Ethnic Diversity and Firm's Exporting Behavior [*]

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Abstract

This article provides novel and unprecedented evidence about the effects of workforce diversity on the firms' export performance. Using a large sample of Danish firms for the period 1995-2007 and implementing a proper instrumental variable strategy, we find that firm-level ethnic diversity increases the probability to export and the extensive margin of exporting, i.e., the number of foreign markets served by the firm and the number of products which the firm exports. Moreover, we also find that diversity positively affects the export volume, i.e. the intensive margin of firm trade. Several robustness checks confirm these findings.

JEL Classification: J15, J16, F10, D21.

Keywords: Ethnic diversity, exporting behavior, fixed costs of exporting.

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1 Introduction

The ethnic composition of the workforce can be considered as a conducive factor to the internationalisation of firms in several respects. First, ethnic diversity may raise firm productivity and thus indirectly ease and boost the export performance. Secondly, it may improve the managerial and organizational ability of the firm, as the latter faces the challenges and the costs associated with diversity management, and thereby may reduce the firm's fixed cost of exporting and trade barriers associated with national borders. The previous literature has in fact concluded that firms' export behavior is largely driven by both their productivity level and the fixed cost of exporting in terms of formal and informal trade barriers. Therefore the higher the fixed cost associated with a destination market, the higher the respective productivity threshold that firms have to overcome in order to serve the respective destination (Lawless, 2009; Eaton et al. 2004; 2009). These fixed costs of trading goods across national borders result from language, cultural differences, information costs and contracting costs, bureaucratic procedures, marketing costs and the cost of setting up retail and wholesale facilities in the country of destination (Bernard and Jensen, 2004; Bernard et al. 2003). Importantly, the impact of barriers (to) exporting is situation-specific, largely depending on the idiosyncratic managerial, organizational, and environmental background of the firm (Leonidou, 2004). It is plausible that an important component explaining this set of managerial skills is partly grounded on the workforce composition characteristics. Using Danish firm-level data, which comprises export information by destination country covering the years 1995 - 2007, we thus investigate how labor diversity in terms of ethnicity and cultural background affects the firm export behavior.

The *indirect effect* of ethnic diversity on exporting through productivity explicityly relates to previous studies. So far the theory suggests that there are two opposing types of effects of ethnic and cultural diversity on firm performance (Parrotta et al. 2011).

On one hand, diversity can create negative effects due to poor communication, lower social ties and trust, and poor cooperation among workers (Becker, 1957; Lang, 1986; Lazear, 1998 and 1999). On the other, ethnic diversity can generate a more diverse spectrum of problem-solving abilities, greater creativity and more knowledge spillover, which, in turn, can foster firm productivity (Alesina and La Ferrara, 2005; Hong and Page 2001 and 2004; Berliant and Fujita, 2008; Glaeser et. al. 2000; Osborne, 2000; Casella and Rauch, 2003).

This indirect effect of diversity on firm productivity may be complemented by a fixed cost reducing effect of diversity, which has - to the best of our knowledge - not been studied yet. In order to manage an ethnically diverse labor force, the firm presumably has to overcome the bundling costs, i.e. it needs to train workers with a different cultural and ethnic background to work together cooperatively (Osborne, 2000). This training on (another) job may affect the firm's internationalization process. Having successfully managed to sustain a diversified labor force endows the firm with a set of communicative, informational and managerial skills, which lowers the firm-specific fixed cost of exporting and thus - ceteris paribus - increases the propensity to export and facilitates the management of cross-border transactions. Thus, after having controlled for *the indirect effect*, diversity can be assumed to affect the propensity to export. Conditional on exporting, we can also argue that diversity may impact on the *extensive margin of exporting*, i.e., the number of foreign markets served by the firm and the number of products which the firm exports. Moreover, it may also boost the export volume, i.e., the intensive margin of firm trade.

Nonetheless, the *direct effect* of diversity on firm exports can easily be confounded with another important "spillover" effect, i.e. *the network effect*. As the previous literature on networks and trade has shown (Andrews et al. 2012; Hiller 2011a; Hiller 2011b; Casella and Rauch 2002 and Rauch 2001), the mere presence of foreign workers can in fact generally reduce trade costs as the latter may help firms to overcome

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language, cultural and informational barriers to trade. Therefore we include in all regression models the share of foreigners belonging to each ethnic group, in addition to the variable measuring workforce ethnic diversity. Furthermore as the presence of at least one employee, who originates from a particular destination country, or the number of competing firms within the same industry and exporting to the same destination, may eventually reduce the information cost of managing cross-border transactions with the respective country, we also consider the number of workers (and competing firms) from (in) each destination in the regression models, where the export outcomes are measured by destination market, together with firm-destination specific effects. Therefore our empirical analysis clearly enables us to single out *the direct effect* from both the *indirect* and the *network effect* of having an ethnically heterogeneous workforce.

However, as firms can leverage labor diversity to improve their export performance, the *direct effect* of diversity is very likely to be biased by endogeneity and simultaneity issues. We therefore instrument ethnic diversity in order to tease out its direct impact on firm export outcomes. More specifically, our instrumental variable (IV) strategy is based on the combination and interaction of two sources of potential exogenous variation. The first source of exogeneity is an historical average of the local attitudes towards immigrants, measured by a 10 year-moving average of the median voter position, in the commuting area, where the firm is located, on selected ideological profiles, referring to immigration, internationalization and ethnic diversity (Kim and Fording, 2001; Pickering and Rockey, 2011). Waisman and Larsen (2010) has in fact shown that immigrants prefer to live in municipalities where the "attitudes" towards them are historically less negative, as indicated by their moving decision. Moreover we exploit the fact that the development of the local average attitudes towards immigrants change after the 2004 expansion of the European Union, which implied a greater presence of both permanent and temporary migrants form the new member states, mainly easter european countries, on the Danish labor market. We believe that

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our identification strategy provides reliable exclusion restrictions as firms are not very likely to (re-)locate their plants on the basis of the commuting area historical attitudes towards immigrants, in the period around the year of the European enlargement. The previous literature on localization has in fact shown that the firm location decisions are mainly driven by the size of the local demand, economies of scale, access to inputs and to knowledge spillovers (Krugman, 1991, Audretsch and Feldman, 1996, Adams and Jaffe, 1996) rather than by the local ideological profiles.

After controlling for time invariant unobserved heterogeneity, the *indirect* and the *network* effects and addressing endogeneity issues, we generally find that workforce heterogeneity in terms of ethnicity increases the probability to export and both the extensive and intensive margin of exporting, conditional on exporting.

The overall picture that comes out from our empirical analysis is particularly relevant not only for the design of firms export strategies but also for public policies aimed at fostering firm internationalization and economic growth. This is especially true for a small open economy, naturally limited by the size of the domestic market, like Denmark, in which continuous exporting and international success of Danish firms are relevant sources of economic growth.

The structure of the article is as follows. Section 2 briefly describes our main data sources and how ethnic diversity and the local attitudes towards immigrants are measured. Section 3 provides a description of the main empirical approaches and our IV identification strategy while section 4 and 5 explain the results of respectively the main analysis and a number of robustness checks. Section 6 offers some concluding remarks.

2 Data

In this section we first describe the main features of our data sources. We then explain the construction of our ethnic diversity index, at the firm level, and of an index summarizing the historical attitudes towards immigrants, calculated at the commuting area, where the firm is located. We finally present the main descriptive statistics, representing a prima facie evidence for the purposes of our empirical analysis.

2.1 Data sources

We use several data sources to build up our final data set. As a point of departure for the construction of our ethnic diversity index and to measure the local attitudes towards immigrants (see the next sub-sections for more details), we respectively use the "Ethnologue: Language of the World" and the "Manifesto Research Group/Comparative Manifestos Project" combined with the "Danish Election" data. These sources are freely available on the web [1] and are merged with our firm-level register-based data, exclusively administered by Statistics Denmark. The latter have been created by merging information from three different main registers. The first one, the Integrated Database for Labor Market Research (IDA, henceforth), is a longitudinal employer-employee register, containing information on each individual aged 15-74 during the period 1980-2007 about age, gender, nationality, place of residence and work, education, labor market status, occupation and wages. These individual socio-economic characteristics are recorded once a year in week 48. Apart from deaths and permanent migration, there is no attrition in the data. As unique identifiers are associated with each employee and employer (firm and plant), we can aggregate individual data at the firm level and then construct variables such as average firm tenure, ethnic diversity (as described in the

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[1]More details about "Ethnologue" can be found at "http://www.ethnologue.com". The Manifesto Research data and Danish Election data can be downloaded respectively at "https://manifestoproject.wzb.eu/" and "http://valgdata.ps.au.dk/Kontakt.aspx".

next sub-section), and several shares of employees (those belonging to each linguistic group and to the age distribution quartiles, managers, middle managers, men, highly skilled workers, and technicians). Unique firm identifiers allow us to merge IDA with the with the "Accounting Statistics Registers" (REGNSKAB and FIRE, henceforth), recording for each firm the annual value of capital stock (measured as sum of value of land, buildings, machines, equipments and inventory), materials, sales[2], industry affiliation, partial/total foreign ownership, whether the firm is a multi-plant enterprise, year of establishment and eventual closure date. Finally, linking REGNSKAB and FIRE to the "Foreign Trade Statistics Register", we can retrieve information on export-sales, the number of destination markets and exported products at the firm level. Export flows are available in DKK and recorded according to the 8-digit Combined Nomenclature, however to make the classification of products consistent across time and to minimize potential measurement errors, we aggregate these flows to the 4-digit level. Furthermore export information on sales and products is available at two levels: aggregated over all destinations and destination specific.

