

Awaworyi Churchill, Sefa

Preprint

Fractionalization and Entrepreneurial Activities

Suggested Citation: Awaworyi Churchill, Sefa (2015) : Fractionalization and Entrepreneurial Activities, ZBW - Deutsche Zentralbibliothek für Wirtschaftswissenschaften, Leibniz-Informationszentrum Wirtschaft, Kiel und Hamburg

This Version is available at:

<https://hdl.handle.net/10419/123723>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Fractionalization and Entrepreneurial Activities

Sefa Awaworyi Churchill
Department of Economics, Monash University
Wellington Road, VIC 3800,
Australia
Email: sefa.awaworyi@monash.edu

Abstract

The vast majority of the literature on ethnicity and entrepreneurship focuses on the construct of ethnic entrepreneurship. However, very little is known about how ethnic heterogeneity affects entrepreneurship. This study attempts to fill the gap, and thus examines the effect of ethnic heterogeneity on entrepreneurial activities in a cross-section of 90 countries. Using indices of ethnic and linguistic fractionalization, we show that ethnic heterogeneity negatively influences entrepreneurship. We argue that potential channels that can explain the negative effect of fractionalization on entrepreneurship include trust, social network, social capital, innovation, and discrimination among others. Results are robust to several checks.

Keywords: entrepreneurship; ethnic diversity, fractionalization

1. Introduction

Ethnicity has become a defining feature of society, and presents implications at various levels. In the area of entrepreneurship, theories of ethnicity and entrepreneurship suggest that entrepreneurial success can be explained by cultural differences. Specifically, theories such as the ethnic enclave theory (Butler & Herring, 1991; Forment, 1989; Waldinger, 1993; Wilson & Portes, 1980), the middleman theory (Aldrich & Waldinger, 1990; Bonacich, 1973; Wong, 1985), and theories of social capital (Gedajlovic et al., 2013; Ibrahim & Galt, 2011; Sanders & Nee, 1996) establish a link between entrepreneurship and ethnicity.

Furthermore, evidence suggests that entrepreneurial activities vary by ethnic groups (see, e.g., Stiles & Galbraith, 2004; Valdez, 2006). In this regard, it is argued that some ethnic groups are predisposed to starting new businesses than other ethnic groups. For instance, Fawcett and Gardner (1994) argue that Koreans are characterized as entrepreneurial as they are culturally predisposed towards entrepreneurship. Other ethnic groups have also been identified as entrepreneurial ethnic groups as their rates of business start-up and ownership far exceeds that of other ethnic groups.

The economic sociology and ethnic entrepreneurship literature has documented several reasons that attempt to explain the ethnic entrepreneurship phenomenon. For instance, it has been argued that co-ethnics (sharing a common ethnicity and language) significantly contribute to the development of social capital relevant for enterprise development and business growth. In this context, entrepreneurial ethnic groups tend to use their ethnic networks to develop social capital and mobilize resources which can contribute to their higher rates of business ownership (Iyer & Jon, 1999).

Despite the accumulation of rich literature which establishes the link between ethnicity and entrepreneurship, an area that has not been explored fully is how the levels of ethnic heterogeneity affect entrepreneurship. The vast majority of the literature on ethnicity and entrepreneurship focuses on ethnic entrepreneurship, and thus attempt to explain why ethnic minorities become entrepreneurs. The relationship between ethnic fractionalization and entrepreneurial activities remains to be investigated in details. In this study, we attempt to fill this gap.

This study contributes to the literature that seeks to understand the interplay between ethnicity, culture and entrepreneurship. It attempts to answer the question; does ethnic heterogeneity affect entrepreneurial activities? Asked differently, are entrepreneurial activities likely to be affected by the level of ethnic and linguistic diversity in a country? We estimate the effect of ethnic heterogeneity, measured by indices of ethnic and linguistic fractionalization, on entrepreneurial outcomes and activities. Rather than focusing on entrepreneurial ethnic groups and how ethnicity affects entrepreneurship, we focus on how increases in ethnic groups may affect entrepreneurship.

Our results show that ethnic heterogeneity is bad for entrepreneurship. This result is consistent across several indicators of entrepreneurial activities. We argue that potential

channels through which fractionalization affects entrepreneurship include trust, social network, social capital, innovation and discrimination among others.

The rest of the paper is structured as follows. Section 2 discusses some conceptual perspectives on why ethnic diversity might affect entrepreneurship. Section 3 outlines the data and empirical strategy. Section 4 presents and discusses the results. Section 5 presents a series of empirical exercises that confirm the robustness of our results. The final section concludes.

2. Conceptual framework and hypothesis development

Starting with Weber (1976), significant emphasis has been placed on the effect of culture and ethnicity on entrepreneurship (see, e.g., Butler & Herring, 1991; Forment, 1989; Waldinger, 1993; Wilson & Portes, 1980). Further, the literature on immigrant entrepreneurship has also highlighted the impact of cultural differences on entrepreneurship. Particularly, values such as family ties, trust and thrift are argued to be inherent traits associated with some immigrant group, and these traits promote business success (Bonacich, 1973).

Existing literature suggests that ethnic diversity has significant implications for business start-up and success. For instance, it has been argued that business ownership and self-employment is more pronounced among some ethnic groups than others (see, e.g., Smallbone et al., 2010). Similarly, owing to the inherent labels which classify some ethnic groups as more innovative or entrepreneurial than others, investors are often attracted to particular areas. In addition, some investors have also been drawn to particular areas because of the preference to work with specific ethnic or religious groups. For instance, coastal merchants penetrated East Africa due to their preference to deal with Muslims (Ensminger, 1996; Fafchamps, 2000; Shillington, 2012). Also, some entrepreneurs and investors prefer to operate in highly fractionalized areas (Khayesi et al., 2014), and other prefer to do business with member of their own ethnic or linguistic groups (Himbara, 1994; Marris, 1971). Thus, overall, ethnic diversity could determine the rate at which new businesses emerge, and also the density of business in a particular area.

Beyond arguments suggesting that some groups have a cultural propensity towards entrepreneurship, differences in cultural values influence the performance of business (Hofstede, 1984), and thus can explain why different economic outcomes are observed across different cultural groups (Sowell, 1981). A vast literature (see, e.g., Ibrahim & Galt, 2011; Wilson & Portes, 1980) argues that ethnic groups are endowed with different social and cultural institutions that can promote entrepreneurial talent at various levels. These arguments tie in with Lavoie (1991) who suggests that entrepreneurship takes place within and is shaped by culture.

Ethnic diversity could promote new ideas and innovation. A major outcome of ethnic diversity is what Sobel et al. (2010) call cultural capital, which reflects the level of innovation that characterises highly heterogeneous communities. Fafchamps (2000), for instance, argues that ethnic heterogeneity could lead to an increase in the talent pool of a country, and thus

increase the quality of entrepreneurs. It is expected that as people from different ethnic backgrounds interact with each other, there is an increased likelihood of new and innovative ideas emerging. From this perspective, ethnic diversity could be favourable and lead to an increase in the level of new businesses. Put differently, ethnic heterogeneity could lead to variations in entrepreneurial activities, which a priori is good for business development and growth.

Further, existing scholarship has stressed the role of entrepreneurs as innovators (see, e.g., Lipparini & Sobrero, 1994; Schumpeter, 2013; Schumpeter & Opie, 1936; Zhao, 2005). Thus, our first argument why we expect ethnic heterogeneity to affect entrepreneurship is that, fractionalization affects innovation which is a core component of entrepreneurship. This logic suggests the following hypothesis; ethnic diversity would be more positively related to entrepreneurial outcomes through its positive effect on innovation.

On the other hand, ethnic diversity has been associated with higher levels of income inequality and lower levels of trust (see, e.g., Alesina & La Ferrara, 2002; Alesina & Zhuravskaya, 2011; Leigh, 2006) and this can lead to dissent and animosity among groups. These tensions can generate an environment not conducive for business and entrepreneurial growth. Ethnic diversity could also influence entrepreneurship through its effect on social networks and social capital (Greve & Salaff, 2003; Montgomery, 1991; Taylor, 2000). In this regard, where higher diversity makes it difficult for social networks to flourish, entrepreneurship is affected negatively. Particularly, in forming social networks, individuals draw on similarities, and thus high level of ethnic heterogeneity may hinder this. Drawing on this chain of logic, one would expect ethnic fractionalization to influence entrepreneurship negatively. This leads to the hypothesis that ethnic diversity would negatively influence entrepreneurship through its effects on social outcomes such as trust, social networks and social capital.

