ESSAYS ON MEXICAN MIGRANTS' REMITTANCES

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In memory of José Guadalupe

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Introduction

The local environment where a person lives can influence their behaviour, and for migrants this is not an exception. Since the mid-twentieth century Mexico has been characterised by its migration to the United States. Nowadays, the Mexico-United States migration corridor is the largest in the world and by 2015 Mexican migrants represent almost 26% of the migrant population in the United States.[1] A distinct feature of Mexican migration has been the amount of remittances sent back home. Mexico is among the top five recipients of remittances in the world, ranking fourth below India, China and Phillipines.[2] According to Ratha et al. (2016) the United States-Mexico corridor was the largest in 2015, with an estimated outflow of US $25.2 billion remittances.

Besides the importance and magnitude of the Mexican remittances and migration, is the fact that immigrants tend to spatially cluster at the host country (Bartel, 1989; Gross and Schmitt, 2003; Massey, 1985; Zimmermann et al., 2014). Furthermore, people with whom we interact either regularly or sporadically form our social network, and a social network constitutes a fundamental part on people's lives by spreading information and influencing decisions and behaviour of its members (Easley and Kleinberg, 2010; Jackson, 2010). Additionally, literature suggests that the environment where a person

[1] Department of Economic and Social Affairs, 2015.

[2] The World Bank, Personal remittances received (current US) https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT?end=2016&start=2016&year_high_desc=true

resides can serve as a learning opportunity and affect his labour market options (Andersson and Larsson, 2014; Guiso et al., 2015). In this line, the aim of this thesis is to contribute to the literature by investigating the effect of migrant's local environment on his decisions to remit. The first chapter looks at the local environment at the host country and its effect on remittances, whereas the second chapter investigates migrants' entrepreneurial local environment at both the home and host country and how they affect migrants' decisions to remit for business purposes. The third chapter puts in context the Mexican remittances and how they impact the development of Mexico.

In Chapter 1, I analyse theoretically and empirically the effect that social networks have on migrants' decision to remit and the amount remitted. The results of the theoretical model suggest that migrants in larger networks are less likely to remit. After controlling for the endogeneity of the network, the empirical results go in line with the theoretical prediction. The most conservative result shows that by one standard deviation increase in the network size, remittances decrease by 0.083 standard deviations.

In Chapter 2, I investigate how exposure to entrepreneurship at both the host and home countries affect migrants' decisions to remit for business purposes. After controlling for selection, the results suggest that the home country entrepreneurial exposure has a negative effect on migrants' probability to remit for business purposes whereas the entrepreneurial exposure in the host country has no effect. In particular, the entrepreneurial exposure of Mexicans in the United States is upward biased, meanwhile, the entrepreneurial exposure in Mexico is downward biased.

In Chapter 3, I analyse the importance of Mexican remittances by reviewing relevant literature regarding their impact on diverse aspects of Mexico's development. Moreover, the main determinants of remittances are discussed.

This thesis contributes to the literature of social networks and migration by providing evidence on how social networks of co-ethnics in the host country affect the amount of remittances sent back home, in particular for Mexican migrants in the United States. Moreover, it sheds light on how migrants' exposure to entrepreneurship at the home and host country affect migrants remittances for business purposes, as a proxy for intentions to get involved in entrepreneurial activities. This is a first attempt of measuring entrepreneurial networks at both places, the origin and destination of the migrant.

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Chapter 1

Social Network Size Effects on Remittances: Evidence from Mexican Migrants

Miriam Saldaña Hernández

Abstract

Mexican remittances constitute a significant source of income for migrants' families. This paper analyses theoretically and empirically the effect that social networks have on migrants' decision to remit. Migrants' social network is measured at the host country, United States, and is defined as the ratio of Mexicans living in a county relative to the ratio of Mexicans living in the United States. Using pooled cross sectional data from a Mexican survey I analyse how both the decision to remit and the amount remitted are affected by the size of migrants' social networks. The estimations account for the endogeneity of the network using ratios of past migration in 1960 as an instrumental variable. I find a negative effect regarding the size of network and both the probability to remit and the amount remitted. In addition, I investigate whether this negative effect also occurs for different groups of migrants.

JEL classification: *F22, F24, O15*
Key words: *Remittances, social network, Mexico, migration*

Introduction

In 2014, Mexico received US $24.5 billion in remittances, which account for 2% of Mexico's GDP.[1] Remittances are an important phenomenon for the development of a country.[2] In Mexico, remittances constitute a significant source of income for migrants' families. How the remittances are determined has been studied extensively, starting with the seminal paper of Lucas and Stark (1985), which introduces different motivations to remit. Rapoport and Docquier (2006) provide an extensive survey of the micro and macro determinants of remittances. Recent studies have shown that social networks constitute a fundamental part in the lives of people because social networks help to spread all type of information as well as to influence the decisions and behaviour of its members (see Easley and Kleinberg, 2010, Ch. 16-17). In particular, social networks play an important role for migrants, influencing the decision to migrate and the destination, as well as migrants' labour market outcomes. Recently, literature has focused in this last strand. In this paper, I analyse the effect of the size of social networks on the amount of remittances and the likelihood to remit, relationship that has not been fully explored in the literature.

According to Jackson (2010), people with whom we interact regularly or sporadically can influence our behaviour and decisions; these people form our social network. A group of authors analyse how social networks affect the remitting behaviour of migrants, assuming that migrants tend to follow the remitting behaviour of other immigrants from the same nationality. The re-

[1] According to the World Bank, Mexico ranked fifth in the world just below India, China, Philippines and France.

[2] For some examples of the effect of remittances see: Taylor et al. (2005), Taylor (1992), Stark et al. (1986), Stark et al. (1988), and Barham and Boucher (1998) on poverty and inequality; Amuedo-Dorantes et al. (2007), Alcaraz et al. (2012), Hanson and Woodruff (2003), and Kanaiaupuni and Donato (1999) on health and education; Conway and Cohen (1998), Taylor (1999), Durand et al. (1996), Zarate-Hoyos (2004), and Amuedo-Dorantes and Pozo (2006a) on home community; Woodruff and Zenteno (2001), Goldring (2004), and Orozco (2002) on globalization and entrepreneurship.

sults suggest that there is mixed evidence on the matter. In a study of the district of Nang Rong in Thailand, after accounting for the endogeneity of the network,[3] Garip et al. (2015) find positive network effects on migrants' remitting behaviour. The probability to remit increases when the migrant comes from a household with larger number of remitters, as well as if the proportion of remitters in the home village is high. Aparicio (2014) analyses the remitting behaviour of immigrants from different nationalities living in Spain. She finds that migrants have a higher probability to remit and remit more if they live among more co-ethnics. These results are consistent when she addresses the bias induced by self-selection of immigrants, using the network size at the province level (higher aggregation) as instrument for the network size at the municipality. Moreover, migrants who are surrounded by a higher share of co-national remitters tend to remit more and have higher probabilities of doing so. Although Clark and Drinkwater (2007) also present evidence of household remittance behaviour from ethnic minorities in England and Wales, their findings suggest that households located on highly ethnic concentrated areas are less likely to remit. They use dichotomous variables to account for different percentages of ethnic concentration, but fail to address the endogeneity of these variables.

In the present paper, I use pooled cross section data from the Survey of Migration in the Northern Border of Mexico (EMIF North) from the period 1999-2009. Unlike other Mexican datasets, this dataset provides a higher level of data disaggregation. This allows to exploit variation on networks at different levels (county and state). Specifically, the dataset contains information on the county where the migrant was living in the US. Since the EMIF North

[3] Garip et al. (2015) use the distance between the village where the migrant lives and the district center as instrumental variable. They argue that migrants need to travel to the center in order to migrate, therefore, migrants living far from the center incur in higher costs and thus have a lower probability to remit.

does not collect enough information on the people migrants interact with, to construct the network size I use the data provided by the 2000 US Census. In particular, I use the number of Mexican immigrants living in each county in 2000. Merging these two datasets enables me to analyse how the decision to remit and the amount remitted are affected by the concentration of co-ethnics in the US county where the migrant lived.

Additionally, I analyse the impact of network size on two types of migrants, legal and illegals, to account for possibles differences between these two groups. Alternatively, I study network effects for different sub-samples such as migrant's level of education, type of occupation and income. I also provide a theoretical framework, introducing an optimization model to explain how remittances are affected by social networks formed by co-ethnics. In this model, I consider that social networks can influence the level of remittances that migrants send, this influence would depend on the size of the network and type of preferences the network has. For instance, migrants in larger networks might consider more profitable to invest in the host community than sending money abroad. However, for migrants living in small networks would be much more expensive to invest in a community project and more fruitful to send remittances.

When studying social networks and its effects, there is always the concern of possible endogeneity of the network. In particular, that individuals or migrants self-select into enclaves because of unobserved characteristics that also determine remittances. To address the endogeneity problem I follow Dustmann et al. (2005), Lewis and Card (2007), and McKenzie and Rapoport (2007) who use past migration rates as an instrumental variable for current migration. I use data from the 1960 US Census, which provides information on the number of Mexicans living in each county. Using this data I compute the network size

of Mexicans in 1960 and use it as instrument for the network size in 2000, in a 2SLS model. I also use an alternative measure for the IV, the network size at state level for 2000, which leads to similar results.

My empirical results suggest that migrants living in larger networks tend to remit less and are less likely to do it. Once we control for a full set of covariates and fixed effects for years and states, the result shows that for one standard deviation increase in the network size remittances decrease by 0.083 standard deviations. In addition, when network size is estimated at the state level, I find that the effect of networks on remittances is also negative and higher, increasing one standard deviation in the network size decreases remittances by 0.152 standard deviations. I also find that legal migrants receive a greater impact from the network than illegal migrants. When controlling for the type of migrants, that is returnee or circular, I find that for one standard deviation increase in the network size, illegal migrants respond with a decrease of 0.037 standard deviations whereas legal migrants respond with 0.071 standard deviations decrease.

When studying different sub-samples I find that migrants with low school and holding jobs related to services, receive a higher impact from the network. In particular, in response to an increase of one standard deviation on the network size, remittances for migrants with less than six years of education are reduced by 0.090 standard deviations, and those who have between 7-9 years reduce remittances by 0.096 standard deviations. Similarly, migrants in the service sector reduce remittances by 0.154 standard deviations as response to one standard deviation increase on the network size. Regarding different levels of income, migrants were divided in four quartiles. I find that migrants from the bottom quartile tend to remit 0.108 standard deviations less when the network size increases by one standard deviation, and those in the top

quartile respond to the same change by -0.047 standard deviations.

The remainder of the paper is organized as follows: In the next Section I analyse theoretically the effect of the size of social networks on the money sent back home. The description of the dataset and descriptive statistics are contained in Section 1.2. Section 1.3 includes the empirical methodology and instrumental variable used, as well as the results. Concluding remarks are in the final Section.

1.1 Theoretical Model

This model considers one representative agent, the migrant denoted by the suffix m. The migrant is an altruistic individual, therefore, he cares for the well-being of his family living in the home country denoted by h, and once abroad he sends remittances R. The network size depends on the concentration of co-ethnics living in the locality chosen by the migrant. A highly popular destination for migrants will form a large network, such as Los Angeles or San Francisco. Whereas if this locality is unpopular and only few migrants settle there, they will form a small network.

In this model, it is assumed that networks can influence migrant's decisions. As explained by Burke and Young (2011), individuals choices may depend on norms, custom and social influence, members of a social group are expected to practice certain behaviour and thus reinforce it (e.g. remit or not). Moreover, Fernández (2011) presents what she call as the epidemiological approach, which consist on identifying the effect of culture on economic outcomes, for individuals who share the same institutional environment but whose social beliefs are different, such as the case of migrants.

