Remittances, Ethnic Diversity, and Entrepreneurship in Developing Countries

Isil R. Yavuz
Bryant University

Berrak Bahadir
Florida International University

March, 2021

Abstract

This paper examines the moderating influence of home country ethnic diversity in the relationship between migrant remittances and new business creation in developing countries. By employing the theories of transaction cost, social network, social identity, and trust, we argue that ethnic diversity is negatively associated with new business creation; nevertheless, it strengthens the positive association between migrant remittances and new business creation in developing countries. We test our hypotheses on 64 developing countries over an 11-year period (2006-2016). This paper contributes to entrepreneurship literature by emphasizing the importance of home country ethnic diversity in channeling migrants' remittances to new business creation in developing countries.

1 Introduction

Migrant remittances or transfers of foreign monies by immigrants back to their home countries, is a significant source of foreign capital inflow for developing countries. According to the World Bank, 240 million immigrants worldwide sent $530 billion dollars to developing countries in 2018 (World Bank, 2019). Dilip Ratha, the head of World Bank Global Knowledge Partnership on Migration and Development, recently stated that *"Remittances are on the track to become the largest source of external financing in developing countries"* (World Bank, 2019). Studies have documented that while migrants' remittances are primarily used for consumption purposes such as food, shelter, health, and education (Mergo, 2016; Ndiaye et al., 2016), some portion is also available for savings, credit mobilization, investment in productive assets, and entrepreneurship in developing countries (Kakhkharov, 2018; Vaaler, 2011).

As a result, recent studies in international entrepreneurship research have focused on discovering the conditions under which the potential of migrant remittances for entrepreneurship are more likely to be realized. These studies have examined immigrant-related characteristics, such as their concentration (Vaaler, 2013) and their tenure in host countries (Cummings et al., 2019), as well as home-country conditions, such as institutional quality (Ashby and Seck, 2012), and the size of informal economy (Martinez et al., 2015). In this paper, we set out to extend this new research frontier by investigating whether and how home-county ethnic diversity influences the use of migrant remittances for new business creation in developing countries.

By drawing from the theories of transaction cost, social network, social identity, and trust, we argue that developing country migrants working abroad may be willing to risk their remittances for starting ventures because of special relationships they have with home-country exchange partners. Relationships between immigrants and those who they leave behind resemble a clan

structure characterized by the presence of common social identity, social knowledge, and the lack of opportunism. As prior research has shown, in this context, ease of communication and coordination as well as low levels of opportunism will decrease transaction costs arising from searching, negotiating, or monitoring the use of remittances and would make migrants motivated to transfer their social remittances such as knowledge, skills, and practices as well as their financial remittances for purposes of founding new ventures back home (e.g., Vaaler 2011, 2013).

We also argue that the level of ethnic diversity is positively associated with discrimination, lack of trust, and increased social conflict (Alesnia et al., 1999; Horowitz, 1985) and negatively influences the rate of new business creation in developing countries (Churchill, 2017a). Nevertheless, we argue that ethnic diversity also increases people's reliance on migrants' remittances for new business creation and strengthens the positive association between remittances and new business creation in developing countries. We test these predictions on 64 developing countries from 2006 to 2016 and find empirical support for our hypotheses. The associations we observe prove substantially robust to reasonable alternatives in estimation approach.

Our results contribute to entrepreneurship literature since it is among the first to systematically propose and test how country-level entrepreneurial activity might be affected by migrant remittances and ethnic diversity as well as their interplay. Understanding the impact of ethnic diversity would help policy makers understand the context in which the use of migrant remittances for new business creation thrive and help them devise more effective policies directed at both migrant and local populations to increase entrepreneurial activities in developing countries.

2   Theoretical Development

2.1. Development Outcomes of Remittances

Scholars have long been interested in the relationship between migrant remittances and a variety of economic development outcomes in the recipient countries. A review of the literature reveals two streams of thoughts about the development impact of remittances (Naudé at al., 2017). On the one hand, there has been a pessimistic view of remittances highlighting the negative effects of remittances for development by depleting human capital whereby people with greater skills and education leave the country and send remittances home and by reducing the incentives for those who receive remittances (Chami et al., 2005). In addition, remittances have the potential to appreciate the real exchange rate, thereby reducing the export competitiveness in the receiving economies (Amuedo-Dorantes and Pozo, 2006).

On the other hand, there has been an optimistic view that emphasizes that remittances contribute to poverty reduction (Kaicker, 2014) and consumption smoothing (Balli and Rana, 2015). This research has shown that remittances support household expenditures in food (Akcay and Karasoy, 2017), utilities (Adida and Girod, 2010), and housing (Nguyen et al., 2017) and, in doing so, improve the standards of living for the remittance-receiving populations (Koc and Onan, 2004). Moreover, remittances augment health expenditures, which result in higher life expectancy and infant birth weights, and lower child mortality and incidence rates (Petreski et al., 2018; Zhunio et al., 2011). Remittances also contribute to education expenditures, thereby increasing school enrollment, school completion, and private school enrollment rates in remittance receiving countries (Azizi, 2018).

Research has also confirmed that while remittances are primarily used for consumption purposes, some portion is also available for savings (Grigorian and Melkonyan, 2011), investment in productive assets (Bui et al., 2015), and entrepreneurship in developing countries (e.g., Hass, 2005; Naudé et al., 2017). The line of research examining the effect of remittances on entrepreneurial activity has argued that remittances increase entrepreneurial activity by alleviating

credit and liquidity constraints and helping new business development in remittance receiving countries (Naudé et al., 2017). Remittances can be a significant source of capital to start new businesses (Bedi et al., 2020; Zheng and Musteen, 2018) as well as to finance the existing ones (Woodruff and Zenteno, 2007).

However, the empirical evidence regarding the effect of migrant remittances on entrepreneurship has been rather mixed. Conducted mostly as single country studies, some of the research found a positive relationship while some other work found none, and some even suggested a negative relationship between the effect of remittances and entrepreneurship. For example, Kakhkharov (2018) has shown that in the case of Uzbekistan, receiving remittances increases the likelihood of starting a small business. However, Vasco (2011) found that receiving remittances has no influence on the likelihood of a household owning a business in Ecuador while Amuedo-Dorantes and Pozo (2006) found that migrant remittances are associated with a reduced likelihood of business ownership in the Dominican Republic.

These inconsistent findings have led researchers to focus on discovering the conditions under which remittances are more likely to lead to increased entrepreneurial activity. These studies have started to examine conditions related to immigrant populations, such as their concentration and their tenure in host countries (Cummings et al., 2019; Vaaler, 2013), as well as home-country conditions, such as institutional quality (Ashby and Seck, 2012), and size of the informal economy (Martinez et al., 2015). In this paper, we set out to extend this new research frontier by investigating whether and how home-country ethnic diversity influences the use of migrant remittances for new business creation in developing countries.

2.2 Migrant Remittances and New Business Creation

We argue that migrant remittances can help foster entrepreneurial activities and increase new business creation in developing countries. First, migrants tend to save money when they are abroad. In fact, research shows that migrants' primary motivation for working abroad is to generate surplus capital (Docquier and Marfouk, 2004). Migrants' remittances, however, are not only limited to money. Migrants also send social and technical remittances back to their home countries (Kshetri et al., 2015). The concept of social remittance refers to new ideas, behaviors, identities, and social capital (Levitt, 1998), and the concept of technical remittance refers to the flow of knowledge, skills, and technology from host countries to home (Nichols, 2002). Migrants are particularly adept at this social and technical knowledge transfer because they usually have both sufficient legitimacies in their home countries to be listened to, and sufficient distance to be bringing something new to the table (Williams, 2007), which helps in opportunity identification and exploitation for new business creation in home countries (Rivera and Reyes, 2011; Saxenian, 2006).

Moreover, migrants and those whom they left behind represent a clan structure that shares common familial, ethnic, and friendship ties. Clan structure is distinguished by reciprocity, strong social solidarity, and high levels of trust, mutual support, and loyalty (Portes et al., 2002). "*...Common values and beliefs provide the harmony of interests that erase the possibility of opportunistic behavior...*" (Ouchi, 1980, pg. 138). Clans also create and sustain several routines, rituals, and norms of appropriate behavior and these customary rules apply to the exchange process among the members (Ouchi, 1980). This common understanding regarding how to communicate and coordinate would help migrants transfer their knowledge and ideas to the other members of their clan at low cost. This is particularly important when migrants possess complex, tacit knowledge such as managerial know-how (Regans and McEvily, 2003). Because migrants develop their knowledge and capabilities in host countries experientially over time, such hard to codify

knowledge would comfortably be exploited through new businesses established with people whom migrants know, trust, and value above and beyond their immediate economic exchanges.

