

The contrasting effects of ethnic, cultural and
immigrant diversity on entrepreneurship and job
creation

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Abstract

This paper is the first one to examine empirically whether ethnic, cultural and immigrant population diversity within countries is favourable for entrepreneurship and job creation. Building on existing, yet disjointed theories on diversity, the paper provides insights as to why different types of diversity may have different effects on entrepreneurship. We test our predictions using multilevel modelling and the Global Entrepreneurship Monitor survey of over 1.5 million people across 88 countries. We find that diversity boosts the number start-ups and new businesses. Also, businesses hire more employees in countries that have a higher population share of skilled or unskilled immigrants due to skill complementarity. However, businesses are more likely to close down in countries with higher cultural or immigration diversity, likely due to market fragmentation. Our results show that small changes in diversity lead to significant changes in the probability of business survival and job creation. These results have important policy implications for countries seeking to toughen their immigration policies. Since societies will continue to become more diverse, considering the multiple dimensions of diversity will become ever more relevant for research and policymaking.

Keywords: Ethnolinguistic diversity; culture; immigration, entrepreneurship; start-ups; job creation; GEM survey; cross-country analysis.

JEL codes: F22, M13, M14, M21, M51, L26, R11.

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1. Introduction

The number of international migrants has more than doubled worldwide since the 1960s, with some areas such as OECD countries experiencing a threefold increase in the share of foreign-born people in the workforce (Alesina, Harnoss and Rapport, 2016). The higher diversity resulting from historical and recent population mobility represents many challenges. More diverse countries, for instance, tend to have poor economic performance, growth, investments and are more prone to conflict (Easterly and Levine, 1997; Gören, 2014; Montalvo and Reynal-Querol, 2005). However, contrasting views, stemming mostly from the entrepreneurship literature, suggest that diversity is not necessarily harmful for growth as it can promote the creation of businesses and social mobility (Danes et al., 2008).

Several reasons can explain the contrasting views on the effects of diversity. Much of the literature has focused on short-term impacts of increased diversity, such as on start-ups, overlooking whether these businesses will survive or create jobs. Also, ethnic and immigrant groups have typically been analysed in isolation, instead of assessing the characteristics that these groups may have in common with the rest of the population (Ram et al., 2010). But perhaps the most important factor limiting our understanding is that the effects of ethnic, cultural and immigrant diversity have been analysed separately, while keeping the narratives of how diversity affects entrepreneurship intertwined (Hlepas, 2013; Vertovec, 2007). The empirical under-exploration of whether ethnic, cultural and immigrant diversity affect entrepreneurship differently is also reflected in the lack of theoretical frameworks examining these dimensions simultaneously. Although the multiple dimensions of diversity might overlap, their effects on entrepreneurship, and more broadly on development, might not necessarily be similar (Desmet, Ortuño-Ortín and Wacziarg, 2017).¹ For instance, new cross-country data show birthplace immigrant diversity is surprisingly uncorrelated to ethnic and cultural diversity, contradicting the common assumption that the effects of higher diversity necessarily go hand in hand (Alesina, Harnoss and Rapport, 2016).

¹ Vertovec (2007) introduced the concept of ‘superdiversity’ to reflect the complexities derived from having multiple layers of diversity in ethnicity, country of origin or culture. These theoretical conceptualizations have been difficult to advance empirically given lack of data (Yamamura and Lasalle, 2019)

This article makes two important contributions to the empirical literature on diversity and entrepreneurship. First, the article offers the first systematic analysis of whether the association between ethnic diversity and entrepreneurial activity differs from the one observed for cultural or immigrant birthplace diversity. To this end, the article builds on existing yet disjointed theories on diversity and adds insights as to why within-country ethnic, cultural and immigrant diversity may have different effects on business creation and business survival. The goal is not to test whether ethnic minorities or immigrants are more likely to create businesses, an issue that has been explored extensively (e.g. Basu and Altinay, 2002; Fritsch and Wyrwich, 2017; Kerr and Kerr, 2020; Wessendorf, 2018). Instead, we seek to assess the net effect that within-country diversity has on entrepreneurial activities, while also considering other important country-level and people's characteristics. Second, we assess another important issue overlooked, the impact of within-country diversity on job creation, that is, the number of employees that businesses hire. Thus, the article provides a comprehensive overview on whether diversity helps people to identify business opportunities, whether these are seized, and whether businesses grow and survive.

We analyse the publicly available Global Entrepreneurship Monitor (GEM) adult population survey of over 1.5 million people across 88 countries from 2001 until 2011. GEM, the largest comparative international survey of entrepreneurial activity, allows us to test how diversity affects entrepreneurship across a wide range of institutional and development settings. Using multilevel modelling, we control for country- and individual-level factors. Thus, in addition to assessing the role of various aspects of diversity, we consider the population share of immigrants, Gross National Income (GNI) per capita, institutional variables, as well as respondents' sex, education, family income and access to entrepreneurial networks. To measure diversity, we use three indices at country-level. These are the ethnic fractionalization index proposed by Alesina et al. (2003), the index of cultural diversity proposed by Fearon (2003) and the index of immigrant birthplace diversity proposed by Alesina, Harnoss and Rapport (2016).

Our article offers four key findings. First, we find that ethnic, cultural and migrant diversity all boost the number of start-ups and new businesses. These businesses, however, are more likely to die soon in countries with higher cultural or immigrant birthplace diversity, unlike in more ethnically diverse regions. We argue that our contrasting findings can be explained by how diversity affects demand

specialisation. We show that businesses embedded in more ethnically diverse settings specialise in their domestic market, where they are likely to find a higher demand for their products and services. In contrast, businesses embedded in more cultural and immigrant diverse settings and with more immigrants have a higher share of exports. Thus, our findings suggest that when demand is fragmented across various international communities it is not conducive to business survival, particularly for small businesses such as those analysed here.

Second, we find that businesses hire more employees in countries that have a higher population share of skilled and unskilled immigrants. This job-expansion effect is stronger in industries more intensive in knowledge, suggesting that immigrants bring critical skills needed by businesses, and supporting theories on skill complementarity (Ottaviano and Peri, 2006). However, our third important finding reveals that both ethnic and cultural diversity are not conducive to job creation, as both reduce the number of employees that businesses hire. We show that this reduction in job creation can be explained by the fact that ethnic and cultural diversity dampen domestic investments, in line with theories that suggest heterogeneity of preferences for private and public goods across groups affects investment coordination and job creation (Azzimonti, 2011).

Fourth, the article reveals the importance of examining the different dimensions of ethnic, cultural and immigrant diversity, since these can affect entrepreneurship differently over time. Hence, our findings suggest that the narratives as to how diversity affects entrepreneurship should not be generalised, but are dependent on what aspect of diversity is being examined, as well the stage of entrepreneurship being analysed. It is this granular view that helps reconcile some of the seemingly contradictory findings of the economic and entrepreneurship research on diversity. Our findings are robust to several checks such as using different controls, model specifications, and alternative indices of diversity. Overall our findings reveal a solid empirical basis for distinguishing the effects of the different types of diversity on entrepreneurship and job creation.

The article continues as follows. The next section discusses the literature on diversity, entrepreneurship and job creation. The following sections then describe the data sources, show the multilevel results and robustness checks. The last section presents our conclusions.

2. Diversity, entrepreneurship and job creation

The literature on the relationship between diversity and entrepreneurship has typically focused on case studies, short-run outcomes, such as start-ups, and a particular aspect of diversity (either ethnic, cultural or immigrant) while often making broad generalisations about its findings.² In this section, we contribute to the literature by explicitly uncovering that while diversity in general might boost early-stage entrepreneurship, not all types of diversity are favourable for business survival or job creation.

2.1. Ethnic diversity

Ethnicity is understood as the shared social traits and common history that groups have, or what others think of them as having (Yinger, 1985). Many entrepreneurs in ethnic economies where people share ethnic identity start out by serving fellow community members in their ethnic neighborhood as ethnic ties facilitates raising startup capital, identifying potential clients and providers (Somashkhar, 2019). Several theoretical and empirical studies have found that ethnic diversity is associated with a higher rate of business creation and survival. For instance, according to the ethnocultural theory, ethnic entrepreneurs serve as role models, inspiring others to see entrepreneurship as a viable occupation (Masurel, Nijkamp and Vindigni, 2004; nDoen et al., 2000). Also, dealings based on coethnic loyalties can increase the chance of business creation and mutual survival by providing access to informal networks and strengthening demand for ethnic products. For this reason, ethnic businesses tend cluster strategically, in urbanised settings, according to the mixed

² This issue is exacerbated as empirical studies focused on ethnic diversity often use indices more suitable for measuring cultural diversity and vice versa (see Kemeny (2017) for a recent review). Similarly, some studies seeking to assess the effects of increased migration often use ethnic and cultural diversity indicators. Although ethnic and cultural diversity undoubtedly capture some of the effects directly associated with immigration, these studies not necessarily fully capture the effect of immigration diversity. For instance, people born in different countries have been educated under different systems, possessing perhaps different skills and entrepreneurial values than groups raised and educated in the same country (Alesina, Harnoss and Rapport, 2016).

embeddedness theory. Nonetheless, these businesses have slim chances of generating jobs as they face tough competition from other similar small firms (Aldrich et al., 1983; Volery, 2007).³ Moreover, since ethnic minorities are often denied credit, their businesses tend to be smaller than those of native entrepreneurs and rely more on self-employment or family members (Bruder, Neuberger and R athke-D oppner, 2011; Cavalluzzo and Wolken, 2005).

2.2. Cultural diversity

Entrepreneurial differences across groups stem not only from differences in their ethnicity but also because of differences in their cultural values (Sowell, 1981).⁴ Culture is understood as the set of shared values and beliefs that guide individual and collective behaviour (Hofstede, 1984). Several theoretical and empirical studies have found that cultural diversity is associated with business creation. For instance, the knowledge spill-over theory of entrepreneurship (KSTE) has argued that cultural diversity may boost business creation, as people can learn more easily about different consumer preferences and products, which facilitates identifying business opportunities (Acs, Audretsch and Lehman, 2013). Several empirical studies have found support for this theory (Cheng and Li 2012; Rodr iguez-Pose and Hardy, 2015; Sobel, Dutta and Roy 2010). While some studies point towards a ‘cultural diversity dividend’ (Niebuhr, 2010), the literature also stresses that there are cultural diversity trade-offs (Nikolova and Simroth, 2013; Sobel, Dutta and Roy 2010). Cultural diversity, for instance, may lead to higher communication barriers, mistrust and social instability, which are not necessarily conducive to business survival nor job expansion (Caprar et al., 2015; Nathan and Lee, 2013; Nettle et al., 2007; Rodr iguez-Pose and Hardy, 2015).

³ The clustering of entrepreneurs observed in urban settings is one of the reasons why the literature has focused on analysing diversity in cities (Karlsson, Rickardsson, and Wincent, 2020; Kemeny, 2017).

⁴ Cultural differences have also been found to lead to persistent variance in performance among countries (Spolaore and Warciarg, 2013), workers and firms (Gibbons and Henderson, 2013).

2.3. Immigrant diversity and share of immigrants

Despite the rich and vibrant research on diversity and the sharp increase in migration flows, surprisingly not much is known about the net effect that immigrants and the associated increase in population diversity have on entrepreneurship over time (Kemeny, 2017). Instead the literature has focused on short-term impacts of recent immigration flows, finding that recent immigrants are more likely to have their own business than native population.⁵ For instance, among the studies using the KTSE theoretical framework show that as immigrant diversity increases, so do new markets offering traditional products, and skill complementarity all beneficial for productivity and entrepreneurship of both immigrants and the native population (Rodríguez-Pose and Hardy, 2015; Saxena, 2014). A burgeoning literature has also explored the rise of migrant diversity and transnational entrepreneurship, where immigrants are involved in border crossing business activities involving their country of origin and destination, might have positive effects for both the country of origin and recipient country of migration flows (e.g. Portes, Haller and Guarnizo, 2002; Zapata-Barrero and Rezaei, 2019). However, other studies are more cautious about the potential effect of immigrant diversity. As the discrimination theory points out, the ‘immigrant entrepreneur’ phenomenon can be explained out of constrained choices, such as the labour discrimination that immigrants often face (Vandor and Franke, 2006). Since immigrants also often face credit constraints, their businesses tend to be smaller than those of the native population, and also have low chances of surviving (Cavalluzzo and Wolken, 2005). Even though immigrant entrepreneurs might benefit from coethnic networks, these bonds might be insufficient for entrepreneurial success (Moyo, 2014). Business survival will be threatened, for instance, if their market is fragmented without the critical mass required, or if the purchasing power of their clients, such as other minority groups, is weak (Aldrich and Waldinger, 1990).