Usually migrants tend to replicate home country attitudes, social norms,

and behaviour in the host country, specially in large networks. Regularly, larger networks are the more established ones and these can provide extra benefits to migrants such as ethnic goods, or experience traditions and customs as in the home country. Thus, large networks can be seen as an extension of the home country because the migrant can find the same ethics and goods as in his place of origin. On the contrary, in small networks it is less likely (or more expensive) to maintain home country traditions and to get ethnic goods. Also, in small networks homesickness can be more likely due to a small environment. As mentioned before, in this model it is assumed that networks can influence migrant's decisions. Particularly, migrant's decision on how much to remit can depend on the network preferences. For example, the migrant can be ostracised by the network if he decides not to remit but network members expect him to do so. On the other hand, if network's preferences consist of investing in community projects, then the migrant is expected to contribute towards a community project and therefore reducing his probability to remit or remit less money.

Thus, the migrant's utility function U_m, depends on three arguments which are expressed in income units: the migrant's own consumption abroad C_m; his household's consumption in the home country C_h, which is constrained by the earnings of household members Y_h plus the amount of remittances received R; and the enclave effects where the migrant settle ϕ.

Hence, migrant's utility function and budget constraint can be defined as follows:

$$\max_{C_m,\sigma,R} U_m(C_m, Y_h + R, \phi(\sigma, R)) \tag{1.1}$$

s.t.

$$Y_m(\sigma, \theta) = C_m + R \tag{1.2}$$

This model considers that migrant's income depends on individual characteristics θ, as well as on the network size σ. This is in line with Munshi (2003) and Edin et al. (2003), who find that social networks improve the labour market outcomes of its members by referring to high paying jobs or obtaining better wages.[4] Moreover, Wahba and Zenou (2005) show theoretically and empirically that the probability to find a job through networks increases and is concave with the network size. Following this, I assume that if the network is relatively large, then there would be more competition among migrants for available jobs meaning that earnings function will be non-monotonic, that is, $Y'_m(\sigma) < 0$ for $\sigma > \sigma^*$. Whereas, if $\sigma < \sigma^*$ then $Y'_m(\sigma) > 0$ and migrant would benefit from the network size since he can be referred to a better-paid job or more jobs. I also assume that the amount of remittances is strictly less than the income earned by the migrant, namely $R < Y_m$.[5] This is a reasonable assumption, since the migrant has to pay for his own expenses abroad such as food and accommodation and therefore the money he sends abroad will be less than his income.

The network size not only affects migrant's income but also the decision of how much to remit. In large networks co-ethnics might pressure the migrant to invest in the host community to integrate better and reinforce customs and traditions. Meanwhile, in small networks, co-ethnics instead of investing in the host community would like to send money back home. Consequently, the enclave effect $\phi(\sigma, R)$, depends on the size of the network σ and the level of remittances migrant sends out R.

One aspect that is not consideredp in this model, is the possibility that the composition of the network affects the enclave effects, in particular if the

[4] Beaman (2012) finds that relatively established networks improve the probability of a refugee to be employed and to earn a higher wage, while if the network is new, the probability of being employed decreases.

[5] This assumption implies that corner solutions are not considered in this model.

network is composed by low or high-skilled migrants. Unskilled and skilled migrants may have different influence on the migrant's decision to remit or not. However, there is mixed empirical evidence suggesting that migrants at the origin place self-select according their abilities i.e. negative or positive self-selection (Chiquiar and Hanson, 2005; Kaestner and Malamud, 2014; McKenzie and Rapoport, 2010; Orrenius and Zavodny, 2005), whereas others suggest that is not self-selection based on migrants' skills but rather on other factors affecting it (Clemens, 2014). Additionally, Munshi (2003) explains that migrants' abilities are similar across the places of origin and migrants tend to locate themselves in a wide variation of locations in the destination country. Consequently, it is less likely that skilled or unskilled migrants concentrate in specific places.

I assume that migrant's utility is an additive utility function. This assumption allow us to observe independently the marginal effects of each argument that affects migrant's utility. Hence, migrant's utility is determined by the sum of migrant's own consumption, the household consumption, and the enclave effects. Formally, the optimization problem is given by:

$$\max_{\sigma,R} U_m = ln(\theta - \sigma^2 + \psi\sigma - R) + \gamma(Y_h + R) + \phi(\sigma + \pi R) \tag{1.3}$$

The first term $ln(\theta - \sigma^2 + \psi\sigma - R)$ represents the migrant's utility from consumption.[6] As stated before, networks can influence on labour market outcomes, such as income level. For example, the migrant can benefit for having an extra member on his network, since he can get a better job or even an extra work. However, it is not until certain point where an extra member of the network can now represent a potential competitor for new job proposals.

[6]For convenience we use a logarithmic utility function which allows us to preserve the expected utility property.

Thus, there is a trade-off between network size and migrant's income that can be represented by a technological effect ψ. Moreover, migrant's income is positively driven by his own innate characteristics and acquired abilities θ, and restricted by the level of remittances R.

The second argument $\gamma(Y_h + R)$, corresponds to the household's consumption, where γ is a parameter that measures the effect of household members' consumption due to changes in their income Y_h and remittances R. Finally, the third term $\phi(\sigma + \pi R)$ represents the enclave effect, the parameter π captures how much the migrant cares about what the community thinks of him. In other words, π weights the importance of others opinion about migrant's behaviour (i.e. sending or not remittances). Meanwhile, ϕ represent how the network treats the migrant, in other words, the network preferences. In specific, for small networks it is expected that members would prefer to send remittances, since investing in the host community is more expensive, while members of big networks would prefer the migrant invest in the host locality such as in community projects or traditional celebrations.

The first order conditions for the maximization of (1.3) by choice of the network size σ and level of remittances R are given by the following equations:

$$\frac{\partial U_m}{\partial \sigma} = \frac{-2\sigma + \psi}{\theta - \sigma^2 + \psi\sigma - R} + \phi = 0 \tag{1.4}$$

$$\frac{\partial U_m}{\partial R} = \frac{-1}{\theta - \sigma^2 + \psi\sigma - R} + (\gamma + \phi\pi) = 0 \tag{1.5}$$

Solving for σ and R, give us the optimal values for network size and remittances:

$$\sigma^* = \frac{\psi}{2} + \frac{\phi}{2(\gamma + \phi\pi)} \tag{1.6}$$

$$R^* = \theta - \sigma^{*2} + \psi\sigma^* + \frac{\psi - 2\sigma^*}{\phi} \tag{1.7}$$

From equations (1.6) and (1.7) we can observe that migrants who care more about others' opinion π will choose a bigger network, and also the preferences of the network are strongly imposed. Therefore, the network will be better off if the migrant invest in the host community. Also can be observed that the technological effect ψ will be higher for large networks and this will induce to a reduction of the remittances, although ψ has a positive effect on remittances directly. Additionally, from equation (1.7) we can observe that individual characteristics θ affect positively the level of remittances. The effect on remittances of both the enclave ϕ and network size σ depend on the magnitude of the technological effect ψ. If the technological change is larger than the network size, the network size has a positive effect on remittances whereas if ψ is smaller the network size has a negative effect on the money sent back home. Also from this equation we infer that bigger networks tend to reduce the level of remittances. This may be because larger networks can be perceived by migrants as more established networks, therefore, community projects are more likely to take place in these networks.

1.2 Data

1.2.1 Database and Variables construction

The Survey on Migration in the northern border of Mexico (EMIF North) is composed by three different datasets capturing divers migratory flows from North to South.[7] The first dataset capture migrants returning to Mexico from

[7]There is another database, the EMIF South, comprising information of migrants coming from the South of Mexico, heading either for the northern border of Mexico or the US.

the US. The second one contains migrants who were caught and deported by US authorities. The third dataset includes people moving from the northern border of Mexico to southern areas. For the purpose of this paper, I use the first dataset from the EMIF North which provides detailed information on Mexican migrants from the US.

Another study that uses this dataset is Amuedo-Dorantes and Pozo (2006b), they describe in detail the representativeness of the data: "Because a small fraction of Mexican immigrants may never go back to Mexico, our sample may not be representative of the entire universe of Mexican immigrants in the US but, rather, of the universe of Mexican migrants in the US going back to Mexico sometime in their lives, either temporarily (e.g., to visit family, for vacation, etc.) or permanently. Nonetheless, and while there are no official figures on the proportion of Mexican immigrants who never return to Mexico, this percentage is suspected to be relatively low due in part to the geographic proximity of the two countries (Lowell 1992; Lindstrom 1996; Reyes 1997; Orrenius 1999)." (Amuedo-Dorantes and Pozo, 2006b, p.235).

The EMIF North is a project conducted since 1993 to date by the College of the Northern Border (COLEF), the National Population Council (CONAPO), and the Secretariat of Labour and Social Welfare (STPS).[8] Since 1999 the EMIF North is conducted yearly, and it's applied in eight different northern border cities: Tijuana, Mexicali, Nogales, Ciudad Juárez, Piedras Negras, Nuevo Laredo, Reynosa, and Matamoros. These, are the main cities through which the flow of migrants move from one country to another.[9] According to EMIF 2009, more than 90% of the migration flow from Mexico to US and US to Mexico, was concentrated in these eight northern cities.

[8] Although others institutions were joining and leaving the project across the years.

[9] After 2010 were included another 3 cities: Altar, Agua Prieta, Ciudad Acuña. Also, in 2009 was the first time the EMIF North included individuals travelling from US to Mexico by air, who form a new dataset not included in this paper.

The main purpose of this survey is to determine the magnitude and characterize the labour migration flow from Mexico to the United States, capturing socio-demographic and labour information of migrants on both, their place of origin (Mexico) and destination (United States). The EMIF North targets people coming from the US, aged 12 or more who are not US citizens and do not live in the city of the interview. The EMIF North, collects information from individuals who lived in the US, no matter the reason for travel (labour, education, tourism, visit acquaintances). The survey takes place in points where migrants only cross once when they return from the US, like in the arrival gates of the bus station, international crossing bridges or immigration inspection points. On these points people are selected randomly and asked four or five screening questions to avoid including tourist who spent less than a month abroad, US citizens, and residents of the northern border of Mexico.

From 2010 onwards, the methodology to obtain the level of remittances changed. Therefore, I use pooled cross section data for the period 1999-2009. For the mentioned period, the sample contains 71,286 individuals. However, the question on remittances is conditioned on migrants having worked in the US the last 30 days of their stay. Specifically, migrants are asked: *1)* During the last 30 days that you worked, how many dollars did you earn?; *2)* From that amount, how many dollars did you send to your home country (Mexico)?. For this reason, I focus on migrant workers aged 16 to 70 that reported both their income in the last month worked abroad and the share of remittances send back to Mexico. These, represent around 50% of the sample. One advantage of the data is that around 40% of migrants who worked also sent remittances to Mexico.

Since I am interested on network effects, this dataset is crucial because it provides information on the county where the migrants settled. Unlike

other Mexican databases, EMIF North contains disaggregated data on where migrants lived, allowing to exploit any variation in different levels of aggregation. Consequently, we only consider worker migrants that reported the county where they spend most of their time in US. Around 20% of the migrant workers who reported income and remittances did not report the county where they lived, ending with 37% of the total sample. In the Appendix the Figure 1.2 shows the number of Mexicans living in the United States by counties, according to the information of migrants reported in the EMIF North.

