The Effect of Workforce Birthplace Diversity on Firms: When do Migrants increase Firms' Performance?

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Abstract

Growing migration between countries and the sustained trend of globalization are changing business dynamics and creating conditions for increased workforce birthplace diversity within firms. However, few studies investigate the relationships between workforce birthplace diversity and firm performance. We address this, and also study how the impact of workplace birthplace diversity on firm performance is moderated by characteristics of the firms (firm size). We find that firm performance increases when workforce birthplace diversity increases. While larger firms perform better, smaller firms can make better use of birthplace diversity's positive impact on firm performance. We analyzed a panel of 33,258 Italian firms operating in the agriculture sector between 2012 and 2017. Theoretical implications of our results are discussed, and further research is recommended to investigate appropriate internal mechanisms to enable firms to take advantage of workforce birthplace diversity.

JEL: F22, J15, J61, Z1

1. Introduction

The international trend of a sustained level of immigration and globalization of firms has created conditions for growing workforce diversity within firms (Arends-Tóth and Vijver, 2003). Organizations are increasingly attempting to manage these changes in the labor market, because workforce birthplace diversity can heavily affect internal firms' dynamics (Milliken and Martins, 1996) and pose the problem on how successful coordination among diverse workforce can be promoted to boost organizational performance (Lee and Kim, 2020). Indeed, it has been shown that workforce diversity can lead to internal conflict and interpersonal communication issues (Lazear, 1999).

A limited number of studies has analyzed the relationship between firm performance and different types of diversity, such as race and gender (Richard, 2000); however, there is a paucity of analysis on this relationship with other types of workforce diversity, such as birthplace diversity. Birthplace diversity is identified by the degree to which employees in the organization vary by area or country of origin (Alesina et al., 2016). Place of origin is an important determinant of performance for the knowledge, perspectives and social network ties people from diverse countries can bring (Lissoni, 2018). So, birthplace diversity may be even more salient and influential than other demographics (Hambrick et al., 1998). Despite the importance of birthplace and the rapid diffusion of diversity of place of origin within organizational workforces, there is little research on the impact of workforce birthplace diversity on organizational performance (Nielsen and Nielsen, 2013). Studies have shown that birthplace diversity can positively affect performance at multiple levels of analysis: countries (Alesina et al., 2016; Bove and Elia, 2017; Ortega and Peri, 2014), regions (Trax et al., 2015), metropolitan areas and states (Ager and Brückner, 2013; Docquier et al., 2020; Ottaviano and Peri, 2006). At firm level, some authors have considered the degree of diversity of country of origin of team members within teams (Rosenauer et al., 2016), and found that diversity is a positive factor in firm performance (Iranzo et al., 2008). However, independent of the level of analysis used to evaluate the effect of birthplace diversity on performance, research studies have overlooked the influence of environment in creating conditions for exploiting the potential of complementarity in individual skills and knowledge (Janssens and Zanoni, 2005; Siebers, 2009). In line with Janssens and Zanoni (2005), who suggested that more studies needed to go beyond the analysis of the effect of one socio-demographic characteristic on a particular outcome variable, we assume that the relevance of birthplace diversity is dependent on the organizational context and analyzes how birthplace diversity enacts its effect in specific organizational contexts. Our study focuses on the impact of birthplace diversity of the workforce on firm performance, expressed in terms of increase in sales, and how this impact is moderated by organizational characteristics, such as firm size. We gathered data on immigrated employees present within firms to construct the measure of birthplace diversity and investigate how it relates to the measure of firm performance. Our regressions use the inverse of the Herfindahl–Hirschman index of fractionalization (a measure of the likelihood that two randomly drawn immigrants are from different countries). To test our hypotheses, we used a panel data analysis, with a data set constructed from the Farm Accountancy Data Network (FADN), an Italian sample of 33,258 firms, observed from 2012 to 2017. The Italian agriculture sector is an excellent case study for several reasons. As with many European countries, Italy has undergone major changes in the composition of its population and has one of the highest immigration inflows in Europe (Frontex, 2018). The agriculture sector is generally characterized by cyclical and seasonal labor

demand. Immigrant workers, a highly mobile workforce that is more productive than their home-grown counterparts (Baldoni et al., 2017), are a major force in agriculture, allowing seasonal labor demand to be met. The key role of immigrants in agriculture in providing expertise to achieve increases in productivity in the rural economy has been confirmed by other research studies (Kasimis and Papadopoulos 2005). This makes the Italian agricultural sector and immigrants working in firms particularly suited to our purpose. We found a positive impact of birthplace diversity of workers on firm performance. However, the positive relationship is reduced as the firm size rises, indicating that larger firms are not able to fully exploit the positive effects of workforce birthplace diversity. This result was also seen when we controlled for potential endogeneity, which may arise because of omitted variables and reverse causality. We suggest that this result may be because large firms are less able to create an internal environment that encourages informal communication and incentivizes subgroup creation helping to diffuse more in-depth knowledge helping to overcome prejudice and conflicts among diverse workers. This study offers different theoretical contributions. First, it examines the relationship between birthplace diversity at the level of the organizational workforce and firm performance, helping to advance knowledge of the impact of firm-level workforce diversity on firm performance. Second, our study provides a theoretical framework underlying the concept that the benefits of workforce birthplace diversity are contingent on the context.

This article first reviews the literature on the implications of workforce birthplace diversity on firm performance. It then introduces the hypotheses and methodology and explores the relationship between workforce birthplace diversity and firm performance, in conjunction with selected organizational characteristics of firms (size of firms). Finally, we set out our results and propose new research avenues.

2. Theoretical Background And Hypothesis Development

2.1 Theoretical background

In line with most academic research (Alesina et al., 2016; Ager and Brückner, 2013; Böheim et al., 2012; Docquier et al., 2020), the term birthplace diversity describes heterogeneity of individual countries of origin. Past studies have mainly used birthplace diversity to identify the dimension of intrapopulation diversity emerging from the heterogeneity of birthplaces in geographical regions (Trax et al., 2015), metropolitan areas and states (Ager and Brückner, 2013; Docquier et al., 2020; Ottaviano and Peri, 2006). At the firm level, diversity of nationality has been more widely used to mean heterogeneity in individuals' national background (Hambrick et al., 1998) rather than country of origin. Diversity studies have tended to analyze the effect of a diverse set of differences in groups, especially management teams (Nielsen and Nielsen, 2013), on group dynamics and performance. Indeed, research on diversity has devoted attention to examining the impact of the heterogeneity of identities on groups' processes and results (see Milliken and Martins, 1996; van Knippenberg and Schippers, 2007). Research on nationality diversity has considered national culture as an important factor that explains and limits group members' behavior either by collectively programming their minds (Hofstede, 1980) or by imposing the way in which a group of people solve problems and that affects groups' patterns of interaction (see Bochner and Hesketh, 1994; Cox, 1991; Maznevski and Chudoba, 2000). Few studies have considered the effect of diversity at the level of organizational workforce. There is, indeed, very little conceptual support and few empirical results addressing the potentially positive effects of workforce-level diversity on organizational results (Joshi et al., 2011). Richard (2000) and Richard et al (2007) are relevant exemptions that started to theorize and verify the influence of racial diversity on firm performance, elevating the analysis of the impact of diversity from group to organizational level.

2.2 Birthplace diversity and organizational performance

Research on the effects of individual birthplace diversity on regions, countries and states has confirmed a positive relationship between birthplace diversity and economic growth (Audretsch et al., 2010; Ottaviano and Peri, 2006). These studies have tended to assume that individuals born in different countries may have diverse productive skills, because of their exposure to diverse life experiences, education and value systems, and will have developed dissimilar perspectives, enabling them to perceive and address problems in a different way (Alesina et al. 2016). This indication is not found in firm-level studies, where the price of heterogeneity may overcome its advantages (Coad and Timmermans, 2014; Østergaard et al., 2011;). For instance,

empirical research studies on workforce ethnic diversity have reported unclear links to firm performance, as a consequence of the complexity of the phenomenon (Herring, 2009; Williams and O'Reilly, 1998) and the relevance of the context.

More in general, past studies on workforce diversity have reported both positive and negative performance effects for firms. They have assumed that a functionally diverse workforce, especially in the ways people perceive and solve problems, positively affects firm performance (Williams and O'Reilly, 1998). Indeed, when there is a problem or a challenge to solve, a varied workforce will produce a larger set of possible solutions and be able to choose the most appropriate one. Other authors, such as Hong and Page (2001), have stated that diverse populations are more likely to generate optimal solutions to difficult problems, despite the fact that each individual agent may not be able to locate a good solution if acting alone.