For example, Disbudak (2004) demonstrates that the close relatives of migrants both in Turkey and Germany helped Turkish migrants set up new businesses and transfer new manufacturing technologies from Germany to Turkey. Moreover, Buckley and Hofmann (2012) compared remittance receiving and non-remittance receiving households in Tajikistan and found that households receiving remittances are more entrepreneurial than non-remittance receiving households. In their study of Vietnam, Bui et al. (2015) show that remittances sent back by migrants working abroad increase the probability of being engaged in business investment by 9.1%.

Testing these ideas on broad cross-country samples, Vaaler (2011) examines 61 developing economies from 2002 to 2007 and finds partial evidence that migrant remittances increase new business startup rates. Moreover, by utilizing cross-country data from Global Entrepreneurship Monitor (GEM), Zheng and Musteen (2018) document that remittances are positively related to necessity-driven entrepreneurship. By using the same database, Bedi et al. (2020) shows that there is a positive relationship between remittances and early stage and opportunity-driven entrepreneurship, respectively. Thus, we posit that:

Hypothesis 1: Migrants' remittances are positively associated with the rate of new business creation in developing countries.

2.3 Ethnic Diversity and New Business Creation in Developing Countries

Studies examining the relationship between ethnic diversity and new business creation suggest two competing mechanisms: (1) creativity and innovation, and (2) social conflicts and lack of trust. Each mechanism suggests opposing forces that increase or reduce entrepreneurship, respectively. The first perspective asserts that ethnic diversity in a society brings about a greater breadth of

knowledge, encourages exchange of ideas, leads to new and useful combinations of ideas, which in turn encourages entrepreneurial initiatives (Churchill, 2019; Ozgen et al., 2013; Smallbone et al., 2010). According to this perspective, ethnic diversity has potential to promote entrepreneurship through amalgamation of ideas, creativity, and innovation, particularly when the local conditions are right such that the country has good high-quality institutions like those in the developed world (Sobel, Dutta, and Roy, 2010). For example, in their qualitative research using a combination of secondary material and original cases studies, Smallbone et al. (2010) show that ethnic diversity and linguistic diversity spark innovation and provide a competitive advantage to the city of London, UK. Similarly, Sobel et al. (2010) show that higher levels of ethno-linguistic fractionalization increase the rate of entrepreneurship in the presence of good institutions in the US by using evidence from the state-level data. More recently, by using county-level US data, Boudreaux (2020) showed that ethnic diversity is associated with 6 to 8% increase in the number of small firm establishment.

While this research has increased our understanding of the benefits of ethnic diversity, this research has taken place in developed countries. The challenge is that most developing countries have varying but lower institutional quality compared to the UK or the US. Given the relatively lower-quality institutions, instead of promoting entrepreneurship through creativity and innovation, ethnic diversity reduces entrepreneurship through lack of trust and social conflict. In fact, studies show that in developing countries, increased ethnic diversity is associated with increased likelihood of civil conflict (Horowitz, 1985), higher levels of poverty (Churchill and Smyth, 2017c), lower levels of trust (Churchill, 2011; Alesnia et al., 1999; Alesnia and Zhuravskaya, 2011), lower levels of firm performance (Churchill et al., 2017d), lower levels of entrepreneurial activity (Churchill, 2017a; Churchill and Mishra, 2018), and lower levels of economic growth (Churchill et., 2019; Easterly and Levine, 1997).

Ethnic diversity may hinder new firm creation in developing countries such that lack of homogeneity in ethnically diverse societies hinders efficient diffusion of capital and ideas (Churchill and Appau, 2019; Churchill, 2017b). Ethnic groups represent a clan structure characterized by shared social identity based on language, culture, and ethnicity. In developing countries with relatively weaker institutional environments, these structures often replace formal institutions (Khanna and Palepu, 2000; Szkudlarek and Wu, 2018), and in these societies, groups characterized by shared ethnicity represent certain in-groups where more favorable procedures apply to in-group members and other groups are discriminated against in the allocation of resources (Biggart and Delbridge, 2004). Thus, people tend to transact preferentially with members of their own clan. For example, La Ferrara (2002) studied a production cooperative in Nairobi and showed that members who do not share the same ethnicity as the chairperson are 20 to 25% less likely to borrow from the group. That is, ethnic diversity weakens the strength of social networks, lowers the level of trust, and makes the transfer of resources across different ethnic groups more problematic, and this, in turn, results in fewer startups and less entrepreneurial activity. Thus, we posit that:

> *Hypothesis 2: Ethnic diversity is negatively associated with the rate of new business creation in developing countries.*

2.4 The Moderating Role of Ethnic Diversity

As stated above, in developing countries with relatively lower institutional quality, ethnic diversity makes it difficult for social networks to flourish because individuals draw on similarities and a high level of trust to form networks. It is also difficult to overcome linguistic and geographic barriers that exist between ethnic groups (Dow et al., 2016). Thus, individuals tend to view cross-ethnic business as riskier and prefer to transact with members of their own ethnic groups since self-control

arising from a sense of belonging and loyalty prevents opportunism, and minimizes transaction costs (Ouchi, 1980). For example, Fafchamps (2000) studied small manufacturing firms in Kenya and demonstrated that entrepreneurs had preferential access to supplier credits based on their ethnic affiliations. Churchill and Mishra (2018) studied 322 microfinance institutions (MFIs) from 45 developing countries and found that ethnic diversity negatively impacted startups via its effect on MFIs' group lending and outreach.

We argue that the risk in transacting across ethnic groups will increase the reliance on migrant remittances for new business creation in ethnically diverse societies. Limited to the opportunities and resources within their ethnic groups, individuals may increase their dependence on their families and friends living abroad for money and ideas for new business creation. Moreover, the existence of out-groups (i.e., other ethnic groups) makes one's own ethnic identity more salient, and leads to in-group favoritism (Tajfel and Turner, 1979; Turner and Reynolds, 2011). This in turn, increases migrants' motivation even more to transfer their money, knowledge, and ideas to the other members of their clan for new business creation (Bernhard et al., 2006; Evansluong and Ramirez-Pasillas, 2019). That is, in ethnically diverse developing countries, migrant remittances are more likely to be relied on for new business creation while in less ethnically diverse societies, greater markets, more opportunities, less uncertainty, and lower transaction costs decrease the dependence on and weaken the positive effect of migrant remittances on new business creation. Thus, we posit that:

Hypothesis 3: Higher levels of ethnic diversity strengthen the positive association between migrant remittances and the rate of new business creation in developing countries.

Figure 1 summarizes these three theoretical relationships that we empirically test in the next section.

[Insert Figure 1 here]

3   Methodology

3.1 Sample and Data

We use annual data for 64 countries to test our three hypotheses. Table 1 presents the definition of each variable used in the analysis, including their data sources, and expected sign in estimations. Our dependent variable is the annual count of newly registered corporations, New Business Creation, which comes from the World Bank Doing Business Database. This measure includes the businesses that are incorporated as a legal entity and registered in a public registry and excludes those that may be part of the informal economy. On the right-hand side, we test the importance of two key variables. The first variable of interest is migrants' remittances, which are measured as the per capita sum of workers' remittances, compensation of employees and migrant transfers in US Dollars. Remittance data come from the World Bank Development Prospects Database. The second variable we study is the ethnicity measure, which is drawn from Alesina et al. (2003). This variable captures the probability that two randomly selected individuals in a country belong to two different ethnic groups.

Figure 2 presents the bivariate relationship between new business creation and the two variables of interest: remittances and ethnicity. The first graph in Figure 2 shows a nonlinear relationship between new business creation and remittances. We observe a positive association between remittances and new business creation when the level of remittances received by the country is low. However, as remittance level increases, the relationship between the two variables becomes negative.

We also observe a nonlinear trend for the link between new business creation and ethnicity (bottom graph in Figure 2). For lower levels of ethnic fractionalization, we observe a slightly positive association between the two variables. However, this trend becomes negative as ethnic

fractionalization increases. While these bivariate correlations provide some model free evidence for the key relationships we are interested in, they also blur important information as they are shaped by multitude of different factors. In our empirical analysis, we control for several variables to disentangle the direct relationship between new business creation, remittances, and ethnicity.

[Insert Figure 2 here]

The second graph in Figure 2 also shows a nonlinear trend for the link between new business creation and ethnicity. For lower levels of ethnic fractionalization, we observe a slightly positive association between the two variables. However, this trend becomes negative as ethnic fractionalization increases. While these bivariate correlations provide some evidence for the key relationships we are interested in, they also blur important information as they are shaped by a multitude of different factors. In our empirical analysis, we incorporate these factors to disentangle the direct relationship between new business creation, remittances, and ethnicity.