To construct the variable of interest, network size, I use data from the US Bureau of the Census 2000. The US Census provides information on the number of Mexicans living in each county. According to Lewis and Card (2007), the US Census from 2000 was more successful than previous ones in counting unauthorized Mexican migrants, this enables to compute a more accurate estimation of the network size. Following Aparicio (2014), a ratio of two ratios is constructed to avoid underestimating small counties. The numerator consist in the proportion of Mexican immigrants in a county, and the denominator corresponds to the proportion of Mexican immigrants living in the US. Specifically, network size is measured as:

$$NetworkSize = \frac{M_c/N_c}{M_{us}/N_{us}}, \tag{1.8}$$

where M represents the number of Mexican immigrants and N the total population, c denotes the county and us stands for the United States. To illustrate, if network size in county c is above one, means that in the county reside a higher percentage of Mexicans relative to the national average. On the other hand, if network size is below one, means that national average of Mexicans is higher than the average living in that county. Figure 1.1 plots the network

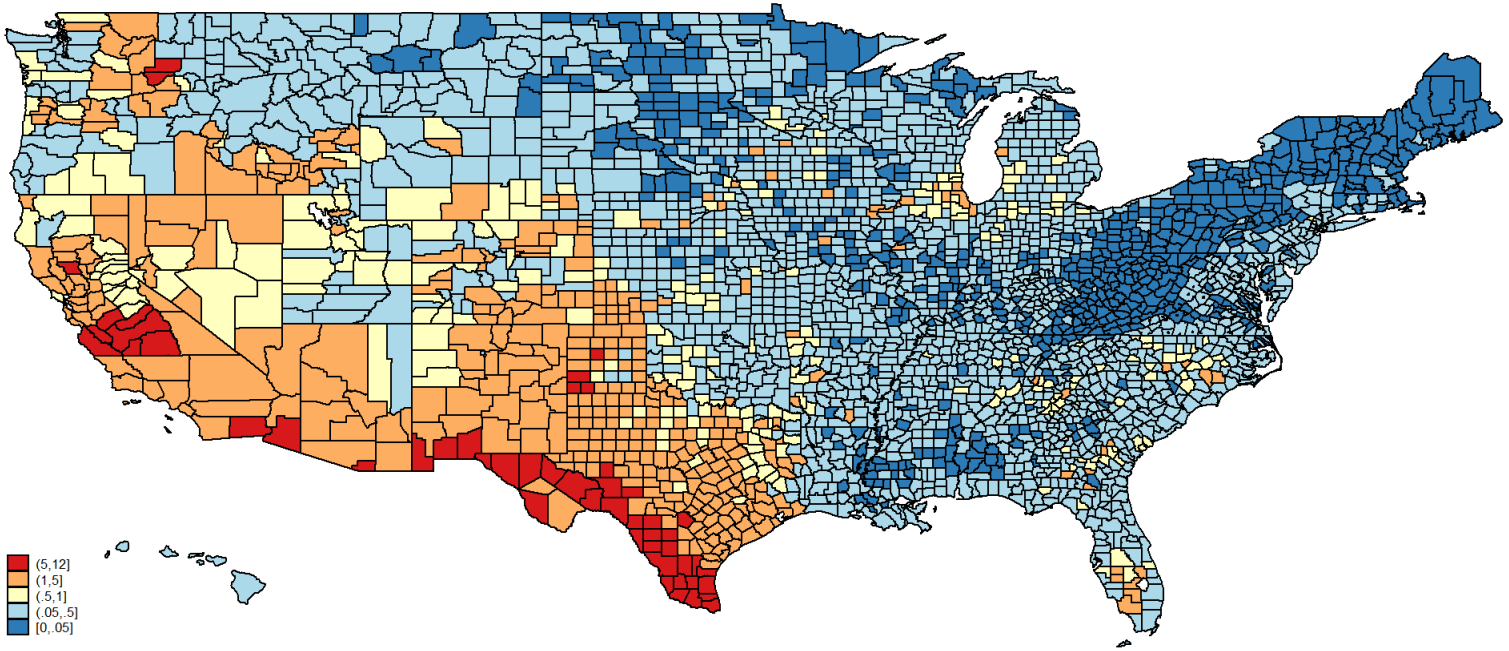
size at county level for Mexican migrants in 2000. Warmer colors mean a concentration above the national average, meanwhile colder colors express a concentration below the national average. Broadly speaking, North and East of US have a lower proportion of Mexicans. While large networks are located in states bordering with Mexico (California, Arizona, New Mexico and Texas), and a small part of the Northwest.

1.2.2 Descriptive Statistics

As mentioned before, remittances are conditioned on having worked in the last 30 days of migrant's stay. Table 1.1 shows the summary statistics for the full sample of worker migrants. Migrants earn $1,764 per month on average, and from that money they remit $214. If we only take into account remitters, they have an average income of $1,835 and remit $595 per month, which represent just over 30% of their income. On average, migrants are 36 years old, most migrants range between 21 and 50 years old and are men (approx. 90%). The 76% of migrants have been married or are still married and 75% declared to be the head of his household. These imply both that migrants have a family to take care of and that they are the primary breadwinners of the house. This suggests that migrants in these categories would remit more, although on average there are two worker members on the migrant's household.

Regarding to education, migrants with elementary school have from zero to six years of education, which represents 40% of the sample although only 5% of this group have no studies. The 36% of the migrants have studied at least one year of middle school (7-9 years of education). A large proportion, 23%, have studied at least one year of high school, this group also includes those who studied college or higher degrees. When migrants crossed back to Mexico, 61% did it alone. Almost 40% of migrants crossed the border illegally and remained

Figure 1.1: Network size of Mexicans by Counties



Source: US Census 2000, own elaboration.

about two years abroad before going back to Mexico. Around 50% of migrants held a job related to manufacture and construction, the second most popular sector to work among Mexican migrants was the service provider (including administrative services) with 30% of migrants employed on it. Only 14% was working on an agricultural related job, while less than 1% had a job where they exerted professionally. Nearly 80% of migrants received a fixed income.

Table 1.2 contains the same summary statistics for two sub-samples. Migrants who crossed into the US without using any official document are considered illegals, while those who used a *border crossing card* (BCC) to enter to US are considered legal migrants. Having a BCC facilitates continuous displacement between Mexico and US, as migrants can enter the US as many times as they like, whereas for migrants without BCC the access to US becomes very difficult and risky since they have to smuggle to US and pay a high fee to hire a coyote. Particularly, legal status can be a decisive factor determining the migrant's type, such as being circular or returnee migrant. Migrants' type is defined according to migrants' intentions of returning or not to the United States to search for a job. This can be observed in the last row of the table, migrants with a BCC are more likely to be circular migrants than those without a BCC. One has to be careful on the interpretation of the results, since they can be capturing migrant's return intentions to the United States, rather than migrant's legal status.[10]

Regarding the principal differences between legal and illegal migrants are the income and amount of remittances. Table 1.2 shows that illegal migrants earn on average US$300 less than legal migrants. Additionally, illegal migrants remit just above US$100 more than than legal migrants do per month. Generally, illegal migrants tend to be unmarried young males between 21-40 years

[10]The distinction between return intentions and legal status' effects are detailed in the next section.

Table 1.1: Descriptive Statistics for Worker Migrants

	Full Sample	
	Mean	SD
Remittances	214.21	409.22
Income	1763.31	1048.86
Age	36.44	10.91
Age 16-20	0.05	0.21
Age 21-30	0.30	0.46
Age 31-40	0.32	0.47
Age 41-50	0.23	0.42
Age 51-60	0.08	0.28
Age 61-70	0.02	0.15
Male	0.88	0.32
Married	0.76	0.43
Household head	0.75	0.43
Elementary Sch.	0.40	0.49
Middle Sch.	0.36	0.48
High Sch.	0.23	0.42
No. Household workers	2.00	1.40
Cross alone	0.61	0.49
Illegal migrant	0.37	0.48
Yrs of last trip	2.11	3.67
Paycheck worker	0.78	0.41
Agricultural Job	0.14	0.35
Industry Job	0.52	0.50
Services Job	0.30	0.46
Professional Job	0.03	0.18
N	26547	

Source: EMIF 1999-2009, own elaboration.
Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. Remittances records the amount of money sent back home in a month. Similarly, Income is the amount earned in a month. Age, Number of household workers, and Years of last trip are continuous variables, the rest are dichotomous. Age is divided in 6 categories. Elementary school refers to migrants with 0-6 years of education, those with 7-9 are in Middle school category, and High school records those who have more than 10 years of education. Cross alone takes value of 1 if the migrant goes back to Mexico alone and 0 if he goes with any relative. Illegal takes value of 1 if the migrant crossed the border without a legal document and 0 if he crossed the border with a valid document. Paycheck takes value of 1 if migrant received a fixed income, 0 otherwise. Agricultural, Industry, Services an Professional jobs categories record the sector where migrants were working in United States.

Table 1.2: Descriptive Statistics for Worker Migrants by Legal Status

	Illegal		Legal		t-test	
	Mean	SD	Mean	SD	Diff	t
Remittances	285.31	434.18	171.83	387.44	-113.5***	(-22.05)
Income	1577.53	859.42	1874.06	1132.62	296.5***	(22.49)
Age	30.25	8.35	40.13	10.57	9.879***	(79.43)
Age 16-20	0.08	0.28	0.02	0.15	-0.0597***	(-22.69)
Age 21-30	0.51	0.50	0.18	0.38	-0.336***	(-61.76)
Age 31-40	0.28	0.45	0.34	0.47	0.0550***	(9.34)
Age 41-50	0.10	0.30	0.30	0.46	0.206***	(39.94)
Age 51-60	0.02	0.14	0.12	0.33	0.102***	(29.55)
Age 61-70	0.00	0.06	0.04	0.19	0.0324***	(16.98)
Male	0.96	0.21	0.84	0.36	-0.113***	(-28.23)
Married	0.62	0.48	0.84	0.36	0.221***	(42.26)
Household head	0.66	0.47	0.80	0.40	0.146***	(27.00)
Primary Sch.	0.44	0.50	0.38	0.49	-0.0607***	(-9.77)
Middle Sch.	0.40	0.49	0.34	0.47	-0.0671***	(-11.02)
High Sch.	0.15	0.36	0.28	0.45	0.128***	(24.00)
No. Household workers	2.07	1.57	1.95	1.28	-0.119***	(-6.75)
Cross back alone	0.74	0.44	0.53	0.50	-0.217***	(-35.93)
Yrs of last trip	3.26	4.32	1.43	3.02	-1.826***	(-40.44)
Paycheck worker	0.78	0.42	0.79	0.41	0.00915	(1.75)
Agricultural Job	0.18	0.38	0.12	0.33	-0.0583***	(-13.12)
Industry Job	0.54	0.50	0.50	0.50	-0.0384***	(-6.06)
Services Job	0.27	0.44	0.32	0.47	0.0537***	(9.22)
Professional Job	0.01	0.08	0.05	0.22	0.0429***	(18.84)
Circular	0.74	0.44	0.96	0.19	0.219***	(55.67)
N	9915		16632		26547	

Source: EMIF 1999-2009, own elaboration.

Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. The group Illegal is composed of migrants who crossed the border without a legal document and the group Legal includes those who crossed the border with a valid document. Remittances records the amount of money sent back home in a month. Similarly, Income is the amount earned in a month. Age, Number of household workers, and Years of last trip are continuous variables, the rest are dichotomous. Age is divided in 6 categories. Elementary school refers to migrants with 0-6 years of education, those with 7-9 are in Middle school category, and High school records those who have more than 10 years of education. Cross alone takes value of 1 if the migrant goes back to Mexico alone and 0 if he goes with any relative. Paycheck takes value of 1 if migrant received a fixed income, 0 otherwise. Agricultural, Industry, Services an Professional jobs categories record the sector where migrants were working in United States. Circular takes value of 1 if the migrant expressed intentions to go back to US, while it takes the value of 0 if the migrant expressed he has no intentions to return to US. t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

old, while legal migrants have an average age of 40 years old and almost 85% are or were married. Broadly speaking, legal migrants are more educated than illegals. Finally, illegal migrants spend twice the time abroad than legals, and illegals return to Mexico accompanied with family members.