2.2 Ethnic diversity

Our measure of firm's workforce ethnic diversity is based on the Herfindahl index. Different from the typical measures of workforce diversity that exclusively refer to the percentages of employees belonging to specific groups, the Herfindahl index combines two important features: the "richness" (number of categories represented within the workplace) and "evenness" (how even are the observed categories).

Following Parrotta et al. (2011), we sum up the Herfindahl indexes calculated for each workplace belonging to the same firm, weighted by the number of individuals employed in each workplace, as follows:

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[2] All monetary values are deflated by using the GDP deflator for the base year 2000 retrieved from the World Bank database

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

where $ethnic_{it}$ is the ethnic diversity of firm i at time t, W is the total number of workplaces belonging to firm i, S is the total number of ethnic categories, N_w and N_i are respectively the total number of employees of workplace w in firm i. The proportion of the workplace's labor force that falls into each category s at time t is represented by the share of foreign workers belonging to each third linguistic family tree level in the Ethnologue data[3], $p_{swt} = \frac{foreigners_{swt}}{foreigners_{wt}}$. The choice of grouping employees together by main language (their major official language) spoken in their country of origin is grounded on the argument that linguistic distance serves as a good proxy for cultural distance (Guiso et al, 2009; Adsera and Pytlikova, 2010). Therefore, the linguistic classification seemed us more opportune than the grouping by nationality to capture diverse ethnic profiles.

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 $\left(1 - \frac{1}{S} \right)$ if all linguistic groups are equally represented. In fact, the ethnic diversity can be interpreted as the probability that two randomly drawn individuals in a workplace belong to different linguistic groups.

2.3 Attitudes towards immigrants, internationalization and ethnic diversity

We measure an index of "attitudes towards immigrants" (ati_index, henceforth) at the commuting area, where the firm is located, by using the "Manifesto Research Group/Comparative Manifestos Project" (henceforth MRG/CMP) data, in order to identify a source of exogenous variation in firm-level diversity, as it will be explained in

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[3]See Appendix 1 for more details.

section 3.3. The MRG/CMP provides measures of (major) political party preferences on several ideological dimensions for 25 Western democracies throughout the postwar period. Several scholars in political economy and economics have taken advantage of this database (Congleton and Bose, 2010; Pickering and Rockey, 2011; Belke and Potrafke, 2012).

Focusing on Denmark, we select preferences of the main parties on several ideological dimensions referring to immigrants, internationalization and ethnic diversity, as described by the statements included in Appendix 2, in 10 national electoral rounds[4] to build up our ati_index is several steps, as explained below. Following Kim and Fording (2001), we first define the party level ideology id_party as:

$$id\_party = (id\_favor - id\_against)/(id\_favor + id\_against)$$

where $id\_favor(against)$ is the sum of statements in favor (against) immigration, internationalization and ethnic diversity. A score is assigned to each stament such that we can interpret $id\_favor(against)$ as the percentage of all party statements that advocate pro(con) immigration, internationalization and ethnic diversity positions. The party level ideology is thus computed as the party net ideological position (scores) in favor (against) immigration, internationalization and ethnic diversity.

We then compute the median voter position at the municipality, m, exploiting the percentage of vote received by each party at each national election, as follows:

$$median\_voter_m = L + [(50 - C)/F] \star W,$$

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[4]In 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 Peoples Party (1981-2007), Social Democratic Party (1981-2007), Centre Democrats (1998, 2005), Radical Party (1981-2007), Liberals (1981-2007), Christian Peoples Party (1981-2005), Conservative Peoples Party (1981-2007), Danish Peoples Party (1998-2007), Progress Party (1981-1997) and Justice Party (1981-1984).

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where L is the lower end of the interval containing the median (ideology score), 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. Thus, $median\_voter_m$ can take values between 1 (positive attitudes towards immigrants) and -1 (negative attitudes towards immigrants). We then calculate our attidutes towards immigrants index, ati_index, at the local labour market, proxied by the commuting area k, where the firm is located, as follows:

$$ati\_index_k = \sum_{m=1}^{M} \frac{V_m}{V_k} * median\_voter_m$$

where V_m is the number of voters for each municipality m=1....M, belonging to the commuting area k while V_k is the total number of voters at the commuting area k.[5] As ideology typically affects governmental actions with some lags, our ati_index may have direct and indirect implications for both national and local immigration policies, attitudes towards immigrants and consequently foreigners' localization decisions (Waisman and Larsen, 2008). In our analysis, we therefore use a ten-year moving average - more than 2 standard mandates - of our attitudes index, denoted by $\bar{ati\_index}_k$ to ensure the inclusion of relevant lags and in some sense support *Granger causality* from our $\bar{ati\_index}_k$ to governmental actions (see Pickering and Rockey, 2011) and eventually the ethnic composition of the workforce at the commuting area, where the firm is located.

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[5]The so-called functional economic regions or commuting areas are identified using a specific algorithm based on the following two criteria: firstly, 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; secondly, 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 104 commuting areas are identified.

2.4 Descriptive statistics

The sample employed in the empirical analysis consists of 157,586 observations and 14,065 firms over the period 1995-2007. Less than half of this sample, corresponding to 5,333 firms, engages in export activities while the large majority of firms (72%) are with 10-49 employees. We decided to exclude firms with fewer than 10 employees because of their scanty comparability with relatively larger firms both in term of propensity to export and degree of workforce's ethnic diversity. A similar sampling is implemented in other studies concerning labor diversity and using Danish register data (e.g. Parrotta et al., 2011; Marino et al. 2012).

As reported in Table 1, on average bigger shares of women, foreigners and longer tenured employees characterize larger (size2) firms, whereas the smaller (size1) ones see a higher proportion of relatively young workers. Differences also emerge by looking at employees' occupations and highest educational levels attained: higher proportions of workers with post-secondary/tertiary education and middle managers are more representative in size2-firms, the opposite holds true for the proportion of managers and employees with secondary education.

Although no consistent differences are recoded for labor productivity and foreign ownership, notable discrepancies arise for the frequency of multi-plant type between the two firm categories. Further, the number of foreign employees from export destinations is much larger for size2-firms and, consistently with the latter stylized fact, we observe a more than double likelihood to export for the same firm category. In the same fashion and even when non-exporters are disregarded, it turns out that size2-firms are much more likely to export a higher number of products, towards a wider set of shipping markets and for longer time. Not surprisingly, size2-firm group also presents substantially higher degrees of ethnic diversity with respect to its complementary sample: such a divergence sharpens when we restrict our attention only on white-collar

workers.

Firms with above average ethnic diversity cover about 27% of the sample. They presents higher shares of female, lower tenured, highly educated and foreign employees. On average their ethnic diversity is about 4 times larger both for white and blue collar workers compared to the rest of the sample. Above average ethnically diverse firms are relatively large enterprises, more than half of them exports and likely for a wide number of products and toward several destinations. This represents a clear and preliminary descriptive evidence supporting our main hypothesis.

[Insert Table 1 around here]

Table 2 reports the evolution of ethnic diversity by industry over time. Although a general increasing trend in the degree of ethnic diversity is observed during the sample period, in the years following 2004 a considerable positive shift in its growth rate occurs in almost all industries. The ethnic diversity growth rate from 2004 to 2007 (from 2000 to 2003) is 18.4% (6%) for manufacturing, 15.1% (-1%) for financial and business services, 26.8% (10.8%) for wholesale and retail trade, 11.5% (37%) for transports, and 48% (4.9%) for construction sector. Showing stronger trends with respect to Table 2, Table 3 reports the share of immigrants by industry over time: the growth rate of immigrant share from 2004 to 2007 (from 2000 to 2003) is 35% (-3.3%) for manufacturing, 32.7% (5.4%) for financial and business services, 31% (12%) for wholesale and retail trade, 32.2% (22.1%) for transports, and 104% (-7.5%) for construction sector.

[Insert Tables 2 and 3 around here]

Table 4 informs us on the immigrants' areas of provenience. As supported by other studies (e.g. Kahanec, 2010), it turns out that part of the immigrant inflow reflects the 2004 expansion of the European Union, which implied a greater presence of permanent

and temporary migrant workers from the new member states.[6] The average share of foreign workers from the New EU members is 0.23% in the period before the 2004 EU enlargement and it more than doubles (114%) in the period after.[7] None of the other groups of foreigners feature such a large growth rate in the same period, despite there is a positive trend in migration from all over the world, especially from South America (93%) and Africa (69%). It is worth noting that these 10 countries belong to 7 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*). We may therefore expect to see an increase in our diversity index which is based among others on these linguistic groups.

[Insert Table 4 around here]

As a matter of fact, the left side of Figure 1 shows a sensible increase in the level (discontinuity) and slope of the superimposed quadratic-fit[8] curve on the average ethnic diversity, which also changes curvature from concave to convex, at the threshold year 2004. At the right side of Figure 1, we plot the moving average of our attitudes index, $\bar{ati\_index}_k$ and its superimposed quadratic-fit over time. Again, a drastic change in the dimension and afterwards in the sign of the slope (from positive to negative) occurs at the same threshold year. The drop in the attitudes towards immigrants index after 2004 seems to be directly linked to the larger inflows of immigrants. A quite reasonable explanation of this relationship is that a non-irrelevant part of the natives was worry

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[6]The 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 Mediterranean countries (Cyprus and Malta). There is clear evidence that migration from new member states to the old increased after enlargement (Kahanec, Zaiceva and Zimmermann, 2010).