A functionally diverse work environment will also be able to create conditions for cross-pollinating to create new solutions (Aiken and Hage 1971). Using the same lines of reasoning (but indirectly referring to measures of diversity), Solheim and Fitjar (2016) showed that Norwegian organizations with a more diverse workforce and more foreign workers tend to innovate and start operating internationally more than less diverse firms

Individuals born in one country but living in another may be considered as rooted in two cultures, and therefore able to act as between-group brokers (Ottaviano and Peri, 2006). They may have competences, skills, and abilities accumulated from the countries where they were born (Ottaviano and Peri, 2006), and also have tacit knowledge from their host country (Lissoni, 2018). Accordingly, to justify the impact of immigrants at the workforce level, Nathan (2014) described the effect of immigrants as improved labor market matching and facilitation of export, international businesses and serving diverse markets (see also Cox, 2001). Studies have also argued that people born in other countries can use their own networks as an additional source, so that greater heterogeneity can increase performance, either by alleviating informal trade barriers (Rauch, 2001) or by building bridges between firms and overseas partners. Möhlmann and Bakens (2015) confirmed this view by finding helpful evidence demonstrating that diversity heavily supports exporting firms.

Some studies have also linked diversity to a negative impact on performance (Cox and Nkomo, 1991, Lazear, 1999). Specifically, diversity can increase interpersonal conflicts and communication issues (McMillan et al., 2003; Sacco and Smith, 2003) and, in turn, lead to staff turnover and absenteeism (Tajfel and Turner, 1985). Such phenomena could impact upon the efficiency and performance of firms (Smulowitz et al., 2019). Along this line, Milliken and Martins (1996) described diversity as a “double-edged sword”. However, birthplace diversity at the level of workforce may lead to different dynamics. At level of firm workforce, groups are easily informally formed, often based on shared social networks (such as similar views, physical proximity, or simply those who are familiar). Formally, establishing cross-functional teams, or groups containing members from different functions or parts of the organization can improve the range of information available to the group (Northcraft et al., 1995). At the level of workforce, birthplace diversity turns to affect group composition and therefore their performances. Diversity can produce different effects on performance contingent to the type of diversity analyzed (Brixy et al., 2020), deep-level (attitudinal) or surface level (demographic) diversity. Deep level diversity can potentially have a positive impact on performance relying on processes of information elaboration (e.g., Kearney et al., 2009). Indeed, when people interact, stereotypes tend to be substituted by a more in-dept knowledge of each other as individuals, which can contribute to reduce prejudice and conflict and lead to greater group cohesiveness (Amir, 1976). Additionally, when tasks demand creativity, innovation, and high-quality decision-making, the cross-fertilization of perspectives, enabled by the diverse birthplace diversity of workforce, may unravel the propitious effects of diversity through the discovery of positive synergies among group members (Kearney et al., 2009). In line with Van Knippenberg et al. (2013), we assume that birthplace diversity bringing added value in the form of nonredundant experience, knowledge, perspectives, and social network ties help to reduce the negative effect of surface level (demographic) diversity.

Therefore, despite birthplace diversity is often viewed as surface level diversity, at the firm level it may also improve performance through information elaboration processes (Kearney et al., 2009), derived from the provision of immigrants' diverse knowledge.

Consistently with the idea that the relationship between birthplace diversity and firms' performance is driven by complementarity of skills and knowledge, we thus assume that the social costs related to the birthplace diversity at workforce level are less than the information benefits that can be derived from it. The possible informational benefits may explain why diversity induced by the presence of immigrants, as seen above, are always reported as positively affecting productivity.

We therefore formulated the hypothesis:

Hypothesis 1: Workforce birthplace diversity is associated with positive performance of firms.

The moderating role of organizational characteristics: firm size

Past studies have emphasized the role of the context on the diversity–outcome relationship (Audretsch et al., 2010; 2019; Nielsen and Nielsen, 2013). However, there is little research on the influence of organizational-level factors on the relationship between organizational workforce diversity and firm performance (Homan et al., 2015; Stahl et al., 2010). At team level, studies have begun theorizing the mechanisms under which diversity undermines or helps the functioning of diverse groups. These studies have considered the organizational culture (Richard et al., 2002), time (Chatman and Flynn, 2001; Harrison et al., 1998), the type of task (Jehn et al., 1999) and the relevance of task interdependence (Rosenauer et al., 2016) as potential moderators of the relationship between diversity and specific group outcomes. Other contextual variables moderating the relationship between diversity and group performance have also been highlighted (Bell, 2007), but not analyzed across studies (Jackson et al., 2003).

Extending the logic of the moderation effect of organizational context on the diversity–outcome relationship to the organizational level, we considered the role of firm size in shaping the meaning of birthplace diversity in the workplace. We suggest that this firm-level characteristic may set specific constraints and opportunities in the workplace and may therefore influence the effects of workforce diversity on firm performance.

Past studies indicate that intense cooperation among workers, favored by conditions of task interdependence and high exposure to others, may contribute to the formation of a superordinate group identity (Richard et al., 2007). This helps to overcome preconceptions and engage workers in shared goals (Dovidio and Gaertner, 2000; Pettigrew, 1998). Other scholars have underlined that where demographically dissimilar individuals provide identifying information, others' idiosyncratic knowledge about them diminishes the inclination to attach stereotypical categories (Miller and Brewer, 1984). Others' reliance on surface-level demographic diversity as a basis for categorization reduces and tends to shift to the social categories characterizing the work environment.

Typically, larger firms have a more intense level of production than small firms. They tend to standardize their activities and use more complex forms of coordination, involving employees who have to carry out repetitive, 'alienating' activities that do not foster the creation of social relations (Wu et al., 2008). Informal relations between top management and employees are less frequent in large firms (Karahanna and Preston, 2013). Higher levels of technological development, a greater degree of formal communication and formalization of working procedures in larger firms may also result in a perception by minorities in the workforce that they are not supported (Stahl et al., 2010). Conversely, in small firms, access to resources is mainly through informal, private social networks, and not through formal channels (Gibson and Cassar, 2005; Peng, 2003). Indeed, in small firms, informal relationships emerge more easily. Small firms, by their very nature, are also characterized by little or no hierarchical distinction of roles in the production process (Gremier and Gwinner, 2000). This may encourage the development of a positive perception by workers that they are part of a network and give them a sense of confidence in others and mutual obligations that facilitate communication (Rosenauer et al., 2016). In this type of environment, workers may voluntarily build interpersonal ties, creating a situation where social learning and a shared set of complementary skills and knowledge are more likely to diffuse.

Small firms can also more easily create a conduit for individuals to combine their diverse backgrounds and perspectives, favoring the creation of an overall stock of complementary skills and knowledge sets (Audretsch et al., 2010; Nielsen and Nielsen, 2013). This, in turns, reduces the costs typically associated with workforce diversity and limits the potential conflicts

among heterogeneous workers (Boudreaux, 2020). With a more heterogeneous workforce, therefore, a smaller firm can give employees the chance to interact with others more easily and to develop perceptions of fair treatment by the management, resulting in full integration (Ely and Thomas, 2001; McLeod and Lobel, 1992; McLeod et al., 1996; Shaw et al., 1998; Sheehan, 2014). We therefore hypothesize:

Hypothesis 2: Higher levels of birthplace diversity of workforce will have the strongest positive effect on firms' performance when a firm is small rather than large.

3. Research Design

The purpose of this study is to examine the interrelationships among workforce birthplace diversity, firm performance and firm size. It attempts to explore the influence of different workers' countries of origin on firm performance, measured through total sales, as well as the influence of firm size as a relevant contextual factor in this relationship. This section describes the research setting, data collection and data analysis, and sets out the empirical model for the study, shown in Figure 1.

3.1. Research setting

Immigrant workers, who represent a highly mobile workforce (Card 2005, 2001), are able to play a major role in agriculture sector, for two main reasons. First, in sectors characterized by cyclical or seasonal labor demand, as agriculture (Hanson and Bell, 2007), immigrant workers, more incline to displacement given the absence of ties in the host-country, represent a key resource that, on one hand, allow the agriculture seasonal labor demand to be met, and on the other hand, constitute the privileged recruitment area, given the declining employment of home-born citizens (Baldoni et al., 2017). Secondly, the agriculture sector, where jobs are often characterized by manual and low-skilled activities, but required experience and traditional knowledge, immigrant workers, bearers of different traditional skills, often acquired on the job in the home-country, constitute a rare and inimitable knowledge asset. Furthermore, the high mobility and the tendency to be carriers of new knowledge, in the long run may increase the spillover effects between firms. Along this line, Klocker et al. (2018) noted that culturally diverse workforce within firms play a role as "environment builders": workers from different nationalities bring relevant traditional knowledge that acts as a new resource for environmental change in the agriculture sector (Somerville and Sumption, 2009). Finally, Italian agriculture is strongly heterogeneous, with considerable geographical specificity, and may be considered a good representation of the various minorities in the workforce (Macrì et al., 2017). Therefore, agriculture, especially the Italian agriculture sector, would appear to represent a suitable sample for investigating the relationship between birthplace workforce diversity and a firm's performance.