The set of control variables includes several variables that capture the economic, institutional, and international dimensions that capture the attractiveness of each economy for lending and investment (Vaaler, 2011, 2013). Economic variables include real GDP, annual real GDP growth, real GDP per capita, and unemployment. Variables related to international factors include foreign direct investment (FDI) to GDP and trade to GDP ratios. FDI includes foreign equity capital, foreign reinvested earnings, and foreign intra-company loans. Trade is the sum of imports and exports, with higher values indicating a higher level of internationalization. We expect that these international variables should have a positive effect on new business creation. The two variables that capture the origin and quality of the legal system and institutions are the common law and rule of law. Common law is a dummy variable (1 if it is a common law country, 0

otherwise) indicating whether a country has British legal origin or not. Rule of Law is measured as

the extent of the quality of contact enforcements, property rights, the police, and the courts, and

the likelihood of crime and violence (-2.5 to 2.5 integral measure: -2.5 = "weak rule of law," and

2.5 = "strong rule of law"). It is expected to be positively related to new business creation in each

country.

[Insert Table 1 here]

We also include the private credit measure, which is defined as credit issued by deposit

money banks and other financial institutions to the private sector as percent of GDP. This is a

"financial development" measure that has been used in the literature by Rioja and Valev (2004)

and King and Levine (1993) among others. We expect that in countries with higher financial

development levels new business creation should be more likely since financial development eases

access to funding for entrepreneurs. Finally, government spending as a share of GDP is included

to control for the involvement of the government in the economy government and expected to have

a negative effect on new business creation.

3.3 Estimation Strategy

We investigate the effect of remittances and ethnic fractionalization on the rate of new business

creation using the following regression:

(1)   New Business$_{it}$ = α_{it} + β_1 Remit$_{it}$ + β_2 Ethnic$_{it}$ + β_3 Remit$_{it}$ * Ethnic$_{it}$ + $\gamma X_{i,t}$ + μ_i + τ_t + u_{it}

The dependent variable is the annual count of newly registered corporations for country i

in year t. Since we are using a count variable, we opt for a nonlinear estimator and use negative

binomial estimation for panel data. We regress our dependent variable on an intercept, remittances

received by country i at time t, and the ethnicity variable to capture the importance of ethnic fractionalization and the moderator variable to assess the importance of the fractionalization variables for the relationship between the rate of new business creation and remittances. $X_{i,t}$ is a vector of time-varying controls, μ_i is a country fixed effect, τ_t is time dummies for each year and u_{it} is an error term. All variables are lagged one year to minimize the simultaneity bias that may arise between the variables and new business creation.

To start with, we only include the control variables to test their predictive power on the rate of new business creation in developing economies. Then, we test Hypothesis 1 by including the remittances received by country i at time t. We expect to find a positive relationship between remittances and new business creation. To test Hypotheses 2, we include the ethnicity variable to our regression. As we described above in more detail, we expect to find a negative effect of these two variables on the rate of new business creation. Finally, we add the moderator variable that interacts remittances with ethnic fractionalization variables to test the moderating effects.

Studying the effect of remittances on new business creation is subject to potential endogeneity biases due to measurement errors, reverse causation, and omitted variables. Officially recorded remittances may be subject to measurement errors as estimates of unrecorded remittances range from 20 to 200 percent of official statistics on remittances (Freund and Spatafora, 2005). Reverse causality is also a concern since a larger number of new businesses may increase the demand for remittances. Finally, omitted factors can explain both the evolution of remittances and of new business creation, leading to biases in the estimated impact of remittances on new business creation.

To address the potential endogeneity concerns, we perform instrumental variable (IV) estimation to capture the exogenous variation in remittances. Specifically, we use economic

conditions in the remittance-source countries (i.e., the countries where migrants sending remittances reside) to instrument for remittance flows received by countries in our sample. Economic conditions in the countries from which migrants send remittances are likely to affect the volume of remittance inflows but are not expected to affect new business creation in the remittance receiving countries directly. To exploit this exogenous change in remittances, we first identify the top remittance sending countries for each country in our sample, using the Bilateral Migration Database provided by the Global Knowledge Partnership on Migration and Development. Using this dataset, we identify the top five countries that receive the most migrants from each remittance-receiving country. We construct the instrumental variable by multiplying the GDP per capita in each of the top five remittance-sending countries by the share of migration to each of these remittance-sending countries.

4 Results

4.1 Descriptive Statistics and Pairwise Correlations

Table 2 reports descriptive statistics and Table 3 reports pairwise correlations for all variables used in our analysis. As presented in Table 2, remittances range from $0.11 to $1143, with an average of $180 per person annually and a standard deviation of $213. New business creation across countries averages approximately 21,498 firms created each year. Means and standard deviations of the control variables are consistent with the general patterns observed in developing countries. The average annual GDP growth rate is 4.09% with a standard deviation of 4.04%, indicating that developing countries experience large fluctuations in GDP growth. Average per capita income is $4,710, which is in line with the low-income levels observed in developing countries.

[Insert Table 2 here]

Pairwise correlations in Table 3 indicate that new business creation is negatively correlated with remittances and positively correlated with ethnicity. While these correlations do not provide support for Hypotheses 1 and 2, a systematic evaluation is needed to reach conclusive evidence for the relationship between new business creation, remittances, and ethnic diversity. We discuss these results in the next section.

[Insert Table 3 here]

4.3 Main Results

We first investigate the effects of the control variables on new business creation. The first column in Table 4 presents these results. Among the control variables, several of them have the expected signs and are significant. These variables include population, GDP per capita, the common law dummy, and the trade to GDP ratio. The other variables, although they have the expected signs, are not significant determinants of the rate of new business creation in developing economies.

[Insert Table 4 here]

The second column in Table 4 tests the effect of remittances on the new business creation count with all the control variables, including the time and country dummies. The coefficient on remittances is positive and statistically significant, confirming Hypothesis 1. When we include the ethnicity variable in Column 3, it does not come out significant, but the sign of the effect is negative, providing partial evidence for Hypothesis 2.

Column 4 in Table 4 presents the results for the third hypothesis on the moderation effect of ethnicity for the relationship between remittances and the rate of new business creation. Our results show that when interaction term is added, the main effect of ethnicity becomes significant and negative, confirming our second hypothesis. Furthermore, the interaction term is positive and significant, suggesting that ethnic diversity strengthens the positive association between migrant remittances and the rate of new business creation in developing countries. Our moderation analysis indicates that while ethnicity has negative effects on the rate of new business creation in developing countries, it reinforces the positive effect of remittances on new business creation.

Table 5 shows the results from the IV estimation described above. In Column 1, we report the first stage results from the IV estimation, which show that the instrument has a positive and significant effect on remittances. This is consistent with the prior data that economic conditions in remittance-sending countries are important determinants of remittance flows. In the second stage, we use the predicted values from the first stage fixed effect estimation and test our three hypotheses. In Columns 2-4, we present these results. The estimation results show that the coefficient on remittances is 0.22 and the coefficient on the interaction of remittances with the ethnicity index is 0.58. These numbers suggest that for an economy with an ethnicity index of 0.8, a 10 percent increase in remittances is associated with a 6.84% growth rate in the number of new businesses created during the next year.[1] However, for a country with an index of 0.2, which corresponds to the lowest 10 percentile, the overall effect of a 10% increase in remittances per capita on the new business creation growth rate is 3.36%.

---

[1] The negative binomial regression coefficients are interpreted as follows: for a one percent change in the per capita remittances, the difference in the logs of expected counts of the new firms is expected to change by the coefficient, given the other predictor variables in the model are held constant.

To summarize, our IV estimation analysis provides support for a robust positive relationship between remittances and new business creation. More importantly, the negative effect of ethnicity is significant, and the magnitude is quite large, indicating that ethnic diversity hurts new business creation. Finally, our moderation analysis indicates that while ethnicity has negative effects on the rate of new business creation in developing countries, it reinforces the positive effect of remittances on new business creation.

[Insert Table 5 here]

4.3 Robustness

In this section, we present several robustness tests to evaluate the sensitivity of our results to certain features of our regression analysis. First, we test whether using random effects, instead of fixed effects, alters our results. Then, we provide a cross-sectional analysis by taking averages of the variables for each country over the sample period used in our baseline analysis. Finally, we use alternative measures for ethnicity proposed by Alesina and Zhuravskaya (2011) to investigate whether our results hold to different definitions of ethnic fractionalization and segmentation.

In Table 6, we present the results using random effects and show that our results remain similar when we change the estimation method from fixed effects to random effects. While the main effect of our ethnicity variable is not significant, it is still negative, providing partial support for our second hypothesis. When the interaction between the ethnicity and remittances is included, we observe a negative significant effect of the main effect and a positive significant effect of the interaction on the new firm creation, confirming our key hypothesis on the moderation effect of ethnic diversity for the relationship between new firm creation and remittances.

[Insert Table 6 here]

Next, we study the robustness of our results using cross-sectional data, rather than a panel sample. While the advantage of panel data analysis is to control for unobservable country effects, several papers in the literature including Alesina et al. (2003) uses cross-country data over a period given that the index of diversity is usually time invariant. In Table 7, we provide the results from our cross-sectional analysis using averages of the variables for our sample period and in Table 8 we perform a quantile regression to see whether the results hold when we study the median instead of the average country. Both results are in line with our baseline results using panel data with a positive significant coefficient on the interaction term between remittances and ethnicity variable and a negative coefficient on the main effect of ethnicity.