[7]This large increase in the share of foreign workers from the New EU members occured despite fears 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.

[8]A cubic- or quartic-fit does not lead to a different interpretation of the graph.

of the extraordinary raise of immigrant population: the most enthusiastic advocate of placing restrictions on immigration, the Danish People's Party, was widely seen as the "election's big winners" because they substantially increased their votes and seats in the parliament with the electoral round in 2005 (Statistisk Aarsbog, 2005). It is worth remembering that the *Mohammed cartoons affair* started in the same year, too.[9]

[Insert Figure 1 around here]

3   Empirical strategy

3.1   Propensity to export

To investigate the empirical association between ethnic diversity and the firm's propensity to export, we use standard OLS and FE regression techniques. We prefer to implement a linear probability model (LPM henceforth) rather than a non linear one, as we are mainly interested in getting an interpretable estimate of the parameter on the ethnic diversity.[10]

Specifically, we estimate the following model:

$$y_{it} = \alpha + \gamma ethnic_{it} + x_{it}'\beta + v_{it}\,, \tag{1}$$

where y_{it} indicates whether firm i concretely engages in any export activity at time t and $ethnic_{it}$ is our variable of interest: the firm level of ethnic diversity. The vector

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[9]The Muhammad cartoons affair began after 12 editorial cartoons, most of which depicted 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, although the bulk of the reprints took place after the large-scale protests in January and February 2006.

[10]The LPM (i) tends to give better estimates of the partial effects on the response probability near the centre of the distribution of a generic $x\beta$ than at extreme values (i.e. close to 0 and 1); (ii) makes easier the interpretation of estimates and addressing econometric issues like endogeneity and omitted variable bias (see e.g. Miguel et al. 2004); (iii) does not typically give worse estimates than probit and logit if the "right" non-linear model is unknown (Angrist and Pischke, 2010).

x'_{it} includes export experience, lagged labor productivity and detailed workforce composition that may affect a firm's decision to export: the shares of managers, middle managers, males, workers with either post-secondary/tertiary or secondary education, shares of differently aged workers belonging to the employees' age distribution quartiles, the average firm tenure, controls for partial/total foreign ownership and industry, size, year, multi-establishment and commuting areas dummies plus all year-industry interactions. We also include in the same vector the shares of foreigners for each linguistic group in order to partly control for *employee network effects*. In the firm FE estimations, the error term v_{it} is assumed to be composed of a time-invariant firm specific u_i and an idiosyncratic component ε_{it}.

3.2   Intensive and extensive margins

Both the intensive and extensive margin analyses employ the same model as described in equation (1), with the difference that the dependent variable respectively refers to the log of export sales per employee and the number of products and destination markets. Given that the firm-level information on the export sales and the number of exported products is also destination-specific, we further extent our analysis on these outcomes by augmenting equation (1) with destination fixed effects, to control for the fact that each shipping market presents specific entry cost and expected profitability, which may also depend on the acquired knowledge on their characteristics (e.g. institutions, quota/tariffs). Furthermore, having destination-specific outcomes allows us to include among the control variables also the number of foreign employees from each export destination and the number of firms belonging to the same industry and competing in the same destination market, the latter two being respectively named *employee and firm network*. These variables control for the fact that employees originating from a particular destination country or other Danish firms exporting to the same destination as the firm in question, eventually may reduce the information cost of managing

cross-border transactions with the respective country. Therefore including these variables in the destination-firm fixed effect regressions allows us to properly single out the association of ethnic diversity with the export outcomes from any potential influence related instead to the network effects, described above.

Note that we condition the analysis of both the intensive and extensive margins on the export decision, as we don't have a reliable exclusion resctrion which allows us to endogenously model the decision to start exporting. Therefore our results on the associations between diversity and the export outcomes are interpreted conditionally on exporting.

3.3 Instrumental variable approach

As firms may be aware of the potential advantages of workforce ethnic diversity and therefore manage it in order to improve their export performance, the relationship between a firm's exporting behavior and ethnic diversity can be affected by endogeneity. In other words, firm-specific factors may influence both a firm's propensity, intensive and extensive margins to export and its degree of ethnic diversity. To address this concern, we apply a two-stage IV strategy based on the interaction of two sources of potential exogenous variation. The first source of exogeneity is an historical average of the local attitudes towards immigrants, measured by $ati\_\bar{index}$, as described in section 2.3. Waisman and Larsen (2008) has in fact shown that immigrants prefer to live in geographical areas where the "attitudes" towards them are historically less negative. Moreover we exploit the fact that the development of the local attitudes towards immigrants change after the 2004 expansion of the European Union, as shown in Figure 1. That allows us to implement the following two-sided linear regression design as first stage of our two stage LS or FE-IV for the period 2001-2007, where

ethnic diversity at the firm level, $ethnic_{it}$, is instrumented as follows:

$$ethnic_{it} = cons + \delta \left[ati\_\bar{i}ndex_{kt} \star I(year >= 2004) \right] + \zeta_1 \left[ati\_\bar{i}ndex_{kt} \star (year - 2004) \right]$$
$$+ \zeta_2 \left[ati\_\bar{i}ndex_{kt} \star I(year >= 2004) \star (year - 2004) \right] + \zeta_3 \left[ati\_\bar{i}ndex_{kt} \star (year >= 2004) \right]^2$$
$$+ \zeta_4 \left[ati\_\bar{i}ndex_{kt} \star (year - 2004) \right]^2 + \zeta_5 \left[ati\_\bar{i}ndex_{kt} \star I(year >= 2004) \star (year - 2004) \right]^2 + \xi_{ikt}$$

where $ati\_\bar{i}ndex_{kt}$ is the moving average of our "attitudes towards immigrants" index at the commuting area k, where firm i is located, and I(year>=2004) is a dummy variable equal to one, for the period after the 2004 european enlargment. We believe that the estimated ethnic diversity at the commuting area level, $\hat{ethnic}_{it}$, is a good proxy for a firm's workforce ethnic heterogeneity and represent a plausible source of exogenous variation in the estimation of the parameter of interest in equation (1). In fact, firms are not likely to (re-)locate their plants on the basis of the historical attitudes towards immigrants at the commuting area, which - as explained above - presents different patterns before and after 2004. The previous literature on localization has in fact shown that the firm location decisions are mainly driven by the size of the local demand, economies of scale, access to inputs and to knowledge spillovers (Krugman, 1991, Audretsch and Feldman, 1996, Adams and Jaffe, 1996) rather than the historical levels of the local ideology. Moreover, restricting our time-window between two election years (2001 and 2007) around the 2004 expansion of the European Union, we ensure that our "attitudes towards immigrants" index is precisely measured.

4 Results

4.1 OLS and FE results

The relationship between ethnic diversity and firms' exporting decision is described in Table 5. The first three columns refer to OLS estimates, whereas the rest informs on results from the firm FE approach. From both estimation methods we find that the parameter on our variable of interest, *the ethnic diversity index*, is significantly positive and takes fairly similar values in the most complete specification. It implies that the association between ethnic diversity and propensity to export is mainly coming from the within- rather than between-firm variations. Specifically, a standard deviation increase in ethnic diversity (0.218) is associated with a 0.4 percentage points increase in the export probability in the fixed effect specification. This marginal association is equivalent to a rise in the probability to export by about 1 percent.[11] The estimated coefficient on the export experience variable is statistically significant and positive, no matter the estimation method employed, showing that – as found in earlier studies and emerged in the descriptive statistics – there exists a certain degree of persistence in firms' exporting activities. The positive link between the latter and high productivity levels is instead captured by including the lagged labor productivity, measured by the log of sales per employee. The inclusion of the latter variable allows us to rule out that the estimated correlation between diversity and export probability is just indirectly related to the fact that diversity rise productivity and in turn the export probability (*indirect effect*). A positive relationship with a firm's export propensity is also found for the share of employees with higher (post-secondary or tertiary) education. This is not surprising either, because a better-educated or more skilled workforce typically represents a key factor in achieving competitive advantages in foreign markets. Controlling

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[11]This figure is obtained using the average probability to export. From the estimates in Table 5, the average probability to export is approximately 39 percent. Therefore, the changes in the probability to export, in percentage terms, are (0.004/0.39)*100=1.02.

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for the share of foreigners for each linguistic group considered in the construction of our diversity index does not affect the correlation between ethnic diversity and the export probability. We interpret this result as supporting evidence for the hypothesis that the network/spillovers mechanisms are not entirely explaining the positive association between diversity and whether the firm exports. We dig deeper into the role of spillover effects in the following discussion of the extensive and intensive margins, where we have further direct and explicit controls for networks.