3.2. Data collection

The analyses used to test the hypotheses in this study relied on data from an Italian sample from the Farm Accountancy Data Network (FADN). The FADN is a European network providing data on farm incomes and businesses. The FADN data set includes only professional farms that carry out market-oriented activities. The data set collects an average of 1000 data items per farm per year for European Union Member States. Its purpose is to improve knowledge of the agriculture sector, and it gives information on aspects such as land use, animal activities, input–output costs, and farm characteristics. The data set includes only farms that have had an economic size of more than 8000 Euros since 2014, measured as standard gross margin (SGM). This threshold has changed over time but tends to identify the same firm size. The FADN sample therefore contains only firms that are representative of a sub-sample of professional and commercial Italian farms (Baldoni et al., 2017). In this study, data were gathered at the provincial level over a six-year period (2012–2017). The panel includes discontinued repeated observations in time. To deal with multicollinearity in our interaction model, we aggregated and treated them as a mean centering over the above period. This procedure may also enhance the interpretability of data (Midavaine et al., 2016). To validate our initial concepts, we focused on several specific datasets: 1) farm characteristics; 2) economic data; 3) labor cost; 4) workforce. Relevant information was extracted for each farm, such as general farm characteristics, location, size in hectares, type of farming, and age and gender of farmers. We also included summary information on the workforce, such as total hours worked per farm and total hours worked by immigrants per farm. Important information was included about the economic

characteristics of farms, such as total farm revenue, revenue from activities complementary to agriculture, direct costs and current costs.

Dependent variable

The dependent variable, firm performance (*Sales*), was measured as the total sales of a firm, in Euros, over the period 2012–2017. This measure includes both business sales revenues and operating aid (EU). Total sales are a widely used measurement of firm performance (Christensen et al., 1987; Huselid, 1995). Its main advantage is that it provides a single measure that can be used to compare a firm's performance and enhance comparability with previous studies. In the second step, the logarithm of sales was calculated to deal with skewness. The logarithm of sales also reflects a firm's performance irrespective of variations in employees and capital markets. In previous studies, models have also specified firm performance as the logarithm of net sales per employee or net income per employee, although these are less frequently used (Huselid, 1995).

Independent variable

In line with Alesina et al. (2016), Ottaviano and Peri (2006) and Parrotta et al. (2014), we used the concept of birthplace diversity to distinguish between different workers' countries of origin. We focused on all firm employees, distinguishing between native and non-native (immigrant) workers. In line with past research (Smulowitz et al., 2019; Richard et al., 2007), we used the inverse of the Herfindahl–Hirschman index to measure workforce birthplace diversity within a firm. Our independent variable was expressed as:

$$\text{Birthplace Diversity} = (1 - \sum p_k^2)$$

Birthplace Diversity

where p is the proportion of workers in each category k . This index measures the degree of birthplace fractionalization within the workforce. It ranges from zero to $(k - 1)/k$ and assumes a maximum value in the presence of maximum heterogeneity, that is, when all countries of origin are equally represented within the workforce. In this study, we considered seven groups by birthplace: native workers, workers from Eastern Europe, workers from elsewhere in Europe, workers from Africa, workers from America, workers from Russia, and workers from Asia. With seven groups, the index has a range of 0 to 0.72, where a value of 0.72 shows more diversity (all categories are equally represented within the firm). All groups were expressed as annual working units (AWU), the total hours worked per firm per annum. In this formula, 1 AWU is equal to 1800 hours worked (Baldoni et al., 2017). Considering the annual working units (AWU) allowed us to take into account the real workforce birthplace diversity within firms, given the role of immigrant workers as a highly mobile workforce in the Italian agricultural sector. Indeed, using total hours worked as a measure, enabled us to show the extent in which workers from different countries of origin, interacting in the workplace and collaborating with each other, provide the firm a stock of traditional skills and knowledge from host countries, which once assembled within firm may represent a rare asset, difficult to acquire elsewhere. The annual working units (AWU) therefore allow us to consider the degree of knowledge transmission between workers and his real effects in a within firm setting. We calculated this measure of heterogeneity for each firm for each year.

Moderating variables

One moderating variable was used, firm size. In line with previous studies, we used the total amount of land per firm, in hectares (Berry 1972; Saini, 1971). Indeed, firm size, expressed in terms of hectares, allow us to take into account the degree of territorial dispersion within farms. In the agriculture sector, where work activities are mainly carried out in the lands, the different territorial extension of firm, in terms of hectares, enables to consider the real extent of social interaction between workers, and consequently, the degree of knowledge transmission. We considered the total amount of land as the main asset of a firm in the agriculture sector.

Control variables

To control for systematic variance that is not due to our main variables, we included all variables that could be confounding factors of the relationship. We therefore controlled for *Machine Opportunity Cost (MOC)*, or the cost of using firm machines within the production processes, in Euros. This variable is cited in many previous studies as having a major impact on firm performance (Koch and McGrath, 1996). It is a measure of both workforce turnover and machinery replacement, so may affect both firm performance and the extent of use of immigrant labor. We also controlled for *Organic Firms*, *Young Entrepreneurs*, *Family Firms* and *Wages*. *Organic Firms* was measured by a dummy variable with a value of 1 if the firm used organic processes. In the mainstream literature, the effects of organic processes on firm performance are generally associated with a higher degree of technology innovation (Lansink et al., 2002). This means that organic agriculture is, on average, more efficient but less productive than other (conventional) methods (Bayramoglu and Gundogmus, 2008). *Young Entrepreneurs* was measured by a dummy variable indicating whether the owner is under 40 years old. The presence of a younger owner is considered a major factor able to affect firm performance, although previous findings are inconclusive. Young people are often more willing to accept environmental change, both in general and within firms (Jackson et al., 1993) and hence may employ more culturally diverse workers. Young people are also more inclined to bear risks, eliminating old patterns of behavior (Gudmundson and Hartenian, 2000). Another control variable is *Family Firms*, which is a dummy variable with a value of 1 for family-run firms. Its inclusion is justified for two reasons. First, family involvement in a business has an important impact on firm performance (Basu and Altinay, 2002; Chrisman et al., 2016). There is also a positive correlation between firm size and family firms (Lee, 2006), so the introduction of the *Family Firms* variable allowed us to detect the effects of the firm's size on our main relationship, net of the spurious effects of family management. Finally, we controlled for *Wages* as a measure of the firm's labor cost. *Wages* was measured by annual salary received by the worker, expressed in Euros. Immigrant workers are more likely to accept bad working conditions and low wages, so *Wages* could be a confounding factor, and we controlled for it to eliminate the bias associated with eventual better economic performance given by a lower labor cost at firm level. The variables used to test the hypotheses are summarized in Table 1.

3.3. Data analysis

Descriptive statistics, the basic attributes of our sample, and correlations between variables are shown in Table 2. The average land per firm was 24.6 hectares. In the sample, the mean value of workforce heterogeneity showed high levels of workforce diversity within firms (0.33). However, there is an issue of data representativeness with the FADN data: the presence of immigrants in the workforce may well be underestimated in some regions, where there is a greater presence of an irregularly employed workforce, especially for seasonal activities. Even given these data reliability issues, the analysis yields some relevant information about the presence of the immigrant workforce in Italian agriculture. More than 15% of firms were certified as organic and more than 43% were family firms. These findings provide support for the use of the control variables to test the main relationship. To explain within-sample differences, we analyzed the presence of foreign workers by region and farm specialization. These results also suggest that immigrants in the workforce make a major contribution to the Italian agriculture sector, especially for seasonal activities, where they are most frequently employed. The results are shown in Table 3, which also shows the immigrant workforce by region. The regions vary considerably in the concentration of workforce from different countries of origin. Firms in northern Italy have higher levels of immigrant workers. However, these findings do not reveal the true picture because these workers tend to be regularly employed in the north, whereas in other regions (notably in southern Italy), there is a greater presence of undeclared workers, and the importance of seasonal workers reflects the typical agricultural specializations of such regions. Before we tested our hypotheses, we examined the relationship between the incidence of workforce diversity and firm performance in Italian agriculture (Table 2). There was a correlation between *Workforce Diversity* and *Sales* (0.26), which suggested the presence of a possible relation between the presence of workers from different nationalities, in terms of *AWU*, and firm performance. Data also suggest that these findings did not reveal a spurious correlation stemming from firm size. We found a highly significant correlation between *Firm Size* and *Sales* (0.51). The magnitude of these correlation coefficients therefore requires in-depth investigations. Formally, the relation exists and suggests the presence of a link among these variables, although correlation does not imply causation. The direction of this relationship therefore needs to be tested. We also checked for *Family Firms*. In line with the literature, we found a negative significant correlation between *Family Firms* and *Sales* (-0.35). Table 2 shows the correlations among the study variables.^[1]