The preceding discussion thus highlights two seemingly conflicting conceptualizations on how ethnic diversity might affect entrepreneurship. On the one hand, ethnic diversity may promote new ideas and innovations which improve the quality of entrepreneurs, and consequently, entrepreneurship as a whole. On the other hand, ethnic diversity may negatively influence various social factors which could present negative implication to entrepreneurial success. Given these conflicting perspectives on how ethnic heterogeneity could affect entrepreneurship, we chose not to proceed with competing hypotheses on the effect of ethnic diversity on entrepreneurship, as a priori, the effect of fractionalization could go either way. Instead, this study argues that identifying the effect of ethnic diversity on entrepreneurship is an empirical task, and thus we set out to quantitatively evaluate the extent to which ethnic diversity affects entrepreneurial outcomes.

3. Data and Empirical Approach

3.1.Data

This study pools together data from several different sources. The two major sources are discussed here¹. Data on entrepreneurship related outcomes is collected from the World Bank's database. Data on ethnic and linguistic fractionalization is drawn from Alesina and Zhuravskaya (2011).

Alesina and Zhuravskaya (2011) construct measures of ethnolinguistic fractionalization for a cross-section of countries. The indices of fractionalization are calculated based on data collected from census closest to the year 2000. Thus, in the cross-section of countries, our indices of fractionalization are not for the same year. This is however not a problem given that ethnic fractionalization is highly persistent, and unlikely to change over a short period of time. For our outcome variables, based on data availability, we take the mean value for each country for the five-year period 2006 to 2010². We merge this data with the data on ethnic fractionalization. To ensure that our results are robust to the choice of years, we run robust checks using data for the years 2006 and 2010.

The indices of ethnic and linguistic fractionalization measure the probability that two randomly selected individuals are from different ethnic or linguistic groups. The indices are calculated using the Herfindahl-type fractionalization formulae³. Alesina and Zhuravskaya (2011) first construct indices of fractionalization at the sub-national (regional) level, and then aggregate this to national level indices⁴.

Our measures of entrepreneurial activities include new business density, ease of credit access, cost of building a warehouse, cost of enforcing a contract, cost of registering a property, business start-up cost, depth of credit information, investor protection index and business start-up capital. We also consider the number of procedures involved in building a warehouse, enforcing a contract, registering a property, and starting a business. Other dependent variables include time needed to enforce contract, to register a property, and to start a business. These variables are drawn from the World Bank's Doing Business database.

For regressions with the highest number of observations, our merged dataset reports estimates for 90 countries. Table 1 presents a summary statistics and description of the variables used in the regressions.

INSERT TABLE 1 HERE

3.2. Model Specification

Our primary goal is to establish whether ethnic and linguistic fractionalization is associated with entrepreneurship, conditional on level of economic development and institutional quality. To do this, we adopt a cross-section framework and run regressions of the following form;

¹ We discuss other sources as we introduce them in our analysis.

² Our preference was to take the average of a decade starting from the year 2000 however, due to data limitations we are not able to do that.

³ Where s_{ej} is the share of ethnic group e in country j , $FRACTIONALIZATION_j = 1 - \sum_{e=1}^N s_{ej}^2$

⁴ For details on index construction, see Alesina and Zhuravskaya (2011).

$$E_i = \alpha + \beta F_i + \sigma' X_i + \varepsilon_i$$

Here, E stands for measures of entrepreneurial activities; F represents indices of fractionalization; X is a vector of country level covariates (discussed below), that are likely to affect our outcome variables. ε is the heteroskedastic error term and i indexes countries.

The vector of covariates used here include country level literacy rate, population, per capita GDP, and a measure of institutional quality. These variables are drawn from the World Bank database. Consistent with Easterly (2007) our measure of institutional quality is the average of the six indicators of governance quality reported in the World Bank's Governance Indicators database⁵. Other covariates include the share of the major religious groups in a population (i.e., Muslim, Protestant and Catholic), and also the legal origin of countries (La Porta et al., 1999).

We run baseline OLS with standard errors adjusted for heteroskedasticity. OLS robust estimates account for issues of heteroskedasticity and normality, and therefore deal with observations that have relatively large leverage and residuals.

3.2.1. *Endogeneity*

If there are potential endogeneity issues, the use of OLS is not appropriate. However, in the ethnic diversity literature indices of fractionalization are often taken as exogenous, although some studies have treated them endogenously.⁶ In our case, arguments could be advanced suggesting omitted variable bias.

Endogeneity may emerge as a result of omitted variables or unobservable factors that cannot be controlled or accounted for. In the context of our analysis, endogeneity may emerge if some underlying variables or factors, which are unobservable (i.e., cannot be quantified or recorded), are correlated with both fractionalization and our outcome variables. It can be argued that given the large body of literature that relates fractionalization to several economic and institutional factors, there may be an issue regarding unobserved factors that may affect the interpretation of the correlation between fractionalization and our outcome variables as causal. Therefore, to ensure that our results are robust to potential endogeneity issues, we adopt the 2SLS to deal with endogeneity. The use of these alternative methods acts as a robustness check.

Our choice of external instrument is informed by the seminal work of Michalopoulos (2012) which sheds light on suitable instruments for ethnolinguistic diversity. Michalopoulos (2012) argue that exogenous variables such as variations in land quality and elevation largely inform the formation of ethnolinguistic diversity around the globe. They show that a single ethnic

⁵ The World Bank reports on six measure of institutional quality namely government effectiveness, control of corruption, political stability, voice and accountability, rule of law and regulatory quality

⁶ Using a similar cross-section framework, Easterly and Levine (1997) and Alesina et al. (2003) use the technique of seemingly unrelated regressions. On the other hand, studies such as Wang and Steiner (2015) treat ethnic diversity as endogenous.

identity is more likely to emerge with homogenous land qualities and elevations, whereas heterogeneous geographic conditions may result in more ethnic and linguistic diversity.⁷

Further to the insight by Michalopoulos (2012), another exogenous variable, country distance from the equator (latitude), has also being argued in the literature to be negatively correlated with ethnolinguistic diversity (Ahlerup and Olsson, 2012; Ashraf and Galor, 2013; Michalopoulos, 2012). Ahlerup and Olsson (2012) suggest that species richness or diversity⁸ emerges as a result of isolation and adaption. They argue that species richness increases with proximity to the equator, and variations in human skin colour comes partly from differences in UV radiations which are affected by latitude, altitude and humidity. In fact, evidence suggests that most of the variations in skin colour can be explained by natural variations in UV radiation, by latitude, and also by altitude and precipitation (Chaplin, 2004). While differences in skin colour do not create ethnic groups, classifications of people into groups is often done on the basis of notable differences in skin colour, and this makes the formation and identification of ethnic groups easier and more detailed. Thus, ethnic diversity is often linked with latitude.

Consistent with the existing literature, we proceed to instrument our indices of fractionalization with latitude, variations in land quality and elevation.⁹ We argue that the exclusion restriction for using these instruments also holds as the main channel through which these exogenous geographic features can affect entrepreneurial outcomes is fractionalization. IV diagnostic test results reported in Table 4 also support the validity of these instruments.

4. Results and Discussions

Table 2 presents results for the association between fractionalization and entrepreneurial outcomes. Panel A presents results for the effect of ethnic fractionalization while Panel B presents results for linguistic fractionalization¹⁰.

INSERT TABLE 2 HERE

We find that the effect of fractionalization on new business density is negative. This result is consistent across both measures of fractionalization. Specifically, a standard deviation increase in ethnic and linguistic fractionalization, respectively, is associated with a decline of 0.17 and 0.18 standard deviations in the level of new businesses. This effect size, although relatively weaker compared to other control variables such as per capita GDP and literacy rate, is significant and thus hold practical relevance. Similarly, we find a negative association

⁷ See Michalopoulos (2012) for details on the intuition behind the correlation between geographic variables and ethnolinguistic diversity.

⁸ Species richness refers to the number of different species represented in an ecological community, regions or landscape.