[Insert Table 5 around here]

How ethnic heterogeneity relates to the share of output exported, measured as the log of export sales per employee, is presented in Table 6. Here, as in the following export outcomes, we only focus on the sample of exporting firms. Therefore all results should be interpreted as conditional on exporting. Moreover we distinguish between the results alternatively obtained by OLS, firm FE and firm-destination FE approaches, depending on whether the aggregate (OLS, firm FE) or the destination specific outcomes (firm-destination FE) are used as dependent variables. The share of exported output turns out to be consistently and positively associated with the level of ethnic diversity. The latter seems to matter more and to be more in line with the OLS estimates as soon as we account for destination specific effects compared to the firm FE counterpart. A standard deviation increase in ethnic diversity is in fact associated with a 10 (3) percent increase in the share of exported output according to the firm-destination (firm) FE estimations. Interestingly, the export experience is less important in explaining our measure of intensive margin than it was in terms of export probability, whereas the lagged labor productivity still carries a positive and large parameter. A larger share of women is also positively linked with the proportion of exported sales, implying that companies with larger intensive margins have a tendency to employ gender-balanced workforces. Looking at the occupational categories, we find that the coefficient on

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the proportion of managers, though not significant in the firm FE specification, is positive. This finding is in line with the hypothesis that firms need a certain amount of managerial competences to compete in the international arena and therefore to export a relevant share of their production. The role of network, measured as the number of employees from shipping markets and of competitors exporting to the same destination, is also fairly important in terms of share of exported sales. A unit increase in the number of competitors is, for example, associated with a 0.1 per cent increase in the share of export sales per employee. Furthermore, note that the association between diversity and our outcome variable is robust to the inclusion of the employee and firm network variables together with the shares of foreigners for each linguistic group. As before, we interpret these results as a sign that the relation under investigation is not counfounded with network effects.

[Insert Table 6 around here]

Table 7 reports the association between ethnic diversity and the number of shipping markets. More remarkable differences emerge between OLS and FE approach in terms of both size and significance levels compared to the results reported in the previous tables. For such a reason, we prefer to comment only on results obtained by implementing a fixed effect approach. We find a positive and significant relationship between the number of shipping markets and the degree of ethnic diversity: two standard deviations increases in the latter variable are correlated with an increase of approximately one destination market. Unsurprisingly, the number of export markets turn to be positively related to the export experience and lagged labor productivity. Further, it seems that the composition of a workforce does not matter at all in terms of this export outcome.

[Insert Table 7 around here]

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In Table 8, we finally look at the relationship between diversity and the number of exported products, the latter being measured using the 4 digits classification. We find that in all specifications (OLS, firm and firm-destination FE) the index of ethnic diversity carries a significant and positive coefficient, though the magnitude involved in the firm FE specification is smaller. In the latter case, two standard deviations increase in the level of diversity is associated to a increase of nearly one exported product.[12]

[Insert Table 8 around here]

We expect that an increase in ethnic diversity may bring larger benefits, in terms of both intensive and extensive margins, especially for those activities directed to more culturally distant markets compared to those focusing on closer destinations in terms of market demand characteristics, tastes and regulations. This is based on the fact that a highly culturally diverse workforce may help Danish firms lowering the firm-specific fixed cost of exporting more significantly for those destinations for which the management of cross-border transactions is more challenging. Nonetheless, we generally don't find evidence consistent with this hypothesis, as the association between ethnic diversity and either export sales or number of exported products barely change across western and non western destination markets.[13]

4.2 IV results

Although the previous findings are of great interest and present already a relevant novelty, as no other study up until now has carefully explored and described the relationship under investigation, we further proceed the analysis by trying to tease out the effect of ethnic diversity on several firm's exporting dimensions, by implementing

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[12]Note that we obtain qualitatively similar results by using a 3 digits classification to measure the number of exported products. These results are reported in Table A1 of Appendix 3.

[13]Results are reported in Table A2 of Appendix 3.

the FE-IV strategy discussed in the previous section. Table 9 includes the results from the first stage estimated using alternative approaches. The first three columns report three specifications, from a parsimonious to a complete one in a similar fashion to the previous tables, where ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with . In column 4 ethnic diversity is instrumented using the same polynomial approximation interacted with the current openness index while in the last column ethnic diversity is instrumented with ati_index_{kt}. The results for all these alternative specifications clearly show that the proposed instruments are strongly correlated with our endogenous variable, i.e. the firm level diversity.[14] This is an interesting results in itself, as it confirms that the ethnic composition of the local labour supply is strongly associated with the local average attitudes towards immigrants, in line with what has been shown by Waisman and Larsen (2010).

[Insert Table 9 around here]

The following tables report the second step of this IV exercise for respectively the probability to export, the log of export sales per employee (Table 10), the number of export market and exported products (Table 11). In each of these tables, there are five columns for each outcome variable, with the last three presenting the most complete specification. Whereas the third and the fith columns use as instruments the moving average of ati_index_{kt}, i.e. $\bar{ati\_index}_{kt}$ with and without the polynomial approximation around the 2004 European enlargement, in the fourth we use the current values of the same index, to test whether the effect of interest varies its sign and size. Given that the estimation sample includes only a subperiod around the 2004 European Union enlargement (from 2001 to 2007) and in line with what typically occurs in estimating

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[14]Their statistical validity is also confirmed by the F-statistics reported at the bottom of Table 10. The F-statistics are generally above 70, which allow us to clearly reject the null of weak instrument (Stock and Yogo, 2005).

local average effects (Angrist and Imbens, 1994), we generally find that parameters on ethnic diversity and their standard errors are a slightly higher compared to the results obtained from firm FE models, in which diversity is treated as exogenous.[15]

However they all remain statistically significant, especially for the number of destinations and exported products. Taking the third specification for each dependent variable as our preferred one, we find that on average a standard deviation increase in ethnic diversity enhances the probability to export by 2.3 percent, raises the value of exported sales per employee by 14 percent, induces firms to export towards 2.9 additional markets and approximately 2 further products. Estimates on relevant controls are qualitatively similar to those commented earlier. Addressing endogeneity issues allows us to conclude that ethnic diversity affects the probability to export and the extensive margin of exporting, i.e., the number of foreign markets served by the firm and the number of products which the firm exports. Moreover, it also boosts the export volume, i.e. the intensive margin of firm trade.

[Insert Tables 10 and 11 around here]

Overall, our findings support the hypothesis that ethnic diversity *directly* affects firm exporting decision through a fixed-cost reducing effect, which is not counfounded with either the *indirect* or the *network effect* associated with an ethnically heterogenous workforce. Thus, we can argue that in order to manage a diverse labor force, firms presumably have to overcome bundling cost, i.e., it has to train workers with a different cultural background to work together cooperatively (Osborne, 2000) and this training on (another) job positively affects the firms' internationalization process. Having successfully managed to sustain a diversified labor force endows firms with a set of communicative, informational and managerial skills, which lowers the firm-specific fixed cost of exporting and thus - ceteris paribus - increase the propensity of

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[15]Results obtained by using a narrower time window around the 2004, i.e. from 2002 to 2006, does not substantially differ from those reported in Tables 10 and 11. Results are reported in table A3 of Appendix 3.

exporting and facilitate the management of cross-border transactions. Furthermore, as workforces characterized by a high heterogeneity in ethnic backgrounds have a flexible and creative approach towards global markets and customers' tastes, they help indeed firms in overcoming cultural and informational barriers and thus stimulate them to improve or develop products sold abroad, in line with what argued in Osborne, 2000 and Berliant and Fujita, 2008.

5 Robustness checks

In Table 12, we first test whether the direct effect arising from an ethnically diverse pool of workers materializes more often and is in general more relevant (i) for white-collar compared to blue-collar occupations, (ii) when considering firms above industry-average share of foreigners, and (iii) for firms operating in the manufacturing with respect to those belonging to the service industries.

The hypothesis according to which the ethnic diversity in senior occupations promotes firms' exporting activities more than it does in other job positions is grounded on the fact that white-collars are typically more influential on firms' business plans and export strategies. The first two sub-panels of Table 12 report evidence supporting this hypothesis for all the export dimensions: the coefficients estimated to diversity for white-collars are generally larger and more precisely estimated than those for blue-collars.

To test whether the effects of diversity in terms of firm internationalization are stronger, the larger is the share of non native workers, we estimate the previous models for two alternative subsamples, depending on whether the firm share of foreigners is below or above the industrial average. Sub-panels 3 and 4 of Table 12 show that the effects of diversity are not generally less precisely estimated and of lower magnitude for firms with below average share of foreigners compared to firms with above average

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share of foreigners, dismissing the hypothesis that diversity is bringing large benefits only if the share of native workers is substantial.

Finally, the distinction between manufacturing (sub-panel 5) and service (sub-panel 6) sectors helps us understanding which group of industries is more likely to gain from cultural heterogeneity in terms of export performance. It is worth remarking that whereas almost half of the total production in manufacturing industries goes to export, a much smaller share of sales from the service sector is sold abroad. Exporting activities in the service sector are dominated by the transportation industry; instead the greater player in exports from manufacturing is the electronics production (Statistics Denmark 2008). These compositional characteristics may explain why an increase in the ethnic diversity dimension does not raise the probability or the intensive margin of export but enlarges considerably the number of shipping markets and exported products for firms operating in the service sector. Conversely, diverse cultural backgrounds in workforces employed in manufacturing substantially and positively affects firms' exporting activities in all dimensions here analyzed.

[Insert Table 12 around here]

In Table 13, we proceed our sensitivity analysis by dividing firms by size and evaluate whether there is any change in the coefficients of workforce diversity for small firms (those with fewer than 50 employees) and large firms (those with more than 50 employees). Ethnic diversity could be more beneficial to larger firms because the organizational and diversity-management practices of such firms are well consolidated, and thus, they are more likely to introduce policies that can help them to fully take advantage of the benefits associated with an ethnically diverse workforce. Conversely, large firms are likely to require many different types of jobs and occupation, in which diversity might affect firm performance in different ways. As reported in the first two sub-panels, the coefficients of the ethnic diversity index are more precisely estimated

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and are generally larger in the sub-sample of large firms, suggesting that diversity plays a relevant role in trade outcomes, especially for the latter firms.

As labor diversity has been computed at the firm level (by weighting the average of the Herfindahl indexes computed at the workplace level), we then evaluate how the results change if multi-establishment firms are excluded from the sample (third panel of Table 13). These findings do not significantly differ from the main results.