⁵ Several other studies show that immigrants are three times as likely as native citizens to become entrepreneurs in the UK, twice as likely in the USA and many other countries (Burn-Callander, 2016; Vandor and Franke, 2006). There are exceptions too, as recent immigrants coming from countries with an overall low rate of entrepreneurship tend to have a low likelihood of setting up businesses elsewhere (Desiderio and Salth, 2010).

Interestingly, some case studies suggest that increased immigrant diversity might have different outcomes to those produced by having a higher share of immigrants. For instance, Ottaviano and Peri (2006) find that a higher share of the immigrant population in metropolitan areas in the USA led to an increase in salary of native workers, thanks to the boost in productivity derived from the skill complementarity that immigrants brought. Similarly, Kahane et al. (2013), using data on the National Hockey League (NHL) teams in the USA, find that teams with a higher share of immigrant players boost performance due to increased skill complementarity. However, as diversity in immigrant players increases, performance surprisingly worsens. This finding is in line with other management studies that have also found immigrant diversity has decreasing returns, as it worsens team cohesion and coordination costs (Milliken and Martins, 1996).⁶

Based on all the theories and evidence reviewed, we formulate the following three hypotheses. We also explain below which indices we will use to disentangle the various effects of diversity.

Hypothesis 1: Diversity (ethnic, cultural or immigrant birthplace) increases early-stage entrepreneurial activity.

Hypothesis 2: Unlike cultural or immigrant birthplace diversity, ethnic diversity helps business survival.

Hypothesis 3: A higher share of skilled immigrants in the population helps businesses create more jobs because of skill complementarity. In contrast, diversity (ethnic, cultural or immigrant birthplace) hinders job expansion.

2.4. Measuring ethnic diversity

We use the ethnic fractionalization index proposed by Alesina et al. (2003) which has dominated the analysis of ethnic diversity. As shown in Equation (1), this index uses the Herfindahl measure, which captures the probability that two people drawn

⁶ Decreasing returns of immigrant diversity have also been found for innovation (Lee, 2015).

randomly from within a country are from different ethnic groups.⁷ The index ranges from zero, when all belong to the same ethnic group, to a maximum of one, where everyone belongs to different groups. Ethnic groups are identified on the basis of both linguistic characteristics (for most of Africa and Europe) and racial characteristics (for most of Latin America), an approach commonly used by ethnologists and anthropologists.⁸

$$FRACT_j = 1 - \sum_{g=1}^N s_{gj}^2, \quad (1)$$

where s_{gj} is the share of group g ($g=1 \dots N$) in country j .

2.5. Measuring cultural diversity

Despite several studies recognising that ethnic and cultural diversity capture different aspects, these have commonly been measured using the same ethnolinguistic indices (Hlepas, 2013).⁹ In contrast, here we measure cultural diversity using the index proposed by Fearon (2003). This index gives a sense of the cultural distance between

⁷ Alesina et al. (2003) used multiple sources but mainly the Encyclopaedia Britannica (for 124 out of 190 countries) and the CIA World Factbook (for 25 countries).

⁸ Other measures of ethnic diversity have been suggested. For instance, Easterly and Levine (1997) proposed to measure ethnic diversity based on the linguistic classification of the 1964 Atlas Narodov Mira, also using the Herfindahl index. Measuring ethnic diversity based solely on linguistic distinctions has received criticism, as it obscures other aspects of ethnic diversity such as skin colour or racial origin. For this reason, the ethno-linguistic index proposed by Alesina et al. (2003) tends to be more broadly used. Fearon (2003) also proposed an index that is highly correlated with that of Alesina et al. (2003), since both use the Herfindahl measure and have overlaps in some data sources. Similarly, Montalvo and Reynal-Querol (2005) proposed a polarisation index designed to study conflict. All the alternative ethnic diversity indices perform similarly in cross-country regressions, showing that ethnic diversity leads to lower trust, growth and more political instability.

⁹ An alternative approach in the international business literature is to measure culture diversity using the Hofstede model (Hofstede, 1984) which measures differences in cultural practices across countries, but with the main disadvantage of ignoring the likely subnational cultures within each country.

groups based on the structural distances between the groups' mother tongue. Linguists believe the languages we have today evolved from a distant common ancestral language. Tree diagrams are used to typify the structural relationships among languages, which are classified into family branches; it is assumed, the closer the branch, the closer the cultural proximity. As shown in Equation (2) this cultural diversity index ranges from zero, when the entire population speaks the same language, to one, where all groups in the country speak structurally unrelated languages.

$$\text{Cultural diversity}_{i,j} = 1 - \left(\frac{l-1}{m-1} \right)^k, \quad (2)$$

Where l is the level or branch at which group i 's and j 's languages diverge. M is the highest number of common classifications in the linguistic dataset (14 in the data Fearon used), the k parameter is set to 0.5 to yield an analogous measure to the ethnolinguistic index.

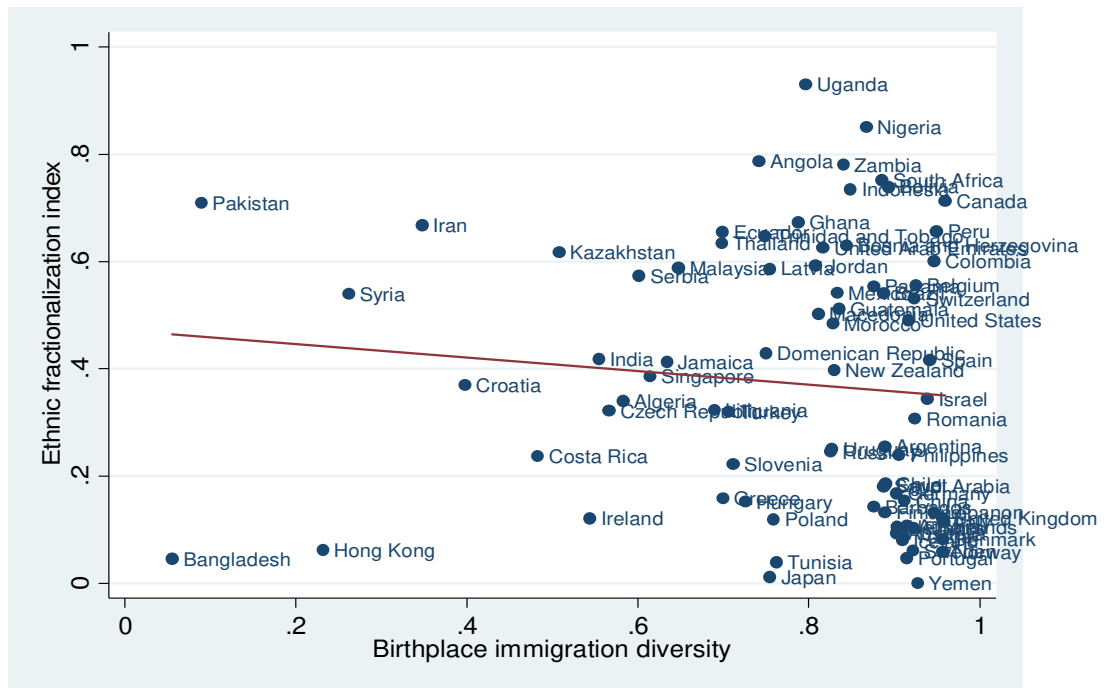
2.6. Measuring birthplace immigration diversity

To measure immigrant diversity we use the index proposed by Alesina, Harnoss and Rapoport (2016). This index is based on people's birthplace, for the workforce of 195 countries in the years 1990 and 2000. The index also uses the Herfindahl measure, hence, it estimates the likelihood that two people drawn randomly from the population have two different countries of birth. Immigrants are identified as foreign-born people aged 25 or older.¹⁰

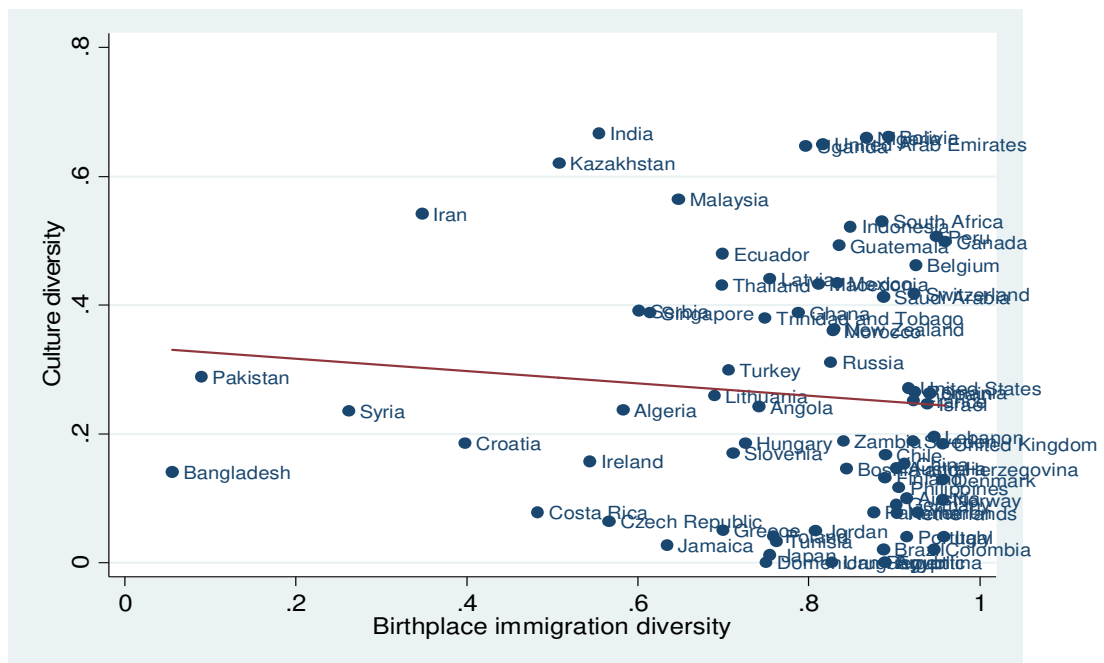
This birthplace immigration index can be separated into two: the birthplace immigrant diversity and the share of immigrants in the population. Both these statistics can be further broken down for skilled and unskilled immigrants. Alesina, Harnoss and Rapoport (2016) show that contrary to widely made assumptions, the immigrant diversity index is uncorrelated to ethnic or cultural diversity indices (see Figure 1). This lack of correlation might explain why, in contrast to ethnic or cultural diversity indices, the population share of immigrants has been found to be positively associated with income per capita in cross-country regressions. To the best of our

¹⁰ This immigration index uses the Artuc et al. (2015) dataset, which provides bilateral data on migration across 195 countries.

knowledge, no cross-country analysis has previously used this new immigration diversity index to analyse the impact on entrepreneurship and job creation.



Panel A



Panel B

Figure 1. Ethnic and immigrant diversity.

Note that all diversity indices used are for the year 2000, that is right before the period of analysis. As Alesina et al. (2003) explain, this is reasonable, and a sound approach given that population diversity is sufficiently stable over a 20-year horizon. Thus, although we will not fully capture how recent changes in diversity brought by constant migration movements affect entrepreneurship, by using diversity measures that immediately precede the entrepreneurial statistics we sidestep potential endogeneity issues.

3. Data and method

We test our three hypotheses using the Global Entrepreneurship Monitor (GEM) adult population survey. GEM is the largest comparable cross-country survey on entrepreneurship, drawing nationally representative samples each year. In total we analyse 88 out of the 89 countries that have taken part in these surveys for at least one year during the 2001–2011 period, capturing both developed and developing regions.¹¹

3.1. Dependent variables

To test hypothesis 1, we use as a dependent variable whether the GEM respondent is engaged in early-stage entrepreneurial activity. Separately, to test hypothesis 2, we use as a dependent variable whether the respondent has an established business. Early-stage and established businesses are defined by GEM as follows (Reynolds et al., 2005):

- Early-Stage Entrepreneurial Activity includes entrepreneurs aged 18–64 who either have a start-up or a young business. Start-ups are people who are actively setting up a new business that they will own and manage, but who have not received salaries or any other payments for more than three months. Young businesses are those who have paid salaries or any other payments to their owners for more than three months and up to 3.5 years.
- Established businesses are those who have paid salaries, or any other payments, to their owners for more than 3.5 years.