⁹ Studies such as Wang and Steiner (2015) have used latitude, elevation and variation in land quality as instrument for ethnolinguistic diversity. Data on land quality was assembled by Ramankutty et al. (2002) and adopted for use by Michalopoulos (2012). For our analysis, data on latitude, variation in land quality and elevation are taken directly from Michalopoulos (2012). See Michalopoulos (2012) for a detailed description of dataset and how they are constructed. Details on the exogeneity of geographical variable and how they correlate with ethnolinguistic diversity can also be found in Michalopoulos (2012) and Wang and Steiner (2015).

¹⁰ To achieve brevity, we report only coefficients for our main explanatory variable (fractionalization). Full tables are available on demand.

between both measures of fractionalization and ease of getting credit. This suggests that both ethnic and linguistic heterogeneity makes it difficult for entrepreneurs to access credit for business establishment or expansion. Specifically, a standard deviation increase in ethnic and linguistic fractionalization, respectively, leads to a decline of 0.20 and 0.18 standard deviations in the ease of getting credit index.

Regarding the costs associated with entrepreneurial activities, results show that ethnic fractionalization is associated with higher costs in building a warehouse and enforcing contracts. Here, a standard deviation increase in ethnic fractionalization is associated with an increase of 0.25 and 0.24 standard deviations in warehouse and contract enforcement costs, respectively. Similar results are observed for the association between fractionalization and business start-up costs. A standard deviation increase in ethnic and linguistic fractionalization, respectively, leads to an increase of 0.35 and 0.28 standard deviations in business start-up costs. Compared to other key regressors such as literacy rate, population, institutional quality and per capita GDP, the effect of fractionalization on business start-up cost is relatively bigger. On the other hand, we find no statistically significant effect of fractionalization on property registration costs, and also on business start-up capital.

Results also show a negative effect of fractionalization on depth of credit information and investor protection. Comparing the estimated standardized coefficients, the effects of fractionalization on these indicators are relatively stronger than the effects of other regressors. Specifically, moving from complete ethnic homogeneity to complete heterogeneity is associated with a 0.40 and 0.22 standard deviations decrease in credit depth and investor protection, respectively. The effect of fractionalization on depth of credit information suggests that as fractionalization increases the availability of credit information to facilitate lending decisions is affected negatively. Put differently, less credit information becomes available making it difficult to access funds easily. The effect on investor protection indicates that the rights of shareholders or investors are more likely to be abused in ethnically and linguistically heterogeneous areas.

Regarding procedures related to entrepreneurial activities, results show that as fractionalization increases, the procedures associated with contract enforcement, property registration and business start-up increase. For instance, a standard deviation increase in ethnic fractionalization is associated with a 0.18, 0.15 and 0.27 standard deviations increase in procedures for contract enforcement, property registration and business start-up, respectively. Similar results are also observed for linguistic fractionalization. Results however show no significant association between fractionalization and the procedures involved in building a warehouse.

Lastly, we observe that fractionalization increases the time required to complete entrepreneurial activities. Specifically, results show that a standard deviation increase in ethnic fractionalization is associated with an increase of 0.19 and 0.28 standard deviations in property registration time and business start-up time. These results indicate that, compared to homogenous areas, it takes a relatively longer time to start-up businesses in ethnically heterogeneous areas. For linguistic fractionalization, this result holds for property registration

time but not business start-up time as the coefficient here is statistically insignificant. We also find no statistically significant association between both measures of fractionalization and contract enforcement time.

Overall, our results point to a negative effect of ethnic and linguistic heterogeneity on entrepreneurial activities. Precisely, heterogeneity leads to an increase in the procedures, time and costs associated with entrepreneurial activities. Further, it leads to a decline in the density of new businesses, and also makes it difficult to access credit. Investors and shareholders are also more vulnerable in heterogeneous areas as fractionalization influences the investor protection index negatively.

Next, we examine if our results are robust to potential endogeneity issues using the 2SLS technique. 2SLS results are reported in Table 3. Overall, these results largely confirm the conclusions emerging from the OLS estimations. Quite consistently, we find that 2SLS results are consistent with OLS results, however, the coefficients from 2SLS regressions are relatively bigger than those of the OLS. In addition, we find that some coefficients which were statistically insignificant in the OLS now gain significance in the 2SLS regressions. For instance, after controlling for endogeneity, results show that linguistic fractionalization is associated with higher business start-up time and contract enforcement cost. These coefficients were statistically insignificant in the OLS but are now significant in the 2SLS. Thus, overall, it is evident that OLS results understate the effect of fractionalization on entrepreneurial outcomes. Nonetheless, the emerging conclusion of a negative effect of fractionalization on entrepreneurial activities is still valid.

Several different arguments can explain these results. Particularly, there are several channels through which fractionalization affects entrepreneurship. First, we consider trust as a channel. A large body of literature find a negative association between fractionalization and trust (see, eg., Alesina & La Ferrara, 2002; Alesina & Zhuravskaya, 2011; Leigh, 2006). Thus, trust is lower in more heterogeneous communities. This could occur because in highly fractionalized communities, it may be more difficult to enforce a system of social sanctions (Leigh, 2006). Nonetheless, this negative effect of fractionalization on trust presents some implication for entrepreneurship.

Trust plays a significant role in establishing social networks, which is a major factor in entrepreneurial success (Kreiser et al., 2013; Light & Dana, 2013; McEvily & Marcus, 2005; Slotte-Kock & Coviello, 2010). Generally, people prefer to form networks with others they trust, or share family ties with (Khayesi et al., 2014). Consequently, where trust is lower, social networks (and thus social capital) are hindered.

Social networks are important as most economic transactions are hinged on networks. Successful networks become social capital and they are necessary for entrepreneurial success (Carr et al., 2011; De Carolis & Saporito, 2006; Gedajlovic et al., 2013). Particularly, social networks and social capital facilitate the acquisition of resources that promote entrepreneurship (Kotha & George, 2012; Ring et al., 2010; Stam et al., 2014). Greve and Salaff (2003) argue that entrepreneurs build various types of networks depending on the

phase of entrepreneurship. This suggests that social capital evolves over time (Milanov & Fernhaber, 2009), and this evolution is largely dependent on trust. Hence, without trust, entrepreneurial networks are non-existent or at best, weak.

From another perspective, entrepreneurs require information to start business activities and to ensure the continual existence of such businesses (Cooper et al., 1995; Greve & Salaff, 2003; Hansen, 1995; Kuhn & Galloway, 2013). With entrepreneurial networks built on trust, entrepreneurs can access crucial information from knowledgeable others. Furthermore, being in a network shortens the path to information access (Blau, 1977; Granovetter, 1973). This privilege may not extend to people in heterogeneous communities as they are less likely to participate in social groups (Alesina & Ferrara, 2000). On the other hand, higher levels of ethnic diversity may lead to the formation of several social groups as groups may emanate from each ethnic group. However, ties in these groups may be relatively weak, compared to those of homogenous counterparts (La Ferrara, 2002). According to Kreiser et al. (2013) lower ties is associated with a decrease in firm-founding activities. Thus, the negative effect of fractionalization on entrepreneurship could be through its effect on trust and social networks.

Related to information flow, credit allocation is also hinged on information flow. While entrepreneurs depend on information to start business activities, credit allocation bodies also depend on credit information of borrowers. However, information flow is hindered in heterogeneous communities. Evidence suggests that the quality of information declines with heterogeneity (see, e.g., Cook & Cooper, 2003). This relates to our results which suggest that fractionalization is associated with a lower depth of credit information. In fact, the literature on economics of information suggest that in the presence of information asymmetry, credit allocation bodies could employ social networks to mitigate issues of moral hazard and adverse selection (Ghatak & Guinnane, 1999; Stiglitz, 1990; Stiglitz & Weiss, 1990). Given that social networks are negatively influenced by fractionalization, harmful implication emerge and affect both entrepreneurs, who find it difficult to access credit, and credit allocation bodies, who incur significant costs due to information asymmetry. This explains the negative effect of fractionalization on the ease of getting credit.