1.3 Empirical Methodology and Results

This section first introduces the approach to estimate the causal effects of network size on remittances and then present the results. The analysis of network effects on remittances requires the use of an instrumental variable to account for the possible endogeneity of the network. The specific concern is that individuals tend to self-select across locations where co-ethnics migrate or live. As an instrument for the current network size, historical rates of Mexican migration are used. New migrants are attracted to places where other co-nationals have migrated to in the past, because they share the same cultural background or are influenced by more experienced migrants. Therefore, these past patterns of migration are highly correlated with current migration but unlikely to be correlated with economic shocks, unemployment rates, or migrants' decisions to remit. Thus, the underlying assumption is that past migration rates are correlated with migrants' decisions to send money back home only through their relationship with the current network size.

Many authors have used past migration rates to instrument for current migration. Kapur (2004), Dustmann et al. (2005), and Lewis and Card (2007) study the effect of immigration on resident labour market outcomes. As in this case, current migration is a possible endogenous variable that may be driven by unobserved local characteristics and which also affect the outcome of interest, remittances. Dustmann et al. (2005), propose as a possible solution to use

historic settlement patterns to instrument for migration flows. They argue that migrant networks are formed because migrants tend to settle in areas with a high concentration of migrants since they look for the same cultural and linguistic background. Therefore, they argue that migrant networks are determined by historical settlement patterns instead of economic shocks. In their analysis of the impact of migration on the labour market of resident workers, they used three and four period lags of the endogenous variable (ratio of immigrants to native population) to instrument for current migration in Britain. While Lewis and Card (2007), instrument the fraction of immigrants in the standard metropolitan statistical area (SMSA), with both the fraction of immigrants in 1970 and its square at the same level SMSA.

Another paper that used past migration as an instrument is McKenzie and Rapoport (2007). Using Mexican data, they study the effect of migration networks (formed by the proportion of individuals in the community who have ever migrated to the US) on both household migration decisions and inequality. McKenzie and Rapoport (2007) instrument for unobserved community factors correlated with both household migration decisions and inequality. To account for unobserved community shocks that would affect migration to US, such as rainfall, they use the US migration rates for 1924 and 1955-59 at state level for sending communities in Mexico, as instrumental variables for current migration.

In line with these papers, I use data from the Inter-University Consortium for Political and Social Research (ICPSR) 2896 data file, which contains historical information of decennial US county and state data collected by the US Bureau of the Census to construct the instrumental variable. I assume that past migration affects current migration which in turn affects remittances, but past migration is not correlated with local unobserved characteristics affect-

ing remittances. Using the Census from 1960, the instrumental variable is constructed in the same fashion as our variable of interest, the network size. I use the number of Mexicans immigrants living in each county in 1960 and computing the two ratios aforementioned.[11]

As described above, a $2SLS$ estimation is the best model that suits the data. Hence, the equations to estimate are the following:

$$Network_{i,c}^{2000} = \gamma_0 + \gamma_1 Network_{i,c}^{1960} + \gamma_2 X_i + D_s + D_t + \mu_{i,c} \tag{1.9}$$

$$Y_{i,c} = \beta_0 + \beta_1 \widehat{Network}^{2000}{}_{i,c} + \beta_2 X_i + D_s + D_t + \varepsilon_{i,c} \tag{1.10}$$

where i indexes individuals, living in county c. The focus of the paper is on how the level of remittances (and the probability to remit) $Y_{i,c}$, is related to the size of the network, which accounts for the proportion of Mexicans living in county c relative to the national average. The migrants' socio-demographic characteristics are included in vector X, containing the migrant's gender, groups of age, marital status, the number of worker households, and the number of years the migrant spent abroad in his last trip. The vector also includes dummies if the migrant was the head of his household and if the migrant cross back alone. It is expected that migrants who are males, have around 30-50 years old, married or household heads remit more. Similarly, migrants going back to Mexico alone are expected to remit more because their families are in Mexico. However, if the number of working household members increase it is likely that migrants send less money home. In the case of years of the last trip it is expected a negative relation with the level of remittances, more

[11] In this case, I impute zero for each county where there was no information of the number of Mexicans living in it. Since in 2000 the proportion of Mexicans living in counties where data was unavailable in 1960 is very low, and it is very likely that missing values mean that there were no Mexicans living in those counties in the sixties. Therefore, assigning zero to these counties should not affect the estimations.

experienced migrants are more likely to settle abroad and have plans to bring family members with them. The vectors D_s and D_t correspond to a set of state and time dummies, that account for omitted variables, such as unemployment rates across states and economic shocks/crisis. In some estimations, the interaction of these vectors is included. As usual the error term is given by ε.

Although the theoretical model suggests a quadratic relationship between the network size and the remittances, in practice this was not the case for Mexico. The theoretical model is based on what others papers have found about the relationship of social networks and labour market outcomes, however, not all cultures are the same. For one thing, people from different countries might behave differently, moreover, economic, cultural, and social factors can play a different role across countries. Since the Mexican data did not support the theory of non-linear relationship, a linear model is estimated.

Table 1.3 reports the results for the baseline estimations with different control variables. In brackets are the standardized coefficients to illustrate the effect that the nework size has on remittances. The remittances are in logs and capture positive and zero remittances.[12] Columns (1), (3), and (5) show the OLS results, and columns (2), (4), and (6) present the same models but for IV, treating the network size as endogenous.[13] According to Abadie et al. (2017), all estimations are clustered at county level since quite a few of the counties are not in the sample.

Overall the effect of the network size is negative, and OLS results show a lower coefficient for the network size than the IV estimations. The standardized coefficients are shown in brackets, from these it is observed the relative

[12] I compute the natural logarithm of remittances and assigned arbitrarily a very small value for those observations where the level of remittances was zero.

[13] According to the critical values by Stock and Yogo (2005), we reject the null of weak instruments for all IV regressions.

Table 1.3: Estimations for the effect of Networks on Remittances

	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV
Network Size	-0.112***	-0.128***	-0.127***	-0.144***	-0.125***	-0.139***
	[-0.078]	[-0.088]	[-0.087]	[-0.099]	[-0.086]	[-0.096]
	(0.0269)	(0.0281)	(0.0286)	(0.0299)	(0.0306)	(0.0317)
Age 21-30	0.241**	0.241**	0.261**	0.261**	0.246**	0.246**
	[0.037]	[0.037]	[0.040]	[0.040]	[0.038]	[0.038]
	(0.1002)	(0.0995)	(0.1035)	(0.1028)	(0.1003)	(0.0991)
Age 31-40	0.185	0.185	0.236*	0.236*	0.216*	0.216*
	[0.029]	[0.029]	[0.037]	[0.037]	[0.034]	[0.034]
	(0.1357)	(0.1349)	(0.1364)	(0.1354)	(0.1295)	(0.1280)
Age 41-50	-0.132	-0.132	-0.069	-0.069	-0.071	-0.071
	[-0.019]	[-0.019]	[-0.010]	[-0.010]	[-0.010]]	[-0.010]
	(0.1618)	(0.1612)	(0.1549)	(0.1543)	(0.1494)	(0.1481)
Age 51-60	-0.230*	-0.226*	-0.197*	-0.193*	-0.207*	-0.203*
	[-0.021]	[-0.021]	[-0.018]	[-0.018]	[-0.019]	[-0.019]
	(0.1181)	(0.1179)	(0.1130)	(0.1130)	(0.1099)	(0.1094)
Age 61-70	-0.352**	-0.347**	-0.407***	-0.402***	-0.405***	-0.400***
	[-0.018]	[-0.01]	[-0.021]	[-0.020]	[-0.021]	[-0.020]
	(0.1502)	(0.1498)	(0.1458)	(0.1456)	(0.1445)	(0.1436)
Male	0.800***	0.792***	0.678***	0.668***	0.666***	0.658***
	[0.086]	[0.085]	[0.073]	[0.072]	[0.071]	[0.071]
	(0.0718)	(0.0716)	(0.0680)	(0.0677)	(0.0682)	(0.0676)
Married	0.103*	0.102*	0.180***	0.179***	0.180***	0.179***
	[0.015]	[0.015]	[0.026]	[0.026]	[0.026]	[0.026]
	(0.0544)	(0.0540)	(0.0525)	(0.0521)	(0.0522)	(0.0516)
HH head	0.032	0.033	-0.024	-0.024	-0.015	-0.015
	[0.005]	[0.005]	[-0.003]	[-0.003]	[-0.002]	[-0.002]
	(0.0544)	(0.0542)	(0.0534)	(0.0530)	(0.0515)	(0.0510)
Go back alone			0.644***	0.647***	0.638***	0.641***
			[0.106]	[0.106]	[0.105]	[0.105]
			(0.0781)	(0.0779)	(0.0799)	(0.0792)
N HH workers			-0.014	-0.015	-0.012	-0.012
			[-0.007]	[-0.007]	[-0.006]	[-0.006]
			(0.0244)	(0.0244)	(0.0221)	(0.0220)
Yrs last trip			-0.044***	-0.044***	-0.047***	-0.047***
			[-0.054]	[-0.054]	[-0.058]	[-0.058]
			(0.0092)	(0.0092)	(0.0090)	(0.0089)
N	26547	26547	26547	26547	26547	26547
R^2	0.052	0.052	0.065	0.065	0.089	0.089
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year*State FE	No	No	No	No	Yes	Yes
F		176.796		177.064		180.369

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Standardized coefficients are in brackets. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors are clustered at county level for all regressions and in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

strength of association of the network size to remittances. In particular, the network size and migrant's gender have the strongest effect on remittances, followed by the number of years spent abroad in the last trip. Column 1 shows that one standard deviation increase in the network size leads to a 0.078 standard deviation decrease in remittances, holding other variables constant. If more covariates are added into the estimation this effect is higher (column 3). But, there is no significant change if fixed effects accounting for unobservables by *Year*State* are introduced. For the corresponding IV estimations, all reflect a slightly higher impact on remittances. As a result of one standard deviation increase in the network size we can expect a decrease in remittances by 0.099 standard deviations for the estimation with the full set of covariates (column 4), and a decrease of 0.096 standard deviations when considering *Year*State* fixed effects. Regarding the endogeneity of the network, the Hausman test is performed for the three estimations.[14] The null of *all regressors are exogenous* is rejected at least at the 10% significance level for the estimations. Thus, IV estimates show that the OLS results underestimate the effect of the network size on remittances.

Additionally, the control variables show the expected signs, with the exception of being a household head. We can observe a non-linear effect across the ranges of age, although the 41-50 years old category is not statistically significant. Broadly speaking, males tend to remit above 65% more than females, as well as migrants who have had or have a partner remit around 18% more than single migrants. Following intuition, going back to Mexico alone suggest that migrant's family is in the home country and migrants tend to remit around 64% more than migrants going back with their families. Furthermore, migrants who stay longer in the US tend to remit less, one more year abroad

[14]Hausman test is not reported in the table.

decreases the remittances by 4.7%. Although an increase in the number of working household members decreases the level of remittances, it is not statistically significant. Surprisingly, being head of the house have a negative impact on remittances in two of the specifications (columns 3-6) and positive in the other (columns 1-2), however, these are not statistically different from zero.