¹¹ We excluded Montenegro, as it has no indices on ethnic nor cultural diversity.

We test hypothesis 3 using as dependent variable the number of employees hired by young businesses, and separately the number of employees hired by established businesses. Both of these variables exclude the owners of the firm.

As shown in Table 1, 1,524,407 people were interviewed by the GEM network across the 88 countries considered. From those, 70,410 have a start-up (5% of the sample). A further 56,813 own a young business (4% of the sample), and 100,538 people own an established business (7% of the sample). The average number of employees hired by young businesses is 5.9, while the number for established businesses is slightly lower at 5.6.

Table 1. GEM survey summary statistics.

	Unweighted descriptive statistics		
	Observations	Percentage	Std. Dev.
Actively involved as owner of a start-up	1,524,407	0.05	0.21
Manages and owns a business younger than 3.5 years	1,524,407	0.04	0.19
Manages and owns a business older than 3.5 years	1,524,407	0.07	0.25
Entrepreneurial networking: Personally knows someone who started a business 2 years ago	1,234,953	0.37	0.48
Is business angel (over past 3 years lent to non-family members funds for a new business)	1,524,407	0.01	0.11
Female	1,524,094	0.53	0.50
Believes have knowledge, skill and experience required to start a new business	1,206,878	0.49	0.50
Has post-secondary education	1,524,407	0.15	0.36
Number of employees working for business younger than 3.5 years old (excluding the owners)	14,435	5.90	18.45
Number of employees working for business older than 3.5 years old (excluding the owners)	100,326	5.57	20.41

3.2. Independent variables

3.2.1. Diversity

The publicly available GEM surveys analysed here do not include respondents' ethnicity, birthplace nor their area of residency within the country. Thus, we complement the GEM survey with three external diversity indices for each country. As mentioned above, these are the ethnic fractionalization index as estimated by Alesina et al. (2003), the index of cultural diversity by Fearon (2003), and the birthplace immigration diversity index by Alesina, Harnoss and Rappart (2016).

All these indices offer a measure of diversity near the year 2000, right at the beginning of our analysis. Previous cross-country studies using these diversity indices treat them as exogenous, that is, pre-dating the dependent variable without capturing changes in diversity over time (Alesina et al. 2003). We follow the same approach here.

3.2.2. Country-level variables

We also consider countries' GNI per capita in constant terms at purchasing power parity (PPP), which serves as a proxy for the country's market size and level of development. We include this control as it is known that the correlation between the ethnic fractionalization index and development measures (such as illiteracy, infant mortality and infrastructure quality) lose significance when considering countries' income per capita (Alesina and La Ferrara, 2005). To avoid endogeneity with our entrepreneurship measures, we include the GNI per capita for the year 2000 only.

We also add the origin of the country's legal code, that is, whether it comes from the English common law tradition, or the civil tradition (stemming from the French, Socialist, German or Scandinavian legal tradition). We include this variable as the relationship between diversity and development is likely to depend on the quality of institutions, and there are significant differences in how legal traditions protect businesses. For instance, the French legal tradition actively protects workers' rights. In contrast, in the German legal tradition, the 'communitarian conception of the enterprise' is the primary driver of legislation, resulting in more favourable regulation for businesses, according to La Porta, Lopez-de-Silanes and Shleifer (2008). The extensive research of these authors has also shown that the origin of the legal code influences the regulation of the labour market, firm entry, investments and job creation, all of which are relevant for our analysis.

We also control for regional fixed effects (whether in Africa, Asia, Europe, Latin America, North America, Oceania, or the Middle East), as ethnic diversity is correlated regionally (Alesina et al., 2003). We add fixed-year effects to take into account other time-variant factors, such as shocks to the economy, which might have occurred during the period of analysis.

3.2.3. Individual-level control variables

At the respondent-level, we include whether the respondent has entrepreneurial networks. To this end, we use a binary variable based on the 'yes' or 'no' response to the GEM survey question: 'Do you personally know someone who started a business in the past two years?'. We include this variable, as role models contribute to enriching people's social capital and increasing the chances of business survival (Burt, 2005).

We also add a binary variable identifying whether the respondent is a moneylender, better known as a business angel in the GEM literature. We do so as informal financial networks are vital for business survival, particularly in diverse environments (Bruder, Neuberger and R athke-D oppner, 2011). We identify business angels as respondents who ‘over the past three years, provided funds for a new business’ and ‘lent these funds to non-family members’.

We include the respondents’ gender and age, since they influence access to financial networks and entrepreneurial engagement (Runyan, Huddleston and Swinney, 2006). We also add the respondents’ family household income, as previous research shows this variable affects whether businesses are created, survive and expand (Dollinger, 2003). GEM records income in tertiles, meaning whether respondents stated their family income falls in the lowest, middle or top third of the family income distribution of the country and year where the interview took place.

Following the literature on human capital, we include respondents’ education level. This variable measures whether respondents have post-secondary education or not. We do not predict how education will affect entrepreneurship, as the international evidence is rather mixed (Lee and Tsang, 2001). Last, we include people’s self-reported business skills, known to be essential for business survival and job expansion (Cuervo, 2005). This variable is based on the ‘yes’ or ‘no’ answer to the following GEM question: ‘Do you have the knowledge, skill and experience required to start a new business?’.

Tables 2 and 3 show the summary statistics and correlations among the diversity indices used. Table A.1 shows the diversity and entrepreneurship statistics used for each of the 88 countries analysed.

Table 2. Diversity indices statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Ethnic fractionalization, Alesina	88	0.36	0.25	0.00	0.93
Cultural diversity, Fearon	81	0.25	0.20	0.00	0.67
Language diversity, Alesina	88	0.30	0.27	0.00	0.92
Ethnic diversity, Fearon	80	0.40	0.25	0.00	0.93
Birthplace Diversity, all immigrants	81	0.77	0.20	0.06	0.96
Birthplace Diversity, skilled immigrants	81	0.81	0.18	0.09	0.97
Birthplace Diversity, unskilled immigrants	81	0.76	0.21	0.05	0.96
Population share of all immigrants	81	0.08	0.11	0.00	0.65
Population share of skilled immigrants	81	0.11	0.16	0.00	0.98
Population share of unskilled immigrants	81	0.08	0.11	0.00	0.61

Table 3. Correlation among diversity indices.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Ethnic fractionalization, Alesina	1.00						
(2) Cultural diversity, Fearon	0.67	1.00					
(3) Language diversity, Alesina	0.68	0.64	1.00				
(4) Ethnic diversity, Fearon	0.86	0.75	0.64	1.00			
(5) Birthplace diversity, all immigrants	-0.12	-0.09	-0.09	-0.06	1.00		
(6) Birthplace diversity, skilled immigrants	-0.13	-0.10	-0.15	-0.08	0.93	1.00	
(7) Birthplace diversity, unskilled immigrants	-0.12	-0.08	-0.05	-0.05	0.99	0.88	1.00

4. Multilevel analysis

Survey respondents are more likely to behave similarly to respondents living in the same country than with respondents in other countries. This dependency invalidates commonly used regression models such as Ordinary Least Squares (OLS), as they require the errors to be unrelated across units or levels (Mehmetoglu and Jakobsen, 2016). Thus, to test the impact of diversity on business participation we use a series of multilevel probit regression models, suitable to handle the nature of our nested data. Equation (3) shows the level-1 (individual) and level-2 (country) characteristics considered.

$$Pr(Entrepreneur_{ijk}=1)=\varphi(\beta_0+\beta_1X_{ijk}+\beta_2Year_k+\gamma C_j+u_j+e_{ijk}) \quad (3)$$

Our dependent variable *Entrepreneur* takes the value of 1 in case the respondent *i* in country *j* at year *k* is engaged in early-stage entrepreneurship, and takes the value of 0 if not. Separately, we also analyse respondents who own established businesses. φ is the cumulative distribution function of the standard normal distribution, u and e are the error terms at country and individual level. We

add X , a set of respondents' characteristics and *Year* fixed effects. Vector C represents the country's characteristics. This vector includes the origin of the country's legal code, GNI per capita, regional fixed effects. We also add the ethnic fractionalization index, the cultural and immigrants' birthplace diversity indices. Following Alesina, Harnoss and Rapport (2016), we include all these diversity indices and the population share of immigrants simultaneously in some of our models to capture their potential distinct effects.

5. Results

5.1. Entrepreneurship and diversity

Table 4 displays the probit marginal effect coefficients of the two-level multilevel regression shown in Equation (3). The individual and institutional variables considered are in line with our expectations. Moreover, supporting hypotheses 1 and 2, the ethnic fractionalization index is positively associated with both the country's average probability that people will have an early-stage business (columns 1-5) as well as an established business (columns 6-10). This positive association is robust to adding the cultural and immigrant birthplace diversity indices and the population share of immigrants.

Also supporting hypothesis 1, we find that the cultural and the immigrant birthplace diversity (all, skilled and unskilled) indices are positively associated with the country's average probability that people will have an early-stage business (columns 1-5). In line with hypothesis 2, all the cultural and the immigrant birthplace diversity indices reduce the average probability of people having an established business (columns 6-10), suggesting that a higher degree of diversity is not conducive for business survival.

We also find that a higher population share of skilled immigrants is favourable for early-stage entrepreneurship (column 4), unlike a higher share of unskilled immigrants (column 5). There are several reasons for these findings. Skilled immigrants are likely to have more knowledge and experience to set up their own business than unskilled immigrants. Also, skilled workers, for instance, might offer valuable productive labour to businesses.

Moreover, we also find that both the share of skilled and unskilled immigrants reduces the country's average probability of people having an established business

(columns 9 and 10). These findings suggest that immigrants' ability to run businesses over time are limited, perhaps due to credit constraints, or tough competition in their main market. We explore these potential reasons next.