In the next step, we evaluate the variation in the coefficients estimated to labor diversity that result when diversity is computed using a less detailed classification. Specifically, we group countries at the first linguistic tree level consisting of 20 categories, where for example Germanic West, Germanic North and Romance languages are classified under the same group of "indo-european languages"', contrary to the main analysis. The results are shown in the fourth sub-panel of Table 13 and are consistent with those of our main analysis, revealing that our analysis is robust with respect to the classification employed to measure the ethnic diversity index.

Finally, given that one of main assumptions for our identification strategy to work is that firm's localization has to be predetermined to the 2004 European enlargement, we conduct an additional sensitivity check by considering only those firms for which this assumption is very likely to hold, i.e. firms established before the sample period used for the IV estimations. The results of this robustness check are reported in the last sub-panel of Table 13 and do not qualitatively differ from the IV results reported in Tables 10 and 11.

[Insert Table 13 around here]

6   Conclusions

Using a rich data on the workforces and trade transactions of firms in a number of different industries for Denmark, we investigate how labor diversity in terms of ethnicity

affect the firm export behavior in several dimensions. To the best of our knowledge, our study is the first empirical attempt to precisely identify and quantify the role played by ethnic diversity in terms of the firm internationalization process.

After controlling for both the indirect and the network effect of diversity and addressing endogeneity issues, we show that workforce heterogeneity in terms of ethnicity increases the probability to export and the extensive margin of exporting, i.e., the number of foreign markets served by the firm and the number of exported products. Moreover, we also find that diversity positively affects the export volume, i.e. the intensive margin of firm trade. More specifically, using an IV-type strategy, based on the interaction between 2004 expansion of the European Union and our "attitudes towards immigrants" index, we find that on average a standard deviation increase in ethnic diversity enhances the probability to export by 2.2 percent, raises the value of exported sales per employee by 14 percent, induces firms to export towards 3 additional markets and approximately 2 further products.

Thus, our empirical analysis is strongly suggestive of a robust relationship between workforce diversity and firms' export performance, supporting the hypothesis that an ethnically diversified labor force endows firms with a set of communicative, informational and managerial skills, which lowers the firm-specific fixed cost of exporting and thus - ceteris paribus - increase the propensity of exporting and facilitate the management of cross-border transactions. Our findings imply that that workplace ethnic diversity can help firms to cope with the challenges posed, and exploit the opportunities offered by economic globalisation. Therefore, instead of only focusing on the challenges and costs associated with managing a diverse workforce, firms also need to look at the positive effects that ethnic diversity can have on their ability to initiate, manage and expand international businesses. These findings may inform policy makers with regard to the design of programmes and incentives geared towards helping firms in their internationalisation (Mohr and Shoobridge, 2012).

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Table 1: Descriptive statistics

Variables	Definition	Total		Firms with above av diversity		Size1		Size2	
		Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
IDA Variables:									
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 emloyees 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 from firm 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 collars 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 (40 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 (40 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 (40 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 equilavents	68.834	363.478	166.026	653.394	21.985	9.887	219.468	725.856
export	1, if the firm export	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		157586		44587		120718		48468	
Number of firms		14065		3810		10111		3954	
				Sample of exporting firms					
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	21.861	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		65932		25373		39615		26317	
Number of firms		5333		2045		3227		2106	

Notes: All descriptive statistics are calculated over the period 1995 to 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: Employees between 10 and 49; Size2: Employees more than 50.

Table 2: Ethnic diversity by industry and year

| | Industry | | | | |
Year	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	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 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	0.0031	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, Irland, 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 Darussalem, Burkina Faso, Camoros, Chad, Djibouti, Egypt, Eritrea, Gambia, Guinea, Indonesia, Iran, Iraq, Jordan, Kazakstan, Kirgizstan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malaysia, Maldives, Mali, Mauritania, Morocco, Nigeria, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Senegal, Sierra Leone, Somalia, Sudan, Syria, Tadzhikstan, Tunisia, Turkey, Turkmenistan, Uzbekistan, Yemen; New EU member after the 2004 enlargement: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia

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Figure 1: Fitted and observed ethnic diversity and diversity-friendly political ideology over time
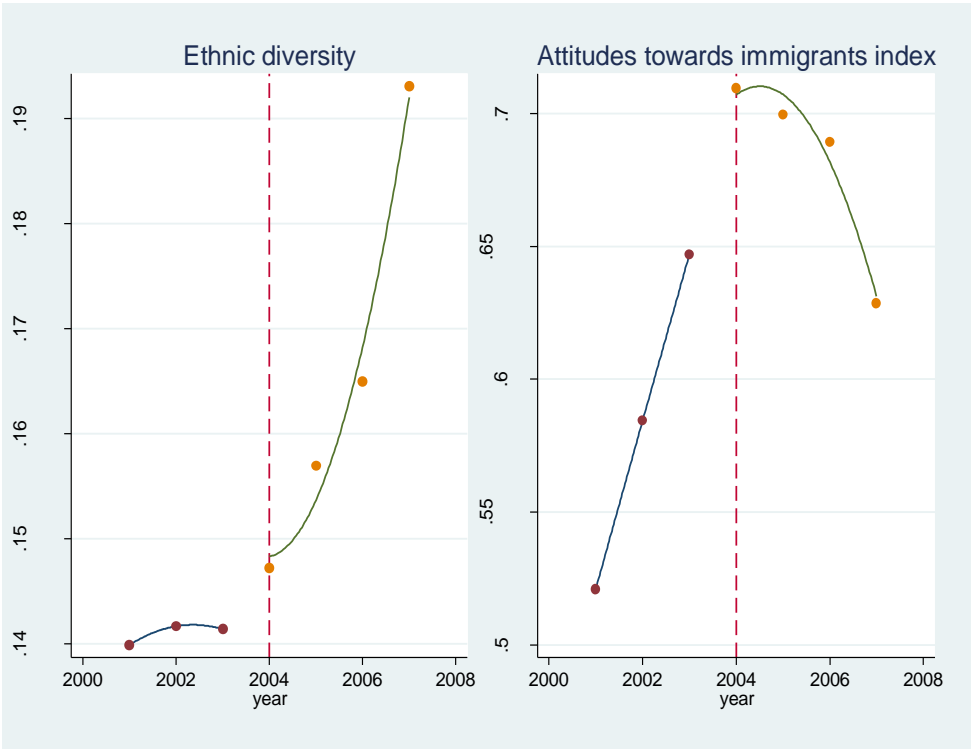
Table 5: Ethnic diversity and the exporting decision

	Probability to export					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	Firm FE	Firm FE	Firm FE
index ethnic diversity	0.165***	0.020***	0.020***	0.020***	0.016***	0.016***
	(0.007)	(0.005)	(0.006)	(0.004)	(0.004)	(0.004)
export experience		0.052***	0.052***		0.063***	0.063***
		(0.000)	(0.000)		(0.001)	(0.001)
lagged labor productivity		0.028***	0.023***		0.013***	0.013**
		(0.002)	(0.003)		(0.004)	(0.004)
skill1			0.048***			0.008
			(0.009)			(0.012)
skill2			0.054**			0.042*
			(0.017)			(0.025)
men			0.007			0.011
			(0.009)			(0.015)
middle managers			0.045***			0.003
			(0.011)			(0.021)
managers			0.056**			0.007
			(0.023)			(0.011)
N	157586	118207	118207	157586	118207	118207
R2	0.426	0.724	0.726	0.009	0.011	0.013

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

Table 6: Ethnic diversity and the proportion of output exported

	(1) OLS	(2) OLS	(3) OLS	(4) Firm FE	(5) Firm FE	(6) Firm FE	(7) Firm-destination FE	(8) Firm-destination FE	(9) Firm-destination FE
					Log of export sales per employee				
index ethnic diversity	0.960***	0.869***	0.403***	0.151***	0.147***	0.130***	0.866***	0.826***	0.481***
	(0.062)	(0.066)	(0.069)	(0.035)	(0.038)	(0.039)	(0.014)	(0.016)	(0.018)
export experience		0.105***	0.100***		0.001	0.001		0.002*	0.006***
		(0.005)	(0.005)		(0.007)	(0.007)		(0.001)	(0.001)
lagged labor productivity		0.338***	0.337***		0.143***	0.148***		0.007	0.058***
		(0.036)	(0.037)		(0.035)	(0.035)		(0.008)	(0.009)
skill1			-0.739***			-0.143			-0.612***
			(0.168)			(0.134)			(0.053)
skill2			0.341			0.215			0.540***
			(0.265)			(0.255)			(0.076)
men			-0.837***			-0.352**			-1.784***
			(0.125)			(0.149)			(0.030)
middle managers			0.016			-0.005			-0.093*
			(0.139)			(0.174)			(0.035)
managers			0.818**			0.089			0.140***
			(0.278)			(0.111)			(0.034)
employee network									0.001*
									(0.001)
firm network									0.001***
									(0.000)
N	65932	51712	51712	65932	51712	51712	3096502	261049	2651049
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, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions. Specifications in columns 3 and 6 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Specification in columns 7-9 also include firm-destination fixed effects. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.