Equation (1.10) is also estimated for the probability to remit. Table 1.4 shows the same estimations described above, but the dependant variable, $Y_{i,c}$, takes the value of one if the migrant sent remittances in the last 30 days of work, and zero if the migrant did not. The estimations show average marginal effects and the results are similar to the one previously analysed. OLS and IV estimations show negative a effect of the network size on the likelihood to remit and all variables have signs as expected, with the exception of household head. Probit and IV results show similar results, according to the estimation of column 4, on average, migrants are 2.4% less likely to remit if the network size increases by one point.[15]

Some migrants' individual and labour characteristics like, education, occupation, and income are not included as part of the control sets. The principal reason to exclude them from the baseline estimations is because these controls are likely to be a function of network effects themselves. The level of education, the type of occupation and amount of earnings can determine migrants' capacity to remit. In regressions not reported in this paper, I find that including these *endogenous controls* reduces the effect of networks on remittances (in the case of income by half). Although the coefficient of the network size is still negative and statistically significant. An alternative method is to analyse the effect of networks on different sub-samples of these *endogenous* variables.

[15]These results are quite similar to marginal effects at the mean.

Table 1.4: AME - Estimations for the effect of Networks on the Probability to Remit

	(1) Probit	(2) Prob.IV	(3) Probit	(4) Prob.IV	(5) Probit	(6) Prob.IV
Network Size	-0.018***	-0.022***	-0.020***	-0.025***	-0.019***	-0.024***
	(0.0049)	(0.0062)	(0.0051)	(0.0063)	(0.0053)	(0.0065)
Age 21-30	0.040**	0.039**	0.043***	0.043***	0.042***	0.042***
	(0.0156)	(0.0155)	(0.0161)	(0.0159)	(0.0155)	(0.0154)
Age 31-40	0.033	0.033	0.041*	0.041*	0.040**	0.039**
	(0.0213)	(0.0212)	(0.0212)	(0.0210)	(0.0201)	(0.0199)
Age 41-50	-0.012	-0.012	-0.002	-0.002	-0.001	-0.001
	(0.0265)	(0.0264)	(0.0251)	(0.0251)	(0.0243)	(0.0242)
Age 51-60	-0.026	-0.025	-0.020	-0.020	-0.020	-0.019
	(0.0194)	(0.0195)	(0.0186)	(0.0187)	(0.0182)	(0.0183)
Age 61-70	-0.047*	-0.045*	-0.055**	-0.053**	-0.053**	-0.052**
	(0.0247)	(0.0247)	(0.0237)	(0.0238)	(0.0234)	(0.0235)
Male	0.130***	0.128***	0.111***	0.109***	0.110***	0.107***
	(0.0109)	(0.0111)	(0.0109)	(0.0110)	(0.0106)	(0.0108)
Married	0.019**	0.019**	0.030***	0.030***	0.029***	0.029***
	(0.0088)	(0.0087)	(0.0084)	(0.0083)	(0.0083)	(0.0082)
HH Head	-0.002	-0.002	-0.011	-0.010	-0.009	-0.008
	(0.0091)	(0.0091)	(0.0089)	(0.0089)	(0.0086)	(0.0085)
Go back alone			0.095***	0.095***	0.094***	0.095***
			(0.0126)	(0.0126)	(0.0130)	(0.0130)
N HH workers			-0.003	-0.003	-0.002	-0.002
			(0.0042)	(0.0042)	(0.0037)	(0.0038)
Yrs last trip			-0.007***	-0.007***	-0.008***	-0.008***
			(0.0016)	(0.0016)	(0.0015)	(0.0015)
N	26532	26532	26532	26532	26454	26454
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year*State	No	No	No	No	Yes	Yes

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. The dependent variable equals 1 if migrant send remittances back home, 0 otherwise. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. Standard errors are clustered at county level for all regressions. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.5: Estimations for the effect of Networks on Remittances by Education Levels

	Elementary		Middle		High	
	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV
Network Size	-0.109***	-0.130***	-0.123***	-0.139***	-0.082***	-0.094***
	[-0.068]	[-0.090]	[-0.085]	[-0.096]	[-0.066]	[-0.065]
	(0.0379)	(0.0344)	(0.0412)	(0.0467)	(0.0223)	(0.0249)
Age 21-30	0.289*	0.289**	0.037	0.037	0.485***	0.483***
	(0.1468)	(0.1458)	(0.1378)	(0.1368)	(0.1613)	(0.1599)
Age 31-40	0.444***	0.445***	-0.220	-0.219	0.437**	0.436**
	(0.1549)	(0.1539)	(0.1466)	(0.1454)	(0.2123)	(0.2104)
Age 41-50	0.038	0.040	-0.734***	-0.736***	0.424*	0.424*
	(0.1888)	(0.1874)	(0.2445)	(0.2432)	(0.2260)	(0.2244)
Age 51-60	-0.196	-0.190	-0.803***	-0.799***	0.413*	0.421*
	(0.1593)	(0.1575)	(0.2169)	(0.2157)	(0.2176)	(0.2164)
Age 61-70	-0.309*	-0.301*	-0.732**	-0.731**	0.008	0.016
	(0.1677)	(0.1663)	(0.3693)	(0.3664)	(0.2745)	(0.2739)
Male	0.913***	0.903***	0.679***	0.670***	0.639***	0.635***
	(0.1140)	(0.1147)	(0.1087)	(0.1068)	(0.1111)	(0.1099)
Married	0.249***	0.249***	-0.010	-0.011	0.023	0.022
	(0.0781)	(0.0775)	(0.0837)	(0.0827)	(0.0855)	(0.0850)
HH head	-0.019	-0.018	0.125	0.124	0.014	0.016
	(0.0891)	(0.0888)	(0.0918)	(0.0912)	(0.0886)	(0.0883)
N	10702	10702	9608	9608	6237	6237
R^2	0.058	0.058	0.069	0.069	0.051	0.051
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
F		142.08		310.98		136.96

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. Elementary sample contains migrants who have six or less years of education, as well as those who did not studied. Middle contemplates individuals who had between seven and nine years of education. High contains migrants with 10 years of education or more. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. Standard errors are clustered at county level for all regressions. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.6: Estimations for the effect of Networks on Remittances by Occupation

	Agricultural		Industry		Services	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	OLS	IV	OLS	IV
Network Size	-0.062	-0.101*	-0.085***	-0.092***	-0.137***	-0.154***
	[0.037]	[0.070]	[0.054]	[0.064]	[0.111]	[0.106]
	(0.0512)	(0.0585)	(0.0292)	(0.0331)	(0.0212)	(0.0207)
Age 21-30	0.032	0.031	0.326***	0.326***	0.204	0.204
	(0.2153)	(0.2134)	(0.1126)	(0.1120)	(0.1397)	(0.1381)
Age 31-40	0.037	0.039	0.158	0.158	0.308*	0.310*
	(0.2071)	(0.2051)	(0.1652)	(0.1644)	(0.1643)	(0.1622)
Age 41-50	-0.020	-0.019	-0.289	-0.289	0.080	0.082
	(0.2521)	(0.2500)	(0.1920)	(0.1913)	(0.1729)	(0.1715)
Age 51-60	-0.440*	-0.432*	-0.303*	-0.302*	-0.038	-0.033
	(0.2488)	(0.2456)	(0.1594)	(0.1586)	(0.1767)	(0.1758)
Age 61-70	-0.661**	-0.651**	-0.236	-0.235	-0.224	-0.218
	(0.2917)	(0.2896)	(0.1949)	(0.1938)	(0.2098)	(0.2083)
Male	0.055	0.044	0.770***	0.767***	0.706***	0.700***
	(0.2740)	(0.2726)	(0.1279)	(0.1270)	(0.0851)	(0.0848)
Married	0.096	0.092	0.161*	0.160*	-0.012	-0.013
	(0.1483)	(0.1469)	(0.0911)	(0.0907)	(0.0838)	(0.0831)
HH head	0.130	0.139	0.002	0.001	0.033	0.035
	(0.1377)	(0.1372)	(0.0980)	(0.0976)	(0.0717)	(0.0714)
N	3821	3821	13766	13766	8960	8960
R^2	0.048	0.048	0.056	0.056	0.055	0.055
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
F		109.538		226.420		176.413

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. Agricultural sample contains migrants whose jobs where related to agricultural activities. Industry sample, contemplates individuals who worked in manufacture and construction related jobs. Services refers to migrants who worked on the tertiary sector including those holding an administrative job. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. Standard errors are clustered at county level for all regressions. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

I report in Table 1.5 OLS and IV estimations for three different education levels, Elementary, Middle, and High. Migrants who have between zero and six years of education are in the elementary level (columns 1-2), those in middle education (columns 3-4) have from seven to nine years of education, finally migrants with more than ten years of education correspond to the group high (columns 5-6). From the network size standardized coefficients we observe a higher effect of networks from migrants with middle school. The IV estimations from column 4 suggests a 0.096 standard deviation decrease on the amount of remittances if the network size increases by one standard deviation. A similar effect occurs for migrants with less than six years of education, by one standard deviation increase on the network size it is expected a reduction of 0.090 standard deviations on remittances. The network size have a minor effect on remittances from migrants with high level of education, although this effect is still high 0.065. Overall, the effect of network size on remittances is stronger for migrants with lower level of education.

Table 1.6 reports estimations for the type of sectors where migrants worked. The industry group includes migrants who hold a job related to construction and manufacture, the services group contemplates those who worked as administrative, provided services, or developed as professionals in their area. Finally, migrants with jobs related to farm and field activities are grouped in agricultural. Migrants in the group services are the most affected by the network size, for the IV estimations in column 6 an increase in one standard deviation of network size decreases remittances by 0.106 standard deviations. Agricultural and industry groups have similar but lower effects with -0.070 and -0.064 standard deviation changes on remittances, respectively.

In order to analyse the effect of network size on income and remittances, I divide the sample in four quantiles according to migrants' income reported

for the last 30 days of work. The OLS and IV estimations are reported in Table 1.7, from the results of the first row we can observe that migrants in different quartiles are affected differently from the network size and there is no clear relationship. In the first quartile one standard deviation increase in the network leads to a decrease of 0.108 in remittances. For the second quartile, this effect is reduced by half, although it is not statistically significant. On the third quartile, one standard deviation increase in the network size has a decrease in remittances of 0.085 standard deviations, while for the top quantile is 0.047 standard deviations.

Furthermore, I analyse two types of migrants, legals and illegals. As described before, legals an illegal migrants might have different opportunities or benefits from the easiness (difficulty) of crossing the border. The aim of introducing these two groups is to look for possible differences that networks might have according migrant's legal status. Moreover, we also need to consider that legal status can be capturing the effect of returnees or circular migrants rather than their legal status. For this reason, I also control for the type of migrant, circular or returnee.[16] The OLS and IV results for illegal and legal migrants are given in columns 1-4 and 5-8, respectively, of Table 1.8. From OLS and IV estimates we can observe the same decreasing pattern on the effect of the network size, although the effect of network size is bigger for legal migrants than for illegal. One standard deviation increase in the network size has a reduction of 0.038 standard deviations on remittances for illegal migrants, whereas for legal migrants this reduction is 0.071.

About the concern of capturing migrants' return intentions rather than their legal status, when controlling for the type of migrant the results regarding the network size do not change (comparing columns 2 with 4, and 6 with

[16]The sample size reduces because not all migrants reported their intentions to return or not to the US to look for a job.