Table 4. Multilevel probit marginal effects of diversity on business participation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Total Early-Stage Entrepreneurship					Established business older than 3.5 years				
Level 1-Variables										
Is business angel (over past 3 years lent to non-family members funds for a new business)	0.043*** (0.002)	0.043*** (0.002)	0.044*** (0.002)	0.044*** (0.002)	0.044*** (0.002)	0.020*** (0.002)	0.021*** (0.002)	0.021*** (0.002)	0.021*** (0.002)	0.021** (0.002)
Entrepreneurial network: Personally knows someone who started a business 2 years ago	0.045*** (0.001)	0.045*** (0.001)	0.045*** (0.001)	0.045*** (0.001)	0.045*** (0.001)	0.017*** (0.001)	0.017*** (0.001)	0.017*** (0.001)	0.017*** (0.001)	0.017*** (0.001)
Believes have knowledge, skill and experience required to start a new business	0.099*** (0.001)	0.098*** (0.001)	0.098*** (0.001)	0.098*** (0.001)	0.098*** (0.001)	0.079*** (0.001)	0.079*** (0.001)	0.079*** (0.001)	0.079*** (0.001)	0.079*** (0.001)
Female	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.026*** (0.001)	-0.025*** (0.001)	-0.026*** (0.001)	-0.026*** (0.001)	-0.026*** (0.001)
Has post-secondary education	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	-0.006*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)	-0.006*** (0.001)	-0.006*** (0.001)
Age (Baseline aged 18-28)										
Aged 29-38	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.054*** (0.001)	0.053*** (0.001)	0.053*** (0.001)	0.053*** (0.001)	0.053*** (0.001)
Aged 39-48	0.000 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.080*** (0.001)	0.078*** (0.001)	0.079*** (0.001)	0.079*** (0.001)	0.079*** (0.001)
Aged 49-58	-0.017*** (0.001)	-0.017*** (0.001)	-0.017*** (0.001)	-0.017*** (0.001)	-0.017*** (0.001)	0.089*** (0.001)	0.087*** (0.001)	0.088*** (0.001)	0.088*** (0.001)	0.088*** (0.001)
Older than 58	-0.052*** (0.001)	-0.052*** (0.001)	-0.052*** (0.001)	-0.052*** (0.001)	-0.052*** (0.001)	0.074*** (0.001)	0.073*** (0.001)	0.074*** (0.001)	0.074*** (0.001)	0.074*** (0.001)
Family household income (baseline bottom 33%centile)										
Middle 33%centile	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.013*** (0.001)	0.013*** (0.001)	0.013*** (0.001)
Top 33% centile	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.030*** (0.001)	0.029*** (0.001)	0.030*** (0.001)	0.030*** (0.001)	0.030*** (0.001)
Level 2-Variables										
Fearon cultural diversity index	0.016*** (0.002)	0.050** (0.002)				-0.012 (0.020)	-0.041*** (0.002)			
Alesina et al. ethnic fractionalization index		0.022*** (0.002)	0.023*** (0.002)	0.022*** (0.002)	0.023*** (0.002)		0.043*** (0.002)	0.021*** (0.002)	0.019*** (0.002)	0.021*** (0.002)
Birthplace diversity, all immigrants		0.032*** (0.002)	0.028*** (0.002)				-0.009*** (0.002)	-0.008*** (0.002)		
Population share of all immigrants		-0.045*** (0.006)	-0.022*** (0.005)				-0.069*** (0.005)	-0.073*** (0.005)		
Birthplace diversity, skilled immigrants				0.025*** (0.003)					-0.006** (0.003)	
Population share of skilled immigrants				0.009** (0.004)					-0.037*** (0.004)	
Birthplace diversity, unskilled immigrants					0.027*** (0.002)					-0.009*** (0.002)
Population share of unskilled immigrants					-0.030*** (0.006)					-0.082*** (0.005)
GNI per capita 2000	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)		0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Origin of legal code (English common law)										
French	-0.014*** (0.001)	-0.018*** (0.001)	-0.018*** (0.001)	-0.016*** (0.001)	-0.018*** (0.001)	-0.010*** (0.001)	-0.015*** (0.001)	-0.013*** (0.001)	-0.013*** (0.001)	-0.012*** (0.001)
Socialist	-0.022*** (0.002)	-0.019*** (0.002)	-0.019*** (0.002)	-0.017*** (0.002)	-0.019*** (0.002)	-0.032*** (0.002)	-0.033*** (0.002)	-0.030*** (0.002)	-0.031*** (0.002)	-0.029*** (0.002)
German	0.013*** (0.001)	0.008*** (0.001)	0.009*** (0.002)	0.011*** (0.002)	0.009*** (0.002)	0.005*** (0.001)	0.002*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.008*** (0.001)
Scandinavian	-0.002 (0.001)	-0.005** (0.002)	0.005*** (0.001)	0.009*** (0.001)	0.005*** (0.001)	0.004*** (0.001)	0.001 (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.005*** (0.001)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects (2001-2011)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	750755	734111	747219	747219	747219	750755	734111	747219	747219	747219
Random-effects parameters										
/lnsig2u	-4.464*** (0.304)	-4.011*** (0.199)	-4.275*** (0.253)	-4.224*** (0.241)	-4.291*** (0.257)	-3.571*** (0.138)	-3.615*** (0.147)	-3.839*** (0.179)	-3.800*** (0.172)	-3.851*** (0.181)
sigma_u	0.107*** (0.016)	0.135*** (0.013)	0.118*** (0.015)	0.121*** (0.015)	0.117*** (0.015)	0.012*** (0.146)	0.164*** (0.012)	0.147*** (0.013)	0.150*** (0.013)	0.1468*** (0.013)
rho	0.011*** (0.003)	0.018*** (0.003)	0.014*** (0.003)	0.014*** (0.003)	0.014*** (0.003)	0.027*** (0.004)	0.026*** (0.004)	0.021*** (0.004)	0.022*** (0.004)	0.021*** (0.004)
Observations	750755	734111	747219	747219	747219	750755	734111	747219	747219	747219

Note: Standard errors in parentheses.

Significance level *** p<0.01, ** p<0.05, * p<0.1.

5.1.1. Why does ethnic diversity boost entrepreneurship, unlike other types of diversity?

How diversity affects business survival might depend on how ethnicity, culture and migration affect intergroup trade relationships. As mentioned earlier, ethnically diverse societies are likely to rely more on intergroup trading and domestic markets than societies with more cultural or immigrant diversity. To formally test whether diversity affects the extent to which businesses rely on international markets, we use as the dependent variable the share of the production and services that early-stage and established businesses claim to export. Since the GEM survey provides this information as a continuous variable, we use a multilevel linear model instead of a probit one. We keep the same controls as before, but we add the industrial sector (e.g. services, consumer oriented, transformative or extractive), since it might influence dependence on national and external markets.

As shown in Table 5, businesses embedded in more ethnically diverse settings export less, suggesting these businesses enjoy intergroup trading domestically (columns 1-6). In contrast, also as expected, businesses embedded in more culturally diverse settings (columns 1-6), or with a higher share of immigrants (columns 1 and 3), have a higher share of exports.

We also find the higher the immigrant diversity is, the higher the country's average probability that early-stage businesses export more (column 1). However, immigrant diversity has the opposite effect for established business, as their average probability of exporting decreases (column 3). These findings suggest that diversity of immigrants motivates new businesses to establish international trade networks. Over time, as immigrants become more familiar with the host country, they rely more on domestic networks, hence export less, but this is no guarantee for business survival.

Table 5. Multilevel regression on the share of exports.

	(1)	(2)	(3)	(4)	(5)	(6)
	Share of exports of early-stage business			Share of exports of business older than 3.5 years		
Level 1-Variables						
Entrepreneurial network: Personally knows someone who started a business 2 years ago	-0.045* (0.025)	-0.045* (0.025)	-0.045* (0.025)	-0.117** (0.050)	-0.117** (0.050)	-0.117** (0.050)
Is business angel (over past 3 years lent to non-family members funds for a new business)	-0.171*** (0.046)	-0.171*** (0.046)	-0.171*** (0.046)	-0.259*** (0.079)	-0.259*** (0.079)	-0.259*** (0.079)
Has post-secondary education	-0.219*** (0.048)	-0.219*** (0.048)	-0.219*** (0.048)	-0.223*** (0.063)	-0.223*** (0.063)	-0.223*** (0.063)
Age (Baseline aged 18-28)						
Aged 29-38	0.042 (0.030)	0.042 (0.030)	0.042 (0.030)	0.161** (0.073)	0.161** (0.073)	0.161** (0.073)
Aged 39-48	0.037 (0.032)	0.037 (0.032)	0.037 (0.032)	0.102 (0.071)	0.102 (0.071)	0.102 (0.071)
Aged 49-58	0.028 (0.038)	0.028 (0.038)	0.028 (0.038)	0.042 (0.079)	0.042 (0.079)	0.042 (0.079)
Older than 58	0.029 (0.057)	0.029 (0.057)	0.029 (0.057)	-0.012 (0.103)	-0.012 (0.103)	-0.012 (0.103)
Female	0.098*** (0.024)	0.098*** (0.024)	0.098*** (0.024)	0.056 (0.048)	0.056 (0.048)	0.056 (0.048)
Family household income (baseline bottom 33%centile)						
Middle 33%centile	0.018 (0.038)	0.018 (0.038)	0.018 (0.038)	0.141** (0.068)	0.141** (0.068)	0.141** (0.068)
Top 33% centile	-0.129*** (0.036)	-0.129*** (0.036)	-0.129*** (0.036)	-0.048 (0.065)	-0.048 (0.065)	-0.048 (0.065)
Believes have knowledge, skill and experience required to start a new business	0.027 (0.034)	0.027 (0.034)	0.027 (0.034)	0.023 (0.080)	0.023 (0.080)	0.023 (0.080)
Level 2-Variables						
Fearon cultural diversity index	8.605*** (1.328)	5.828*** (1.222)	8.310*** (1.232)	19.792** (5.440)	8.515*** (3.253)	32.502*** (8.228)
Alesina et al. ethnic fractionalization index	-18.243*** (2.618)	-11.811*** (3.054)	-17.806*** (2.381)	-35.843*** (10.057)	-13.049*** (5.298)	-56.280*** (14.755)
Birthplace diversity, all immigrants	4.868*** (1.128)			-13.224*** (3.792)		
Population share of all immigrants	14.506*** (2.207)			96.900*** (22.038)		
Birthplace diversity, skilled immigrants		-0.299 (1.886)			-10.922*** (3.692)	
Population share of skilled immigrants		15.504*** (2.001)			21.118*** (5.080)	
Birthplace diversity, unskilled immigrants			5.568*** (1.110)			-14.711*** (4.371)
Population share of unskilled immigrants			14.936*** (2.248)			145.474*** (33.618)
GNI per capita	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)
Origin of legal code (English common law)						
French	-5.087*** (0.673)	-3.707*** (0.886)	-5.065*** (0.624)	-7.507*** (2.171)	-2.970** (1.328)	-11.030*** (2.971)
Socialist	-10.349*** (1.641)	-5.070** (2.164)	-10.058*** (1.492)	-9.034*** (2.897)	-1.096 (1.741)	-15.972*** (4.391)
German	-10.680*** (1.370)	-7.309*** (1.752)	-10.334*** (1.273)	-14.688*** (4.109)	-4.356** (2.198)	-22.360*** (5.828)
Scandinavian	-6.201*** (0.790)	-3.742*** (0.968)	-6.289*** (0.734)	-11.182*** (3.210)	-2.576* (1.501)	-18.585*** (4.893)
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects (2001-2011)	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,293	15,293	15,293	5,001	5,001	5,001
Random-effects parameters						
Ins1_1_1	-10.547*** (0.207)	-10.949*** (0.177)	-15.607*** (0.176)	-19.764*** (0.395)	-14.572*** (0.317)	-15.676*** (0.345)
Insig_e	0.333*** (0.006)	0.333*** (0.006)	0.333*** (0.006)	0.425*** (0.010)	0.425*** (0.010)	0.425*** (0.010)
var(_cons)	0.00 (0.000)	0.00 (0.000)	0.00 (0.000)	0.00 (0.000)	0.00 (0.000)	0.00 (0.000)
var(Residual)	1.945 (0.022)	1.945 (0.022)	1.945 (0.022)	2.338 (0.047)	2.338 (0.047)	2.338 (0.047)
Observations	15,293	15,293	15,293	5,001	5,001	5,001
Number of groups	12,612	12,612	12,612	4,365	4,365	4,365

Note: Standard errors in parentheses.

Significance level *** p<0.01, ** p<0.05, * p<0.1.

5.2. Job creation

To test hypothesis 3, whether diversity affects job creation, we use as dependent variable the number of employees hired. We analyse the number of employees hired by young businesses, and separately those hired by established businesses. Since our dependent variable is continuous, we use a linear multilevel model (instead of a probit one), as shown in Equation (4).

$$\text{Number of employees}_{ijk} = \alpha_0 + \alpha_1 X_{ijk} + \alpha_2 \text{Year}_k + \gamma C_j + u_j + e_{ijk} \quad (4)$$

Following GEM's definition, the number of employees hired excludes the owner(s) of the firm. So, for businesses with no extra employees, the dependent variable takes the value of zero, meaning self-employed. We exclude from this analysis respondents who do not have any existing business, as well as start-ups, as these firms are in too early a stage. In our multilevel analysis we use the same controls as before, including the industrial sector as this might influence the number of employees needed.

Table 6 shows the multilevel linear coefficients. Again, the individual and the institutional variables considered provide results consistent with our expectations. With regards to diversity, the indices of ethnic fractionalization and cultural diversity are negatively associated with the number of employees hired by young and established businesses. Both diversity indices are among the most influential factors associated with the number of employees hired. But when both indices are added in the regression simultaneously (columns 2 and 7) one coefficient absorbs the effect of the other, likely given their strong correlation.

The regression coefficients of the diversity indices estimate what would be the change in the country's average number of employees hired by businesses, for a unit increase in the corresponding diversity index. This change implies going from the diversity index's minimum value of zero to its highest value of one. Another way to assess the extent of this impact is to consider a country that goes from the 25th percentile of the ethnic fractionalization index to the 75th percentile across the 88 countries analysed. This change represents an increase of 0.46 units in the ethnic fractionalization index. A difference of this extent is the one found in Japan and the USA, for instance. By multiplying this number by the coefficient in Table 6, column 3, we find that this increase in the ethnic fractionalization index leads to a decrease of

slightly more than one employee hired by new businesses ($0.46 \times -3.502 = -1.74$). The effect of the ethnic fractionalization index is slightly larger for established businesses (column 8), reducing the average number of employees by more than two employees ($0.46 \times -4.914 = -2.44$).

With regards to immigrant birthplace diversity (all, skilled and unskilled), we find it positively associated with the number of employees hired, though this association is statistically insignificant. Overall, however, considering the effects of ethnic fractionalization, and cultural diversity, we find support for hypothesis 3.