[Insert Table 7 & Table 8 here]

Finally, we study the sensitivity of our results to using alternative measures of ethnic diversity. For this purpose, we use three different indices from Alesina and Zhuravskaya (2011): one index is for fractionalization and two different indices for segregation. (See Alesina and Zhuravskaya, 2011 for further details.) Using the segregation measures, we find strong support for our hypotheses with a significant positive coefficient on the interaction term between remittances and ethnicity. Our results are also in line with our baseline results when we use the fractionalization index. However, in this case the estimates on the interaction term is insignificant.

[Insert Table 9 here]

5 Discussion

In this paper, we examine the interactive effect of migrant remittances and ethnic diversity on new business creation in developing countries. Prior studies have indicated that remittances are primarily used to for consumption purposes such as household expenditures, education (Azizi, 2018), and healthcare (Petreski et al., 2018), and whether they are used for entrepreneurial activities is highly dependent on the context. For example, Naudé et al. (2017) has explicitly emphasized the context-dependent nature of the use of migrant remittances for entrepreneurship and stated that:

> *"Whether remittances are used for business investments and self-employment activities is highly dependent on the context as is shown by the mixed evidence on the relationship between the two. It seems that it matters where the remittances come from, where they go and who is then responsible for the way they are used in the receiving household. As such, more research is necessary to really understand the interactions between remittances and entrepreneurship and to establish under what conditions migrant remittances are likely to fund entrepreneurship in their home countries." (pg. 6)*

Research in international entrepreneurship has recently started to highlight the importance of contextual factors in examining the use of migrant remittances for new business creation (e.g., Ashby and Seck, 2012; Cummings et al., 2019; Vaaler, 2013). Our paper extends this new research frontier by examining the role of ethnic diversity as an important contextual factor. We develop a theoretical model exploring the relationships between migrant remittances, ethnic diversity, and new business creation in developing countries.

First, we show that migrant remittances are positively associated with new business creation in developing countries. This relationship is theoretically important to explore because migrant remittances may be an informal venture capital for developing countries where migrants may be an important channel for injecting not only money but also new knowledge, skills, and practices for new business creation back to their home countries. In line with these arguments, our results

demonstrate that migrant remittances tend to be a robust inflow of informal capital for new business creation in developing countries because of the special relationship that they have with people whom they left behind (Martinez et al., 2015). In that sense, our results reinforce some of the few prior findings (e.g., Bedi et al., 2020; Kakhkharov, 2018; Valeer, 2011; Yang, 2008; Zheng and Musteen, 2018) by clarifying the positive effects of remittances in terms of the creation of new firms.

Next, we find that ethnic diversity is negatively associated with new business creation in developing countries. This provides support for our argument that lack of homogeneity in ethnically diverse societies results in the difficulties in forming social networks across different ethnic groups to access resources, and markets, and achieving greater outreach. While ethnic groups facilitate the diffusion of credit and ideas within their boundaries to fill the voids in formal institutions, and minimizes transaction costs (Ouchi, 1980), out-group members are discriminated against in the allocation of resources, which results in less entrepreneurial activity in more ethnically diverse societies.

Prior research in international entrepreneurship has focused on factors such as home country regulatory institutions (Estrin et al., 2013), cultural values, social norms (Linan and Fernandez-Serrano, 2014), human capital (Estrin et al., 2016), and economic and financial development (Pan and Yang, 2019) to understand why rates of entrepreneurial activities differ across countries, and some of this research also explored whether these factors affect the use of migrant remittances for entrepreneurial activities (e.g., Ashby and Seck, 2012, Cummings et al., 2019). However, this research has given very limited attention to the role of ethnic diversity although *"ethnicity has become a defining feature of a society and presents implications at various levels"* (Churchill, 2017a, pg. 577). This study, therefore, contributes to international entrepreneurship literature by not only revealing ethnic diversity as an important antecedent of

entrepreneurial activity but also uncovering how it shapes the relationship between migrant remittances and entrepreneurial activities in developing countries.

Finally, our results indicate that ethnic diversity positively moderates the relationship between migrant remittances and new business creation such that the positive relationship between migrant remittances and new business creation becomes stronger as ethnic diversity increases. This result is in line with our argument that the difficulties in accessing resources from other ethnic groups increase reliance on migrant remittances for capital and ideas for new business creation. In-group solidarity and favoritism arising from salient common ethnic identity that immigrants share with their clans and communities back home seem to motivate immigrants even more to send their remittances for the purposes of new business creation in ethnically diverse societies.

This finding sheds a new light to why some single country studies have reported a positive effect of remittances for entrepreneurship while others have not. For example, Woodruff and Zenteno's (2007) work regarding Mexico, which is high in ethnic diversity, reported a positive and significant effect of remittances on entrepreneurial activity. They have found that remittances are responsible for almost 20% of the capital invested in microenterprises. The work of Acosta (2020) regarding El Salvador, which scores relatively low on ethnic diversity, on the other hand, revealed no major effect of remittances on self-employment. It is clear from our results that immigrants and their remittances might help new firms overcome the obstacles ethnic diversity impose on their development.

6   Practical Implications

These results have practical implications for policy makers and practitioners. Policy makers in today's developing countries regard entrepreneurship as a mechanism for economic prosperity and

growth. If policy makers want to encourage entrepreneurial activities in their countries, they should recognize the value of their diaspora in new business creation and try to increase immigrants' remittances and help channel this resource for productive uses through various policies.

Moreover, for developing nations, many of whom already have a significant degree of ethnic diversity within them, policy makers should be aware of the implications of ethnic diversity for new business creation and should find ways to build trust across different ethnic groups. For example, social psychology research shows that emphasizing superordinate goals promotes trust and reduces tensions (Sherif, 1958; Gaertner et al., 2000). Moreover, Sert at al. (2020) have recently demonstrated that creating interdependencies among the agents of different kinds leads to increased interaction and cooperation. Thus, policy makers should emphasize superordinate goals and ideals as well as try to find ways to create other interdependencies among different ethnic groups both in their policies and in their discourse.

Furthermore, this research suggests that aspiring entrepreneurs in ethnically diverse developing countries be more cognizant of the value of the relationships that they have with their immigrant friends and families abroad. Given their limited outreach within their home countries, they should look for ways to benefit from immigrants' financial, social, and technical remittances in funding and founding of their new businesses. This would not only work as a solution to liquidity and other human and technological resource requirements, but it can potentially open new international horizons as well.

Finally, it is important for banks and other international financial institutions to realize the potential of migrant remittances for new business creation particularly in ethnically diverse developing countries. These organizations should not miss the opportunity to create high-quality, cost-effective, and reliable products and services customized for immigrants and the companies they fund and found in their home countries.

7 Limitations and Future Research

This paper is not without limitations. First, this study relies on the data from World Bank to measure both new business creation and migrant remittances. While World Bank Data is the most consistent longitudinal cross-country data available, this data does not capture the informal economy. For example, new business creation is measured as the number of newly registered businesses. The problem with this is that since many of the business activities take place in the informal economy in the developing countries (Martinez et al., 2015), the real magnitude of new business creation is underestimated. Similarly, remittance data measures the remittances that are sent through formal channels. Flows through informal channels are believed to be large (Ferriani and Oddo, 2019; Maimbo and Ratha, 2005) but are not captured in this data set. Therefore, the real magnitude of the remittances is also underestimated in this study. Thus, future research should tackle this problem as more comprehensive data on new business creation and remittances becomes available.

Second, the approach we use in this paper is reduced form as opposed to a structural model. When studying the linkages between new business creation, ethnicity, and remittances, a structural framework should enable the investigation of different channels through which remittances can affect entrepreneurial activities. One possible channel, which we aim to capture in this study, works through providing financing for entrepreneurial activities. However, other channels may also be in play, which can be captured using a general equilibrium framework. For example, remittances may create a demand increase for certain products and services. The positive effect of remittances on demand may trigger investment and entrepreneurial activities in related sectors. Investigating these channels should enrich our understanding of how remittances affect entrepreneurial activities. We suggest future research tackle this difficult task.

Finally, this research presents an aggregated quantitative analysis at a macroeconomic level to be able to capture cross-country variances in remittances and ethnic diversity. However, it cannot capture micro mechanisms operating at the individual or firm level. Therefore, additional qualitative studies are needed to better understand the mechanism through which migrant remittances and ethnic diversity plays a role in influencing entrepreneurial activity. We suggest future research focus on qualitative case studies with the recipients of migrant remittances located in more and less ethnically diverse societies.