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Table 7: Ethnic diversity and the number of export markets

	Number of export markets					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	Firm FE	Firm FE	Firm FE
index ethnic diversity	13.002***	12.133***	10.877***	2.399***	2.051***	1.928***
	(0.568)	(0.608)	(0.626)	(0.172)	(0.177)	(0.181)
export experience		0.585***	0.504***		0.094**	0.096**
		(0.031)	(0.031)		(0.041)	(0.041)
lagged labor productivity		4.083***	3.350***		1.101***	1.098***
		(0.245)	(0.235)		(0.160)	(0.158)
skill1			0.525			0.857
			(0.931)			(0.538)
skill2			9.305***			1.349
			(1.793)			(1.329)
men			-11.408***			-0.882
			(0.833)			(0.718)
middle managers			0.535			-0.315
			(1.637)			(0.722)
managers			8.765***			-0.156
			(0.906)			(0.523)
N	65932	51740	51740	65932	51740	51740
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, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions. Specifications in columns 3 and 6 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Standard errors 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)
	OLS	OLS	OLS	Firm FE	Firm FE	Firm FE	Firm-destination FE	Firm-destination FE	Firm-destination FE
index ethnic diversity	7.009***	6.240***	6.202***	1.824***	1.820***	1.671***	4.854***	4.956***	5.059***
	(0.632)	(0.752)	(0.732)	(0.298)	(0.332)	(0.336)	(0.120)	(0.142)	(0.145)
export experience		0.244***	0.226***		0.078	0.081*		0.014	0.011
		(0.039)	(0.040)		(0.049)	(0.049)		(0.011)	(0.010)
lagged labor productivity		3.166***	2.978***		0.753**	0.714**		2.425***	2.661***
		(0.328)	(0.363)		(0.296)	(0.298)		(0.063)	(0.066)
skill1			3.697**			1.099			1.491***
			(1.134)			(1.066)			(0.615)
skill2			5.497**			0.484			2.846***
			(2.075)			(1.979)			(0.401)
men			-9.807***			1.222			-10.781***
			(0.957)			(1.321)			(0.258)
middle managers			1.121			-1.227			-2.962***
			(2.249)			(1.208)			(0.684)
managers			8.255***			0.929			5.142***
			(1.454)			(1.015)			(0.375)
employee network									0.024
									(0.017)
firm network									0.001***
									(0.000)
N	65932	51740	51740	65932	51740	51740	3098339	2652367	2652367
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, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions. Specifications in columns 3 and 6 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Specification in columns 7-9 also include firm-destination fixed effects. Standard errors 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)
ati_index					0.063***
					(0.008)
(year>=2004)*ati_index	0.159***	0.137***	0.149***	0.043**	
	(0.027)	(0.030)	(0.029)	(0.013)	
((year>=2004)*ati_index)^2	-0.267***	-0.221***	-0.218***	-0.067***	
	(0.033)	(0.037)	(0.035)	(0.016)	
(year-2004)*ati_index	0.049***	0.042***	0.032***	0.034***	
	(0.008)	(0.010)	(0.009)	(0.005)	
(year¿=2004)*(year-2004)*ati_index	-0.026**	-0.011	-0.001	-0.018*	
	(0.010)	(0.011)	(0.011)	(0.010)	
((year-2004)*ati_index)^2	0.010***	0.009***	0.005*	0.006***	
	(0.002)	(0.003)	(0.002)	(0.001)	
((year¿=2004)*(year-2004)*ati_index)^2	-0.011***	-0.013***	-0.010***	-0.003	
	(0.003)	(0.003)	(0.003)	(0.004)	
export experience		0.006***	0.006***	0.006***	0.006***
		(0.000)	(0.000)	(0.000)	(0.000)
lagged labor productivity		-0.014***	0.001	0.002	0.003
		(0.002)	(0.002)	(0.002)	(0.002)
skill1			-0.055***	-0.055***	-0.055***
			(0.006)	(0.006)	(0.006)
skill2			-0.012	-0.013	-0.014
			(0.010)	(0.010)	(0.010)
men			-0.018***	-0.018***	-0.018***
			(0.005)	(0.005)	(0.005)
age1			-0.731***	-0.731***	-0.731***
			(0.017)	(0.017)	(0.017)
age2			-0.446***	-0.446***	-0.446***
			(0.014)	(0.014)	(0.014)
age3			-0.264***	-0.264***	-0.264***
			(0.012)	(0.012)	(0.012)
age4			-0.148***	-0.148***	-0.148***
			(0.012)	(0.012)	(0.012)
middle managers			-0.065***	-0.065***	-0.065***
			(0.014)	(0.014)	(0.014)
managers			0.019**	0.019**	0.019**
			(0.006)	(0.006)	(0.006)
tenure			-0.030***	-0.030***	-0.030***
			(0.001)	(0.001)	(0.001)
N	100710	78619	78619	78619	78619
R2	0.221	0.281	0.335	0.334	0.329

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 moving average of the *ati_index* at 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, a full set of 2-digit industry, size, year and commuting areas dummies. Columns 3-5 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.

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

	Probability to export						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	0.256***	0.048*	0.042*	0.025*	0.036*	1.008**	0.922**	0.654*	0.572*	0.541*
	(0.033)	(0.034)	(0.027)	(0.014)	(0.020)	(0.456)	(0.354)	(0.320)	(0.292)	(0.297)
export experience		0.068***	0.068***	0.007**	0.068***		0.029**	0.029**	0.116***	0.029**
		(0.001)	(0.001)	(0.003)	(0.001)		(0.013)	(0.013)	(0.026)	(0.013)
lagged tfp		0.007**	0.007**	0.068***	0.008**		0.106***	0.118***	0.029**	0.122***
		(0.003)	(0.003)	(0.001)	(0.003)		(0.026)	(0.026)	(0.013)	(0.027)
skill1			0.003	0.002	0.003			-0.380**	-0.389**	-0.420**
			(0.013)	(0.013)	(0.014)			(0.141)	(0.141)	(0.147)
skill2			0.017	0.017	0.016			0.814***	0.845***	0.845***
			(0.025)	(0.025)	(0.025)			(0.230)	(0.230)	(0.230)
men			0.006	0.006	0.006			-0.372**	-0.365**	-0.365**
			(0.016)	(0.016)	(0.016)			(0.148)	(0.148)	(0.149)
age1			0.012	0.004	0.024			-0.633**	-0.594*	-0.757**
			(0.031)	(0.031)	(0.036)			(0.308)	(0.310)	(0.372)
age2			0.026	0.019	-0.005			-0.169	-0.131	-0.270
			(0.026)	(0.026)	(0.031)			(0.254)	(0.256)	(0.310)
age3			0.013	0.010	-0.003			0.046	0.067	0.001
			(0.021)	(0.021)	(0.023)			(0.202)	(0.203)	(0.220)
age4			0.023	0.022	0.019			0.054	0.060	0.053
			(0.018)	(0.018)	(0.018)			(0.172)	(0.172)	(0.172)
middle managers			-0.003	-0.004	-0.007			-0.047	-0.028	-0.043
			(0.022)	(0.022)	(0.022)			(0.181)	(0.181)	(0.182)
managers			0.005	0.005	0.006			0.093	0.093	0.089
			(0.011)	(0.011)	(0.011)			(0.096)	(0.096)	(0.097)
tenure			0.001	0.001	-0.001			-0.023**	-0.022**	-0.029**
			(0.001)	(0.001)	(0.001)			(0.010)	(0.010)	(0.013)
F test (excluded instruments); p-value	266.12; 0.000	194.10; 0.000	318.82; 0.000	292.02; 0.000	134.22; 0.000	129.98; 0.000	107.74; 0.000	183.29; 0.000	163.12; 0.000	113.01; 0.000
N	100710	78197	78197	78197	78197	38795	33334	33334	33334	33334
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 moving average of the ati_index at 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 moving average of ati_index within the commuting area where the firm is located. All regressions include firm-specific unobserved fixed effects whether the firm is foreign-owned, a multi-establishment dummy, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions. Specifications in columns 3,6,9 and 12 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.

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

	Number of export markets						Number of exported products			
	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) IV	(8) IV	(9) IV	(10) IV
index ethnic diversity	23.064***	15.751***	13.325***	13.039***	14.444***	16.555***	14.433***	11.072***	10.731***	14.621***
	(1.188)	(1.116)	(0.837)	(0.889)	(1.705)	(0.826)	(0.849)	(0.603)	(0.648)	(1.318)
export experience		0.207***	0.214***	1.074***	0.213***		0.063	0.070*	0.348***	0.168***
		(0.056)	(0.054)	(0.100)	(0.055)		(0.043)	(0.039)	(0.073)	(0.043)
lagged tfp		1.221***	1.038***	0.213***	1.051***		0.507***	0.341***	0.069*	0.301***
		(0.102)	(0.100)	(0.054)	(0.105)		(0.078)	(0.072)	(0.039)	(0.081)
skill1			0.436	0.299	0.461			0.359	0.406	0.739
			(0.591)	(0.595)	(0.630)			(0.425)	(0.433)	(0.487)
skill2			2.019**	-2.178**	2.178**			1.009	1.050	1.052
			(0.963)	(0.968)	(0.989)			(0.693)	(0.705)	(0.764)
men			-0.518	-0.542	-0.540			-0.901**	-0.903**	-0.899*
			(0.622)	(0.626)	(0.639)			(0.448)	(0.456)	(0.494)
age1			8.584***	8.301***	9.150***			6.352***	6.727***	8.474***
			(1.292)	(1.308)	(1.596)			(0.930)	(0.953)	(1.234)
age2			7.156***	6.965***	7.694***			5.072***	5.385***	6.884***
			(1.065)	(1.079)	(1.333)			(0.766)	(0.786)	(1.030)
age3			5.858***	5.807***	6.154***			3.361***	3.509***	4.222***
			(0.849)	(0.856)	(0.944)			(0.611)	(0.624)	(0.730)
age4			2.262**	2.266**	2.300**			0.700	0.701	0.772
			(0.722)	(0.725)	(0.742)			(0.519)	(0.528)	(0.573)
middle managers			-0.398	-0.334	-0.255			-0.460	-0.402	-0.240
			(0.759)	(0.763)	(0.783)			(0.546)	(0.556)	(0.605)
managers			0.320	0.241	0.265			0.156	0.136	0.086
			(0.404)	(0.406)	(0.416)			(0.291)	(0.296)	(0.321)
tenure			0.486***	0.473***	0.512***			0.402***	0.417***	0.492***
			(0.041)	(0.042)	(0.057)			(0.030)	(0.031)	(0.044)
F test (excluded instruments); p-value	130.68; 0.000	110.06; 0.000	185.81; 0.000	165.79; 0.000	67.81; 0.000	130.68; 0.000	110.06; 0.000	185.81; 0.000	165.79; 0.000	59.21; 0.000
N	38795	33334	33334	33334	33334	38795	33334	33334	33334	33335
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 moving average of the $ati.index$ at 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 moving average of $ati.index$ within the commuting area where the firm is located. All regressions include firm-specific unobserved fixed effects, the share of differently aged workers belonging to the employees age distribution quartiles, the firm average tenure, whether the firm is foreign-owned, a multi-establishment dummy, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions. Specifications in columns 3,6,9 and 12 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.