We also find that a higher share of skilled immigrants increases job expansion of both young and established businesses. To assess the extent of this effect, consider a country that goes from the 25th percentile of the share of skilled immigrants (such as Poland) to the 75th percentile (such as the UK). This increase of 0.107 units in the share of skilled immigrants leads young businesses to hire almost one extra worker ($0.107 \times 8.277 = 0.89$), and established businesses to hire 1.22 extra workers (0.107×11.367).

The population share of unskilled immigrants has a statistically insignificant association on young businesses, but a statistically significant and positive effect on established businesses hiring more employees. To assess the extent of this effect, consider a country that goes from the 25th percentile of the share of unskilled immigrants (such as Egypt) to the 75th percentile (such as the USA). This increase of 0.09 units in the population share of unskilled immigrants leads established businesses to have 1.5 extra workers (0.09×16.492).

5.2.1. Why does immigration boost job creation?

Our findings suggest that a higher population share of immigrants is favourable for job creation, perhaps due to skill complementarities, as suggested by Roback (1982). To more formally test this theory, we add into our regressions an interaction term. This term interacts the population share of immigrants and a variable that measures the business industry's intensity on employees with at least sixteen years of schooling. Ciccone and Papaioannou (2009) estimated this intensity in human capital

for the 28 manufacturing industries shown in Table A.2.¹² Focusing only on these 28 industries, Table 7 shows that the interaction coefficient is positive and statistically significant. Our findings thus suggest that a higher population share of immigrants (both skilled and unskilled workers) is favourable for job creation, especially for industries more intensive in knowledge.

Table 6. Multilevel regression on businesses size.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Number of employees in business younger than 3.5 years					Number of employees in business older than 3.5 years				
Level 1-Variables										
Entrepreneurial network: Personally knows someone who started a business 2 years ago	0.848* (0.480)	0.757 (0.483)	0.815* (0.480)	0.810* (0.480)	0.814* (0.480)	1.133*** (0.169)	1.052*** (0.171)	0.988*** (0.173)	0.985*** (0.173)	0.989*** (0.173)
Is business angel (over past 3 years lent to non-family members funds for a new business)	3.203*** (0.795)	3.368*** (0.803)	3.231*** (0.794)	3.239*** (0.793)	3.232*** (0.794)	5.413*** (0.441)	5.302*** (0.449)	5.700*** (0.448)	5.667*** (0.448)	5.710*** (0.448)
Has post-secondary education	1.232** (0.611)	1.333** (0.617)	1.251** (0.608)	1.266** (0.608)	1.251** (0.608)	1.779*** (0.254)	1.833*** (0.257)	1.849*** (0.259)	1.841*** (0.259)	1.853*** (0.259)
Age (Baseline aged 18-28)										
Aged 29-38	-0.717 (0.558)	-0.682 (0.561)	-0.662 (0.556)	-0.649 (0.556)	-0.664 (0.556)	-0.735** (0.346)	-0.694** (0.349)	-0.605* (0.354)	-0.603* (0.354)	-0.604* (0.354)
Aged 39-48	-0.983 (0.598)	-0.911 (0.600)	-0.977 (0.594)	-0.949 (0.594)	-0.984* (0.594)	-0.388 (0.335)	-0.388 (0.338)	-0.353 (0.343)	-0.310 (0.343)	-0.299 (0.343)
Aged 49-58	-0.434 (0.711)	-0.495 (0.714)	-0.595 (0.705)	-0.555 (0.705)	-0.604 (0.705)	-0.694** (0.342)	-0.685** (0.346)	-0.624* (0.350)	-0.610* (0.350)	-0.622* (0.350)
Older than 58	-1.106 (1.043)	-1.162 (1.045)	-1.276 (1.040)	-1.228 (1.040)	-1.287 (1.040)	-0.387 (0.378)	-0.458 (0.382)	-0.436 (0.387)	-0.436 (0.387)	-0.460 (0.387)
Female	-2.352*** (0.447)	-2.431*** (0.449)	-2.407*** (0.445)	-2.416*** (0.445)	-2.405*** (0.445)	-0.928*** (0.174)	-0.976*** (0.176)	-0.938*** (0.178)	-0.945*** (0.178)	-0.936*** (0.178)
Family household income (baseline bottom 33%centile)										
Middle 33%centile	1.122* (0.633)	1.148* (0.634)	1.216* (0.630)	1.250** (0.630)	1.213* (0.630)	0.155 (0.238)	0.251 (0.241)	0.274 (0.244)	0.286 (0.244)	0.272 (0.244)
Top 33% centile	2.742*** (0.616)	2.635*** (0.617)	2.740*** (0.613)	2.757*** (0.613)	2.741*** (0.613)	4.217*** (0.233)	4.226*** (0.237)	4.396*** (0.239)	4.418*** (0.239)	4.389*** (0.239)
Believes have knowledge, skill and experience required to start a new business	0.260 (0.677)	0.519 (0.682)	0.533 (0.672)	0.534 (0.672)	0.530 (0.672)	0.643*** (0.224)	0.462** (0.229)	0.593** (0.231)	0.601*** (0.232)	0.591** (0.232)
Level 2-Variables										
Fearon cultural diversity index	-4.196*** (1.488)	-3.066* (1.813)								
Alesina et al. ethnic fractionalization index		-2.400 (1.599)	-3.502*** (1.295)	-3.759*** (1.301)	-3.457*** (1.299)					
Birthplace diversity, all immigrants		1.127 (2.194)	2.742 (2.023)							
Population share of all immigrants		6.649 (5.025)	5.352 (4.547)							
Birthplace diversity, skilled immigrants				2.883 (2.479)						
Population share of skilled immigrants				8.277** (3.453)						
Birthplace diversity, unskilled immigrants					2.555 (1.845)					
Population share of unskilled immigrants					3.842 (4.659)					
GNI per capita	0.000*** (0.000)	0.000* (0.000)	0.000** (0.000)	0.000 (0.000)	0.000** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Origin of legal code (English common law)										
French	-0.877 (0.802)	-0.682 (0.561)	-0.476 (0.838)	-0.026 (0.845)	-0.581 (0.833)	-1.078*** (0.258)	-0.567** (0.274)	-0.413 (0.276)	-0.099 (0.288)	-0.546** (0.274)
Socialist	2.682* (1.618)	-0.911 (0.600)	2.294 (1.763)	2.809 (1.816)	2.226 (1.761)	-0.483 (0.707)	-0.356 (0.762)	-0.409 (0.776)	0.092 (0.782)	-0.521 (0.776)
German	4.588*** (1.000)	-0.495 (0.714)	5.080*** (1.102)	5.549*** (1.091)	4.995*** (1.092)	0.742** (0.326)	1.131*** (0.357)	1.252*** (0.360)	1.673*** (0.374)	1.045*** (0.355)
Scandinavian	-1.128 (1.569)	-1.162 (1.045)	0.719 (1.398)	1.197 (1.373)	0.567 (1.402)	-1.592*** (0.417)	-1.317*** (0.449)	-0.246 (0.419)	-0.098 (0.421)	-0.375 (0.418)
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects (2001-2011)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,711	8,511	8,703	8,703	8,703	54,605	52,979	54,049	54,049	54,049
Random-effects parameters										
Ins1_1_1	-12.814*** (0.268)	0.866* (0.461)	-10.523*** (0.272)	-10.755*** (0.291)	-10.391*** (0.263)	-5.906*** (0.172)	-9.592*** (0.150)	-9.563*** (0.148)	-8.209*** (0.139)	-5.849*** (0.162)
Insig_e	2.966*** (0.008)	2.951*** (0.010)	2.962*** (0.008)	2.961*** (0.008)	2.962*** (0.008)	2.940*** (0.003)	2.939*** (0.003)	2.959*** (0.003)	2.959*** (0.003)	2.959*** (0.003)
var(_cons)	0.000 (0.000)	5.651* (5.206)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
var(Residual)	377.1097*** (5.714)	365.8819*** (7.610)	373.59*** (5.663)	373.420*** (5.661)	373.610*** (5.664)	357.980*** (2.166)	357.130*** (2.194)	371.901*** (2.262)	371.969*** (2.263)	371.917*** (2.263)
Observations	8,711	8,511	8,703	8,703	8,703	54,605	52,979	54,049	54,049	54,049
Number of groups	6,130	5,883	6,087	6,087	6,087	21,772	21,099	21,410	21,410	21,410

Note: Standard errors in parentheses. Significance level *** p<0.01, ** p<0.05, * p<0.1.

¹² These authors estimated these intensities using the USA Integrated Public Use Microdata Series for 1980. This information is used as a proxy for the human capital intensity differences that manufacturers have in the USA and other countries.

Table 7. Multilevel regression on manufacturing size and human capital intensity.

	(1)	(2)	(3)	(4)
	Number of employees in business younger than 3.5 years		Number of employees in business older than 3.5 years	
Level 1-Variables				
Entrepreneurial network: Personally knows someone who started a business 2 years ago	0.217 (1.680)	0.180 (1.682)	1.681*** (0.637)	1.672*** (0.637)
Is business angel (over past 3 years lent to non-family members funds for a new business)	2.319 (2.749)	2.190 (2.753)	9.330*** (1.733)	9.286*** (1.733)
Has post-secondary education	-1.282 (2.330)	-1.148 (2.331)	4.546*** (1.067)	4.559*** (1.066)
Age (Baseline aged 18-28)				
Aged 29-38	0.586 (2.037)	0.411 (2.039)	-1.580 (1.310)	-1.601 (1.309)
Aged 39-48	2.273 (2.106)	2.188 (2.110)	-1.009 (1.259)	-1.018 (1.259)
Aged 49-58	5.145** (2.505)	4.852* (2.502)	-0.858 (1.289)	-0.888 (1.288)
Older than 58	0.755 (3.696)	0.746 (3.702)	0.282 (1.443)	0.256 (1.443)
Female	-2.602 (1.614)	-2.700* (1.615)	-1.951*** (0.660)	-1.947*** (0.660)
Family household income (baseline bottom 33%centile)				
Middle 33%centile	3.210 (2.225)	3.213 (2.228)	1.044 (0.914)	1.061 (0.913)
Top 33% centile	2.984 (2.207)	3.007 (2.210)	6.714*** (0.895)	6.697*** (0.895)
Believes have knowledge, skill and experience required to start a new business	-8.728*** (2.577)	-8.583*** (2.578)	1.310 (0.860)	1.249 (0.860)
Level 2-Variables				
Alesina et al. ethnic fractionalization index	-5.549 (4.728)	-4.924 (4.834)	-5.738*** (1.897)	-6.152*** (1.906)
Birthplace diversity, skilled immigrants	1.332 (8.242)		3.358 (3.121)	
Industry human capital intensity X Share of skilled immigrants	210.826** (95.374)		61.005* (36.951)	
Birthplace diversity, unskilled immigrants		1.889 (6.191)		2.742 (2.344)
Industry human capital intensity X Share of unskilled immigrants		205.251 (129.404)		123.237*** (47.686)
GNI per capita	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Origin of legal code (English common law)				
French	1.889 (3.244)	0.900 (3.230)	-0.099 (1.111)	-0.163 (1.083)
Socialist	13.097** (5.589)	11.718** (5.417)	0.879 (2.580)	0.536 (2.555)
German	15.167*** (4.158)	14.302*** (4.250)	4.391*** (1.486)	4.309*** (1.449)
Scandinavian	6.393 (4.952)	5.780 (5.054)	1.105 (1.656)	0.992 (1.675)
Sector fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Year fixed effects (2001-2011)	Yes	Yes	Yes	Yes
Observations	957	957	5,903	5,903
Random-effects parameters				
Ins1_1_1	1.737*** (0.294)	1.738*** (0.293)	0.372 (1.167)	0.323 (1.274)
Insig_e	3.068*** (0.030)	3.069*** (0.030)	3.154*** (0.010)	3.153*** (0.010)
var(_cons)	0.000 (0.000)	0.000 (0.000)	5.011 (5.593)	4.684 (5.576)
var(Residual)	494.953*** (22.627)	496.178*** (22.683)	545.589*** (11.433)	545.563*** (11.429)
Observations	957	957	5,903	5,903
Number of groups	665	665	2,515	2,515

Notes: The share of immigrants is interacted with the industry's intensity on employees with at least sixteen years of schooling (college) for 28 large manufacturing industries. Standard errors in parentheses.