References

Acosta, P. (2020). Intra-household labor allocations, migration, and remittances in rural El Salvador. *The Journal of Development Studies,* 56(5), 1030-1047. DOI: 10.1080/00220388.2019.1626832

Adida, C., & Girod, D., (2010). Do migrants improve their hometowns? Remittances and access to public services in Mexico, 1995-2000. *Sage Journal,* 44(1), 3-27. https://doi.org/10.1177/0010414010381073

Akcay, S., & Karasoy, A., (2017). Remittances and calories consumption nexus in Algeria. *International Migration,* 55(4). https://doi.org/10.1111/imig.12348

Alesina, A., Baqir, R., & Easterly, W. (1999). Public goods and ethnic divisions. *The Quarterly Journal of Economics*, 114(4), 1243-1284. https://doi.org/10.1162/003355399556269

Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., & Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth*, *8*(2), 155-194.

Alesina, A., & Zhuravskaya, E. (2011). Segregation and the quality of government in a cross section of countries. *The American Economic Review*, 101(5), 1872-1911. DOI: 10.1257/aer.101.5.1872

Amuedo-Dorantes C., & Pozo S., (2004). Workers' remittances and the real exchange rate: a paradox of gifts. *World Development,* 32(8), 1407–17.

Ashby, N. J., & Seck, O. (2012). *Remittances, Institutional quality, and entrepreneurship,* University of Texas at El Paso, 79968.

Azizi, S.S. (2018). The impacts of workers' remittances on human capital and labor supply in developing countries, *Economic Modelling,* 75, 377-396. https://doi.org/10.1016/j.econmod.2018.07.011.

Balli, F., & Rana, F., (2015). Determinants of risk sharing through remittances. *Journal of Banking and Finance,* 55, 107-116. https://doi.org/10.1016/j.jbankfin.2015.02.003

Bedi, J., Jia, S., & Williamson, C.R. (2020). Brain gains: A cross country study on the relationship between remittances and entrepreneurship, *International Journal of Entrepreneurship and Small Business.*

Bernhard, H., Fischbacher, U., & Fehr, E. (2006). Parochial altruism in humans. *Nature*, *442*, 912-915. doi: 10.1038/nature04981.

Biggart, N. W., & Delbridge, R. (2004). Systems of exchange. *Academy of Management Review*, *29*(1), 28-49. https://doi.org/10.5465/amr.2004.11851707

Boudreaux, C. (2020). Ethnic diversity and small business venturing, *Small Business Economics,* 54(1), 25-41. DOI: 10.1007/s11187-018-0087-4

Buckley, C., & Hofmann, E.T. (2012). Are remittances an effective mechanism for development? Evidence from Tajikistan, 1999-2007, 48(8): 1121-1138. https://doi.org/10.1080/00220388.2012.688816

Bui, T., Le, T., & Daly, K. (2015). Microlevel impacts of remittances on household behavior: Vietnam case study, *Emerging Markets Review*, 25, 176-190. https://doi.org/10.1016/j.ememar.2015.10.001

Chami, R., Fullenkamp, C., & Jahjah, S. (2005). Are immigrant remittance flows a source of capital for development? *IMF Staff Papers, 52*(1), 55-81.

Churchill, S. A., (2017a). Fractionalization, entrepreneurship, and the institutional environment for entrepreneurship. *Small Business Economics*, 48, 577-597. https://doi.org/10.1007/s11187-016-9796-8

Churchill, S. A., (2017b). Microfinance and ethnic diversity. *Economic Record,* 93(300), 112-141. https://doi.org/10.1111/1475-4932.12310

Churchill, S.A, & Smyth, R. (2017c). Ethnic diversity and poverty. *World Development,* 95, 285-302. http://doi.org/10.1016/j.worlddev.2017.02.032

Churchill, S.A, Valenzuela, M. R., & Sablah, W. (2017d). Ethnic diversity and firm performance: Evidence from China's materials and industrial sectors. *Empirical Economics*, 53(4), 1711-1731.doi:10.1007/s00181-016-1174-5

Churchill, S.A., & Mishra, (2018). The impact of ethnic diversity on microenterprise startups. *Applied Economics,* 50(40), 4328-4342. https://doi.org/10.1080/00036846.2018.1444264

Churchill, S. A. (2019). Firm financial performance in Sub-Saharan Africa: The role of ethnic diversity. *Empirical Economics,* 57(3), 957-970. doi:10.1007/s00181-018-1463-2

Churchill, S. & Appau, S. (2019). Microfinace in Latin America and the Caribbean: the curse and blessing of ethnic diversity, *Applied Economics*, 1-15. https://doi.org/10.1080/00036846.2019.1679344

Churchill, S. A., Ivanosvki., K. & Bhattacharya, M. (2019). The role of ethnic diversity in sustainable environmental growth: New evidence across different income regions, *Applied Economics,* 51(4), 398-408. https://doi.org/10.1080/00036846.2018.1497854

Cummings, M., Deeds, D. L., & Vaaler, P. M. (2019). Migrant tenure abroad and the differential impact of remittances for entrepreneurship in developing countries. *Available at SSRN 3460442*. http://dx.doi.org/10.2139/ssrn.3460442

Dişbudak, C. (2004). Transnational and local entrepreneurship. *Transnational Social Spaces*, 143-162. https://doi.org/10.4324/9781315235707-14

Docquier, F., & Marfouk, A. (2004). Measuring the international mobility of skilled workers (1990–2000), release 1.0. *The World Bank*.

Dow, D., Cuypers, I., & Ertug, G. (2016). The effects of within-country linguistic and religious diversity on foreign acquisitions. *Journal of International Business Studies*, 47(3), 319-346. DOI: 10.1057/jibs.2016.7

Easterly, W., & Levine, R. 1997. Africa's growth tragedy: policies and ethnic divisions. *The Quarterly Journal of Economics*, *112*(4), 1203-1250. https://doi.org/10.1162/003355300555466

Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing*, *28*(4), 564-580. DOI: 10.1016/j.jbusvent.2012.05.001

Estrin, S., Mickiewicz, T., & Stephan, U. (2016). Human capital in social and commercial entrepreneurship. *Journal of Business Venturing*, *31*(4), 449-467. https://doi.org/10.1016/j.jbusvent.2016.05.003

Evansluong, Q., & Ramirez-Pasillas, M. (2019). The role of family social capital in immigrants' entrepreneurial opportunity creation processes, *International Journal of Entrepreneurship and Small Business,* 36, 1-2. https://doi.org/10.1504/IJESB.2019.096973

Fafchamps, M. (2000). Ethnicity and credit in African manufacturing. *Journal of Development Economics*, *61*(1), 205-235. https://doi.org/10.1016/S0304-3878(99)00068-1

Ferriani, F & Oddo, G. (2019). More distance, more remittance? Remitting behavior, travel cost, and the size of the informal channel. *Economic Notes*, 48(3), 1-23 https://doi.org/10.1111/ecno.12146

Freund, C., & Spatafora, N. (2005). Remittances: transaction costs, determinants, and informal flows. The World Bank Policy Research Working Paper no. 3704.

Gaertner, S., & Dovidio, J. (2000). Reducing intergroup conflict: From superordinate goals to decategorization, recategorization, and mutual differentiation, *Group Dynamics: Theory, Research, and Practice,* 4(1), 98-114. https://doi.org/10.1037/1089-2699.4.1.98

Grigorian, D., & Melkonyan, T., (2011). Destined to Receive: The Impact of Remittances on Household Decision in Armenia. *Review of Development Economics,* 15(1). https://doi.org/10.1111/j.1467-9361.2010.00598.x

Haas, H. (2005). International migration, remittances, and development: myths and facts. *Third World Quarterly*, *26*(8), 1269-1284. https://doi.org/10.1080/01436590500336757

Horowitz, D.L. (1985). *Ethnic groups in conflict.* Berkeley: University of California Press.

Kakhkharov, J. (2018). Migrant Remittances as a Source of Financing for Entrepreneurship,

International Migration, 57(5), 37-55. https://doi.org/10.1111/imig.12531

Khanna,T., & Palepu, K., (2000). "Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups." *The Journal of Finance,* 55, 867-891. https://doi.org/10.1111/0022-1082.00229

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics*, *108*(3), 717-737. https://doi.org/10.2307/2118406

Koc, I., & Onan, I., (2004). International Migrants' Remittances and Welfare Status of the Left-Behind Families in Turkey. *Sage Journal,* 30(1), 78-112. https://doi.org/10.1111/j.1747-7379.2004.tb00189.x

Kshetri, N., Rojas-Torres, D., & Acevedo, M. C. (2015). Diaspora networks, non-economic remittances, and entrepreneurship development: Evidence from some economies in Latin America. *Journal of Developmental Entrepreneurship*, *20* (01), 1550005. https://doi.org/10.1142/S1084946715500053

La Ferrara, E. (2002). Self-help groups and income generation in the informal settlements of Nairobi. *Journal of African Economies*, *11*(1), 61-89. https://doi.org/10.1093/jae/11.1.61

Levitt, P. (1998). Social remittances: Migration driven local-level forms of cultural diffusion. *International Migration Review*, *32*(4), 926-948. https://doi.org/10.1177/019791839803200404

Liñán, F., & Fernandez-Serrano, J. (2014). National culture, entrepreneurship and economic development: different patterns across the European Union. *Small Business Economics*, *42*(4), 685-701. DOI: 10.1007/s11187-013-9520-x

Maimbo, S., & Ratha, D. (2005). *Remittances: Development impact and prospects,* The World Bank, Washington DC.