3.4. Empirical methodology

The estimation of the relationship between workforce birthplace diversity and firm performance in the agricultural sector could be invalidated by endogeneity problems from several causes such as omitted variables (Seifert and Valente, 2018), measurement errors and reverse causality. The presence of unobserved firm-specific factors, because of, e.g., geographical differences, sub-sector production and the decisions made by farmers can be correlated with both firm performance and the diversity index, creating a spurious relationship between our main variables. Immigrant workers also tend to vary both across firms and over time, as a result of specific skills and attitudes of the workers and seasonal variations in labor demand. The FADN data misrepresents the true immigrant workforce in the Italian agriculture sector. The number of workers from different countries employed in agriculture could be greatly underestimated because of the presence of undeclared workers. This provides a further problem of endogeneity because of measurement errors. To deal with these causes of endogeneity, we estimated the relationship between firm performance and workforce birthplace diversity by using the fixed-effects model at firm-level. This allowed us to control for any unobservable firm characteristics that may affect both the presence of foreign workers and firm performance. We also included time fixed effects, in order to consider time-varying aggregate factors, such as an increase of immigration, able to invalidate our estimations. Both measurement errors and omitted variables can be addressed by the inclusion of fixed effects at firm- and time-level. Finally, our specifications include year dummies, altimetry variables and standard errors clustered by firms to account for any other sources of bias (i.e. seasonality effects, geographical features). Previous studies also suggest that immigrants are mostly employed in large (and more productive) firms (Baldoni et al., 2017). This gave us a problem of reverse causality. To solve this problem, we used the Generalized Method of Moments (GMM) model, which can take into account possible endogeneity from reverse causality. We modeled our setting as a dynamic linear process in which we included a lagged dependent variable, to consider the past values of firm performance, controlling for state dependence (Heckman, 1981). We also included the lagged independent variable, to take into account the farmer's historical propensity to hire immigrant workers. Firms that have historically hired immigrant workers are more likely to continue to use immigrants in the production process, because of factors like a lower search process costs (the role of enclaves) (Malchow-Møller et al., 2013). Given extensive data availability, we used the FADN data set with an unbalanced sample of 33,258 firms, observed from 2012 to 2017. As described above, we measured workforce diversity through a fractionalization index, using the inverse of the Herfindahl-Hirschman index.

[1] In order to obtain a measure of how much the variances of estimated parameters are influenced by multicollinearity, we calculated the variance inflation factors (VIF) scores. Our values are consistently below 1,4. This circumstance allow us to confirm multicollinearity is not a problem.

4. Results

This section first provides the results of the regression model related to the research questions. It also describes the methodology adopted to reach our results. We then discuss the main implications of this contribution and define the most relevant relationships emerging from our data.

4.1. Results of panel data estimations

The empirical results of the static models are shown in Table 4. The fixed effects estimates are reported in columns 1-4. The ordinary least squares estimates are shown in column 5. To deal with multicollinearity in the interaction models, we computed the mean centering of the variables in the moderator analysis in all models. In addition to the control variables, all specifications contain year dummies, altimetry variables and standard errors clustered by firm, to avoid any other sources of bias. The dependent variable was the log of sales (*Sales*). We first examined the control variables effects on firm performance (*Sales*) in column 1. Then we added the main variable (*Birthplace Diversity*) in column 2. Indeed, in order to take into account the effects coming from firm-specific characteristics, we considered all variables that could be confounding factors of the relationship. We therefore controlled for Machine Opportunity Cost, Organic Firms, Young Entrepreneurs, Family Firms and Wages. We indeed sustained that firm performance can be influenced by presence of unobserved firm-specific factors, e.g., the young entrepreneur's risk inclination or eventual better economic performance given by a lower labor cost. Even adding these

controls, results are in line with our hypothesis. Hypothesis 1 was therefore supported in columns 2–4, which showed that employing more heterogeneous workers may enhance levels of sales, improving firm performance. Specifically, results from FE estimations show that an increase of birthplace diversity in a within firm setting leads to an increase of sales about 18 percentage points (column 2). Hypothesis 2 predicted that the relationship between workforce birthplace diversity and firm performance would be negatively moderated by the presence of large firm size. According to the literature, column 3 indicated that larger firm size is linked to better firm performance (Barkema and Vermeulen, 1998). However, as shown of column 4, the introduction of the moderating term, the multiplication of *Firm Size* and *Birthplace Diversity*, was negatively related to performance of firms (*Sales*). In particular, the estimates coefficient is around -0,25 percent. More specifically, we find a negative interaction effect between firm size and workforce birthplace diversity, which means that small firm turns the negative effect into a positive effect of birthplace diversity on firm performance. This implies that, when we consider a proper context (small firm rather than a larger one), an increase in birthplace diversity of workers is associated with a positive variation on firm outcome. Expressed differently, small firms are more able to create an environment that is conducive to fully exploit the benefits deriving from a greater cultural workforce diversity. Hypothesis 2 was supported in column 4. Finally, we ran an ordinary least squares regression analysis (column 5). As shown, the main results were confirmed by the simple OLS model. However, when we did not control for endogeneity, the main coefficients were higher than the coefficients estimated with the fixed effects regression (column 4), where we controlled for positive omitted variables biases. Figure 2 plots out the joint effect of birthplace workforce diversity and firm size on change in performance, considering two illustrative points of firm size distribution: small (-1 SD below the sample mean) and large (+1 SD above the sample mean). Figure 2 suggests that, as assumed in H2, small firms were more able to maximize benefits deriving from higher levels of birthplace workforce diversity, improving firm's performance. Similarly, higher levels of birthplace diversity of workers were less strongly associated to better performance, when the firm is larger. However, figure 2 also shows that birthplace workforce diversity affects firm's performance, independently of the size of firm.

4.2. Robustness checks

Table 5 includes a number of robustness checks. Column 1 shows the baseline equation; columns 2–5 include additional control variables to test the persistence of a positive contribution of workers from different countries of origin to firm performance. Columns 2–3 include farm specializations and a dummy variable that is equal to one in case of firm's localization in lowland and zero otherwise. We consider that some typical sector characteristics (i.e. differences in productivity between crops, seasonality features) and the specific location of firms are able to impact on our main relationship. Several studies have indeed considered the influence of a firm's geographical location on its performance, like potential presence of geographic spillover effects (Shoobridge, 2006). Even considering these additional controls, the positive impact of a culturally diverse workforce on firm performance seems to be confirmed by high values of the statistically significant parameter. Column 4 controls for the presence of new investments: the additional control was significant and our main relationships did not change. Finally, column 5 includes the size of firms as total employees. Even though this specification seems to absorb the significance of our main relationships, birthplace diversity continued to play a major role in firm performance and all our hypotheses were supported. As Table 5 shows, our findings are robust in all specifications. Table 6 contains robustness checks based on GMM estimators. Estimating the main relationships through a dynamic panel data model with the Arellano–Bond estimator allowed us to consider the possible endogeneity of the workforce diversity not completely eliminated with fixed effects at firm level. Column 1 repeats the baseline equation, without control variables, using the lagged dependent variable (*Sales t-1; Sales t-2*) and the lagged independent variable (*Birthplace Diversity t-1*) to take into account serial correlation over time. Column 2 repeats the previous equation, introducing the control variables. The results obtained differed slightly from those obtained with the fixed-effects specifications (Table 4). The coefficient for the independent variable (*Birthplace Diversity*) was positively statistically significant in the two columns. This suggests that, even accounting for other sources of endogeneity, the results are still robust, and a culturally diverse workforce plays a major role in explaining the performance of firms. The findings also show that the presence of contextual factors, such as larger firm size, is significantly related to firm performance. Additionally, when assuming persistence of *Sales* over time, the results did not change. Even considering the past values for firm performance, the role of enclaves and controlling for state dependence (Heckman, 1981), our main hypothesis was supported.

5. Discussion

In this article, we used workforce birthplace diversity to describe the presence of heterogeneity of employees' birthplaces within the organizational workforce. In line with research from the past decade exploring a distinct type of diversity, birthplace diversity with immigrant diversity in metropolitan areas (Ottaviano and Peri, 2006), we considered the immigrant workforce employed by firms to be a good sample for workforce birthplace diversity. Past empirical studies have reported a positive relationship between urban and regional immigrant diversity and worker productivity, underlining the concept that the advantages of immigrant heterogeneity overcome the costs (Suedekum et al., 2014, Trax et al., 2015).