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Table 12: Robustness checks: estimates under alternative index definitions, by relevant sub-samples and by industry

	Probability to export			Log of export sales per employee			Number of export markets			Number of exported products		
	OLS	Firm FE	IV	OLS	Firm FE	IV	OLS	Firm FE	IV	OLS	Firm FE	IV
White collar diversity												
index ethnic diversity	0.024***	0.012**	0.033*	0.543***	0.101**	0.887***	11.473***	1.957***	12.373***	7.816***	1.294**	11.787***
	(0.006)	(0.004)	(0.017)	(0.069)	(0.039)	(0.303)	(0.684)	(0.190)	(1.234)	(1.059)	(0.405)	(0.920)
F test (excluded instruments); p-value			76.56; 0.000			40.45; 0.000			41.71; 0.000			41.71; 0.000
N	118207	118207	78197	51740	51740	33334	51740	51740	33334	51740	51740	33334
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 diversity												
index ethnic diversity	0.017**	0.011**	0.032	0.271***	0.132***	0.653	8.948***	1.301***	6.942***	5.304***	1.153***	9.854***
	(0.007)	(0.004)	(0.069)	(0.079)	(0.036)	(0.421)	(0.812)	(0.205)	(2.282)	(0.682)	(0.328)	(1.781)
F test (excluded instruments); p-value			57.62; 0.000			40.45; 0.000			41.71; 0.000			41.71; 0.000
N	118207	118207	78197	51740	51740	33334	51740	51740	33334	51740	51740	33334
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
Firms with below industry-average share of foreigners												
index ethnic diversity	0.035***	0.017**	0.119*	0.753***	0.111**	0.744*	12.994***	2.289***	16.898***	7.152***	1.902***	22.920***
	(0.008)	(0.006)	(0.061)	(0.100)	(0.053)	(0.348)	(0.903)	(0.277)	(1.489)	(1.135)	(0.522)	(3.292)
F test (excluded instruments); p-value			97.60; 0.000			71.91; 0.000			72.28; 0.000			72.28; 0.000
N	86711	86711	52370	36036	36036	21030	36036	36036	21030	36036	36036	21030
R2	0.712	0.009	0.221	0.173	0.013	0.004	0.339	0.143	0.249	0.148	0.077	0.440
Firms with above industry-average share of foreigners												
index ethnic diversity	0.028**	0.023**	0.041	0.964***	0.045	0.408	13.942***	1.530***	6.946***	8.115***	0.756	7.092***
	(0.010)	(0.007)	(0.031)	(0.129)	(0.082)	(0.687)	(1.050)	(0.359)	(3.853)	(1.174)	(0.634)	(9.076)
F test (excluded instruments); p-value			19.63; 0.000			18.63; 0.000			36.32; 0.000			18.63; 0.
N	31416	31416	17499	15726	15726	9008	15726	15726	9008	15726	15726	9008
R2	0.688	0.011	0.141	0.163	0.012	0.006	0.276	0.120	0.149	0.127	0.057	0.140
Manufacturing sectors												
index ethnic diversity	0.026**	0.014**	0.082***	0.509***	0.099***	0.567*	11.637***	1.851***	16.640***	6.123***	0.940***	29.163***
	(0.009)	(0.007)	(0.014)	(0.083)	(0.045)	(0.295)	(0.797)	(0.207)	(1.437)	(0.617)	(0.271)	(2.192)
F test (excluded instruments); p-value			84.72; 0.000			66.47; 0.000			66.48; 0.000			66.48; 0.000
N	42829	42829	23362	29997	29997	16801	29999	29999	16801	29999	29999	16801
R2	0.609	0.022	0.609	0.146	0.014	0.176	0.398	0.164	0.404	0.246	0.116	0.240
Service sectors												
index ethnic diversity	0.003	0.004	0.016	0.119	0.110	0.450	7.810***	1.369***	12.868***	6.431***	2.530**	23.145***
	(0.007)	(0.005)	(0.042)	(0.137)	(0.074)	(0.384)	(0.909)	(0.298)	(1.432)	(1.815)	(0.877)	(4.291)
F test (excluded instruments); p-value			137.91; 0.000			69.36; 0.000			70.55; 0.000			70.55; 0.000
N	74585	74585	54674	21379	21379	16435	21405	21405	16435	21405	21405	16435
R2	0.694	0.021	0.696	0.133	0.012	0.134	0.248	0.087	0.230	0.097	0.063	0.091

Notes: Ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the moving average of the ati_index at the commuting area where the firm is located. The IV estimation sample is from 2001 to 2007. All regressions include the share of differently aged workers belonging to the employees age distribution quartiles, the firm average tenure, whether the firm is foreign-owned, a multi-establishment dummy, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions, the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. IV type regressions also include firm-specific unobserved fixed effects. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.

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Table 13: Robustness checks: estimates by size and and establishment year

	Probability to export			Log of export sales per employee			Number of export markets			Number of exported products		
	OLS	FE	IV	OLS	FE	IV	OLS	FE	IV	OLS	FE	IV
Firms with fewer than 50 employees												
index ethnic diversity	0.010***	0.004	0.064	0.325***	0.044	0.186	1.537***	0.477***	11.417***	0.064	0.473**	17.632***
	(0.003)	(0.002)	(0.038)	(0.047)	(0.024)	(0.342)	(0.274)	(0.115)	(1.828)	(0.239)	(0.160)	(3.393)
F test (excluded instruments); p-value			33.91; 0.000			14.24; 0.000			14.17; 0.000			14.17; 0.000
N	83935	83935	51160	30177	30177	17882	30177	30177	17882	30177	30177	17882
R2	0.698	0.010	0.228	0.130	0.007	0.013	0.237	0.070	0.405	0.112	0.036	0.3193
Firms with more than 50 employees												
index ethnic diversity	0.034***	0.008**	0.018**	0.691***	0.019*	0.513*	9.658***	1.333***	14.223***	5.631***	1.571**	27.544***
	(0.009)	(0.004)	(0.009)	(0.129)	(0.010)	(0.278)	(1.763)	(0.361)	(1.566)	(1.233)	(0.567)	(4.526)
F test (excluded instruments); p-value			35.18; 0.000			32.62; 0.000			33.00; 0.000			33.00; 0.000
N	34191	34191	20345	21599	21599	12882	21599	21599	12882	21599	21599	12882
R2	0.663	0.015	0.107	0.205	0.010	0.011	0.198	0.098	0.239	0.098	0.044	0.344
Mono-establishment firms												
index ethnic diversity	0.026***	0.059*	0.069*	0.638***	0.476*	0.566*	8.583***	3.594***	13.431***	2.837***	7.626***	17.645***
	(0.006)	(0.028)	(0.035)	(0.077)	(0.274)	(0.274)	(0.588)	(1.077)	(1.077)	(0.694)	(1.931)	(1.931)
F test (excluded instruments); p-value			152.60; 0.000			90.50; 0.000			91.25; 0.000			91.25; 0.000
N	102132	62368	62368	41042	24176	24176	41065	24194	24194	41065	24194	24194
R2	0.709	0.022	0.220	0.162	0.004	0.004	0.326	0.249	0.249	0.125	0.440	0.440
Aggregate diversity index (20 categories)												
index ethnic diversity	0.044***	0.020***	0.063*	0.856***	0.136**	0.582*	10.520***	1.584***	17.887***	5.015***	1.531***	51.016***
	(0.007)	(0.005)	(0.032)	(0.087)	(0.044)	(0.296)	(0.733)	(0.212)	(1.309)	(0.744)	(0.416)	(3.029)
F test (excluded instruments); p-value			167.61; 0.000			106.73; 0.000			108.24; 0.000			108.24; 0.000
N	118207	118207	78197	51740	51740	33334	51740	51740	33334	51740	51740	33334
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
Firms established before 2001												
index ethnic diversity	0.052***	0.022**	0.052*	1.030***	0.218**	0.397*	18.269***	4.042***	7.294***	10.611***	4.848***	6.172***
	(0.011)	(0.007)	(0.027)	(0.130)	(0.075)	(0.204)	(1.254)	(0.416)	(2.042)	(1.378)	(0.869)	(5.230)
F test (excluded instruments); p-value			91.30; 0.000			60.65; 0.000			60.54; 0.000			60.54; 0.000
N	29601	29601	18177	16504	16505	10079	16504	16505	10086	16504	16505	10086
R2	0.718	0.01	0.123	0.195	0.014	0.003	0.255	0.078	0.139	0.129	0.033	0.546

Notes: Ethnic diversity is instrumented using a polynomial approxiation centered on the year 2004, interacted with the moving average of the ati_index at the commuting area where the firm is located. The IV estimation sample is from 2001 to 2007. All regressions include the share of differently aged workers belonging to the employees age distribution quartiles, the firm average tenure, whether the firm is foreign-owned, a multi-establishment dummy, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions, the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. IV type regressions also include firm-specific unobserved fixed effects. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.