Table 1.7: Estimations for the effect of Networks on Remittances by Quartiles

	Bottom		Second		Third		Top	
	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV	(7) OLS	(8) IV
Network Size	-0.133***	-0.143***	-0.072	-0.075	-0.115***	-0.137***	-0.059**	-0.079***
	[-0.113]	[-0.108]	[-0.040]	[-0.049]	[-0.075]	[-0.085]	[-0.045]	[-0.047]
	(0.0250)	(0.0248)	(0.0569)	(0.0610)	(0.0274)	(0.0333)	(0.0281)	(0.0263)
Age 21-30	0.423***	0.423***	-0.112	-0.112	0.088	0.087	0.217	0.219
	(0.1418)	(0.1405)	(0.1613)	(0.1601)	(0.2235)	(0.2219)	(0.1832)	(0.1816)
Age 31-40	0.395***	0.395***	-0.178	-0.178	-0.050	-0.050	0.068	0.072
	(0.1485)	(0.1466)	(0.2073)	(0.2058)	(0.2272)	(0.2257)	(0.2469)	(0.2444)
Age 41-50	0.329**	0.331**	-0.373	-0.372	-0.565***	-0.564***	-0.367	-0.365
	(0.1336)	(0.1324)	(0.2581)	(0.2563)	(0.2025)	(0.2015)	(0.2811)	(0.2784)
Age 51-60	0.039	0.042	-0.706***	-0.705***	-0.619***	-0.618***	-0.143	-0.136
	(0.1490)	(0.1475)	(0.2034)	(0.2031)	(0.2352)	(0.2342)	(0.2286)	(0.2255)
Age 61-70	0.133	0.138	-0.899***	-0.899***	-0.768***	-0.764***	0.080	0.093
	(0.1905)	(0.1892)	(0.2277)	(0.2262)	(0.2722)	(0.2724)	(0.4102)	(0.4047)
Male	0.651***	0.646***	0.888***	0.887***	0.664***	0.655***	0.669***	0.659***
	(0.0944)	(0.0926)	(0.1554)	(0.1546)	(0.1064)	(0.1052)	(0.2073)	(0.2079)
Married	0.142	0.142	0.062	0.061	0.255*	0.252**	-0.043	-0.044
	(0.1048)	(0.1038)	(0.1109)	(0.1101)	(0.1292)	(0.1284)	(0.1066)	(0.1056)
HH Head	0.008	0.009	0.210**	0.211**	-0.146	-0.144	-0.091	-0.091
	(0.0781)	(0.0774)	(0.0894)	(0.0890)	(0.1255)	(0.1243)	(0.1623)	(0.1607)
N	6681	6681	6704	6704	6622	6622	6540	6540
R^2	0.067	0.067	0.068	0.068	0.049	0.049	0.052	0.052
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F		229.233		218.379		200.150		174.110

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. The quantiles are defined according the income migrants earned during the last 30 days they worked abroad. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. Standard errors are clustered at county level for all regressions. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.8: Estimations for the effect of Networks on Remittances by Legal Status

	Illegal				Legal			
	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV	(7) OLS	(8) IV
Network Size	-0.051*	-0.055*	-0.044	-0.054*	-0.090***	-0.103***	-0.089***	-0.103***
	[-0.030]	[-0.038]	[-0.026]	[-0.037]	[-0.068]	[-0.071]	[-0.068]	[-0.071]
	(0.0275)	(0.0287)	(0.0275)	(0.0282)	(0.0173)	(0.0180)	(0.0174)	(0.0180)
Age 21-30	0.130	0.130	0.120	0.120	0.498***	0.497***	0.475***	0.473***
	(0.1300)	(0.1293)	(0.1343)	(0.1336)	(0.1631)	(0.1621)	(0.1677)	(0.1666)
Age 31-40	0.332***	0.332***	0.342***	0.342***	0.699***	0.697***	0.670***	0.668***
	(0.1215)	(0.1209)	(0.1285)	(0.1278)	(0.2015)	(0.2004)	(0.2026)	(0.2015)
Age 41-50	0.294*	0.294*	0.276	0.277	0.533**	0.530**	0.502**	0.499**
	(0.1747)	(0.1738)	(0.1696)	(0.1687)	(0.2078)	(0.2071)	(0.2082)	(0.2074)
Age 51-60	-0.382	-0.382	-0.417	-0.416	0.542***	0.543***	0.512***	0.513***
	(0.2844)	(0.2830)	(0.2843)	(0.2832)	(0.1653)	(0.1645)	(0.1718)	(0.1710)
Age 61-70	0.065	0.067	0.057	0.062	0.394*	0.395*	0.368*	0.370*
	(0.6004)	(0.5972)	(0.5942)	(0.5908)	(0.2128)	(0.2118)	(0.2177)	(0.2167)
Male	0.640***	0.639***	0.681***	0.678***	0.581***	0.574***	0.575***	0.568***
	(0.1305)	(0.1300)	(0.1332)	(0.1325)	(0.0844)	(0.0838)	(0.0837)	(0.0830)
Married	0.609***	0.609***	0.554***	0.554***	-0.151**	-0.153**	-0.151**	-0.153**
	(0.0864)	(0.0861)	(0.0919)	(0.0915)	(0.0734)	(0.0727)	(0.0741)	(0.0735)
Household head	-0.200**	-0.200**	-0.162*	-0.162*	0.138**	0.140**	0.146**	0.147**
	(0.0901)	(0.0894)	(0.0858)	(0.0852)	(0.0615)	(0.0613)	(0.0607)	(0.0605)
Circular			0.211**	0.211**			0.142	0.144
			(0.1025)	(0.1019)			(0.1335)	(0.1331)
N	9915	9915	9457	9457	16632	16632	16512	16512
R^2	0.058	0.058	0.060	0.060	0.052	0.052	0.052	0.052
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F		471.3		489.3		147.7		147.7

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. Migrants are considered illegals if they crossed the border without an official document, while if they crossed using a valid document, are considered legal migrants. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. Standard errors are clustered at county level for all regressions. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

8). Moreover, the sample is also divided by type of migrant, returnee or circular. The results are in the Appendix in Table 1.10, these show that there is no difference on the effect of the network size on remittances according to migrants' intentions to return to United States. Remittances from both types of migrants respond in the same way and magnitude to the size of the network. Thus, although circular migrants are more likely to be legal and returnees illegals, estimations from Table 1.8 are indeed capturing the legal status of migrants, it might be the case that illegal migrants are worried about the duration of their stay abroad and they tend to send more remittances compared to legal migrants in the same network size.

1.3.1 Robustness Checks

One important factor to consider is the closeness to the border, according to Figures 1.1 and 1.2 there is a higher concentration of Mexican migrants in counties nearer the southern border of the United States. Thus, it might be the case that the omitted variable *distance* can be leading the results. In order to check this, the distance to the border is included in the model. In particular, the distance of each county's centroid to the nearest point of the border with Mexico is used.[17] The same models as before are estimated but including the distance to the border as an additional control, the results are shown in Table 1.9.

The distance to the border is statistically different from zero for the OLS estimations, however it looses significance for the IV estimations and the coefficient is lower. Furthermore, according to Hausman test the OLS estimates are biased and inconsistent, the null of endogenous regressors is rejected at a 95% confidence interval. The effect of the network size is reduced by around

[17]The measure of distance is computed in decimal degrees.

Table 1.9: Estimations for the effect of Networks on Remittances

	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV
Network Size	-0.091***	-0.113***	-0.100***	-0.125***	-0.099***	-0.120***
	[-0.063]	[-0.078]	[-0.069]	[-0.086]	[-0.068]	[-0.083]
	(0.0302)	(0.0338)	(0.0317)	(0.0359)	(0.0318)	(0.0359)
Distance	0.041*	0.029	0.051**	0.038	0.050**	0.039
	[0.071]	[0.051]	[0.088]	[0.067]	[0.087]	[0.069]
	(0.0238)	(0.0271)	(0.0240)	(0.0279)	(0.0225)	(0.0263)
Age 21-30	0.242**	0.241**	0.262**	0.262**	0.248**	0.247**
	[0.037]	[0.037]	[0.041]	[0.040]	[0.038]	[0.038]
	(0.0998)	(0.0991)	(0.1031)	(0.1023)	(0.0998)	(0.0987)
Age 31-40	0.188	0.187	0.240*	0.239*	0.220*	0.219*
	[0.029]	[0.029]	[0.038]	[0.037]	[0.034]	[0.034]
	(0.1354)	(0.1346)	(0.1358)	(0.1349)	(0.1289)	(0.1274)
Age 41-50	-0.129	-0.130	-0.064	-0.064	-0.065	-0.066
	[-0.018]	[-0.018]	[-0.009]	[-0.009]	[-0.009]	[-0.009]
	(0.1617)	(0.1611)	(0.1546)	(0.1540)	(0.1491)	(0.1478)
Age 51-60	-0.227*	-0.224*	-0.193*	-0.189*	-0.202*	-0.199*
	[-0.021]	[-0.021]	[-0.018]	[-0.018]	[-0.019]	[-0.019]
	(0.1183)	(0.1180)	(0.1130)	(0.1130)	(0.1100)	(0.1094)
Age 61-70	-0.349**	-0.344**	-0.403***	-0.398***	-0.400***	-0.396***
	[-0.018]	[-0.018]	[-0.020]	[-0.020]	[-0.020]	[-0.020]
	(0.1494)	(0.1491)	(0.1448)	(0.1447)	(0.1437)	(0.1430)
Male	0.794***	0.787***	0.670***	0.661***	0.659***	0.652***
	[0.085]	[0.084]	[0.072]	[0.071]	[0.071]	[0.070]
	(0.0731)	(0.0731)	(0.0694)	(0.0693)	(0.0696)	(0.0693)
Married	0.099*	0.099*	0.176***	0.175***	0.176***	0.176***
	[0.014]	[0.014]	[0.025]	[0.025]	[0.025]	[0.025]
	(0.0551)	(0.0548)	(0.0530)	(0.0526)	(0.0527)	(0.0522)
HH Head	0.035	0.035	-0.022	-0.022	-0.013	-0.014
	[0.005]	[0.005]	[-0.003]	[-0.003]	[-0.002]	[-0.002]
	(0.0556)	(0.0554)	(0.0541)	(0.0538)	(0.0522)	(0.0516)
Go back alone			0.650***	0.652***	0.644***	0.646***
			[0.107]	[0.107]	[0.106]	[0.106]
			(0.0768)	(0.0766)	(0.0786)	(0.0780)
N HH workers			-0.016	-0.016	-0.013	-0.013
			[-0.007]	[-0.007]	[-0.006]	[-0.006]
			(0.0242)	(0.0242)	(0.0219)	(0.0218)
Yrs last trip			-0.044***	-0.044***	-0.047***	-0.047***
			[-0.054]	[-0.055]	[-0.058]	[-0.058]
			(0.0091)	(0.0091)	(0.0088)	(0.0088)
N	26544	26544	26544	26544	26544	26544
R^2	0.052	0.052	0.065	0.065	0.090	0.090
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year*State FE	No	No	No	No	Yes	Yes
F		137.8		137.9		139.1

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Standardized coefficients are in brackets. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors are clustered at county level for all regressions and in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

0.012 standard deviations compared to results from Table 1.3, nonetheless remains negative and significant. Thus, from the results of Table 1.9 we can conclude that remittances are not driven by the county closeness to the border but rather by the size of the network.

Additionally to instrumenting with past migration rates from the sixties, I followed the strategy used by Aparicio (2014). I instrumented the network size at county level in 2000, with a higher aggregation level, namely the network size at state level for 2000. The estimations yield to similar results, and are presented in Table 1.11. The change of an increase of one standard deviation in the network size at state level leads to a decrease of 0.133 and 0.142 standard deviations on the amount remitted, for the estimations with different sets of control variables.