At the workplace level, Cooke and Kemeny (2017) explored the relationship between immigrant diversity and worker productivity and found that the diversity effects on wages were stronger among workers that are heavily appointed to complex problem-solving activities. Drawing on these results, and confirming that birthplace heterogeneity gives tangible economic benefits, our evidence supports the first hypothesis showing a positive correlation between birthplace diversity and firm performance. We proved this relationship through an empirical analysis run on a panel data set of 33,258 Italian firms, observed from 2012 to 2017. The results were robust even after having controlled for potential endogeneity. Past studies have reported a robust correlation between workforce immigrant diversity and different measures of productivity, but no one has provided deeper insights into the relationship between workforce birthplace diversity and firm performance. At team-level, current literature has been not able to provide consistent results about the direct impacts of diversity on performance that could be generalizable across contexts (Stewart, 2006; Van Knippenberg and Schippers, 2007). Therefore, some scholars have concluded that all types of diversity can have both positive and negative effect on performances (Van Knippenberg et al., 2013) leaving the knowledge of when and how diversity impacts team performance quite fragmented with some questions unanswered (Van Knippenberg and Schippers, 2007).

Drawing on the idea that individuals construct a preliminary opinion of other people relying on detectable attributes using stereotypes that informal or formal interactions within the company work environment help to replace with deeper knowledge of the cognitive features of other individuals, we proposed that given the value added, in terms of their social ties and background knowledge, individuals originating from different countries can give, birthplace diversity at level of workforce can have positive impact on firm' performance. Indeed, we underlined that individuals originating from diverse countries add to their destination countries different skills, culture, value systems and problem-solving capabilities, which are crucial assets for companies.

Thus, we have explained the positive results of birthplace diversity on firm's performance, introducing the information-decision-making perspective and therefore, for this reason, we claim that birthplace diversity can be different from the other types of demographic diversity.

The empirical evidence also shows that the positive effect of birthplace diversity on firm performance depends on the organizational context, as the birthplace diversity can have stronger consequences in environment where individuals can spend more time together and interact more easily. This is consistent with past research that considered that organizational context moderated the relationship between diversity (racial) and performance (Richard, 2000; Richard et al., 2006). These studies also suggested that factors such as organizational structure, culture, and firm strategy acted as moderators of this relationship at both group and firm level. For example, Chatman and Flynn (2001) showed that the interaction between demographic characteristics and organizational culture affected different diversity outcomes. Richard et al. (2006) found that both organizational structure (managerial span of control) and organizational life cycle stage moderated the relationship between racial diversity and firm performance. Earlier, Richard (2000) suggested that business strategy (in terms of growth vs. downsizing) was also a moderating factor in this relationship.

Our results underline the relevance of the organizational context and suggest that the organizational context of human resource diversity can positively affect firm performance. In large firms, the higher coordination costs and degree of formality in the social structure regulating internal activities mean that diversity can lead to higher social costs because of the difficulty of creating an environment encouraging spontaneous social ties and informal group formations.

Our study makes several contributions to the literature. First, this is the first study of which we are aware to extend the level of analysis of birthplace diversity to the organizational level. It complements regional and urban studies that have also shown the effect of birthplace diversity on economic growth. Second, past research on the heterogeneity of employees' places of origin at firm level, with the exception of Cooke and Kemeny (2017), has focused on the effect of diversity, mostly diversity of nationality, on group processes and outcomes. This study also answered the call for more theoretical guidance and empirical studies on the valuable impact of firm-level diversity on organizational outcomes (Joshi et al., 2011).

Third, our study tested the effect of firm size on the relationship between birthplace diversity and firm performance. It therefore addresses the need for more studies about how diversity is affected by organizational and societal context (Joshi and Roh, 2009; Prasad et al., 2006; Siebers, 2009). Past studies on organizational diversity found that organization strategy moderated the effects of organizational diversity (see Dwyer et al., 2003; Richard, 2000; Richard and Shelor, 2002). Richard et al. (2004) proved that entrepreneurial orientation was a positive moderator of the nonlinear relationships between organizational diversity (as gender and racial diversity) and organizational performance. Similarly, Cunningham (2009) reported that having a proactive diversity management strategy (where diversity is encouraged, and the organizational mission statement, policies, procedures, and practices incorporate diversity) positively moderated the relationship between racial diversity and organizational performance. No previous studies included any moderator variables describing organizational context.

6. Limitations

Our study suggests that organizational characteristics of firms can be a critical asset in the right context and can positively affect the workforce diversity–firm performance relationship. However, conclusions from our findings must be tempered by the awareness of several study limitations. First, we were unable to completely exclude endogeneity problems, because of measurement errors and reverse causality, and omitted variables issues. Our identification strategy included time-varying covariates and a full set of fixed effects, but the estimation of the relationship between firm performance and workforce birthplace diversity could still suffer from endogeneity issues. To further take into account these sources of bias, we modelled the generalized method of moments (GMM) model. We are aware that, in some cases, IV estimation could lead to better results (Ager and Brückner, 2013; Ortega and Peri, 2009; Ottaviano and Peri, 2005; Trax et al., 2015), but these strategies do not seem applicable here. The limited availability of data and the poor data quality from the Italian agricultural sector prevent the use of several instrumental variables extensively used in previous studies (Card, 2005; Ottaviano and Peri, 2005). We therefore followed the approach of Parrotta et al., (2014) and used the one-step GMM estimator, because it can account for contemporaneous correlation in the errors of the simultaneous two-equation system and is robust for serial correlation or heteroskedasticity in the error terms (Wooldridge, 2009). In general, the one-step GMM estimator has a larger asymptotic variance than the two-step counterpart, but it allows for a lower loss of efficiency by simultaneously estimating the first and the second stage conditions. We can therefore reasonably contend that the large number of fixed effects, the full set of robustness checks and the GMM estimation are sufficient to deal with our endogeneity issues. However, further research could consider implementing an IV estimation, to achieve a more complete understanding of drivers of diversity (Docquier et al., 2020).

Secondly, the use of a single industry might reduce the external validity of our results (Richard, 2000). However, it also allows us to reduce any bias from cross-sectoral variation, reducing endogeneity arising from unobservable confounding factors linked to differences in sectors. The use of one sector may therefore help to better identify the effects of birthplace diversity on firm performance. We are aware that our findings need to be further validated by analyzing at least one other industry (e.g., manufacturing), to provide confirmation of the role of contingency factors (Richard et al., 2004). Finally, our study did not consider other demographic attributes of diversity of workers (e.g., gender or age), which may interact with the effects of diversity based on birthplace or nationality. This may allow us to explore the complexity of the workforce diversity–performance relationship, in a within-firm setting (Richard et al., 2004).

7. Conclusions

In this study, we analyzed the relationship between workforce birthplace diversity and organizational performance from a new point of view. We challenged a tacit assumption of past studies that different backgrounds will lead to variation in information, knowledge and cognitive approaches. In larger firms, workers from diverse backgrounds have more opportunity to interact. However, the higher level of coordination, and stronger presence of formal rules mean that these firms may have less opportunity to take advantage of diversity of knowledge and ways of thinking. In smaller firms, there may be more flexible interactions among co-workers, with more chances to draw on the combination of backgrounds, information and knowledge.

Our study therefore provided empirical support for a theoretical position, i.e., that birthplace diversity fosters firm performances. These complements studies at regional level and in metropolitan areas. This research is important because of the move towards globalization. Future research could explore the mechanisms underlying the expansion of the pool of knowledge and information deriving from different employee backgrounds at firm level. The lack of operationalization of these topics in previous work means that our results call for additional measures to collect information about the extent to which the combination of different backgrounds leads to new knowledge.

References

- Ager, P., & Brückner, M. (2013). Cultural diversity and economic growth: Evidence from the US during the age of mass migration. *European Economic Review*, 64, 76-97.
- Aiken, M., & Hage, J. (1971). The organic organization and innovation. *Sociology*, 5(1), 63-82.
- Alesina, A., Harnoss, J. & Rapoport, H. (2016). Birthplace diversity and economic prosperity. *Journal of Economic Growth*, 21, 101–138.
- Arends -Tóth, J., & Vijver, F. J. V. D. (2003). Multiculturalism and acculturation: views of Dutch and Turkish–Dutch. *European Journal of Social Psychology*, 33(2), 249-266.
- Amir, Y. (1976). The role of intergroup contact in change of prejudice and ethnic relations. In *Towards the elimination of racism* (pp. 245-308). Pergamon.
- Audretsch, D., Dohse, D., & Niebuhr, A. (2010). Cultural diversity and entrepreneurship: a regional analysis for Germany. *The Annals of Regional Science*, 45(1), 55-85.
- Baldoni, E., Coderoni, S., & Esposti, R. (2017). Immigrant workforce and labour productivity in Italian agriculture: a farm-level analysis. *Bio-based and Applied Economics*, 6, 259-278.
- Barkema, H. G., & Vermeulen, F. (1998). International expansion through start-up or acquisition: A learning perspective. *Academy of Management Journal*, 41, 7-26.
- Basu, A., & Altinay, E. (2002). The interaction between culture and entrepreneurship in London's immigrant businesses. *International small business journal*, 20, 371-393.
- Bayramoglu, Z., & Gundogmus, E. (2008). Cost efficiency on organic farming: a comparison between organic and conventional raisin-producing households in Turkey. *Spanish Journal of Agricultural Research*, (1), 3-11.
- Bell, S. T. (2007). Deep-level composition variables as predictors of team performance: a meta-analysis. *Journal of applied psychology*, 92(3), 595.
- Berry, R. A. (1972). The relevance and prospects of small-scale industry in Colombia. Center Discussion Paper, 142.
- Bochner, S., & Hesketh, B. (1994). Power distance, individualism/collectivism, and job-related attitudes in a culturally diverse work group. *Journal of cross-cultural psychology*, 25(2), 233-257.