Another potential channel which could explain the negative association between fractionalization and entrepreneurship is discrimination. Existing research has established a relationship between ethnic diversity and discrimination (see, e.g., Dion & Kawakami, 1996; Williams & Mohammed, 2009). Discrimination is higher in more fractionalized countries. Masurel et al. (2004) argue that discrimination and marginalization compel some ethnic groups to become entrepreneurs. This could be because they are not able to get wage-earning jobs. However, discrimination presents some implications for credit allocation, and is a major component that affects entrepreneurship. For instance, it could determine which entrepreneurs receive credit. In the process, more innovative entrepreneurs may become victims of discrimination. Subsequently, discrimination could hinder the allocation of credit which can present negative implications for entrepreneurship.

Forbes et al. (2006) argue that the motivation to choose a particular person to join an existing entrepreneurial team may not necessarily be based on resource needs. Further, where member additions are necessary, it is likely entrepreneurs may base decisions on similarities in background. This reinforces issues of discrimination, and could prevent the selection of the most resourceful person as the new addition.

Studies such as Cooper et al. (1994), Florin (2005) and Au and Kwan (2009) have emphasized on the importance of start-up capital in the establishment and success of businesses. On the one hand, fractionalization, through discrimination, hinders human capital as it is likely less resourceful individuals may be chosen as new addition to entrepreneurial teams. In essence, discrimination can be costly and result in lower profits (Becker, 2010). On the other hand, fractionalization, through its influence on information flow, may negatively affect access to start-up capital (funds).

The effect of fractionalization on entrepreneurship could also be explained by its effect via economic development. Evidence suggests that there is a negative association between fractionalization and economic growth (see, e.g., Alesina et al., 2003; Easterly & Levine, 1997). The effect of entrepreneurship on economic growth has been a subject of interest for a long time (Sautet, 2013). However, beyond this, economic growth is important for enterprise development (Wennekers et al., 2002). For instance, high growth can increase demand and create new niches for new businesses to fill, and also create expansion opportunities for existing businesses. Further, a growing economy characterized by high income can increase the willingness of individuals to take on more risk by investing in new or existing businesses (Ahlin et al., 2011). Overall, ingredients of economic growth may make entrepreneurship more profitable.

Related to economic growth, another macro-level variable which has been hypothesized to affect entrepreneurship is institutional quality. An extensive literature explores the relationship between entrepreneurial activity and institutional variables such as government regulations and institutional quality (see, e.g., Baumol, 1990; Gohmann et al., 2008; Lim et al., 2010; McMullen et al., 2008; Sobel, 2008; Valdez & Richardson, 2013). For instance, McMullen et al. (2008) show that strong institutions characterized by strong fiscal freedom, monetary freedom and property rights are positively related with entrepreneurial activities. Furthermore, the institutional environment has the potential to affect not only profit opportunities for entrepreneurs, but also the prevalence of entrepreneurial activities and the type of activities to pursue (Gohmann et al., 2008).

In addition, corruption presents some implications for business performance. Particularly, weaker control of corruption may be detrimental to entrepreneurship (Anokhin & Schulze, 2009). Corruption creates barriers to enterprise start-up and development, and may hinder credit allocation (Ahlin et al., 2011; Fisman & Svensson, 2007). Tonoyan et al. (2010) indicate that the prevalence of corruption increases among entrepreneurs when financial and legal institutions are less efficient. Overall, institutional environment affects the success of entrepreneurial activities, and in most cases, where institutions are bad, entrepreneurship is affected adversely. Given that existing literature provides evidence of a negative association

between institutional quality and fractionalization (Alesina & Zhuravskaya, 2011), we can expect institutional quality to be a key channel through which fractionalization affects entrepreneurship negatively. This might explain why we observe a negative association between fractionalization and investor protection, and also the ease of getting capital. Similarly, poor institutional quality may explain why cost, time and procedure involved in business activities are higher in fractionalized areas.

Another potential channel which could explain the negative influence of fractionalization on entrepreneurship is infrastructure. Several studies have observed a negative association between racial heterogeneity and the provision of public goods (see, e.g., Banerjee et al., 2005; Khwaja, 2001; Miguel & Gugerty, 2005). Meanwhile, existing literature has also established a link between infrastructure and entrepreneurship (see, e.g., Audretsch et al., 2015; Van De Ven, 1993; Woolley, 2014). Given the negative influence of fractionalization on public goods, enterprise development may be hindered as a result.

Consider also another important channel of influence in the context of business environment. Conflict has been found to present an environment which is not conducive for investments and business growth (Miguel et al., 2004). On the other hand, ethnic diversity has been found to promote conflict (Reynal-Querol & Montalvo, 2005; Tangerås & Lagerlöf, 2009). This suggests that fractionalization induces an environment which is not conducive for business start-up or development. This phenomenon could explain the observed negative relationship between fractionalization and new business density.

Lastly, we consider the implications of fractionalization on innovation. As indicated earlier, existing conceptualizations suggest that fractionalization could lead to higher levels of innovation (Fafchamps, 2000; Sobel et al., 2010). If this is the case, we would expect a positive effect of fractionalization on entrepreneurial outcomes, given that innovation promotes entrepreneurship (Kirchhoff et al., 2007). However, we find that fractionalization affects entrepreneurship negatively. Two potential inferences may be drawn from this finding. First, this result could suggest that the effect of innovation on entrepreneurship is affected by significant externalities such as the negative influence of fractionalization on mechanisms discussed above. Thus, while fractionalization may promote innovation, the negative effects of fractionalization on other channels that affect entrepreneurship may outweigh the effects via innovation. Second, it could be that the hypothesized positive effect of fractionalization on innovation does not hold. We can easily test this hypothesis using data, and thus we examine the impact of fractionalization on innovation.

Dwelling on the assumption that innovative activities, and their underlying innovation would lead to an increase in research and development (R&D), patent and trademark applications (Kirchhoff et al., 2007; Scherer, 1986), we adopt measures of innovation to reflect these dimensions. Drawing on data from the World Bank, we use number of patent and trademark applications, as well as number of R&D researchers as measures of innovation. We examine the effect of ethnic and linguistic fractionalization on these measures of innovation (Table 4).

INSERT TABLE 3 HERE

Results for the association between fractionalization and innovation are presented in Table 4. We find that contrary to the hypothesized relationship between fractionalization and innovation, both ethnic and linguistic fractionalization have a negative effect on innovation. Specifically, as fractionalization increases, the numbers of R&D researchers as well as patent and trademark applications reduce. A possible mechanism which could explain this effect is trust. Of course, as discussed earlier, ethnic diversity could lead to the emergence of new ideas. Also, highly heterogeneous communities may have quality entrepreneurs as they have a large talent pool to choose from (Fafchamps, 2000). However, innovation is better harnessed in groups (Paulus & Nijstad, 2003), and this is disrupted where there is lower trust. This result places further emphasis on the importance of social networks and social capital in the success of entrepreneurial activities.

5. Other Robust and Sensitivity Checks

In this section, we examine the sensitivity of our results to different samples. Given that our main results are based on the average of half a decade (2006 to 2010), we consider the start (2006) and end (2010) of the five-year period used in our main regressions to examine if our results are robust to the choice of years. We also examine the effect of fractionalization using an alternate measure of fractionalization. Alesina et al. (2003) developed a measure of fractionalization different from what Alesina and Zhuravskaya (2011) developed. While Alesina et al. (2003) develop indices of fractionalization using national level census and observations, Alesina and Zhuravskaya (2011) use information from the sub-national (regional) level and then aggregate this into national level indices. We adopt the measure of fractionalization from Alesina et al. (2003) to examine the sensitivity of our results to alternate measures of fractionalization.

For both ethnic and linguistic fractionalization results are virtually the same and are largely consistent with our main results.¹¹ Thus, are results are robust to different measures of fractionalization, and also to the sample used.

6. Summary and Conclusions

This study attempts to examine the impact of ethnic heterogeneity on measures of entrepreneurial activities. We provide evidence of the impact of ethnic and linguistic fractionalization on 16 indicators of entrepreneurial activities. These indicators cover the density of new business, access to credit, depth of credit information, investor protection, and indicators associated with the time, procedures and costs involved in completing enterprise development activities.

¹¹ For brevity, Tables for robust checks are not presented here. However, they can be provided on request.

Quite robustly, results show that ethnic and linguistic fractionalization negatively influences entrepreneurship. We also find that the effect of fractionalization on some entrepreneurial outcomes is relatively stronger than that of macroeconomic variables such as literacy rate, institutional quality and per capita GDP. This suggests that fractionalization may play a greater role than some economic considerations in enterprise development and success.