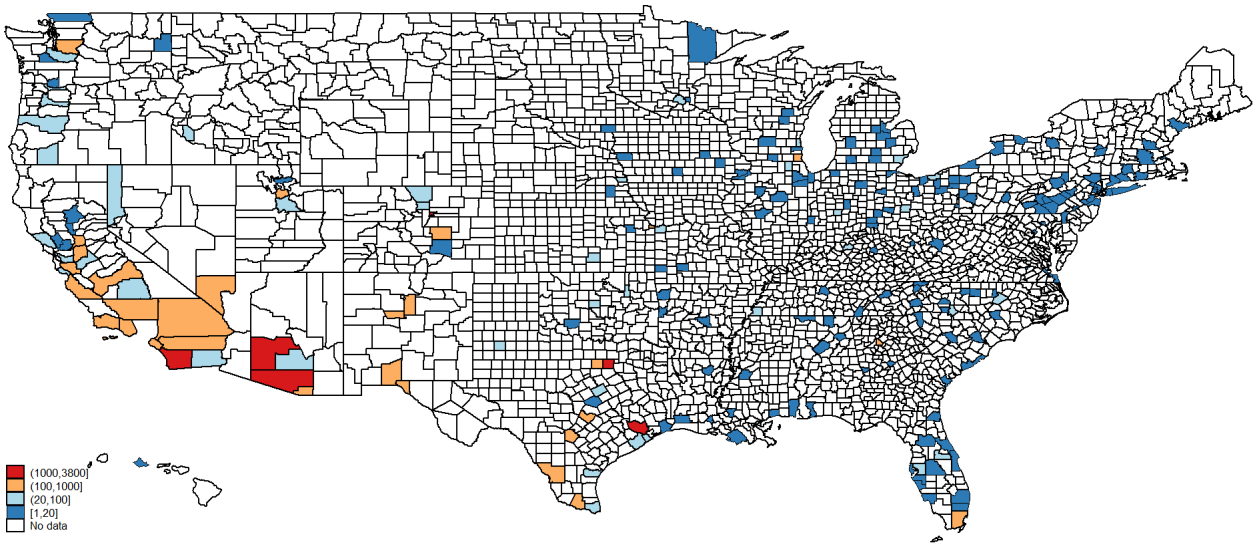
I also analyse the network size at a different disaggregation level, the state. The measure is constructed in the same fashion as the county level, but instead of measuring the proportion of Mexicans living in each county I use the proportion of Mexicans living in each state of US. To instrument for this new measure, I also compute the state network size with data from 1960. The results for the two different sets of covariates are presented in Table 1.12. State network size also present a negative effect on the level of remittances, however this effect is higher. One standard deviation increase in the network size leads to a decrease of 0.155 standard deviations for column (2) and a decrease of 0.152 standard deviations for column (4) on remittances. Thus, the US state where a migrant moves to has a higher impact on his remittance behaviour.

1.4 Concluding Remarks

In this paper I analysed the effect of network size on remittances and the likelihood to remit. First, I developed a theoretical framework to explain the influence of network size on remittances. Second, I used a pooled cross sectional data from a Mexican Survey to construct a measure of networks size; which is the proportion of co-ethnics living in the same county as the migrant, relative to the national average population of co-ethnics. To account for the endogeneity of network size I used past migration as an instrumental variable. I found a negative effect regarding the size of network and the amount remitted. Moreover, the bigger the network size, the bigger the negative effect on remittances. This effect is robust when controlling for the endogeneity of the network and also when controlling for the distance to the border. The network negative effect is greater when the network size is constructed at state level. Another result is that legal migrants are more affected by the network size and remit less than illegal.

1.5 Appendix

Figure 1.2: Number of Mexicans by Counties



Source: EMIF 1999-2009, own elaboration.

Table 1.10: Estimations for the effect of Networks on Remittances by Type of Migrant

	Returnee		Circular	
	(1) OLS	(2) IV	(3) OLS	(4) IV
Network Size	-0.081	-0.125***	-0.110***	-0.124***
	(0.0508)	(0.0459)	(0.0273)	(0.0287)
Age 21-30	-0.047	-0.043	0.290***	0.289***
	(0.1773)	(0.1752)	(0.1109)	(0.1102)
Age 31-40	0.198	0.200	0.211	0.211
	(0.1837)	(0.1808)	(0.1462)	(0.1453)
Age 41-50	-0.212	-0.202	-0.088	-0.089
	(0.2368)	(0.2333)	(0.1642)	(0.1637)
Age 51-60	-0.744**	-0.724**	-0.160	-0.157
	(0.3212)	(0.3178)	(0.1233)	(0.1231)
Age 61-70	-1.225**	-1.234**	-0.267*	-0.262*
	(0.5026)	(0.4973)	(0.1594)	(0.1591)
Male	0.641***	0.631***	0.809***	0.801***
	(0.1960)	(0.1943)	(0.0716)	(0.0714)
Married	0.678***	0.676***	-0.019	-0.020
	(0.1141)	(0.1128)	(0.0612)	(0.0608)
HH Head	-0.259**	-0.255**	0.078	0.079
	(0.1222)	(0.1212)	(0.0506)	(0.0503)
N	3071	3071	22898	22898
R^2	0.054	0.054	0.057	0.057
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
F		257.581		174.007

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. Migrants are considered returnees if they reported to not have intentions to return to the US, while if they reported they have intentions to return to the US are considered circular migrants. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. State fixed effects only contain dummies for the states with counties where migrants reported to live. For the Year*State fixed effects, each year is multiplied by each state. Standard errors are clustered at county level for all regressions. IV regressions are instrumented with the Mexican network size at county level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.11: Estimations for the effect of Networks on Remittances
Instrumenting with State level data

	(1) IV	(2) IV
Network Size	-0.193***	-0.205***
	[-0.133]	[-0.142]
	(0.0440)	(0.0429)
Age 21-30	0.298***	0.316***
	(0.0914)	(0.0973)
Age 31-40	0.252**	0.306**
	(0.1204)	(0.1231)
Age 41-50	-0.051	0.019
	(0.1392)	(0.1345)
Age 51-60	-0.120	-0.086
	(0.1146)	(0.1137)
Age 61-70	-0.214	-0.283**
	(0.1407)	(0.1410)
Male	0.758***	0.621***
	(0.0713)	(0.0773)
Married	0.046	0.139**
	(0.0654)	(0.0560)
Household head	0.079	0.006
	(0.0724)	(0.0556)
Cross back Alone		0.716***
		(0.0816)
N Household workers		-0.020
		(0.0243)
Yrs last trip		-0.044***
		(0.0130)
N	26547	26547
R^2	0.026	0.041
Year FE	Yes	Yes
F	64.246	65.897

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given county over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. Standard errors are clustered at county level for all regressions. IV regressions are instrumented with the Mexican network size at state level in 2000. The instrument is constructed in the same fashion as the variable of interest but at the state level, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.12: Estimations for the effect of Networks at State Level on Remittances

	(1) OLS	(2) IV	(3) OLS	(4) IV
State Network Size	-0.227***	-0.474**	-0.240***	-0.467**
	[-0.074]	[-0.155]	[-0.078]	[-0.152]
	(0.0594)	(0.2358)	(0.0575)	(0.2096)
Age 21-30	0.295***	0.281***	0.309***	0.300***
	(0.0934)	(0.1080)	(0.1000)	(0.1120)
Age 31-40	0.242*	0.252*	0.290*	0.303**
	(0.1432)	(0.1434)	(0.1515)	(0.1492)
Age 41-50	-0.062	-0.022	0.002	0.039
	(0.1437)	(0.1266)	(0.1325)	(0.1173)
Age 51-60	-0.172*	-0.110	-0.145	-0.089
	(0.0996)	(0.0963)	(0.0946)	(0.0923)
Age 61-70	-0.285***	-0.231**	-0.357***	-0.309***
	(0.0935)	(0.0933)	(0.0929)	(0.0903)
Male	0.880***	0.836***	0.754***	0.711***
	(0.0969)	(0.1082)	(0.1147)	(0.1267)
Married	0.057	0.055	0.150***	0.146***
	(0.0627)	(0.0605)	(0.0436)	(0.0460)
HH head	0.073	0.085	0.009	0.025
	(0.0968)	(0.1062)	(0.0734)	(0.0839)
Go back alone			0.686***	0.693***
			(0.1050)	(0.0939)
N HH workers			-0.013	-0.010
			(0.0271)	(0.0249)
Yrs last trip			-0.038**	-0.042***
			(0.0155)	(0.0140)
N	26547	26547	26547	26547
R^2	0.030	0.023	0.043	0.038
Year FE	Yes	Yes	Yes	Yes
F		12.211		12.932

Source: EMIF 1999-2009. Notes: The sample is composed of migrants between 16-70 years old who worked in the last 30 days of their stay in US. The dependent variable, remittances, records the amount of money sent back home in a month and is measured in logs. Network size is a ratio of two ratios, the proportion of Mexicans in a given state over the proportion of Mexicans in US. The omitted age group is migrants between 16-20 years old. The control variables are as described in Table 1.1. Year fixed effects contain dummies for the years contemplated on the EMIF. Standard errors are clustered at state level for all regressions. IV regressions are instrumented with the Mexican network size at state level in 1960. The instrument is constructed in the same fashion as the variable of interest, using data from the US Census. First-stage F-statistics are reported at the end of the table. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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Chapter 2

The effect of migrants' exposure to entrepreneurship at the host and home countries on remitting for business purposes

Miriam Saldaña Hernández

Abstract

I investigate how exposure to entrepreneurship at both the host and home countries affect migrants' decisions to remit for business purposes. Using data of Mexican migrants retuning from the United States, I combine individual data on migrants, which contains information on the origin and destination, and aggregate self-employment rates at the county and municipality level for the US and Mexico, in this way, I can control for selection of migrants by accounting for state by-origin-and-destination fixed effects. After controlling for selection the results suggest that only the exposure to entrepreneurship at the home country (Mexico) has a significant and negative effect on the decision to remit for business purposes. Broader exposure to entrepreneurship in the host country is analysed using the rates of entrepreneurship of Latinos and non-Mexicans.

JEL classification: *F22, F24, J15, L26, R23*
Key words: *Remittances, entrepreneurship, Mexican migrants, entrepreneurial exposure*

Introduction

There is a large literature on the determinants of migrant entrepreneurship, including characteristics at the origin or destination (Fairlie and Lofstrom, 2014; Naudé et al., 2015). However, little is known on how home and host country characteristics might jointly determine the decision to engage in entrepreneurship. Recent literature suggests that the entrepreneurial environment where a person resides serves as a learning opportunity and affect his occupational choices (Andersson and Larsson, 2014; Giannetti and Simonov, 2004; Guiso et al., 2015). In this paper, I empirically investigate the effect that exposure to entrepreneurship in both the location at host and home country have on migrants' intentions to become entrepreneurs.

Due to its characteristics, Mexico provides a good case study of migrants' exposure to entrepreneurship at the host and home countries. For the last 25 years, Mexico ranked among the top five countries with self-employment rate ranging between 32% and 45% (OECD, 2017). According to Fairlie and Woodruff (2007), Mexican immigrants in the United States have a significant lower rate of self-employment or entrepreneurship compared to natives and other immigrant groups. Furthermore, according to 2015 estimates by the United Nations, 98% of Mexicans living outside Mexico reside in the United States. Mexican migrants represent almost 26% of the migrant population in the United States.[1]

This paper contributes to the literature by analysing the effect of entrepreneurial exposure in both the origin and destination localities on migrants' intentions to involve in entrepreneurial activities. The data for this study comes from the Survey of Migration in the Northern Border of Mexico

[1]Department of Economic and Social Affairs. http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml

(hereafter EMIF, for its acronym in Spanish). Unlike other Mexican surveys about migration, the EMIF provides more detailed information on the host and home localities. The National Survey of Demographic Dynamics (ENADID) and the Mexican Migration Project (MMP) both provide the migrant's locality of origin. However, for the place of destination, the ENADID only reports states and the MMP records the Metropolitan Statistical Areas. [2]

Moreover, the EMIF collects information on migrants who are either returning temporarily or permanently to Mexico from the United States.[3] The survey includes socio-demographic and work related characteristics of migrants both before (in Mexico) and after migration (in the United States), and information on the motives to remit including remitting for business purposes. The motivation to remit for business purposes is used as proxy for migrants' intentions to engage in entrepreneurial activities. In specific migrants are asked if the money they sent was used to buy, establish, or expand a business (in Mexico). Due to data availability, the entrepreneurial exposure in Mexico is measured as the rate of self-employment, whereas the entrepreneurial exposure in United States consist of the ratio of Mexican business entrepreneurs. Thus, I use entrepreneur to refer to either a self-employed individual or business owner.