- Böheim, R., Horvath, T., & Mayr, K. (2012). *Birthplace diversity of the workforce and productivity spill-overs in firms* (No. 438). WIFO Working Papers.
- Borjas G. (1999). The Economic Analysis of Immigration. Orley C. Ashenfelter & David Card, eds., *Handbook of Labor Economics*, Amsterdam: North Holland, 1697-1760.
- Boudreaux, C. J. (2020). Ethnic diversity and small business venturing. *Small Business Economics*, 54(1), 25-41.
- Bove, V., & Elia, L. (2017). Migration, diversity, and economic growth. *World Development*, 89, 227-239.
- Brixy, U., Brunow, S., & D'Ambrosio, A. (2020). The unlikely encounter: Is ethnic diversity in start-ups associated with innovation?. *Research Policy*, 49 (4), 103950.
- Card D. (2001). Immigrants Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration. *Journal of Labor Economics*, 19, 22-64.
- Card, D. (2005). Is the new immigration really so bad?. *The Economic Journal*, 115, F300-F323.
- Chatman, J. A., & Flynn, F. J. (2001). The influence of demographic heterogeneity on the emergence and consequences of cooperative norms in work teams. *Academy of Management Journal*, 44(5), 956-974.
- Chrisman, J. J., Chua, J. H., De Massis, A., Minola, T., & Vismara, S. (2016). Management processes and strategy execution in family firms: From "what" to "how". *Small Business Economics*, 47, 719-734.
- Christensen, C. H., Da Rocha, A., & Gertner, R. K. (1987). An empirical investigation of the factors influencing exporting success of Brazilian firms. *Journal of International Business Studies*, 18, 61-77
- Clemens, M. A. (2013). Why do programmers earn more in Houston than Hyderabad? Evidence from randomized processing of US visas. *American Economic Review*, 103, 198-202.
- Coad, A., & Timmermans, B. (2014). Two's company: Composition, structure and performance of entrepreneurial pairs. *European Management Review*, 11(2), 117-138.
- Cooke, A., & Kemeny, T. (2017). Cities, immigrant diversity, and complex problem solving. *Research Policy*, 46(6), 1175-1185.
- Cox Jr, T. (2001). *Creating the multicultural organization: A strategy for capturing the power of diversity*. Jossey-Bass.
- Cox, T. (1991). The multicultural organization. *Academy of Management Executive*, 5, 2.
- Cox, T. (1994). *Cultural diversity in organizations: Theory, research, and practice*. San Francisco: Berrett-Koehler.
- Cox, T., H., Jr., & Blake, S. (1991). Managing cultural diversity: Implications for organizational competitiveness. *Academy of Management Executive*, 5, 45-56.
- Cox, T. H., & Nkomo, S. M. (1991). A race and gender-group analysis of the early career experience of MBAs. *Work and Occupations*, 18, 431-446.
- Cunningham, G. B. (2009). The moderating effect of diversity strategy on the relationship between racial diversity and organizational performance. *Journal of Applied Social Psychology*, 39(6), 1445-1460.
- Dahlin, K. B., Weingart, L. R., & Hinds, P. J. (2005). Team diversity and information use. *Academy of Management Journal*, 48(6), 1107-1123.
- Docquier, F., Turati, R., Valette, J., & Vasilakis, C. (2020). Birthplace diversity and economic growth: evidence from the US states in the Post-World War II period. *Journal of Economic Geography*, 20(2), 321-354.

- Dovidio, J. F., & Gaertner, S. L. (2000). Aversive racism and selection decisions: 1989 and 1999. *Psychological Science*, 11(4), 315-319.
- Dwyer, S., Richard, O. C., & Chadwick, K. (2003). Gender diversity in management and firm performance: The influence of growth orientation and organizational culture. *Journal of Business Research*, 56(12), 1009-1019.
- Earley, C. P., & Mosakowski, E. (2000). Creating hybrid team cultures: An empirical test of transnational team functioning. *Academy of Management Journal*, 43(1), 26-49.
- Gibson, B., & Cassar, G. (2005). Longitudinal analysis of relationships between planning and performance in small firms. *Small Business Economics*, 25(3), 207-222.
- Gremler, D. D., & Gwinner, K. P. (2000). Customer-employee rapport in service relationships. *Journal of Service Research*, 3(1), 82-104.
- Gudmundson, D., & Hartenian, L. S. (2000). Workforce diversity in small business: An empirical investigation. *Journal of Small Business Management*, 38, 27.
- Hambrick, D. C., Davison, S. C., Snell, S. A., & Snow, C. C. (1998). When groups consist of multiple nationalities: Towards a new understanding of the implications. *Organization studies*, 19(2), 181-205.
- Hamilton, B. H., Nickerson, J. A., & Owan, H. (2003). Team incentives and worker heterogeneity: An empirical analysis of the impact of teams on productivity and participation. *Journal of political Economy*, 111(3), 465-497.
- Hanson, J., & Bell, M. (2007). Harvest trails in Australia: Patterns of seasonal migration in the fruit and vegetable industry. *Journal of Rural Studies*, 23, 101-117.
- Harrison, D. A., Price, K. H., & Bell, M. P. (1998). Beyond relational demography: Time and the effects of surface-and deep-level diversity on work group cohesion. *Academy of Management Journal*, 41(1), 96-107.
- Heckman, J. J. (1981). Heterogeneity and state dependence. In *Studies in labor markets* (pp. 91-140). University of Chicago Press.
- Herring, C. (2009). Does diversity pay? Race, gender, and the business case for diversity. *American Sociological Review*, 74(2), 208-224.
- Homan, A. C., Buengeler, C., Eckhoff, R. A., van Ginkel, W. P., & Voelpel, S. C. (2015). The interplay of diversity training and diversity beliefs on team creativity in nationality diverse teams. *Journal of Applied Psychology*, 100(5), 1456.
- Hofstede, G. (1980). Culture and organizations. *International Studies of Management & Organization*, 10(4), 15-41.
- Hong, L., & Page, S. E. (2001). Problem solving by heterogeneous agents. *Journal of Economic Theory*, 97(1), 123-163.
- Huselid, M. A. (1995). The impact of human resource management on turnover, productivity, and corporate performance. *Academy of Management Journal*, 38, 635-672.
- Iranzo, S., Schivardi, F., & Tosetti, E. (2008). Skill dispersion and firm productivity: An analysis with employer-employee matched data. *Journal of Labor Economics*, 26(2), 247-285.
- Jackson, S., Stone, V., & Alvarez, E. (1993). Socialization amidst diversity: The impact of demographics on work team old timers and newcomers. In L. L. Cummings and B. M. Staw (Eds.), *Research in organizational behavior*, vol. 15. Greenwich, CT: JAI Press.