Potential channels explored include trust, which negatively influences social networks. Across various facets of business, social networks serve as a platform for the acquisition of information and capital. Given that social networks become weaker with higher levels of fractionalization, social capital is affected as a consequence. This, in the end, presents a negative effect on enterprise development. Other potential channels explored include institutional quality, economic growth, discrimination and innovation among others. By exploring these potential channels we have linked past research with well-established theories across the field of entrepreneurship, sociology and economics.

Our results present some important implications for policy. Particularly, countries that seek to pursue entrepreneurship as a significant economic development tool need to focus their attention on the implications of ethnic diversity. It is important that strategies be adopted to offset the effect of ethnic heterogeneity on important factors such as economic development and institutional quality. With regards to the effect of heterogeneity on the discussed social constructs, it is equally important that policies are devised accordingly to offset the negative effects of fractionalization.

For instance, our discussions reveal that trust is major factor that connects and affects several other potential channels. Lower trust induced by fractionalization leads to tensions that can affect social networks and social capital, and even promote discrimination. Therefore, policy aimed at increasing trust in highly fractionalized areas would be a step in the right direction. One potential area to explore is policy promoting education. Evidence suggests that there is a positive correlation between education and trust (Leigh, 2006). Thus, policies targeted towards the promotion of education would be relevant, and could help offset the negative effects of fractionalization on the discussed social outcomes. Furthermore, education efforts and social campaigns could be undertaken to shape the beliefs of younger generations (Valdez & Richardson, 2013).

From a different perspective, policy can adopt various approaches to influence the beliefs and norms of society (see DeJong et al., 2006, 2009; Perkins et al., 1999). For instance, evidence from the field of psychology and sociology suggest that superordinate goals can be effective in reducing tensions between groups (see, e.g., Sherif, 1958). Community development programmes aimed at involving heterogeneous groups in a common task could help minimize inter-group conflicts and promote cooperation. Another approach pertains to the role of categorization itself in promoting conflict. The prevalence of intergroup bias increases when individuals see themselves different from other people. This increases significantly when society places labels such as ‘minorities’ on groups. Gaertner et al. (1989) argues that re-categorization of groups can reduce intergroup bias, and the tensions associated with it. This places importance on policies aimed at promoting homogeneity in communities. Particularly,

it would be worthwhile to promote activities that would highlight the similarities among groups despite their ethnic or cultural differences.

Future research can explore the impact of ethnic diversity on firm performance. In this study, we focus on the impact of ethnic diversity on outcome variables pertaining mainly to business start-up or establishment. Our dependent variables mainly relate to the time, costs and procedures involved in completing entrepreneurial activities. Indicators such as new business density and credit allocation also broadly capture issues pertaining to business establishment. However, it would be interesting to know what happens to the performance of firms after they have been established. Thus, it might be worthwhile to explore the effect of ethnic diversity on various indicators of firm performance. Such as study would contribute significantly to the literature on ethnicity and entrepreneurship, and give a clearer picture of the role ethnic diversity plays in the productivity of firms.

References

- Ahlerup, P., & Olsson, O. (2012). The roots of ethnic diversity. *Journal of Economic Growth*, 17(2), 71-102. doi: 10.1007/s10887-011-9075-0
- Ahlin, C., Lin, J., & Maio, M. (2011). Where does microfinance flourish? Microfinance institution performance in macroeconomic context. *Journal of Development Economics Volume 95, Issue 2*, 105-120.
- Aldrich, H. E., & Waldinger, R. (1990). Ethnicity and entrepreneurship. *Annual Review of Sociology*, 111-135.
- Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., & Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth*, 8(2), 155-194.
- Alesina, A., & Ferrara, E. L. (2000). Participation in Heterogeneous Communities. *The Quarterly Journal of Economics*, 115(3), 847-904. doi: 10.2307/2586898
- Alesina, A., & La Ferrara, E. (2002). Who trusts others? *Journal of Public Economics*, 85(2), 207-234.
- Alesina, A., & Zhuravskaya, E. (2011). Segregation and the Quality of Government in a Cross Section of Countries. *American Economic Review*, 101(5), 1872-1911. doi: doi: 10.1257/aer.101.5.1872
- Anokhin, S., & Schulze, W. S. (2009). Entrepreneurship, innovation, and corruption. *Journal of Business Venturing*, 24(5), 465-476. doi: <http://dx.doi.org/10.1016/j.jbusvent.2008.06.001>
- Ashraf, Q., & Galor, O. (2013). The 'Out of Africa' Hypothesis, Human Genetic Diversity, and Comparative Economic Development. *American Economic Review*, 103(1), 1-46. doi: 10.1257/aer.103.1.1
- Au, K., & Kwan, H. K. (2009). Start-up capital and Chinese entrepreneurs: The role of family. *Entrepreneurship Theory and Practice*, 33(4), 889-908.
- Audretsch, D., Heger, D., & Veith, T. (2015). Infrastructure and entrepreneurship. *Small Business Economics*, 44(2), 219-230. doi: 10.1007/s11187-014-9600-6
- Banerjee, A., Iyer, L., & Somanathan, R. (2005). History, social divisions, and public goods in rural india. *Journal of the European Economic Association*, 3(2-3), 639-647.
- Baumol, W. J. (1990). Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy*, 98(5), 893-921. doi: 10.2307/2937617
- Becker, G. S. (2010). *The Economics of Discrimination*. Chicago, IL: University of Chicago Press.
- Blau, P. M. (1977). A Macrosociological Theory of Social Structure. *American Journal of Sociology*, 83(1), 26-54. doi: 10.2307/2777762
- Bonacich, E. (1973). A Theory of Middleman Minorities. *American Sociological Review*, 38(5), 583-594. doi: 10.2307/2094409
- Butler, J. S., & Herring, C. (1991). Ethnicity and entrepreneurship in America: Toward an explanation of racial and ethnic group variations in self-employment. *Sociological Perspectives*, 34(1), 79-94.
- Carr, J. C., Cole, M. S., Ring, J. K., & Blettner, D. P. (2011). A measure of variations in internal social capital among family firms. *Entrepreneurship Theory and Practice*, 35(6), 1207-1227.
- Chaplin, G. (2004). Geographic distribution of environmental factors influencing human skin coloration. *American Journal of Physical Anthropology*, 125(3), 292-302.
- Cook, K. S., & Cooper, R. M. (2003). Experimental studies of cooperation, trust, and social exchange *Trust and Reciprocity, Interdisciplinary Lesson from Experimental Research* (pp. 209-244). New York: Russell Sage Foundation.
- Cooper, A. C., Folta, T. B., & Woo, C. (1995). Entrepreneurial information search. *Journal of Business Venturing*, 10(2), 107-120.

- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9(5), 371-395.
- De Carolis, D. M., & Saporito, P. (2006). Social capital, cognition, and entrepreneurial opportunities: A theoretical framework. *Entrepreneurship Theory and Practice*, 30(1), 41-56.
- DeJong, W., Schneider, S. K., Towvim, L. G., Murphy, M. J., Doerr, E. E., Simonsen, N. R., . . . Scribner, R. A. (2006). A multisite randomized trial of social norms marketing campaigns to reduce college student drinking. *Journal of Studies on Alcohol and Drugs*, 67(6), 868.
- DeJong, W., Schneider, S. K., Towvim, L. G., Murphy, M. J., Doerr, E. E., Simonsen, N. R., . . . Scribner, R. A. (2009). A multisite randomized trial of social norms marketing campaigns to reduce college student drinking: a replication failure. *Substance Abuse*, 30(2), 127-140.
- Dion, K. L., & Kawakami, K. (1996). Ethnicity and perceived discrimination in Toronto: Another look at the personal/group discrimination discrepancy. *Canadian Journal of Behavioural Science*, 28(3), 203.
- Easterly, W. (2007). Inequality does cause underdevelopment: Insights from a new instrument. *Journal of Development Economics*, 84(2), 755-776.
- Easterly, W., & Levine, R. (1997). Africa's growth tragedy: policies and ethnic divisions. *The Quarterly Journal of Economics*, 1203-1250.
- Ensminger, J. (1996). *Making a market: The institutional transformation of an African society*: Cambridge University Press.
- Fafchamps, M. (2000). Ethnicity and credit in African manufacturing. *Journal of Development Economics*, 61(1), 205-235.
- Fawcett, J. T., & Gardner, R. W. (1994). Asian immigrant entrepreneurs and non-entrepreneurs: A comparative study of recent Korean and Filipino immigrants. *Population and environment*, 15(3), 211-238.
- Fisman, R., & Svensson, J. (2007). Are corruption and taxation really harmful to growth? Firm level evidence. *Journal of Development Economics*, 83(1), 63-75.
- Florin, J. (2005). Is venture capital worth it? Effects on firm performance and founder returns. *Journal of Business Venturing*, 20(1), 113-135.
- Forbes, D. P., Borchert, P. S., Zellmer-Bruhn, M. E., & Sapienza, H. J. (2006). Entrepreneurial team formation: An exploration of new member addition. *Entrepreneurship Theory and Practice*, 30(2), 225-248.
- Forment, C. A. (1989). Political practice and the rise of an ethnic enclave. *Theory and Society*, 18(1), 47-81.
- Gaertner, S. L., Mann, J., Murrell, A., & Dovidio, J. F. (1989). Reducing intergroup bias: The benefits of recategorization. *Journal of Personality and Social Psychology*, 57(2), 239.
- Gedajlovic, E., Honig, B., Moore, C. B., Payne, G. T., & Wright, M. (2013). Social Capital and Entrepreneurship: A Schema and Research Agenda. *Entrepreneurship Theory and Practice*, 37(3), 455-478. doi: 10.1111/etap.12042
- Ghatak, M., & Guinnane, T. (1999). The Economics of Lending with Joint Liability: Theory and Practice. *Journal of Development Economics, Elsevier, Volume 60(1)*, 195-228.
- Gohmann, S. F., Hobbs, B. K., & McCrickard, M. (2008). Economic Freedom and Service Industry Growth in the United States. *Entrepreneurship Theory and Practice*, 32(5), 855-874. doi: 10.1111/j.1540-6520.2008.00259.x
- Granovetter, M. S. (1973). The Strength of Weak Ties. *American Journal of Sociology*, 78(6), 1360-1380. doi: 10.2307/2776392

- Greve, A., & Salaff, J. W. (2003). Social networks and entrepreneurship. *Entrepreneurship Theory and Practice*, 28(1), 1-22.
- Hansen, E. L. (1995). Entrepreneurial networks and new organization growth. *Entrepreneurship Theory and Practice*, 19(4), 7-20.
- Himbara, D. (1994). The failed Africanization of commerce and industry in Kenya. *World Development*, 22(3), 469-482.
- Hofstede, G. (1984). *Culture's consequences: International differences in work-related values* (Vol. 5): sage.
- Ibrahim, G., & Galt, V. (2011). Explaining ethnic entrepreneurship: an evolutionary economics approach. *International Business Review*, 20(6), 607-613.
- Iyer, G. R., & Jon, M. S. (1999). Ethnic Entrepreneurial and Marketing Systems: Implications for the Global Economy. *Journal of International Marketing*, 7(4), 83-110. doi: 10.2307/25048787
- Khayesi, J. N. O., George, G., & Antonakis, J. (2014). Kinship in Entrepreneur Networks: Performance Effects of Resource Assembly in Africa. *Entrepreneurship Theory and Practice*, 38(6), 1323-1342. doi: 10.1111/etap.12127
- Khwaja, A. I. (2001). Can good projects succeed in bad communities? Collective action in the Himalayas. *Collective Action in the Himalayas (March 2001)*. John F. Kennedy School of Government Faculty Research Working Papers Series RWP01-043.
- Kirchhoff, B. A., Newbert, S. L., Hasan, I., & Armington, C. (2007). The Influence of University R & D Expenditures on New Business Formations and Employment Growth. *Entrepreneurship Theory and Practice*, 31(4), 543-559. doi: 10.1111/j.1540-6520.2007.00187.x
- Kotha, R., & George, G. (2012). Friends, family, or fools: Entrepreneur experience and its implications for equity distribution and resource mobilization. *Journal of Business Venturing*, 27(5), 525-543.
- Kreiser, P. M., Patel, P. C., & Fiet, J. O. (2013). The Influence of Changes in Social Capital on Firm-Founding Activities. *Entrepreneurship Theory and Practice*, 37(3), 539-568.
- Kuhn, K. M., & Galloway, T. L. (2013). With a Little Help From My Competitors: Peer Networking Among Artisan Entrepreneurs. *Entrepreneurship Theory and Practice*, n/a-n/a. doi: 10.1111/etap.12053
- La Ferrara, E. (2002). Self-help Groups and Income Generation in the Informal Settlements of Nairobi. *Journal of African Economies*, 11(1), 61-89.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). The Quality of Government. *Journal of Law, Economics and Organization*, 15(1), 222-279.
- Lavoie, D. (1991). The discovery and interpretation of profit opportunities: Culture and the Kirznerian entrepreneur. *The culture of entrepreneurship*, 33-51.
- Leigh, A. (2006). Trust, Inequality and Ethnic Heterogeneity. *Economic Record*, 82(258), 268-280. doi: 10.1111/j.1475-4932.2006.00339.x
- Light, I., & Dana, L. P. (2013). Boundaries of social capital in entrepreneurship. *Entrepreneurship Theory and Practice*, 37(3), 603-624.
- Lim, D. S. K., Morse, E. A., Mitchell, R. K., & Seawright, K. K. (2010). Institutional Environment and Entrepreneurial Cognitions: A Comparative Business Systems Perspective. *Entrepreneurship Theory and Practice*, 34(3), 491-516. doi: 10.1111/j.1540-6520.2010.00384.x
- Lipparini, A., & Sobrero, M. (1994). The glue and the pieces: Entrepreneurship and innovation in small-firm networks. *Journal of Business Venturing*, 9(2), 125-140.
- Marris, P. (1971). African businessmen in a dual economy. *The Journal of Industrial Economics*, 231-245.

- Masurel, E., Nijkamp, P., & Vindigni, G. (2004). Breeding places for ethnic entrepreneurs: a comparative marketing approach. *Entrepreneurship & Regional Development*, 16(1), 77-86.
- McEvily, B., & Marcus, A. (2005). Embedded ties and the acquisition of competitive capabilities. *Strategic Management Journal*, 26(11), 1033-1055.
- McMullen, J. S., Bagby, D., & Palich, L. E. (2008). Economic freedom and the motivation to engage in entrepreneurial action. *Entrepreneurship Theory and Practice*, 32(5), 875-895.
- Michalopoulos, S. (2012). The Origins of Ethnolinguistic Diversity. *American Economic Review*, 102(4), 1508-1539.
- Miguel, E., & Gugerty, M. K. (2005). Ethnic diversity, social sanctions, and public goods in Kenya. *Journal of Public Economics*, 89(11-12), 2325-2368. doi: <http://dx.doi.org/10.1016/j.jpubeco.2004.09.004>
- Miguel, E., Satyanath, S., & Sergenti, E. (2004). Economic shocks and civil conflict: An instrumental variables approach. *Journal of Political Economy*, 112(4), 725-753.
- Milanov, H., & Fernhaber, S. A. (2009). The impact of early imprinting on the evolution of new venture networks. *Journal of Business Venturing*, 24(1), 46-61.
- Montgomery, J. D. (1991). Social networks and labor-market outcomes: Toward an economic analysis. *The American Economic Review*, 1408-1418.
- Paulus, P. B., & Nijstad, B. A. (2003). *Group creativity: Innovation through collaboration*: Oxford University Press.
- Perkins, H. W., Meilman, P. W., Leichliter, J. S., Cashin, J. R., & Presley, C. A. (1999). Misperceptions of the norms for the frequency of alcohol and other drug use on college campuses. *Journal of American College Health*, 47(6), 253-258.
- Ramankutty, N., Foley, J. A., Norman, J., & McSweeney, K. (2002). The global distribution of cultivable lands: current patterns and sensitivity to possible climate change. *Global Ecology and Biogeography*, 11(5), 377-392. doi: 10.1046/j.1466-822x.2002.00294.x
- Reynal-Querol, M., & Montalvo, J. G. (2005). Ethnic polarization, potential conflict and civil war. *American Economic Review*, 95(3), 796-816.
- Ring, J. K., Peredo, A. M., & Chrisman, J. J. (2010). Business networks and economic development in rural communities in the United States. *Entrepreneurship Theory and Practice*, 34(1), 171-195.
- Sanders, J. M., & Nee, V. (1996). Immigrant Self-Employment: The Family as Social Capital and the Value of Human Capital. *American Sociological Review*, 61(2), 231-249. doi: 10.2307/2096333
- Sautet, F. (2013). Local and Systemic Entrepreneurship: Solving the Puzzle of Entrepreneurship and Economic Development. *Entrepreneurship Theory and Practice*, 37(2), 387-402. doi: 10.1111/j.1540-6520.2011.00469.x
- Scherer, F. M. (1986). Innovation and growth: Schumpeterian perspectives. *MIT Press Books*, 1.
- Schumpeter, J. A. (2013). *Capitalism, socialism and democracy*: Routledge.
- Schumpeter, J. A., & Opie, R. (1936). *The Theory of Economic Development: An Inquiring Into Profits, Capital, Credit, Interest, and the Business Cycle*: Harvard University Press.
- Sherif, M. (1958). Superordinate Goals in the Reduction of Intergroup Conflict. *American Journal of Sociology*, 63(4), 349-356. doi: 10.2307/2774135
- Shillington, K. (2012). *History of Africa*. Basingstoke [etc.]: Palgrave Macmillan.
- Slotte-Kock, S., & Coviello, N. (2010). Entrepreneurship research on network processes: A review and ways forward. *Entrepreneurship Theory and Practice*, 34(1), 31-57.