Significance level *** p<0.01, ** p<0.05, * p<0.1.

5.2.2. Why does ethnic and cultural diversity dampen job creation?

Supporting hypothesis 3, we have found that ethnic fractionalization and cultural diversity are associated with a smaller number of employees hired by businesses. One potential reason for this finding is that ethnic and cultural diversity might make investment coordination more difficult, thus hindering job expansion, as suggested by Easterly and Levine (1997). We test this potential mechanism next.

Since the GEM survey does not provide information on overall investments, we test whether diversity dampens investments, using instead as dependent variable the gross capital formation (formerly known as gross domestic investments) in USA dollars aggregated at the country level from 2001 until 2016, as shown in Equation (5). We obtained this information from the World Bank.

To test whether diversity dampens investments, we aggregate all the investment information at the country level, thus we no longer use multilevel analysis. Instead, we use panel random effects, clustering the standard errors at the country level, as shown in Equation (5).

$$Investment_{jk} = \gamma_0 + \gamma_1 C_j + \gamma_2 Year_k + u_j + e_{jk} \quad (5)$$

As before, C_j represents the controls aggregated at country level, which includes country's GNI per capita for the year 2000 and the origin of the legal tradition, as both variables are known to affect investments (La Porta, Lopez-de-Silanes and Shleifer, 2008). We also include the indices of diversity, region and year-fixed effects to consider time-invariant regional differences and swings the countries might have experienced.

Table 8 shows that ethnic fractionalization and cultural diversity are associated with lower level of investments, as expected. It is known that reductions in domestic investments often lead to rises in unemployment (Smith and Zoega, 2009), which might explain why we also found that ethnic and cultural diversity dampens job creation. In contrast, also as expected, immigrant birthplace diversity (skilled and unskilled) is associated with the country receiving more investments.

Table 8. Diversity and investment, panel random effects.

	(1)	(2)	(3)	(4)	(5)	(6)
	Investment in USA billion dollars					
Fearon cultural diversity index	-0.313* (0.169)		0.031 (0.184)			
Alesina et al. ethnic fractionalization index		-0.312** (0.140)	-0.440** (0.192)	-0.371*** (0.143)	-0.360** (0.140)	-0.371*** (0.144)
Birthplace diversity, all immigrants			0.287 (0.195)	0.311* (0.179)		
Birthplace diversity, skilled immigrants					0.403** (0.199)	
Birthplace Diversity, unskilled immigrants						0.240 (0.174)
GNI per capita	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Origin of legal code (English common law)						
French	0.033 (0.065)	0.078 (0.059)	0.011 (0.061)	0.033 (0.062)	0.030 (0.060)	0.042 (0.062)
Socialist	0.111 (0.110)	0.119 (0.115)	0.016 (0.105)	0.041 (0.102)	0.060 (0.102)	0.041 (0.104)
German	0.485** (0.238)	0.502** (0.235)	0.479** (0.228)	0.502** (0.230)	0.507** (0.227)	0.512** (0.233)
Scandinavian	-0.056 (0.105)	-0.065 (0.099)	-0.118 (0.092)	-0.110 (0.094)	-0.094 (0.092)	-0.105 (0.096)
Constant	0.055 (0.087)	0.106 (0.104)	-0.017 (0.185)	-0.073 (0.160)	-0.167 (0.178)	-0.015 (0.162)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects (2001-2011)	Yes	Yes	Yes	Yes	Yes	Yes
Overall R2-squared	0.56	0.55	0.52	0.51	0.52	0.51
Number of countries	73	78	72	75	75	75
Total number of observations (country x year)	777	832	766	799	799	799

Note: Robust standard errors in parentheses, clustered by country.

Significance level *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

6. Robustness analysis

We assess in this section whether our results are robust to different specifications, controls and alternative measures of diversity. We use five main checks, all confirming the validity of the results presented.

6.1. Alternative controls

First, we re-run all our regressions including additional controls including inequality measures such as the Gini index, data on private credit, population size, and institutional variables such as red tape needed to open businesses. None of these changed our results, thus are omitted, but are available upon request.¹³

¹³ The multilevel literature recommends not to add too many level-2 variables (country-variables in our case), as otherwise the models become computationally challenging or impossible to estimate. Multilevel regressions require at least 25-30 level-2 units (countries) to yield reliable confidence intervals and to add at least ten level-2 units for each control variable included at that level (Mehmetoglu and

6.2. Alternative diversity indices

As a second check, we added the squared value of our diversity indices to test for diminishing returns. None of these squared terms were statistically significant, hence suggesting the detrimental effect of diversity on business survival is not simply due to diminishing returns. Instead, our findings suggest that the benefits that diversity offers for new businesses are outweighed by its associated costs over time for established businesses.

As a third check, we used alternative measures of diversity such as the linguistic fractionalization index estimated by Alesina et al. (2003), which identifies groups based on linguistic distinctions. We also used the ethnic fractionalization index by Fearon (2003). Both alternative indices give the same results on the sign and statistical significance to those presented earlier on, hence are omitted.

6.3 Different specifications

As a fourth check, we re-run all our specifications but using the linear OLS model instead of multilevel modelling. Again, we found the same associations between diversity and entrepreneurship and job creation. We omit presenting these results but are available upon request.

A potential criticism of the results presented is that we have used large cross-country surveys, which could boost statistical significance. Thus, as a fifth robustness check, we aggregated the data by country. Again, we found the same associations between diversity and entrepreneurship. For instance, Figure A.1 in the online Appendix shows the positive correlation between the indices on ethnic, cultural and immigration diversity, and the average early-stage entrepreneurship rate of each country between 2001 and 2011. Similarly, Figure A.2 shows the negative association between our diversity indices and the country's average number of employees hired by established businesses.

Jakobsen, 2016). Since we have 88 countries, we could reasonably include up to six country-level variables.

7. Conclusion and discussion

Unlike previous diversity studies on entrepreneurship, this article simultaneously analysed the effects that diversity in ethnic, cultural and immigrant birthplace have on business creation, survival and job expansion. Building on existing, yet disjointed theories on diversity, the paper provides insights as to why different types of diversity may have different effects on entrepreneurship. We tested our hypotheses using the Global Entrepreneurship Monitor adult population survey across 88 countries.

The paper offered four key findings. First, diversity (whether ethnic, cultural or birthplace immigration) increases the number of start-ups and new businesses. However, businesses are more likely to survive in more ethnically diverse countries only, while the opposite is the case for countries with higher cultural or immigration diversity. We also showed that how diversity affects demand specialisation is likely to play a role in our contrasting results. For instance, ethnically diverse countries tend to specialise in their domestic market, while businesses embedded in more culturally and immigrant diverse settings have a higher share of exports, which perhaps makes them more vulnerable to both competition and fluctuations.

Recent studies have found that immigration is beneficial for long-run growth. For instance, areas that received more immigrants during the Age of Mass Migration (1850–1920) in the USA are significantly more prosperous today, with higher rates of industrialisation, agricultural productivity, innovation and local growth (Rodríguez-Pose and von Berlepsch, 2017; Sequeira, Nunn and Qian, 2017). Our findings on the impact of immigration diversity on business survival do not necessarily contradict these recent studies. Our findings instead highlight that the pressures and constraints of receiving a large inflow of immigrants might be overcome overtime, once immigrants or their offspring integrate and find an adequate market niche to survive. This potential long-term outcome might explain why we found that ethnic diversity is beneficial for business survival (in contrast to cultural or immigration diversity).

Moreover, our second key finding revealed that a higher share of immigrants, whether skilled or unskilled, is actually beneficial for businesses creating more jobs. For instance, consider a country that goes from the 25th percentile of the share of skilled immigrants (such as Poland) to the 75th percentile (such as the UK). This increase in the share of skilled immigrants (of 0.107 units) drives young businesses to hire one extra worker, and older businesses to hire 1.22 extra workers. This effect is large, particularly considering that the businesses analysed have an average of five

workers. This finding supports other studies which suggest immigration boosts productivity and growth (Alesina, Harnoss and Rapport, 2016).

Third, we showed that ethnic and cultural diversity hinders job creation as well as investments in the country. Lastly, the article revealed the importance of examining the different dimensions of diversity. Our findings help explain why ethnic, cultural and immigration diversity might have contrasting effects, thereby providing a more complete and nuanced understanding of diversity, with important implications for policy making. Our results, therefore, advance the discussion of entrepreneurship and diversity, showing how small changes in diversity can lead to significant changes in business survival and job creation. These results have important policy implications for countries seeking to toughen their immigration policies. Immigration policies need to consider their consequences on employment, productivity, and on entrepreneurship, all key drivers of economic growth. Since societies will continue to become more diverse, considering the multiple dimensions of diversity will become ever more relevant for research and policymaking.

Disclosure statement

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References

- Acs, Z. J., Audretsch, D. B., and Lehman, E. (2013) The Knowledge Spillover Theory of Entrepreneurship. *Small Business Economics*, 41: 757–774.
- Aldrich, H. E., Cater, J. C., Jones, T. P., and McEvoy, D. (1983) From Periphery to Peripheral: The South Asian Petite Bourgeoisie in England. In I. H. Simpson & R. Simpson (eds.), *Research in the Sociology of Work*. Greenwich: JAI Press.
- Aldrich, H., and Waldinger, R. (1990) Ethnicity and Entrepreneurship. *Annual Review of Sociology*, 16: 111–135.
- Alesina, A., and La Ferrara, E. (2005) Ethnic Diversity and Economic Performance. *Journal of Economic Literature*, 43: 762–800.
- Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S. and Wacziarg, R. (2003) Fractionalization. *Journal of Economic Growth*, 8: 155–194.
- Alesina, A., Harnoss, J. and Rapport, H. (2016) Birthplace Diversity and Economic Prosperity. *Journal of Economic Growth*, 21: 101–138.

- Artuc, E., Docquier, F., Özden, Ç. and Parsons, C. (2015) A Global Assessment of Human Capital Mobility: The Role of Non-OECD Destinations. *World Development*, 65: 6–26.
- Azzimonti, M. (2011) Barriers to Investment in Polarized Societies. *American Economic Review*, 101: 2182–2204.
- Basu, A., and Altinay, E. (2002) The Interaction Between Culture and Entrepreneurship in London's Immigrant Businesses. *International Small Business Journal*, 20: 371–393.
- Bruder, J., Neuberger, D. and Rätthke-Döppner, S. (2011) Financial Constraints of Ethnic Entrepreneurship: Evidence from Germany. *International Journal of Entrepreneurial Behavior & Research*, 17: 296–313.
- Burn-Callander, R. (2016) Immigrants Far More Likely to be Entrepreneurial than British Born. *Telegraph Business*, 12 May.
- Burt, R. S. (2005) *Brokerage and Closure: An Introduction to Social Capital*. Oxford: Oxford University Press.
- Caprar, D., Devinney, T., Kirkman, B. and Caligiuri, P. (2015) Conceptualizing and Measuring Culture in International Business and Management: From Challenges to Potential Solutions. *Journal of International Business Studies*, 46: 1011–1027.
- Cavalluzzo, K., and Wolken, J. (2005) Small Business Loan Turndowns, Personal Wealth and Discrimination. *Journal of Business*, 78: 2153–2178.
- Cheng, S., and Li, H. (2012) New Firm Formation Facing Cultural and Racial Diversity. *Papers in Regional Science*, 91: 759–774.
- Ciccone, A. and Papaioannou, E. (2009) Human Capital, the Structure of Production, and Growth. *Review of Economics and Statistics*, 91: 66–82.
- Cuervo, A. (2005) Individual and Environmental Determinants of Entrepreneurship. *International Entrepreneurship and Management Journal*, 1: 293–311.
- Danes, S., Lee, J., Stafford, K. and Heck, R. K. Z. (2008) The Effects of Ethnicity, Families and Culture on Entrepreneurial Experience: An Extension of Sustainable Family Business Theory. *Journal of Development Entrepreneurship*, 13: 229–268.
- Desiderio, M. V. and Salt, J. (2010) *Main Findings of the Conference on Entrepreneurship and Employment Creation of Immigrants in OECD Countries*. Paris: OECD.