Martinez, C., Cummings, M.E., & Vaaler, P.M. (2015). Economic informality and the venture funding impact of migrant remittances to developing countries. *Journal of Business Venturing, 30*(4), 526-545. https://doi.org/10.1016/j.jbusvent.2014.10.004

Naudé, W., Siegel, M., & Marchand, K., (2017). Migration, entrepreneurship, and development: critical questions. *IZA Journal of Migration, 6*(5), 1-16. https://doi.org/10.1186/s40176 0160077-8

Nguyen, D., Grote, U., & Nguyen, T., (2017). Migration and rural household expenditures: A case study from Vietnam. *Economic Analysis and Policy,* 56, 163-175. https://doi.org/10.1016/j.eap.2017.09.001

Nichols, S. (2002). Another Kind of Remittance: transfer of agricultural innovations by migrants to their communities of origin. In *Second Colloquium on International Migration: Mexico–California'. University of California, Berkeley (29 March)*.

Ouchi, W. G. (1980). Markets, bureaucracies, and clans. *Administrative Science Quarterly*, 129-141. https://doi.org/10.2307/2392231

Ozgen, C., Nijkamp P., & Poot, J. (2013). The impact of cultural diversity on firm innovation: evidence from Dutch micro-data, *IZA Journal of Migration,* 2(18), 1-24. https://doi.org/10.1186/2193-9039-2-18

Pan, F., & Yang, B. (2019). Financial development and the geographies of startup cities: evidence from China. *Small Business Economics*, *52*(3), 743-758. DOI: 10.1007/s11187-017-9983-2

Petreski, B., Tumanoska, D., Davalos, J., & Petreski, M., (2018). New Light on the Remittances Poverty-Health Nexus in Macedonia. *International Migration,* 56(5). https://doi.org/10.1111/imig.12436

Portes A, Haller W, & Guanizo L. (2002). Transnational entrepreneurs: an alternative form of immigrant economic adaptation. *American Sociology Review,* 67(2), 278-298. DOI: 10.2307/3088896

Reagans, R., & McEvily, B. (2003). Network structure and knowledge transfer: The effects of cohesion and range. *Administrative Science Quarterly*, *48*(2), 240-267. https://doi.org/10.2307/3556658

Rioja, F., & Valev, N. (2004). Does one size fit all? A reexamination of the finance and growth relationship. *Journal of Development Economics*, *74*(2), 429-447.

Rivera, J.P.R., & Reyes, P.O. (2011) Remittances as avenue for encouraging household entrepreneurial activities, *Journal of International Business Research*, 10(3), 85-113.

Saxenian, A., (2006). International mobility of engineers and the rise of entrepreneurship in the periphery. econstor.eu Working Paper no. 2006/142.

Sert, E., Bar-Yam, Y., & Morales, A.J. (2020) Segregation dynamics with reinforcement learning and agent-based modeling, *Scientific Reports*, 10:11771. https://doi.org/10.1038/s41598-020-68447-8

Sherif, M. (1958). Superordinate goals in the reduction of intergroup conflict. *American Journal of Sociology*, 63(4), 349-356.

Smallbone, D., Kitching, J., & Athayde, R. (2010). Ethnic diversity, entrepreneurship, and competitiveness in a global city. *International Small Business Journal*, *28*(2), 174-190. https://doi.org/10.1177/0266242609355856

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. DOI: 10.1007/s11138-010-0112-6

Szkudlarek, B., & Wu, X. (2018). The culturally contingent meaning of entrepreneurship: mixed embeddedness of co-ethnic ties. *Entrepreneurship and Regional Development*, 30(5-6), 585-611. https://doi.org/10.1080/08985626.2018.1432701

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin, and S. Worchel (Eds.), *The Social Psychology of Intergroup Relations* (33-37). Monterey, CA: Brooks/Cole.

Turner, J.C. & Reynolds, K. J. (2011), Self-categorization theory. In Van Lange, Kruglanski and Higgins (ed.), *Handbook of Theories in Social Psychology*, Sage Publications, 399-417. http://dx.doi.org/10.4135/9781446249222.n46

Williams, A. M. (2007). Listen to me, learn with me: International migration and knowledge transfer. *British Journal of Industrial Relations*, *45*(2), 361-382. https://doi.org/10.1111/j.1467-8543.2007.00618.x

Vaaler, P.M. (2011). Immigrant remittances and the venture investment environment of developing countries. *Journal of International Business Studies, 42*(9), 1121-1149. https://doi.org/10.1057/jibs.2011.36

Vaaler, P. M. (2013). Diaspora concentration and the venture investment impact of remittances. *Journal of International Management*, *19*(1), 26-46. https://doi.org/10.1016/j.intman.2012.11.004

Vasco, C. (2011). *The Impact of International Migration and Remittances on Agricultural Production Patterns, Labor Relationships and Entrepreneurship: The Case of Rural Ecuador*, Kassel University Press GmbH, Kassel, Germany.

Woodruff C, & Zenteno R. (2007). Migration Networks and Microenterprises in Mexico. *Journal of Development Economics,* 82(2), 509-528.

World Bank, (2019). Remittances on track to become the largest source of external financing in developing countries. *World Bank.* (April, 23).

Zheng, C., & Musteen, M. (2018). The Impact of Remittances on opportunity based and necessity based entrepreneurial activities. *Academy of Entrepreneurship Journal*, 24(3), 1-13.

Zhunio, M.C., Vishwasrao, S., & Chiang, E.P. (2011). The influence of remittances on education and health outcomes: a cross country study, *Applied Economics,* 44(35), 4605-4616. https://doi.org/10.1080/00036846.2011.593499

Figure 1: Theoretical model
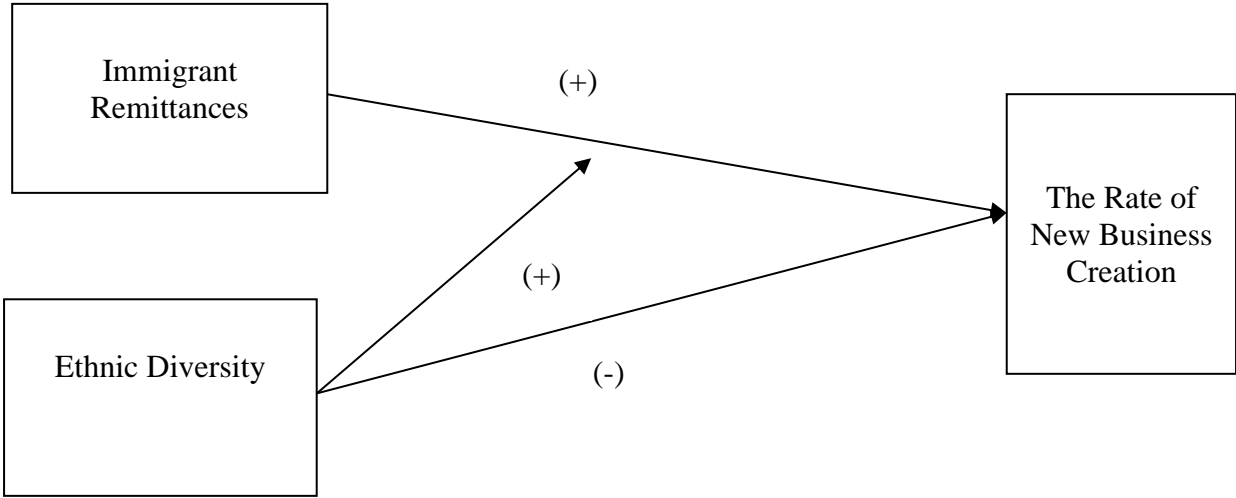
Figure 2: Scatter plot smoothed (Lowess) results for new business creation, remittances, and ethnicity (2006-2016)