- Jackson, S. E., Joshi, A., & Erhardt, N. L. (2003). Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of Management*, 29(6), 801-830
- Janssens, M., & Zanoni, P. (2005). Many diversities for many services: Theorizing diversity (management) in service companies. *Human Relations*, 58(3), 311-340.
- Jehn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict and performance in workgroups. *Administrative Science Quarterly*, 44(4), 741-763.
- Joshi, A., & Roh, H. (2009). The role of context in work team diversity research: A meta-analytic review. *Academy of Management Journal*, 52(3), 599-627.
- Joshi, A., Liao, H., & Roh, H. (2011). Bridging domains in workplace demography research: A review and reconceptualization. *Journal of Management*, 37(2), 521-552.
- Karahanna, E., & Preston, D. S. (2013). The effect of social capital of the relationship between the CIO and top management team on firm performance. *Journal of Management Information Systems*. 30, 15-56.
- Kasimis, C., & Papadopoulos, A. G. (2005). The multifunctional role of migrants in the Greek countryside: implications for the rural economy and society. *Journal of Ethnic and Migration Studies*, 31, 99-127.
- Kearney, E., Gebert, D., & Voelpel, S. C. (2009). When and how diversity benefits teams: The importance of team members' need for cognition. *Academy of Management Journal*, 52(3), 581-598.
- Klocker, N., Head, L., Dun, O., & Spaven, T. (2018). Experimenting with agricultural diversity: Migrant knowledge as a resource for climate change adaptation. *Journal of Rural Studies*, 57, 13-24.
- Koch, M. J., & McGrath, R. G. (1996). Improving labor productivity: Human resource management policies do matter. *Strategic Management Journal*, 17, 335-354.
- Lansink, A. O., Pietola, K., & Bäckman, S. (2002). Efficiency and productivity of conventional and organic farms in Finland 1994–1997. *European Review of Agricultural Economics*, 29, 51-65.
- Lazear, E. P. (1999). Culture and language. *Journal of political Economy*, 107, S95-S126.
- Lee, J. (2006). Family firm performance: Further evidence. *Family Business Review*, 19 (2), 103-114.
- Lee, H. W., & Kim, E. (2020). Workforce diversity and firm performance: Relational coordination as a mediator and structural empowerment and multisource feedback as moderators. *Human Resource Management*, 59(1), 5-23.
- Lissoni, F. (2018). International migration and innovation diffusion: an eclectic survey. *Regional Studies*, 52(5), 702-714.
- Macrì, M. C., Cardillo, C., Coderoni, S., & Perito M.A., (2017). Foreign Workers in Italian Agriculture. An Analysis with Census Micro Data. M. A. XXXVIII Conferenza Italiana Di Scienze Regionali.
- Malchow-Møller, N., Munch, J. R., Seidelin, C. A., & Skaksen, J. R. (2013). Immigrant workers and farm performance: Evidence from matched employer-employee data. *American Journal of Agricultural Economics*, 95(4), 819-841.
- Maznevski, M. L., & Chudoba, K. M. (2000). Bridging space over time: Global virtual team dynamics and effectiveness. *Organization Science*, 11(5), 473-492.
- McLeod, L. P., & Lobel, S. A. (1992). The effects of ethnic diversity on idea generation in small groups. In *Academy of Management Proceedings* (Vol. 1992, No. 1, pp. 227-231). Briarcliff Manor, NY 10510: *Academy of Management*.

- McLeod, P. L., Lobel, S. A., & Cox Jr, T. H. (1996). Ethnic diversity and creativity in small groups. *Small group research*, 27(2), 248-264.
- Midavaine, J., Dolfsma, W., Aalbers, R., Adcroft, A. & Lohrke, F. (2016). Board diversity and R&D investment. *Management Decision*, 54, 558-569.
- Miller, N., & Brewer, M. B. (1984). The social psychology of desegregation: An introduction. In *Groups in contact* (pp. 1-8). Academic Press.
- Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review*, 21, 402-433.
- Möhlmann, J., & Bakens, J. (2015). Ethnic diversity and firm productivity in the Netherlands. In *The economics of cultural diversity*. Edward Elgar Publishing.
- Nielsen, B. B., & Nielsen, S. (2013). Top management team nationality diversity and firm performance: A multilevel study. *Strategic Management Journal*, 34(3), 373-382.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford university press.
- Northcraft, G. B., Polzer, J. T., Neale, M. A., & Kramer, R. M. (1995). Diversity, social identity, and performance: Emergent social dynamics in cross-functional teams.
- Ortega, F., & Peri, G. (2014). Openness and income: The roles of trade and migration. *Journal of international Economics*, 92(2), 231-251.
- Østergaard, C. R., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? The effect of employee diversity on innovation. *Research Policy*, 40(3), 500-509.
- Ottaviano, G. I., & Peri, G. (2006). The economic value of cultural diversity: evidence from US cities. *Journal of Economic Geography*, 6(1), 9-44.
- Parrotta, P., Pozzoli, D. & Pytlikova, M. (2014). The nexus between labor diversity and firm's innovation. *J Popul Econ*, 27, 303–364.
- Peng, M. W. (2003). Institutional transitions and strategic choices. *Academy of Management Review*, 28(2), 275-296.
- Pettigrew, T. F. (1998). Reactions toward the new minorities of Western Europe. *Annual Review of Sociology*, 24(1), 77-103.
- Rauch, J. E. (2001). Business and social networks in international trade. *Journal of Economic Literature*, 39(4), 1177-1203.
- Richard, O. C. (2000). Racial diversity, business strategy, and firm performance: A resource-based view. *Academy of Management Journal*, 4, 164-177.
- Richard, O. C., Barnett, T., Dwyer, S., & Chadwick, K. (2004). Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions. *Academy of Management Journal*, 47(2), 255-266.
- Richard, O. C., Ford, D., & Ismail, K. (2006). Exploring the performance effects of visible attribute diversity: the moderating role of span of control and organizational life cycle. *The International Journal of Human Resource Management*, 17(12), 2091-2109.
- Richard, A., Minow, M., & Markus, H. R. (Eds.). (2002). *Engaging cultural differences: The multicultural challenge in liberal democracies*. Russell Sage Foundation.

- Richard, OC, Murthi, BP, & Ismail, K (2007) The impact of racial diversity on intermediate and long-term performance: The moderating role of environmental context. *Strategic Management Journal* 28 (12): 1213–1233.
- Richard, O. C., & Shelor, R. M. (2002). Linking top management team age heterogeneity to firm performance: Juxtaposing two mid-range theories. *International Journal of Human Resource Management*, 13(6), 958-974.
- Rosenauer, D., Homan, A. C., Horstmeier, C. A., & Voelpel, S. C. (2016). Managing nationality diversity: The interactive effect of leaders' cultural intelligence and task interdependence. *British Journal of Management*, 27(3), 628-645.
- Saini, G. R. (1971). Holding size, productivity, and some related aspects of Indian agriculture. *Economic and Political Weekly*, A79-A85.
- Seifert, S., & Valente, M. (2018). An Offer that you Can't Refuse? Agrimafias and Migrant Labor on Vineyards in Southern Italy.
- Shaw, J. D., Delery, J. E., Jenkins Jr, G. D., & Gupta, N. (1998). An organization-level analysis of voluntary and involuntary turnover. *Academy of Management Journal*, 41(5), 511-525
- Sheehan, M. (2014). Human resource management and performance: Evidence from small and medium-sized firms. *International Small Business Journal*, 32(5), 545-570.
- Siebers, H. (2009). Struggles for recognition: The politics of racio-ethnic identity among Dutch national tax administrators. *Scandinavian Journal of Management*, 25(1), 73-84.
- Smulowitz, S., Becerra, M., & Mayo, M. (2019). Racial diversity and its asymmetry within and across hierarchical levels: The effects on financial performance. *Human Relations*, 72(10), 1671–1696.
- Somerville, W. & Sumption, M. (2009). Immigration and the labour market: Theory, evidence and policy. Equality and Human Rights Commission. London.
- Stahl, G. K., Mäkelä, K., Zander, L., & Maznevski, M. L. (2010). A look at the bright side of multicultural team diversity. *Scandinavian Journal of Management*, 26(4), 439-447.
- Stewart, S. (2006). Cultural competence in health care. Sydney: Diversity Health Institute.
- Suedekum, J., Wolf, K., & Blien, U. (2014). Cultural diversity and local labour markets. *Regional Studies*, 48(1), 173-191.
- Tajfel, H., & Turner, J. C. (1985). The social identity theory of inter-group behavior. *Psychology of Intergroup Relations*, 6-24.
- Timmermans, B., Østergaard, C. R., Fitjar, R. D., & Solheim, M. (2016). Workplace Segregation, Ethnic Diversity, and Innovation. In AAG-San Francisco 2016.
- Trax, M., Brunow, S., & Suedekum, J. (2015). Cultural diversity and plant-level productivity. *Regional Science and Urban Economics*, 53, 85-96.
- Van Knippenberg, D., & Schippers, M. C. (2007). Work group diversity. *Annu. Rev. Psychol.*, 58, 515-541.
- Williams, K., & O'Reilly, C. (1998). The complexity of diversity: A review of forty years of research. *Research in Organizational Behavior*, 21, 77-140.
- Wooldridge, M. (2009). *An introduction to multiagent systems*. John Wiley & Sons.
- Wu, W. Y., Chang, M. L., & Chen, C. W. (2008). Promoting innovation through the accumulation of intellectual capital, social capital, and entrepreneurial orientation. *R&D Management*, 38, 265-277.