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Appendix 1: 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 Nord** (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 Guina, 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, Irak, Israel, Jordan, Kuwait, Lebanon, Lybian Arab Jamahiria, Malta, Mauritiania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, Yemen, United Arabs 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** (Malasya), **Cushitic East** (Somalia), **Turkic East** (Uzbekistan), **Viet-Muong** (Vietnam), **Volta-Congo** (Burundi, Congo, Kenya, Lesotho, Malawi, Nigeria, Rwanda, Swaziland, Tanzania, Togo), **Turkic West** (Kazakhstan, Kyrgystan), **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 D.P.R.O.).

Appendix 2: Definition of the ideological dimensions

Statements in favor to immigration, internationalization and ethnic diversity

1. **European community/union_plus**: Favourable 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**: Favourable mentions of lax citizenship and election laws; no or few restrictions in enfranchisement.

4. **Multiculturalism_plus**: Cultural diversity, communalism, cultural plurality and pillarisation; 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**: Favourable mentions of, or need for, assistance to people who left their homes because of the war (for instance, on 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 of 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; favourable 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**: Negative Opposition to traditional moral values; support for divorce, abortion etc.; otherwise as Traditional morality_plus, but negative.

11. **Underprivileged minority groups_plus**: Favourable references to underprivileged minorities who are defined neither in economic nor in demographic terms, e.g. the handicapped, homosexuals, immigrants, etc.

12. **Welfare state_plus**: Favourable mentions of need to introduce, maintain or expand any social service or social security scheme; support for social services such as health service or social housing. *This category excludes education.*

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**: Favourable 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**: Appeals to patriotism and/or nationalism; suspension of some freedoms in order to protect the state against subversion; support for established national ideas.

5. **Protectionism_plus**: Favourable mentions of extension or maintenance of tariffs to protect internal markets; other domestic economic protectionism such as quota restrictions.

6. **Restrictive citizenship_plus**: Favourable mentions of restrictions in citizenship; restrictions in enfranchisement with respect to (ethnic) groups.

7. **Traditional morality_plus**: Favourable mentions of traditional moral values; prohibition, censorship and suppression of immorality and unseemly behaviour; 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.

Appendix 3: Additional results

Table A1: Ethnic diversity effects on the number of exported products, 3 digits classification

| | Number of exported products | | | | | | | | |
	(1) OLS	(2) OLS	(3) OLS	(4) Firm FE	(5) Firm FE	(6) Firm FE	(7) Firm-destination FE	(8) Firm-destination FE	(9) Firm-destination FE
index ethnic diversity	2.741***	2.413***	2.256***	0.682***	0.655***	0.655***	0.765***	0.774***	0.776***
	(0.188)	(0.210)	(0.216)	(0.095)	(0.106)	(0.110)	(0.033)	(0.039)	(0.042)
export experience		0.123***	0.111***		0.037**	0.038**		0.023***	0.023***
		(0.013)	(0.013)		(0.017)	(0.016)		(0.003)	(0.003)
lagged labor productivity		1.050***	1.000***		0.319***	0.309**		0.515***	0.697***
		(0.101)	(0.108)		(0.095)	(0.095)		(0.018)	(0.019)
skill1			1.075**			-0.319			0.293**
			(0.371)			(0.324)			(0.122)
skill2			2.642***			0.337			2.132***
			(0.628)			(0.642)			(0.170)
men			-4.733***			-0.053			-2.584***
			(0.350)			(0.428)			(0.069)
middle managers			0.586			-0.886**			0.012
			(0.669)			(0.416)			(0.194)
managers			2.662***			0.136			0.013
			(0.415)			(0.306)			(0.095)
network									0.001**
									(0.000)
firm network									0.001***
									(0.000)
N	65932	51740	51740	65932	51740	51740	3098794	2652720	2652720
R2	0.188	0.207	0.233	0.125	0.121	0.123	0.229	0.234	0.279

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, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions. Specifications in columns 3 and 6 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Specification in columns 7-9 also include destination-product pair fixed effects. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.

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Table A2: 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	0.507***	0.566***	0.818***	0.749***
	(0.024)	(0.043)	(0.073)	(0.082)
export experience	0.002	0.009**	0.042***	0.015**
	(0.002)	(0.004)	(0.005)	(0.006)
lagged labor productivity	0.187***	0.061**	0.732***	0.559***
	(0.012)	(0.024)	(0.032)	(0.040)
skill1	-0.453***	-0.583***	0.792***	0.603**
	(0.071)	(0.161)	(0.200)	(0.258)
skill2	0.563***	0.965***	2.433***	1.477***
	(0.106)	(0.205)	(0.293)	(0.351)
men	-1.462***	-2.136***	-2.950***	-1.935***
	(0.042)	(0.093)	(0.112)	(0.159)
middle managers	-0.418***	-0.153*	0.539***	-0.185
	(0.050)	(0.083)	(0.159)	(0.202)
managers	0.436***	0.664**	0.518	0.697*
	(0.128)	(0.228)	(0.350)	(0.398)
network	0.001*	0.001	0.001**	0.015***
	(0.001)	(0.001)	(0.000)	(0.003)
competitors	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
N	1668274	996360	1669349	996933
R2	0.242	0.210	0.132	0.075

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

Table A3: Ethnic diversity effects on the firm internationalization process, IV results for the period 2002-2006

	Probability to export			Log of export sales per employee			Number of export markets			Number of exported products		
	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV	(6) IV	(7) IV	(8) IV	(9) IV	(10) IV	(11) IV	(12) IV
index ethnic diversity	0.332*** (0.035)	0.074** (0.036)	0.064* (0.035)	1.008*** (0.353)	0.965*** (0.332)	0.573* (0.266)	19.836*** (0.956)	17.979*** (0.994)	14.084*** (0.795)	10.759*** (1.238)	9.491*** (1.544)	10.697*** (1.703)
export experience		0.008*** (0.001)	0.008*** (0.001)		0.029** (0.013)	0.028** (0.013)		0.062 (0.047)	0.076* (0.042)		0.283*** (0.058)	0.267*** (0.060)
lagged labor productivity		0.007** (0.003)	0.007** (0.003)		0.105*** (0.026)	0.117*** (0.026)		0.468*** (0.087)	0.327*** (0.077)		1.957*** (0.443)	1.768*** (0.450)
skill1			0.004 (0.014)			-0.375** (0.142)			0.544 (0.460)			2.764* (1.632)
skill2			-0.016 (0.025)			-0.822*** (0.231)			1.102 (0.748)			-16.347*** (4.122)
share of men			0.005 (0.016)			-0.372** (0.149)			-0.901* (0.483)			-12.232*** (1.323)
age1			0.020 (0.031)			-0.597* (0.311)			7.094*** (1.012)			10.821*** (4.624)
age2			0.033 (0.026)			-0.141 (0.257)			5.695*** (0.835)			8.570** (2.769)
age3			0.017 (0.021)			0.062 (0.203)			3.619*** (0.661)			5.321** (2.438)
age4			0.024 (0.018)			0.063 (0.172)			0.574 (0.560)			1.308 (2.036)
middle managers			-0.002 (0.022)			-0.042 (0.181)			-0.571 (0.588)			1.917 (3.172)
managers			0.004 (0.011)			-0.092 (0.097)			0.136 (0.314)			8.912*** (1.841)
tenure			0.001 (0.001)			-0.022** (0.010)			0.439*** (0.033)			0.126 (0.130)
F test (excluded instruments), p-value	1429.75, 0.000	1025.73, 0.000	1204.66, 0.000	706.37, 0.000	579.00, 0.000	760.26, 0.000	710.43, 0.000	592.98, 0.000	770.16, 0.000	710.43, 0.000	592.98, 0.000	770.16, 0.000
N	73817	55168	55168	28398	23895	23895	28370	23879	23879	28398	23895	23895
R2	0.437	0.729	0.731	0.236	0.286	0.335	0.211	0.266	0.293	0.106	0.114	0.133

Notes: Ethnic diversity is instrumented using a polynomial approximation centered on the year 2004, interacted with the moving average of the ati_index at the commuting area where the firm is located. The estimation sample is from 2002 to 2006. In columns 4,8,12 and 16 the commuting area ati.index is the current one. All regressions include firm-specific unobserved fixed effects, the share of differently aged workers belonging to the employees?ge distribution quartiles, whether the firm is foreign-owned, a multi-establishment dummy, a full set of 2-digit industry, size, year and commuting areas dummies plus all year-industry interactions. Specifications in columns 3,6,9 and 12 also include the share of foreigners for each linguistic group, the share of differently aged workers belonging to the employees age distribution quartiles and the firm average tenure. Standard errors clustered at the firm level. Significance levels: ***1%, **5%, *10%.