bandwidth = .8

bandwidth = .8
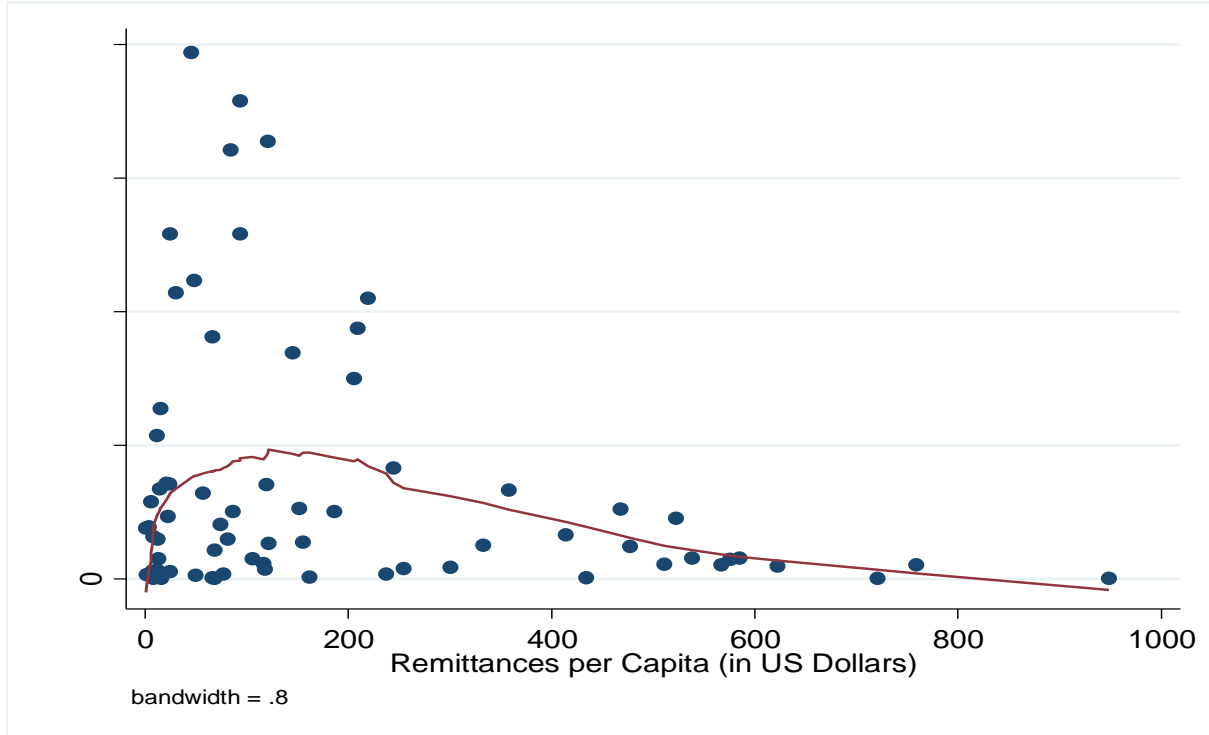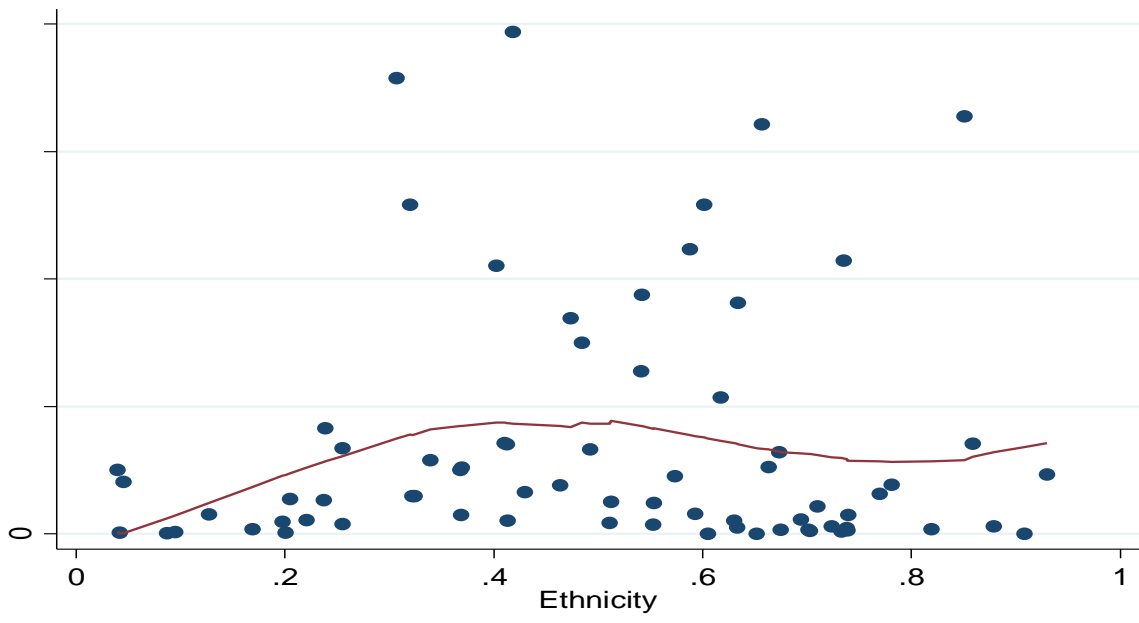
Table 1: Variable definitions and sources

Variable	Variable Definition	Source	Expected sign
New firm creation	Number of newly registered corporations	World Bank, Doing Business Database	Dependent variable
Remittances	Per capita sum of workers' remittances, compensation of employees, and migrant transfers in US	World Bank Development Prospects Database	+
Ethnicity	Index of ethnic fractionalization	Alesina et al. (2003)	-
GDP Growth	Real annual percentage growth	World Bank, World Development Indicators	+
GDP per capita	Real per capita gross domestic product	World Bank, World Development Indicators	+
Trade	Sum of exports and imports divided by GDP	World Bank, World Development Indicators	+
Common Law	0-1 dummy, where 1=common law; 0=otherwise	Kaufman et al. (2008)	
Population	The log of population for each country	World Bank, World Development Indicators	+
FDI inflow	Foreign direct investment as a percentage of GDP	World Bank, World Development Indicators	+
Rule of Law	Measure of the extent of quality of contract enforcement, property rights, the courts, crime and violence for each country	Kaufman et al. (2008)	+
Government Spending to GDP	Percentage of GDP accounted for government and state-owned enterprises	World Bank, World Development Indicators	-
Private Credit to GDP	Private credit by deposit money banks as a percentage of GDP	Beck et al. (2000)	+
Unemployment rate	Number of unemployed as a percentage of the labor force	World Bank, World Development Indicators	-

Table 2: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
New Firm	554	21497.686	40434.754	11	376727
Remittances	554	180.417	213.361	.111	1143.391
Ethnic Diversity	554	.483	.214	.039	.93
GDP growth	554	4.09	4.038	-20	21
GDP per capita	554	4710.803	3399.77	320	15894
Trade to GDP	549	80.067	30.827	21	192
Common law	554	.267	.443	0	1
Log of population	554	16.318	1.76	11.536	20.986
FDI to GDP	554	.041	.043	-.086	.46
Rule of law	554	-.348	.619	-2	1
Gov Spending	549	14.816	4.809	5.039	40.444
Credit to GDP	553	38.291	23.629	2.17	120.07
Unemployment	554	8.262	6.248	0	35

Table 3: Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
New Firm	1.000												
Remittances	-0.215	1.000											
Ethnicity	0.216	-0.325	1.000										
GDP growth	-0.055	-0.235	0.103	1.000									
GDP per capita	0.176	-0.010	-0.195	-0.183	1.000								
Trade to GDP	-0.176	0.118	-0.093	0.003	0.098	1.000							
Common law	0.208	-0.059	0.193	0.027	-0.289	-0.042	1.000						
Log of population	0.416	-0.375	0.245	0.068	-0.013	-0.522	0.024	1.000					
FDI to GDP	-0.130	0.092	-0.014	0.158	0.022	0.285	-0.040	-0.272	1.000				
Rule of law	0.099	0.060	-0.099	-0.048	0.286	0.318	0.109	-0.333	0.144	1.000			
Gov Spending	0.016	0.118	-0.085	-0.206	0.116	0.320	-0.065	-0.331	-0.034	0.331	1.000		
Credit to GDP	0.238	0.047	-0.048	-0.194	0.402	0.456	-0.025	-0.100	0.052	0.482	0.181	1.000	
Unemployment	0.198	0.263	-0.078	-0.201	0.135	0.142	0.031	-0.244	0.029	0.278	0.594	0.070	1.000

Table 4: The effect of remittances and ethnicity on new business creation

VARIABLES	(1) NBR	(2) NBR	(3) NBR	(4) NBR
Remittances per capita		0.06*	0.04	-0.13*
		(0.03)	(0.03)	(0.08)
Ethnicity			-0.54	-1.98***
			(0.38)	(0.70)
Remittances*Ethnicity				0.33**
				(0.14)
GDP Growth	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
GDP per capita	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Trade to GDP	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Common Law	1.29***	1.13***	1.20***	1.29***
	(0.16)	(0.16)	(0.17)	(0.17)
Population	0.12***	0.15***	0.17***	0.14***
	(0.04)	(0.04)	(0.04)	(0.04)
FDI to GDP	0.43	0.34	0.39	0.42
	(0.34)	(0.34)	(0.36)	(0.36)
Rule of Law	0.05	0.01	0.02	0.01
	(0.04)	(0.04)	(0.04)	(0.04)
Government spending to GDP	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Private credit to GDP	0.00	0.00*	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment ratio	-0.00	0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	-0.00	-0.61	-0.69	0.67
	(0.71)	(0.73)	(0.74)	(0.93)
Observations	565	563	554	554
Number of Countries	66	66	65	65

Notes: Panel regressions estimated using negative binomial regression (NBR) with robust Huber- White sandwich standard errors. All regressions include time and country fixed effects. *,**, *** indicate significance at the 0.1, 0.05, 0.01 levels, respectively.