- Smallbone, D., Kitching, J., & Athayde, R. (2010). Ethnic diversity, entrepreneurship and competitiveness in a global city. *International Small Business Journal*, 28(2), 174-190.
- Sobel, R. S. (2008). Testing Baumol: Institutional quality and the productivity of entrepreneurship. *Journal of Business Venturing*, 23(6), 641-655.
- Sobel, R. S., Dutta, N., & Roy, S. (2010). Does cultural diversity increase the rate of entrepreneurship? *The Review of Austrian Economics*, 23(3), 269-286.
- Sowell, T. (1981). *Ethnic America: a history*: Basic Books.
- Stam, W., Arzlanian, S., & Elfring, T. (2014). Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators. *Journal of Business Venturing*, 29(1), 152-173.
- Stiglitz, J. (1990). Peer Monitoring and Credit Markets. *The World Bank Economic Review*, Volume 4, Number 3, 351-366.
- Stiglitz, J., & Weiss, A. (1990). Credit Rationing in Markets with Imperfect Information. *American Economic Review*, Volume 71, Number 3, 393-410.
- Stiles, C. H., & Galbraith, C. S. (2004). *Ethnic Entrepreneurship: Structure and Process*. Oxford, UK: Elsevier
- Tangerås, T. P., & Lagerlöf, N. P. (2009). Ethnic Diversity, Civil War and Redistribution. *The Scandinavian Journal of Economics*, 111(1), 1-27.
- Taylor, C. R. (2000). The Old-Boy Network and the Young-Gun Effect. *International Economic Review*, 41(4), 871-891.
- Tonoyan, V., Strohmeier, R., Habib, M., & Perlitz, M. (2010). Corruption and Entrepreneurship: How Formal and Informal Institutions Shape Small Firm Behavior in Transition and Mature Market Economies. *Entrepreneurship Theory and Practice*, 34(5), 803-831. doi: 10.1111/j.1540-6520.2010.00394.x
- Valdez, M. E., & Richardson, J. (2013). Institutional Determinants of Macro-Level Entrepreneurship. *Entrepreneurship Theory and Practice*, 37(5), 1149-1175. doi: 10.1111/etap.12000
- Valdez, Z. (2006). Beyond the ethnic enclave: The effect of ethnic solidarity and market opportunity on white, Korean, Mexican and Black Enterprise *Crossing Borders/Constructing Boundaries: Race, Ethnicity, and Immigration* (pp. 341-385).
- Van De Ven, H. (1993). The development of an infrastructure for entrepreneurship. *Journal of Business Venturing*, 8(3), 211-230. doi: [http://dx.doi.org/10.1016/0883-9026\(93\)90028-4](http://dx.doi.org/10.1016/0883-9026(93)90028-4)
- Waldinger, R. (1993). The ethnic enclave debate revisited. *International Journal of Urban and Regional Research*, 17(3), 444-452.
- Wang, C., & Steiner, B. (2015). Can Ethno-Linguistic Diversity Explain Cross-Country Differences in Social Capital?: A Global Perspective. *Economic Record*.
- Weber, M. (1976). *The Protestant Ethic and the Spirit of Capitalism*. London: Allen & Unwin.
- Wennekers, S., Uhlaner, L., & Thurik, R. (2002). Entrepreneurship and its conditions: a macro perspective. *International Journal of Entrepreneurship Education (IJEE)*, 1(1), 25-64.
- Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: evidence and needed research. *Journal of behavioral medicine*, 32(1), 20-47.
- Wilson, K. L., & Portes, A. (1980). Immigrant enclaves: An analysis of the labor market experiences of Cubans in Miami. *American Journal of Sociology*, 295-319.
- Wong, E. F. (1985). Asian American Middleman Minority Theory: The Framework of an American Myth. *Journal of Ethnic Studies*, 13(1), 51-88.
- Woolley, J. L. (2014). The Creation and Configuration of Infrastructure for Entrepreneurship in Emerging Domains of Activity. *Entrepreneurship Theory and Practice*, 38(4), 721-747. doi: 10.1111/etap.12017

Zhao, F. (2005). Exploring the synergy between entrepreneurship and innovation. *International Journal of Entrepreneurial Behavior & Research*, 11(1), 25-41.

Tables

Table 1 – Description and Summary of Variables

Variable	Description	Mean	Median	Std Dev
Ethnic Index	Index of Ethnic Fractionalization	0.36	0.27	0.27
Linguistic Index	Index of Linguistic Fractionalization	0.35	0.31	0.26
New Business Density	New Businesses Registration per 1000 People	0.31	0.42	1.45
Ease of Getting Credit	Ease of Getting Credit Index	9.49	9.51	1.51
Warehouse Cost	Cost to Build a Warehouse (% of average income)	4.99	4.86	1.59
Contract Enforcement Cost	Cost to Enforce a Contract (% of average income)	3.28	3.23	0.54
Property Registration Cost	Cost to Register Property (% of average income)	1.16	1.44	1.19
Business Start-up Cost	Cost to Start a Business (% of average income)	2.54	2.54	1.57
Depth of Credit Information	Depth of Credit Information Index	1.32	1.53	0.53
Business Start-up Capital	Minimum Paid-in Capital Required to Start a Business	3.48	3.29	1.63
Warehouse Building Procedures	Number of Procedures Required to Build a Warehouse	2.71	2.65	0.39
Contract Enforcement Procedures	Number of Procedures Required to Enforce Contract	3.58	3.61	0.17
Property Registration Procedures	Number of Procedures Required to Register Property	1.71	1.79	0.42
Business Start-up Procedure	Number of Procedures Required to Start a Business	1.99	2.00	0.48
Contract Enforcement Time	Time (Days) Required to Enforce Contract	6.26	6.23	0.49
Property Registration Time	Time (Days) Required to Register a Property	3.56	3.67	1.08
Business Start-up Time	Time (Days) Required to Start a Business	3.02	3.11	0.75
Investor Protection	Strength of Investor Protection Index	1.60	1.66	0.33
Literacy	Literacy Rate	4.21	4.43	0.50
Protestant Share	Protestant Share of Population	13.63	2.15	23.63
Muslim Share	Muslim Share of Population	18.36	1.15	32.35
Catholic Share	Catholic Share of Population	34.44	18.60	37.24
English Legal Origin	Country Legal Origin Dummy (La Porta et al., 1999)	0.24	0	0.43
German Legal Origin	Country Legal Origin Dummy (La Porta et al., 1999)	0.07	0	0.25
Socialist Legal Origin	Country Legal Origin Dummy (La Porta et al., 1999)	0.24	0	0.43
Population	Total Population	16.58	16.38	1.52
Institutional Quality	Average of World Bank WGI Institutional Quality Measures	0.79	0.90	0.87
Per Capita GDP	Real GDP per Capita (Current US\$)	4.34	4.05	2.28
Land quality	Variations in land quality in a country from Michalopoulos (2012)	2.65	2.85	1.07
Elevation	Variations in elevation in a country from Michalopoulos (2012)	0.66	0.02	1.42
Latitude	Log latitude of a country	0.45	0.39	0.78