- Desmet, K., Ortuño-Ortín, I. and Wacziarg, R. (2017) Culture, Ethnicity and Diversity. *American Economic Review*, 107: 2479–2513.
- Dollinger, M. J. (2003) *Entrepreneurship: Strategies and Resources*, 3rd ed. Upper Saddle River, NJ: Prentice Hall.
- Easterly, W., and Levine, R. (1997) Africa's Growth Tragedy: Policies and Ethnic Divisions. *The Quarterly Journal of Economics*, 112: 1203–1250.
- Fearon, J. (2003) Ethnic and Cultural Diversity by Country. *Journal of Economic Growth*, 8: 195–222.
- Fritsch, M. and Wyrwich, M. (2017) The Effect of Entrepreneurship on Economic Development – An Empirical Analysis Using Regional Entrepreneurship Culture. *Journal of Economic Geography*, 17: 157–189.
- Gibbons, R., and Henderson, R. (2013). What Do Managers Do? Exploring Persistent Performance Differences Among Seemingly Similar Enterprises. Harvard Business School. Working Paper No. 13–20.
- Gören, E. (2014) How Ethnic Diversity Affects Economic Growth. *World Development*, 59: 275–297.
- Hlepas, N. (2013) Cultural Diversity and National Performance. Search Working Paper 5/06.
- Hofstede, G. (1984) *Culture's Consequences: International Differences in Work-Related Values*. Newbury Park, CA: Sage.
- Karlsson, C., Rickardsson, J. and Wincent, J. (2020) Diversity, innovation, and Entrepreneurship: Where are we and Where should We Go in Future Studies? *Small Business Economics*, in print.
- Kahane, L., Longley, N. and Simmons, R. (2013) The Effects of Coworker Heterogeneity on Firm-Level Output: Assessing the Impacts of Cultural and Language Diversity in the National Hockey League. *The Review of Economics and Statistics*, 95: 302–314.
- Kemeny, T. (2017) Immigrant Diversity and Economic Performance in Cities. *International Regional Science Review*, 40: 164–208.
- Kerr, S. P., and Kerr, W. (2020) Immigrant Entrepreneurship in America: Evidence from the Survey of Business Owners 2007 & 2012. *Research Policy*, 49: in print.
- La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2008) The Economic Consequences of Legal Origins. *Journal of Economic Literature*, 46: 285–332.

- Lee, D.Y., and Tsang, E. W. (2001) The Effects of Entrepreneurial Personality, Background and Network Activities on Venture Growth. *Journal of Management Studies*, 38: 583–602.
- Lee, N. (2015) Migrants and Ethnic Diversity, Cities and Innovation: Firm Effects or City Effects? *Journal of Economic Geography*, 4: 769–796.
- Masurel, E., Nijkamp, P. and Vindigni, G. (2004) Breeding Places for Ethnic Entrepreneurs: A Comparative Marketing Approach. *Entrepreneurship & Regional Development*, 16: 77–86.
- Mehmetoglu, M., and Jakobsen, G. (2016) *Applied statistics Using Stata: A Guide for the Social Sciences*. United Kingdom: Sage Publications.
- Milliken, F., and Martins, J. L. (1996) Searching for Common Threads: Understanding the Multiple Effects of Diversity in Organizational Groups. *Academy of Management Review*, 21: 402–433.
- Montalvo, G. J., and Reynal-Querol, M. (2005) Ethnic Diversity and Economic Development. *Journal of Development Economics*, 76: 293–323.
- Moyo, I. (2014) A Case Study of Lack African Immigrant Entrepreneurship in Inner City Johannesburg Using the Mixed Embeddedness Approach. *Journal of Immigrant & Refugee Studies*, 12: 250–273.
- Nathan, M., and Lee, N. (2013) Cultural Diversity, Innovation, and Entrepreneurship: Firm-Level Evidence from London. *Economic Geography*, 89: 367–394.
- nDoen, M. L., Gorter, C., Nijkamp, P. and Rietveld, P. (2000) Ethnic Entrepreneurship and Migration: A Survey from Developing Countries. Tinbergen Institute, Working Paper.
- Nettle, D., Grace, J. B. Choisy, M. Cornell., H. V. Guégan, J. F. and Hochberg, M. E. (2007) Cultural Diversity, Economic Development and Societal Instability. *PLoS One*, 2: e929.
- Niebuhr, A. (2010) Migration and Innovation: Does Cultural Diversity Matter for Regional R&D Activity?" *Papers in Regional Science*, 89: 563–585.
- Nikolova, E., and Simroth, D. (2013) Does Cultural Diversity Help or Hinder Entrepreneurship? Evidence from Eastern Europe and Central Asia. European Bank for Reconstruction and Development (EBRD) Working Paper 158.
- Ottaviano, G., and Peri, G. (2006) The Economic Value of Cultural Diversity: Evidence from US Cities. *Journal of Economic Geography*, 6: 9–44.
- Portes, A., Haller, W. G. and Guarnizo, L. E. (2002) Transnational Entrepreneurs: An

Alternative Form of Immigrant Economic Adaptation. *American Sociological Review*, 67: 278–298

- Ram, M., Sanghera, B. Abbas, T. Barlow, G. and Jones, T. (2010) Ethnic Minority Business in Comparative Perspective: The Case of the Independent Restaurant Sector. *Journal of Ethnic and Migration Studies*, 26: 495–510.
- Reynolds, P., Bosma, N. Autio, E. Hunt, S., De Bono, N. Servais, I. and Lopez-Garcia, P. (2005) Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003. *Small Business Economics*, 24: 205–231.
- Roback, J. (1982) Wages, Rents, and the Quality of Life. *The Journal of Political Economy*, 90: 1257–1278.
- Rodríguez-Pose, A., and Hardy, D. (2015) Cultural Diversity and Entrepreneurship in England and Wales. *Environment and Planning A*, 47: 392–411.
- Rodríguez-Pose, A., and von Berlepsch, V. (2017) Does Population Diversity Matter for Economic Development in the Very Long-Term? Historic Migration, Diversity and County Wealth in the US. CEPR Discussion Paper 12347.
- Runyan, R. C., Huddleston, P. and Swinney, J. (2006) Entrepreneurial Orientation and Social Capital as Small Firm Strategies: A Study of Gender Differences from a Resource-Based View. *International Entrepreneurship and Management Journal*, 2: 455–477.
- Saxena, A. (2014) Workforce Diversity: A Key to Improve Productivity. *Procedia Economics and Finance*, 11: 76–85.
- Smith, R., and Zoega, G. (2009) Keynes, Investment, Unemployment and Expectations. *International Review of Applied Economics*, 23: 427–444.
- Sobel, R., Dutta, N. and Roy, S. (2010) Does Cultural Diversity Increase the Rate of Entrepreneurship? *Review of Austrian Economics*, 15: 269–286.
- Sowell, T. (1981) *Ethnic America: A History*. New York: Basic Books.
- Spolaore, E., and Wacziarg, R. (2013) How Deep Are the Roots of Economic Development? *Journal of Economic Literature*, 51: 325–369.
- Vandor, P., and Franke, N. (2006) See Paris and... Found a Business? The Impact of Cross-Cultural Experience on Opportunity Recognition Capabilities. *Journal of Business Venturing*, 31: 388–407.
- Volery, T. (2007) Ethnic Entrepreneurship: A Theoretical Framework. In: L. P. Dana (ed.) *Handbook of Research on Ethnic Minority Entrepreneurship: A Co-evolutionary View on Resource Management*. Cheltenham: Edward Elgar.

Yinger, J. M. (1985) Ethnicity. *Annual Review of Sociology*, 11: 151–180.

Zapata-Barrero, R., and Rezaei, S. (2019). Diaspora Governance and Transnational Entrepreneurship: The Rise of an Emerging Social Global Pattern in Migration Studies. *Journal of Ethnic and Migration Studies*. In print.

Online appendix

Table A.1. Main GEM statistics by country.

Country	% Owns a start-up	% Owns a young business	% TEA	%Owns an established business	Ethnic frac. Alesina	Culture diversity Fearon	Diversity immigration	Diversity skilled immigrants	Diversity unskilled immigrants
Algeria	0.05	0.11	0.12	0.04	0.34	0.24	0.58	0.48	0.56
Angola	0.12	0.16	0.28	0.07	0.79	0.24	0.74	0.78	0.73
Argentina	0.06	0.07	0.12	0.09	0.26	0.00	0.89	0.95	0.88
Australia	0.04	0.05	0.09	0.08	0.09	0.15	0.90	0.92	0.88
Austria	0.02	0.02	0.04	0.05	0.11	0.10	0.91	0.92	0.91
Bangladesh	0.07	0.07	0.13	0.11	0.05	0.14	0.06	0.12	0.05
Barbados	0.01	0.08	0.10	0.04	0.14		0.88	0.85	0.86
Belgium	0.01	0.02	0.03	0.03	0.56	0.46	0.93	0.94	0.91
Bolivia	0.14	0.25	0.35	0.19	0.74	0.66	0.89	0.91	0.87
Bosnia and Herzegovina	0.03	0.05	0.07	0.06	0.63	0.15	0.84	0.82	0.85
Brazil	0.09	0.05	0.13	0.10	0.54	0.02	0.89	0.93	0.87
Canada	0.03	0.05	0.08	0.06	0.71	0.50	0.96	0.96	0.95
Chile	0.06	0.11	0.16	0.07	0.19	0.17	0.89	0.94	0.87
China	0.10	0.07	0.16	0.12	0.15	0.15	0.91	0.93	0.90
Colombia	0.10	0.13	0.21	0.10	0.60	0.02	0.95	0.91	0.95
Costa Rica	0.04	0.10	0.13	0.05	0.24	0.08	0.48	0.91	0.34
Croatia	0.02	0.04	0.05	0.03	0.37	0.19	0.40	0.53	0.37
Czech Republic	0.02	0.05	0.07	0.05	0.32	0.06	0.57	0.70	0.55
Denmark	0.03	0.03	0.05	0.05	0.08	0.13	0.96	0.96	0.95
Domenican Republic	0.08	0.10	0.18	0.09	0.43	0.00	0.75	0.82	0.67
Ecuador	0.10	0.10	0.20	0.13	0.66	0.48	0.70	0.89	0.57
Egypt	0.05	0.05	0.10	0.06	0.18	0.00	0.89	0.94	0.85
Finland	0.02	0.03	0.05	0.07	0.13	0.13	0.89	0.86	0.90
France	0.01	0.03	0.04	0.02	0.10	0.25	0.92	0.96	0.91
Gaza Strip & West Bank	0.04	0.05	0.09	0.05	0.00				
Germany	0.02	0.03	0.04	0.04	0.17	0.09	0.90	0.97	0.87
Ghana	0.25	0.11	0.34	0.35	0.67	0.39	0.79	0.88	0.78
Greece	0.03	0.04	0.07	0.13	0.16	0.05	0.70	0.88	0.66
Guatemala	0.09	0.10	0.18	0.04	0.51	0.49	0.84	0.93	0.75
Hong Kong	0.02	0.02	0.04	0.03	0.06		0.23	0.43	0.19
Hungary	0.03	0.04	0.06	0.04	0.15	0.19	0.73	0.72	0.73
Iceland	0.04	0.07	0.10	0.08	0.08		0.91	0.87	0.92
India	0.05	0.07	0.11	0.10	0.42	0.67	0.55	0.64	0.55
Indonesia	0.11	0.09	0.19	0.17	0.74	0.52	0.85	0.81	0.87
Iran	0.05	0.06	0.12	0.09	0.67	0.54	0.35	0.48	0.34
Ireland	0.04	0.05	0.08	0.07	0.12	0.16	0.54	0.67	0.44
Israel	0.02	0.03	0.05	0.03	0.34	0.25	0.94	0.91	0.94
Italy	0.02	0.02	0.04	0.04	0.11	0.04	0.96	0.97	0.95
Jamaica	0.07	0.09	0.16	0.10	0.41	0.03	0.63	0.65	0.62
Japan	0.01	0.01	0.03	0.07	0.01	0.01	0.75	0.81	0.73
Jordan	0.06	0.08	0.14	0.14	0.59	0.05	0.81	0.84	0.79
Kazakhstan	0.05	0.04	0.09	0.06	0.62	0.62	0.51	0.47	0.52
Latvia	0.04	0.05	0.08	0.06	0.59	0.44	0.75	0.79	0.74
Lebanon	0.09	0.07	0.15	0.16	0.13	0.20	0.95	0.94	0.95
Lithuania	0.05	0.09	0.11	0.06	0.32	0.26	0.69	0.69	0.69
Macedonia	0.05	0.05	0.10	0.09	0.50	0.43	0.81	0.86	0.80
Malaysia	0.04	0.03	0.06	0.06	0.59	0.56	0.65	0.88	0.62

Table A.1. Main GEM statistics by country, continuation.