Table 5: The effect of remittances and ethnicity on new business creation – IV Estimation

VARIABLES	(1) First stage FE	(2) Second stage NBR	(3) Second stage NBR	(4) Second stage NBR
Instrument	0.67***			
	(0.20)			
Remittances per capita		0.41***	0.42***	0.22*
		(0.09)	(0.09)	(0.11)
Ethnicity			-1.13***	-3.61***
			(0.37)	(0.98)
Remittances*Ethnicity				0.58***
				(0.21)
GDP Growth	0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
GDP per capita	-0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Trade to GDP	0.00*	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Common Law		1.23***	1.28***	1.10***
		(0.18)	(0.18)	(0.19)
Population	1.31***	-0.48***	-0.45***	-0.55***
	(0.46)	(0.13)	(0.12)	(0.13)
FDI to GDP	1.25***	0.13	0.19	-0.08
	(0.39)	(0.34)	(0.36)	(0.38)
Rule of Law	0.14**	-0.03	-0.02	0.00
	(0.06)	(0.04)	(0.04)	(0.04)
Government spending to GDP	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Private credit to GDP	-0.00**	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment ratio	-0.04***	0.01	0.01**	0.01*
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	-19.92***	8.16***	8.15***	10.75***
	(7.39)	(1.72)	(1.69)	(1.96)
Observations	643	499	491	491
R-squared	0.28			
Number of Countries	68	64	63	63

Notes: Instrumental variable (IV) estimation. Column 1 is estimated using fixed effects (FE) with robust standard errors. Columns 2-4 show the results using the predicted values from stage 1 and estimating the regression using NBR with robust Huber- White sandwich standard errors. All regressions include time and country fixed effects. *,**, *** indicate significance at the 0.1, 0.05, 0.01 levels, respectively.

Table 6: Baselines results using random effects

VARIABLES	(1) RE	(2) RE	(3) RE	(4) RE
Remittances per capita		0.09***	0.07**	-0.07
		(0.03)	(0.03)	(0.08)
Ethnicity			-0.42	-1.62**
			(0.33)	(0.69)
Remittances*Ethnicity				0.28*
				(0.15)
GDP Growth	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
GDP per capita	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Trade to GDP	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Common Law	1.05***	0.85***	0.88***	0.93***
	(0.16)	(0.16)	(0.16)	(0.16)
Population	0.23***	0.28***	0.30***	0.28***
	(0.04)	(0.04)	(0.04)	(0.05)
FDI to GDP	0.46	0.35	0.38	0.41
	(0.36)	(0.37)	(0.39)	(0.39)
Rule of Law	0.05	0.00	0.01	-0.00
	(0.04)	(0.04)	(0.04)	(0.04)
Government spending to GDP	-0.01	-0.01	-0.01	-0.01*
	(0.01)	(0.01)	(0.01)	(0.01)
Private credit to GDP	0.00*	0.00**	0.00*	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment ratio	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Observations	565	563	554	554
Number of countries	66	66	65	65

Notes: Panel regressions estimated using negative binomial regression (NBR) with robust Huber- White sandwich standard errors. All regressions are estimated using random effects and include time dummies. *,**, *** indicate significance at the 0.1, 0.05, 0.01 levels, respectively.

Table 7: Baselines results using cross-sectional data

VARIABLES	(1) Cross-sectional	(2) Cross-sectional	(3) Cross-sectional	(4) Cross-sectional
Remittances per capita		0.09	0.12	-0.17
		(0.08)	(0.09)	(0.17)
Ethnicity			0.71	-1.77
			(0.64)	(1.60)
Remittances*Ethnicity				0.58*
				(0.32)
GDP Growth	-0.05	-0.00	0.00	-0.01
	(0.09)	(0.10)	(0.10)	(0.10)
GDP per capita	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Trade to GDP	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Common Law	0.04	0.08	-0.01	0.06
	(0.25)	(0.26)	(0.27)	(0.27)
Population	0.92***	0.92***	0.88***	0.86***
	(0.09)	(0.09)	(0.10)	(0.10)
FDI to GDP	4.10	2.38	1.48	1.93
	(4.63)	(4.57)	(5.33)	(5.04)
Rule of Law	0.72***	0.74***	0.79***	0.73***
	(0.27)	(0.26)	(0.25)	(0.26)
Government spending to GDP	-0.03	-0.03	-0.02	-0.03
	(0.05)	(0.05)	(0.05)	(0.05)
Private credit to GDP	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment ratio	0.04	0.04	0.04	0.05*
	(0.03)	(0.03)	(0.03)	(0.03)
Constant	-6.46***	-7.13***	-7.03***	-5.18**
	(1.73)	(1.95)	(1.86)	(2.11)
Observations	69	69	68	68

Notes: Cross-sectional regressions estimated using robust standard errors. *,**, *** indicate significance at the 0.1, 0.05, 0.01 levels, respectively.

Table 8: Cross-sectional results using quantile analysis

VARIABLES	(1) Quantile Regression	(2) Quantile Regression	(3) Quantile Regression	(4) Quantile Regression
Remittances per capita		0.13***	0.18	0.02
		(0.00)	(0.14)	(0.02)
Ethnicity			0.17	-1.58***
			(0.56)	(0.38)
Remittances*Ethnicity				0.41***
				(0.08)
GDP Growth	-0.08***	-0.07***	-0.03	-0.01***
	(0.00)	(0.00)	(0.08)	(0.00)
GDP per capita	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Trade to GDP	0.01***	0.01***	0.01*	0.01***
	(0.00)	(0.00)	(0.01)	(0.00)
Common Law	0.26***	0.53***	0.48*	0.40***
	(0.02)	(0.00)	(0.25)	(0.08)
Population	0.81***	0.87***	0.87***	0.86***
	(0.00)	(0.00)	(0.02)	(0.01)
FDI to GDP	0.68***	1.72***	-1.53	1.02**
	(0.04)	(0.07)	(13.05)	(0.48)
Rule of Law	0.59***	0.37***	0.43	0.59***
	(0.03)	(0.00)	(0.43)	(0.10)
Government spending to GDP	-0.08***	-0.08***	-0.09***	-0.05***
	(0.00)	(0.00)	(0.02)	(0.00)
Private credit to GDP	-0.01***	-0.01***	-0.01	-0.01***
	(0.00)	(0.00)	(0.01)	(0.00)
Unemployment ratio	0.05***	0.05***	0.05***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	-4.48***	-6.41***	-6.76***	-6.04***
	(0.05)	(0.04)	(1.18)	(0.02)
Observations	69	69	68	68

Table 9: Ethnicity and new business creation using alternative measures of ethnicity

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Remittances per capita	0.09**	0.08	0.09**	-0.00	0.09**	-0.02
	(0.04)	(0.07)	(0.04)	(0.06)	(0.04)	(0.05)
Fractionalization	-1.13**	-1.22				
	(0.45)	(0.78)				
Remittances*Fractionalization		0.02				
		(0.15)				
Segmentation 1			-1.12	-3.89***		
			(0.73)	(1.35)		
Remittances*Segmentation 1				0.93***		
				(0.36)		
Segmentation 2					-1.31	-5.62***
					(0.80)	(1.61)
Remittances*Segmentation 2						1.40***
						(0.42)
GDP Growth	0.00	0.00	0.01	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP per capita	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Trade to GDP	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Common Law	1.68***	1.68***	1.38***	1.36***	1.36***	1.35***
	(0.29)	(0.29)	(0.28)	(0.29)	(0.28)	(0.28)
Population	0.27***	0.27***	0.29***	0.26***	0.29***	0.25***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.07)
FDI to GDP	0.51	0.51	0.39	0.48	0.41	0.51
	(0.63)	(0.64)	(0.65)	(0.63)	(0.65)	(0.62)
Rule of Law	0.06	0.06	0.07	0.02	0.07	0.02
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Government spending to GDP	-0.02	-0.02	-0.01	-0.02*	-0.01	-0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Private credit to GDP	-0.00	-0.00	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment ratio	0.00	0.00	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	-2.29*	-2.26	-3.07**	-2.36*	-3.00**	-2.23*
	(1.36)	(1.38)	(1.36)	(1.37)	(1.34)	(1.31)
Observations	305	305	305	305	305	305
Number of countries	37	37	37	37	37	37

Notes: Panel regressions estimated using negative binomial regression (NBR) with robust Huber- White sandwich standard errors. All regressions are estimated using random effects and include time dummies. *,**, *** indicate significance at the 0.1, 0.05, 0.01 levels, respectively.