Tables

Construct	Operationalization
<i>Sales</i>	Total sales of a firm, expressed in Euros (logarithmic transformation)
<i>Birthplace Diversity</i>	The inverse of the Herfindahl–Hirschman index that measure the degree of birthplace fractionalization within the workforce. We considered seven groups by birthplace: native workers, workers from Eastern Europe, workers from elsewhere in Europe, workers from Africa, workers from America, workers from Russia, and workers from Asia, in terms of AWU, that is the total hours worked per firm per annum; 1 AWU is equal to 1800 hours worked.
	Total amount of land per firm, in terms of hectares.
	Cost of using firm machines within the production processes, expressed in Euros
<i>Firm Size</i>	Dummy variable, that assumes value =1 if the firm implements an organic process
<i>Machine Opportunity Cost (M.O.C.)</i>	Dummy variable, indicating whether the owner is under 40 years old
	Dummy variable, that it assumes value =1 in case of family management of firm.
<i>Organic Firms</i>	Salary received by the worker, expressed in Euros, yearly
<i>Young Entrepreneurs</i>	
<i>Family Firms</i>	
<i>Wages</i>	

Table 1. Summary of constructs and operationalizations

Variable	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. <i>M.O.C.</i>	20.389	9.35	1.000							
2. <i>Young Entrepreneurs</i>	12,2%	.327	.0072	1.000						
3. <i>Organic Firms</i>	15,2%	.359	.0172*	.0842*	1.000					
4. <i>Family Firms</i>	43,9%	.496	.0101*	-.0185*	-.1687*	1.000				
5. <i>Wages</i>	8654.6	29765.9	.0236*	-.0002	.0712*	.2539*	1.000			
6. <i>Workforce Diversity</i>	0.33	.11	.0334*	.0184*	-.0140*	.2489*	.1895*	1.000		
7. <i>Firm Size</i>	24.6	39.8	.0183*	-.0128*	.0317*	.1117*	.3901*	.0079	1.000	
8. <i>Sales</i>	10.716	1.081	.0570*	.0447*	.0438*	-.3556*	.4721*	.2623*	.5140*	1.000

Table 2. Descriptive statistics and correlations among variables * show significance at the 0.05

Variable	Mean	SD	Min	Max
<i>Central Italy</i>	.164	1.05	0	47.59
<i>North Italy</i>	.199	1.09	0	58.48
<i>South Italy</i>	.157	1.01	0	35.03
<i>Arable crops</i>	.211	.68	0	39.43
<i>Polyculture</i>	.149	1.74	0	57.35
<i>Livestock</i>	.186	0.823	0	39.13

Table 3. Workforce diversity, in terms of AWU, by region and farm specializations

D.V. Sales	(1)	(2)	(3)	(4)	(5)
Variable	FE	FE	FE	FE	OLS
<i>Machine Opportunity Cost</i>	-0.0004091 (.0008)	-0.00037409 (.0008)	-0.00049469 (.0008)	-0.00048109 (.0008)	-0.00456069*** (.0011)
<i>Young Entrepreneurs</i>	-0.00803648 (.0315)	-0.00803252 (.0310)	-0.00232581 (.0306)	-0.0023389 (.0303)	.14736775*** (.0319)
<i>Organic Firms</i>	.00007211 (.0043)	-0.00088967 (.0432)	.00529262 (.0404)	.00469131 (.0404)	-.07463532*** (.0384)
<i>Family Firms</i>	-.08161825*** (.0202)	-.07499287*** (.0202)	-.06888431*** (.0199)	-.06856841*** (.0198)	-.46413647*** (.0199)
<i>Wages</i>	.05345006*** (.0007)	.0522206*** (.0007)	.0476606*** (.0006)	.04799006*** (.0006)	.08654006*** (.0007)
<i>Birthplace Diversity</i>		.18935398*** (.0068)	.1746499*** (.0066)	.234003436** (.0121)	.692625*** (.0022)
<i>Firm Size</i>			.00996822*** (.0004)	.01012651*** (.0051)	.011260224*** (.0007)
<i>Birthplace Diversity*Firm Size</i>			-	-.00252179*** (.0012)	-.01210131*** (.0002)
<i>Constant</i>	10.722873*** (.0743)	10.718554*** (.0739)	10.480851*** (.0744)	10.4767*** (.0755)	10.281791*** (.0964)

Observations	33258	33258	33258	33258	33258
R2	.03992259	.04150433	.06875355	.06920126	.43998178
F	22.979702	24.230832	27.967216	26.043503	339.77552
Year Dummies	Yes	Yes	Yes	Yes	Yes
Altimetry	Yes	Yes	Yes	Yes	Yes

Table 4. Fixed-effects regression analysis (Models 1-4); Ols regression analysis (Model 5). * $p < .1$; ** $p < .05$; *** $p < .01$. Standard errors are clustered by firms. All regressions contain year dummies and altimetry variables.

D.V. Sales	(1)	(2)	(3)	(4)	(5)
Variable					
<i>Machine Opportunity Cost</i>	-.00048109 (.0008)	-.0046395 (.0008)	-.00046766 (.0008)	-.00048084 (.0008)	-.00048035 (.0008)
<i>Young Entrepreneurs</i>	-.0023389 (.0303)	-.0398212 (.0303)	-.00397759 (.0303)	-.00222334 (.0302)	-.0032816 (.0311)
<i>Organic Firms</i>	.00469131 (.0404)	-.00370241 (.0404)	-.00313016 (.0399)	.00487375 (.0400)	.00646583 (.0409)
<i>Family Firms</i>	-.06856841*** (.0202)	-.06774815*** (.0198)	-.06736993*** (.0198)	-.06765117*** (.0194)	-.06377795*** (.0194)
<i>Wages</i>	.04799006*** (.0007)	.04814006*** (.006)	.0484605*** (.0007)	.04782008*** (.0006)	.04634004*** (.0007)
<i>Birthplace Diversity</i>	.234003436** (.0121)	.23286497*** (.0120)	.23838453*** (.0120)	.2218784*** (.0121)	.20789876*** (.0119)
<i>Firm Size</i>	.01012651*** (.0051)	.00997997*** (.0051)	.010000091*** (.0052)	.00899412*** (.0051)	.00899455*** (.0048)
<i>Birthplace Diversity*Firm Size</i>	-.00252179*** (.0012)	-.00250007*** (.0121)	-.00223815*** (.0150)	-.0023379*** (.0121)	-.00276885*** (.0117)
<i>Livestock</i>		.10046046** (.0120)	.10053884** (.0121)		

Arable Crops		.22860163*** (.0396)	.22846945*** (.0395)		
Lowland			.0006276006 (.0007)		
New Investments					
Large			.000197907** (.0001)	.12770991*** (.0284)	
Small				-.13322969*** (0277)	
Constant	10.4767*** (.0755)	10.373616*** (.0793)	10.372985*** (.0798)	10.476329*** (.0754)	10.566581*** (.0738)
Observations	33258	33258	33258	33258	33258
R2	.06920126	.07169184	.07177143	.06944752	.08142597
F	26.043	23.675	22.336	28.506	35.389
Year Dummies	Yes	Yes	Yes	Yes	Yes
Altimetry	Yes	Yes	Yes	Yes	Yes

Table 5. Fixed-effects regression analysis. * $p < .1$; ** $p < .05$; *** $p < .01$. Standard errors are clustered by firms. All regressions contain year dummies and altimetry variables

D.V. Sales	(1)	(2)
Variable		
<i>Machine Opportunity Cost</i>		.0003893 (.0011)
<i>Young Entrepreneurs</i>		.03093196 (.0571)
<i>Organic Firms</i>		-.03698068 (.0529)
<i>Family Firms</i>		-.00995075 (.0117)
<i>Wages</i>		.03911009*** (.0007)
<i>Sales t-1</i>	-.45515909*** (.0115)	-.45175714*** (.0253)
<i>Sales t-2</i>	-.1037101*** (.0120)	-.10514978*** (.0252)
<i>Birthplace Diversity</i>	.2040014** (.0092)	.20761337*** (.0137)
<i>Birthplace Diversity t-1</i>	.06980802 (.0066)	.07215229 (.0868)
<i>Firm Size</i>	.01091156** (.0005)	.01010535*** (.0044)
<i>Birthplace Diversity*Firm Size</i>	-.00138946	-.00264655*

	(.0103)	(.0014)
Constant	16.490725*** (.0195)	16.459106*** (.0167)
Observations	6756	6756
Number of groups	3173	3173
Robust S.E.	yes	yes
Wald Chi2	1612.46	1682.43
Number of instruments	15	20
Year Dummies	Yes	Yes
Altimetry	Yes	Yes

Table 6. Arellano-Bond GMM specifications. * $p < .1$; ** $p < .05$; *** $p < .01$. Robust standard errors. All regressions contain year dummies and altimetry variables.

Figures

Figure 1

Conceptual Model

Figure 2

Joint effect of Birthplace Diversity and Firm Size on change in Firm Performance (Log of Sales)