Note: Variables Logged except for Dummy variables and Indices taking values between 0 and 1

Table 2 - Fractionalization and Entrepreneurial Outcomes (OLS Robust Regressions)

	(1) New Business Density	(2) Ease of Getting Credit	(3) Warehouse Cost	(4) Contract Enforcement Cost	(5) Property Registration Cost
<i>Panel A</i>					
Ethnic Fractionalization	-0.95* (0.54) [-0.17]	-1.16** (0.55) [-0.20]	1.45** (0.70) [0.25]	0.48* (0.25) [0.24]	0.56 (0.41) [0.13]
Observations	78	78	90	90	89
R-squared	0.57	0.59	0.27	0.21	0.34
<i>Panel B</i>					
Linguistic Fractionalization	-1.10* (0.59) [-0.18]	-1.10* (0.59) [-0.18]	0.50 (0.57) [0.09]	0.43 (0.31) [0.20]	0.49 (0.51) [0.10]
Observations	69	69	81	81	80
R-squared	0.65	0.64	0.40	0.24	0.32

Robust standard errors, adjusted for heteroskedasticity in parentheses

Standardized coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 2 (Cont'd) - Fractionalization and Entrepreneurial Outcomes (OLS Robust Regressions)

	(6) Business Start-up Cost	(7) Depth of Credit Information	(8) Business Start- up Capital	(9) Warehouse Building Procedures	(10) Contract Enforcement Procedures
<i>Panel A</i>					
Ethnic Fractionalization	2.06*** (0.60) [0.35]	-0.79*** (0.20) [-0.40]	-0.18 (0.92) [-0.03]	0.08 (0.14) [0.05]	0.12* (0.07) [0.18]
Observations	89	82	61	90	90
R-squared	0.50	0.49	0.33	0.30	0.30
<i>Panel B</i>					
Linguistic Fractionalization	1.75** (0.69) [0.28]	-0.69*** (0.22) [-0.33]	1.46 (0.89) [0.21]	0.17 (0.16) [0.11]	0.09 (0.10) [0.13]
Observations	80	73	55	81	81
R-squared	0.58	0.46	0.38	0.33	0.28

Robust standard errors, adjusted for heteroskedasticity in parentheses

Standardized coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 2 (Cont'd) - Fractionalization and Entrepreneurial Outcomes (OLS Robust Regressions)

	(11) Property Registration Procedures	(12) Business Start-up Procedure	(13) Contract Enforcement Time	(14) Property Registration Time	(15) Business Start-up Time	(16) Investor Protection
<i>Panel A</i>						
Ethnic Fractionalization	0.24*	0.47***	0.04	0.77*	0.77**	-0.27**
	(0.13) [0.15]	(0.16) [0.27]	(0.17) [0.02]	(0.46) [0.19]	(0.32) [0.28]	(0.11) [-0.22]
Observations	90	90	90	90	90	90
R-squared	0.36	0.36	0.31	0.18	0.28	0.40
<i>Panel B</i>						
Linguistic Fractionalization	0.29*	0.41**	0.18	1.01*	0.47	-0.24*
	(0.16) [0.18]	(0.20) [0.22]	(0.22) [0.10]	(0.57) [0.24]	(0.37) [0.16]	(0.12) [-0.18]
Observations	81	81	81	81	81	81
R-squared	0.36	0.38	0.31	0.21	0.28	0.45

Robust standard errors, adjusted for heteroskedasticity in parentheses

Standardized coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 3 - Fractionalization and Entrepreneurial Outcomes (2SLS Regressions)

	(1) New Business Density	(2) Ease of Getting Credit	(3) Warehouse Cost	(4) Contract Enforcement Cost	(5) Property Registration Cost
<i>Panel A</i>					
Ethnic Fractionalization	-3.32** (1.58) [-0.59]	-3.77** (1.61) [-0.66]	1.42 (1.17) [0.25]	2.26*** (0.63) [1.12]	2.03* (1.19) [0.47]
Observations	78	78	90	90	89
R-squared	0.57	0.59	0.27	0.21	0.34
Sargan OIR (P-value)	0.2168	0.2525	0.3241	0.3132	0.8417
<i>Panel B</i>					
Linguistic Fractionalization	-3.71* (1.90) [-0.63]	-4.11** (2.00) [-0.69]	2.27 (2.06) [0.39]	2.70*** (0.98) [1.26]	2.41 (2.05) [0.52]
Observations	69	69	81	81	80
R-squared	0.65	0.64	0.40	0.24	0.32
Sargan OIR (P-value)	0.2933	0.2833	0.4045	0.1395	0.2933

Robust standard errors, adjusted for heteroskedasticity in parentheses
Standardized coefficients in brackets
*** p<0.01, ** p<0.05, * p<0.1

Table 3 (Cont'd) - Fractionalization and Entrepreneurial Outcomes (2SLS Regressions)

	(6) Business Start-up Cost	(7) Depth of Credit Information	(8) Business Start- up Capital	(9) Warehouse Building Procedures	(10) Contract Enforcement Procedures
<i>Panel A</i>					
Ethnic Fractionalization	6.83*** (1.54) [1.17]	-1.29*** (0.36) [-0.65]	1.55 (1.50) [0.26]	0.05 (0.36) [0.03]	0.59*** (0.20) [0.91]
Observations	89	82	61	90	90
R-squared	0.50	0.49	0.33	0.30	0.30
Sargan OIR (P-value)	0.7766	0.1015	0.6922	0.8262	0.1032
<i>Panel B</i>					
Linguistic Fractionalization	7.34*** (2.24) [1.19]	-2.15*** (0.76) [-1.02]	2.84 (2.21) [0.42]	-0.26 (0.50) [-0.16]	0.69** (0.29) [1.03]
Observations	80	73	55	81	81
R-squared	0.58	0.46	0.38	0.33	0.28
Sargan OIR (P-value)	0.0133	0.2378	0.4031	0.5722	0.0835

Robust standard errors, adjusted for heteroskedasticity in parentheses
Standardized coefficients in brackets
*** p<0.01, ** p<0.05, * p<0.1

Table 3 (Cont'd) - Fractionalization and Entrepreneurial Outcomes (2SLS Regressions)

	(11) Property Registration Procedures	(12) Business Start-up Procedure	(13) Contract Enforcement Time	(14) Property Registration Time	(15) Business Start-up Time	(16) Investor Protection
<i>Panel A</i>						
Ethnic Fractionalization	0.89*** (0.32) [0.57]	1.69*** (0.55) [0.95]	0.50 (0.46) [0.28]	2.50*** (0.90) [0.62]	2.87*** (0.81) [1.05]	-0.39 (0.36) [-0.32]
Observations	90	90	90	90	90	90
R-squared	0.36	0.36	0.31	0.18	0.28	0.40
Sargan OIR (P-value)	0.3579	0.2381	0.7089	0.1274	0.2336	0.7013
<i>Panel B</i>						
Linguistic Fractionalization	1.49** (0.58) [0.91]	2.07** (0.95) [1.11]	0.54 (0.60) [0.29]	4.04** (1.59) [0.96]	2.97** (1.26) [1.03]	-0.56 (0.46) [-0.43]
Observations	81	81	81	81	81	81
R-squared	0.36	0.38	0.31	0.21	0.28	0.45
Sargan OIR (P-value)	0.4543	0.1036	0.6453	0.3337	0.0670	0.6430

Robust standard errors, adjusted for heteroskedasticity in parentheses

Standardized coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 4 – Fractionalization and Innovation (OLS Robust Regressions)

	(1) R&D Researchers	(2) Patent Applications	(3) Trademark Applications
<i>Panel A</i>			
Ethnic Fractionalization	-1.83** (0.88)	-2.31* (1.29)	-1.76*** (0.62)
Observations	71	76	80
R-squared	0.65	0.60	0.64
<i>Panel B</i>			
Linguistic Fractionalization	-1.49 (0.91)	-2.89** (1.19)	-1.49** (0.61)
Observations	64	68	73
R-squared	0.66	0.68	0.64

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1