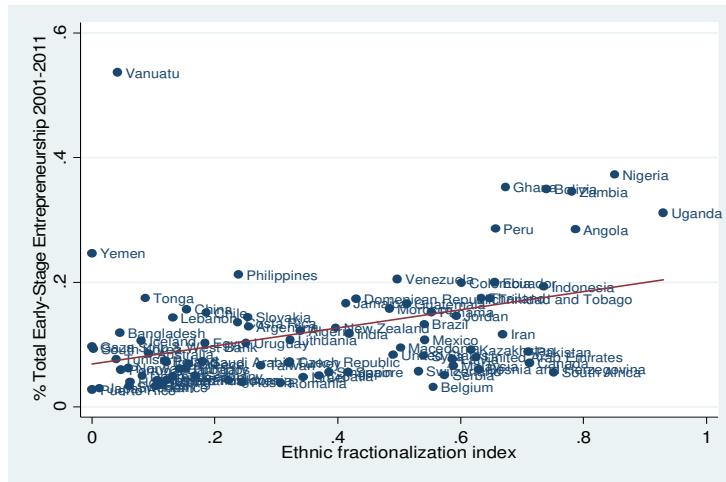
Country	% Owns a start-up	% Owns a young business	% TEA	%Owns an established business	Ethnic frac. Alesina	Culture diversity Fearon	Diversity immigration	Diversity skilled immigrants	Diversity unskilled immigrants
Mexico	0.03	0.07	0.10	0.03	0.54	0.43	0.83	0.88	0.78
Morocco	0.09	0.07	0.16	0.15	0.48	0.36	0.83	0.83	0.83
Netherlands	0.02	0.02	0.05	0.05	0.11	0.08	0.90	0.88	0.90
New Zealand	0.06	0.08	0.13	0.09	0.40	0.36	0.83	0.83	0.83
Nigeria	0.10	0.33	0.35	0.09	0.85	0.66	0.87	0.90	0.86
Norway	0.03	0.04	0.06	0.06	0.06	0.10	0.96	0.95	0.96
Pakistan	0.02	0.07	0.09	0.04	0.71	0.29	0.09	0.09	0.09
Panama	0.06	0.10	0.15	0.05	0.55	0.08	0.88	0.91	0.86
Peru	0.09	0.22	0.29	0.10	0.66	0.51	0.95	0.95	0.94
Philippines	0.16	0.05	0.20	0.20	0.24	0.12	0.91	0.91	0.90
Poland	0.03	0.05	0.07	0.05	0.12	0.04	0.76	0.77	0.76
Portugal	0.03	0.03	0.06	0.06	0.05	0.04	0.91	0.93	0.90
Puerto Rico	0.02	0.02	0.03	0.02	0.00				
Romania	0.02	0.03	0.04	0.03	0.31	0.27	0.92	0.95	0.90
Russia	0.02	0.02	0.04	0.02	0.25	0.31	0.83	0.83	0.83
Saudi Arabia	0.03	0.04	0.07	0.04	0.18	0.41	0.89	0.89	0.89
Serbia	0.03	0.03	0.06	0.07	0.57	0.39	0.60	0.63	0.60
Singapore	0.03	0.04	0.06	0.04	0.39	0.39	0.61	0.70	0.58
Slovakia	0.05	0.12	0.14	0.10	0.25	0.29			
Slovenia	0.02	0.03	0.05	0.05	0.22	0.17	0.71	0.76	0.69
South Africa	0.02	0.04	0.06	0.02	0.75	0.53	0.89	0.89	0.86
South Korea	0.06	0.04	0.09	0.11	0.00	0.00			
Spain	0.03	0.03	0.06	0.07	0.42	0.26	0.94	0.95	0.94
Sweden	0.02	0.02	0.03	0.06	0.06	0.19	0.92	0.95	0.91
Switzerland	0.03	0.03	0.06	0.08	0.53	0.42	0.92	0.92	0.91
Syria	0.05	0.03	0.08	0.07	0.54	0.24	0.26	0.31	0.25
Taiwan	0.04	0.04	0.07	0.07	0.27	0.17			
Thailand	0.14	0.09	0.21	0.20	0.63	0.43	0.70	0.71	0.66
Tonga	0.11	0.07	0.17	0.03	0.09		0.91	0.89	0.91
Trinidad and Tobago	0.07	0.12	0.17	0.07	0.65	0.38	0.75	0.87	0.73
Tunisia	0.06	0.02	0.08	0.10	0.04	0.03	0.76	0.84	0.75
Turkey	0.04	0.04	0.08	0.08	0.32	0.30	0.71	0.76	0.68
Uganda	0.20	0.13	0.32	0.20	0.93	0.65	0.80	0.82	0.79
United Arab Emirates	0.04	0.05	0.08	0.03	0.63	0.65	0.82	0.82	0.82
United Kingdom	0.03	0.03	0.05	0.05	0.12	0.18	0.96	0.96	0.95
United States	0.04	0.06	0.09	0.06	0.49	0.27	0.92	0.97	0.84
Uruguay	0.04	0.08	0.11	0.06	0.25	0.00	0.83	0.86	0.81
Vanuatu	0.28	0.31	0.52	0.23	0.04				
Venezuela	0.06	0.15	0.20	0.06	0.50	0.02			
Yemen	0.01	0.23	0.24	0.03	0.00	0.08	0.93	0.91	0.93
Zambia	0.16	0.16	0.31	0.09	0.78	0.19	0.84	0.90	0.83

Note: Data weighted by GEM population survey.

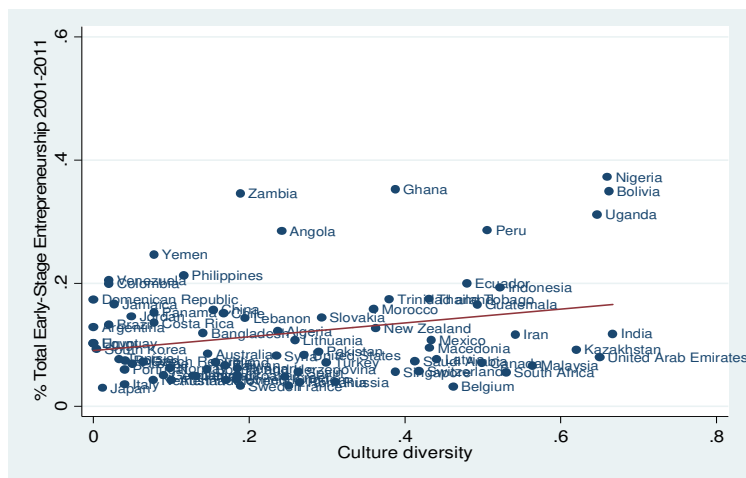
Table A.2. Intensity in human capital at industry-level.

ISI code	Industry	Industry intensity on employees with at least 16 years of schooling (college)
311	Food products	0.097
313	Beverages	0.131
314	Tobacco	0.110
321	Textiles	0.059
322	Wearing apparel, except footwear	0.051
323	Leather products	0.071
324	Footwear, except rubber or plastic	0.037
331	Wood products, except furniture	0.071
332	Furniture, except metal	0.071
341	Paper and products	0.109
342	Printing and publishing	0.200
351	Industrial chemicals	0.217
352	Other chemicals	0.270
353	Petroleum refineries	0.250
354	Misc. petroleum and coal products	0.141
355	Rubber products	0.079
356	Plastic products	0.102
361	Pottery, china, earthenware	0.099
362	Glass and products	0.087
369	Other non-metallic mineral products	0.142
371	Iron and steel	0.083
372	Non-ferrous metals	0.097
381	Fabricated metal products	0.097
382	Machinery, except electrical	0.139
383	Machinery, electric	0.163
384	Transport equipment	0.159
385	Professional & scientific equipment	0.185
390	Other manufactured products	0.119

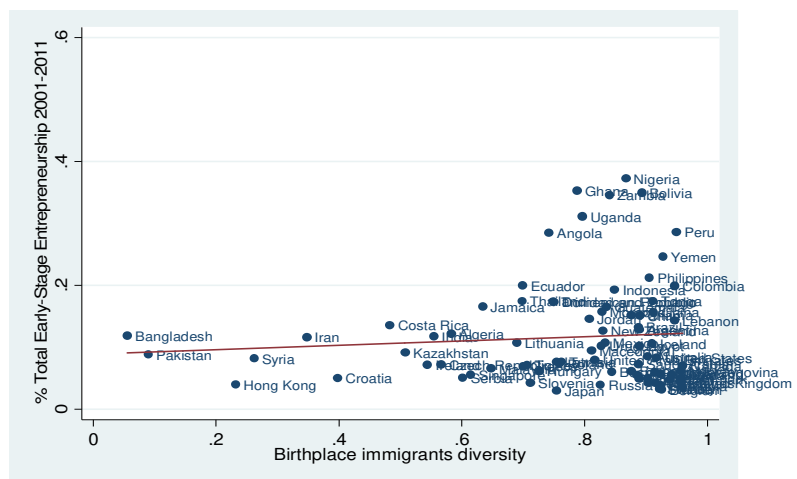
Source: Ciccone and Papaioannou (2009).



Panel A

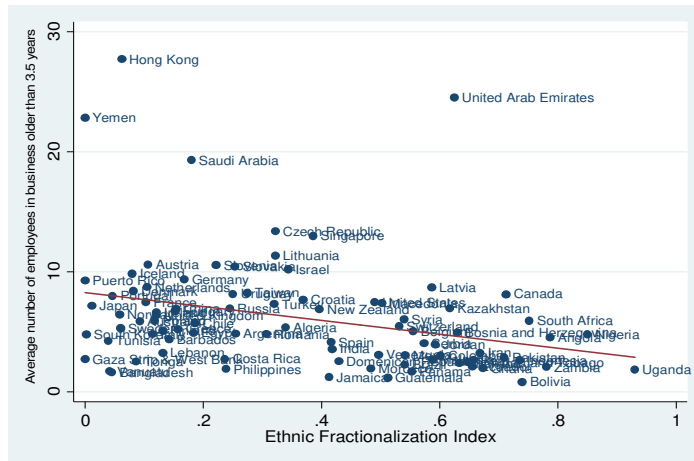


Panel B

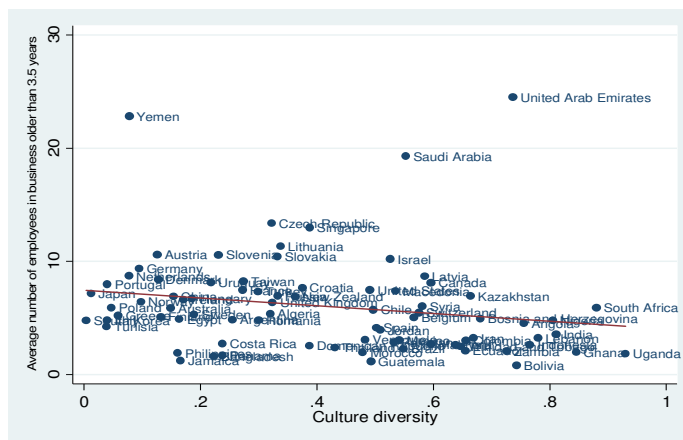


Panel C

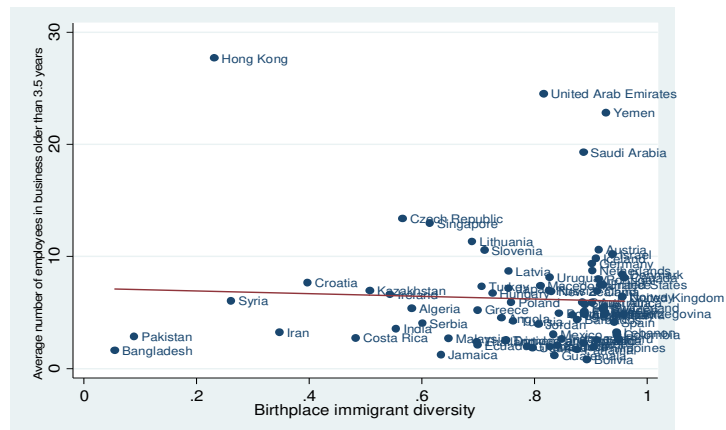
Figure A.1. Diversity and early-stage entrepreneurship.



Panel A



Panel B



Panel C

Figure A.2. Diversity and business size.