)	0.015** (0.006)
lagged labor productivity	0.176*** (0.012)	0.061** (0.024)	0.732*** (0.032)	0.559*** (0.040)
skill1	-0.471*** (0.070)	-0.583*** (0.161)	0.792*** (0.200)	0.603** (0.258)
skill2	0.230** (0.107)	0.965*** (0.205)	2.433*** (0.293)	1.477*** (0.351)
men	-1.472*** (0.041)	-2.136*** (0.093)	-2.950*** (0.112)	-1.935*** (0.159)
middle managers	-0.051 (0.131)	-0.153* (0.083)	0.539*** (0.159)	-0.185 (0.202)
managers	0.257*** (0.050)	0.664** (0.228)	0.518 (0.350)	0.697* (0.398)
employee network	0.001* (0.001)	0.001 (0.001)	0.001** (0.000)	0.015*** (0.003)
firm network	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
N	1,668,274	996,360	1,669,349	996,933
R2	0.242	0.210	0.132	0.075

Notes: All regressions include whether the firm is foreign-owned, a multi-establishment dummy, the log of capital stock per employee, a full set of industry (2 digit), size, year, and commuting areas dummies, all year-industry interactions, firm-destination specific unobserved fixed effects, the share of differently aged workers belonging to the employees' age distribution quartiles, the firm average tenure, and the share of foreigners for each linguistic group. Non-Western destinations exclude Nordic countries, South and West Europe, North America and Oceania. Standard errors are clustered at the firm level. Significance levels: ***1%, **5%, *10%.