After controlling for selection the results suggest that the home country entrepreneurial exposure has a negative effect on migrants' probability to remit for business purposes whereas the entrepreneurial exposure in the host country

[2]Another reason why I use the EMIF is because for the ENADID the migrant's occupational choice refers to the job held in the last week, previous to the survey, therefore is not clear whether it was held in the United States or Mexico. Regarding the MMP, this database specifies if the migrant was owner of a small business or factory, as well as merchant in a retail establishment. Nonetheless, it comprises only a small portion of communities, by 2017 just 161 communities where sampled.

[3]Due to geographical proximity, Mexican migration to the United States is characterized to a great extent by circular migrants who travel back and forth for different reasons (e.g. visiting family, seasonal work, deported).

has no effect. Without controlling for state by-origin-and-destination fixed effects the estimates of the entrepreneurial exposure in both countries are biased. In particular, the entrepreneurial exposure of Mexicans in the United States is upward biased, whereas the entrepreneurial exposure in Mexico is downward biased.

I also explore whether a broader exposure to entrepreneurship in the host country has an impact on migrants' intentions to get involved in entrepreneurial activities. For this purpose, I use the ratios of Latino and non-Mexican business owners in the United States. The results suggest that Latinos behave similarly to the entrepreneurial exposure of Mexicans abroad. The estimates were biased before controlling for selection, showing a positive and significant effect. However, the coefficient losses significance after controlling for selection. With regard to the entrepreneurial exposure of non-Mexicans, I find no effect on migrants' intentions to become entrepreneurs.

Research on how the occupational choices of migrants are affected has focused on the host and home country separately. Nevertheless, I find that controlling for the interaction of states at home and host country is important, thus, the results from these studies may be misleading. In contrast with these studies, this paper analyses the entrepreneurial environment a migrant is exposed before and after migration. Studies in the home country mainly focus on the determinants of returnees' entrepreneurship. Like Piracha and Vadean (2010) and Wahba and Zenou (2012), who analyse if returnee migrants are more likely to become entrepreneurs than non-migrants. Similarly, Dustmann and Kirchkamp (2002) show that returnees are more likely to engage in entrepreneurial activities after they return. Another factor promoting self-employment among returnees is the experience obtained from abroad (Black and Castaldo, 2009; Kilic et al., 2009). In the case of the host country, many

studies focus on the effects of the so called ethnic enclaves. It is widely known that migrants have the tendency to cluster in neighbourhoods or areas with a high proportion of co-ethnics (Logan et al., 2002; Massey, 1985). Some studies find mixed evidence about how living among more co-ethnics affect migrants' occupational choices (Clark and Drinkwater, 2000, 2002; Fairchild, 2010; Fairlie and Woodruff, 2007; Razin and Langlois, 1996).

The remainder of this paper is structured as follows. The following section describes the hypotheses to test. Section 2.2 details the different datasets used and how the variables of interest where constructed. Section 2.3 specifies the estimation model as well as the results. The last section concludes.

2.1 Theoretical Framework

The mechanisms through which entrepreneurial exposure can influence migrants' intentions to get involved in entrepreneurial activities are described below. It is important to keep in mind a couple of things. First, this paper uses data from Mexican migrants returning either temporarily or permanently to Mexico from the United States. Second, I use migrants' motivations to remit for business purposes as a proxy for their intentions to engage in entrepreneurial activities. Therefore, such entrepreneurial activities are expected to take place at the home country (in Mexico) rather than at the host country (in the United States). Moreover, migration, remittances, and entrepreneurship might be choices taken at the household level, however, since most of the migrants in our sample are household heads they are likely to represent the interests and choices of the household.

Entrepreneurial neighborhoods defined as wards or localities with high density of entrepreneurs, are found to have a positive impact on individuals

choossing entrepreneurship as occupational choice. Using data from Sweden, Andersson and Larsson (2014), Giannetti and Simonov (2009), and Lindquist et al. (2015) find that residing in entrepreneurial neighbourhoods increases the likelihood that an individual becomes an entrepreneur. Moreover, Guiso et al. (2015) argue that the environment where a person grows up is more likely to shape her, such as being surrounded by more entrepreneurs. Using data from Italy, they find that the entrepreneurial density of the place where an individual grew up has a positive impact on the likelihood of becoming an entrepreneur.

The fact that a highly entrepreneurial locality is more likely to produce an entreprenuer is explained by Andersson and Larsson (2014) by three types of local social interactions. The first one is motivation and self-confidence, observing a large quantity of entrepreneurs in one's locality may encourage one to engage in entrepreneurial activities. The second type of social interaction is the status an entrepreneur has in the society, if they are considered as having a high social status then it may stimulate entrepreneurship among ambitious individuals. A further social interaction, is the spillover information and knowledge you can obtain from entrepreneurs. An individual is more likely to acquire and/or learn entrepreneurial skills when is surrounded by a large share of entrepreneurs. For these reasons, I expect that migrants who were exposed to a highly entrepreneurial environment are more likely to engage in entrepreneurial activities. This hypothesis applies to both the entrepreneurial exposure at the host and the home country, since the mechanisms mentioned before can equally apply to the places of origin and destination.

One aspect that also should be considered is that a relatively large ratio of entrepreneurs in one's locality can also play a detrimental effect against becoming an entrepreneur. Specifically, if the market is overcrowded with

entrepreneurs it will be harder for the migrant to start up his own business due to higher competition, as suggested by Aldrich and Waldinger (1990). In their paper they refer to competition in enclaves in the host country. In the same way, this competition can also take place at the home country. For the entrepreneurial exposure at home, more competition will decrease migrants' probability to remit for business purposes since migrants might find more attractive to engage in entrepreneurial activities at the host country. As for the case of entrepreneurial exposure at the host country this will lead to an increase in the probability to remit for business purposes, since more competition in the host country might encourage migrants to start a business at home which will mean remitting more for business purposes.

Therefore, although evidence suggests that exposure to entrepreneurship has a positive effect on the probability of becoming entrepreneur this might not be the case for the entrepreneurial exposure in the home country if the market is overcrowded.

2.2 Data

To test the hypotheses stated above, I use three datasets. I first describe the survey used to account for the exposure to entrepreneurship in Mexico. Next, I present the database for entrepreneurial exposure in the United States. Then, I detail the main dataset which provides socio-demographic and labour market characteristics on migrants returning temporarily or permanently to Mexico from the United States, the EMIF. Last, I describe how the main variables are constructed, along with the data description.

2.2.1 The ENOE

The National Survey of Occupation and Employment (ENOE, for its acronym in Spanish) is collected by the Mexico's National Information and Census Office. The ENOE contains quarterly individual data since 2005 to date and provides detailed information of the Mexican occupational as well as demographic and economic characteristics.[4] The ENOE is the result of a consolidation and merge of two previous national surveys which provided information on the labour force and unemployment for more than 20 years. The National Survey of Urban Employment and the National Survey of Employment, where the later includes the former.

The main advantage of this data, for this research, is that it provides detailed individual data about the Mexican labour force and its characteristics. This individual level data can be aggregated at higher levels, such as municipalities or states. Although the survey main purpose is to generate quarterly indicators of general labour market outcomes at national level, the ENOE is representative for localities with less than 2,500 inhabitants.

For the purposes of this research, I use information about the labour force and occupational choices for the period 2005-2012. In particular, for household members above 14 years old they are categorized by labour force status, whether they are employed or unemployed. Furthermore, the employed individuals also report the position on their job: subordinate and paid workers, employers, self-employed, unpaid workers, and not specified. From these, I focus on those who report themselves as self-employed.

[4]The ENOE is formed by five questionnaires: housing, household, socio-demographic, occupation and employment I, and II.

2.2.2 The SBO

The Survey of Business Owners (SBO) contains economic and demographic characteristics for businesses and business owners in the United States.[5] It is conducted on a firm or company basis, where a firm consist of one or more domestic establishments. The survey covers all businesses filing Internal Revenue Service tax forms as individual proprietorship, partnerships, or any type of corporation with revenues of more than $1,000 USD. In particular, the SBO covers all sectors classified in the North American Industry Classification System (NAICS).[6]

The SBO contains data on business ownership by ethnicity and race and data can be aggregated at the county level. Data of business ownership at the county level is essential since migrants in the EMIF reported the counties they resided in the United States. Although the survey was integrated to the economic census in 1972 and has been conducted every five years, data on ethnicity before 2002 reported only if the owner had Hispanic or Latino origin. From 2007 the ethnicity group Hispanic or Latino is more detailed and records information on the place of origin. Therefore, the SBO waves of 2007 and 2012 provide in detail the place of origin, and identify the number of Mexican business owners.[7] For the purposes of this research, an individual is categorized from Mexico if he or she was reported to be Mexican American, Chicano, or from Mexico.

[5] By definition, business ownership is defined as having 51% or more of the stock or equity in the business.

[6] Except those classified as: Crop and animal production; Rail transportation; Postal service; Monetary Authorities-Central Bank; Funds, Trusts, and other Financial Vehicles; Religious, Grantmaking, Civic, Professional, and Similar organization; Private households; Public administration.

[7] Using data from 2007 or 2012 yields similar results.

2.2.3 The EMIF

The Survey of Migration in the Northern Border of Mexico, EMIF, is an annual sample survey from 1999 to date that collects individual information of Mexican migrants going back to Mexico from the United States. The survey includes returnees and circular migrants, since a large share of individuals reported that have intentions to migrate again to the United States. The EMIF includes information on Mexicans above the age of 12 and entering Northern Mexico by land. Before the survey takes place some screening questions are performed to avoid US citizens or commuters from Northern Mexico, since commuting to work is very common along the border. The survey is carried out at arrival gates in bus stations or at customs inspection points located in specific Mexican cities along the Mexico-United States border. On these specific points, individuals pass only once per visit to the city which facilitates the sampling and avoids double counting.

The EMIF main objective is to collect detailed information on the socio-demographic and labour characteristics of migrants before (in Mexico) and after migration (in the United States). It also gathers information on migration, such as when and how migrants crossed the border, if they received help, the time spent abroad, their legal status, remittances, among others. Such information helps to analyse the migratory phenomenon between these two countries. An essential characteristic for this research offered by the dataset is that it collects information on two key locations, the place where migrants used to live in Mexico before migrating and the place they used to live while they were in the United States. Specifically, it reports municipalities for Mexico and counties for the United States.

I use the surveys taken in the period 1999-2012, which contains 92,176 individual-level observations. For the aim of this study, I am interested on

migrant entrepreneurs. Although there is no direct question regarding a migrant being a business owner or self-employed, the survey provides information on whether the migrant remitted for business purposes, which can be used as a proxy for entrepreneurship. Migrants remitting for business purposes are more likely to intend to get involved in entrepreneurial activities. The EMIF provides information on whether migrants worked and remitted when living in the United States, as well as the purposes of remitting. If a migrant ever send money back home, he is asked about his motives for sending money. Therefore, I focus on migrants who sent remittances for business purposes versus those who sent remittances for any other motive.

2.2.4 Variables construction

2.2.4.1 Remitting for business purposes

The dependent variable is dichotomous and represents whether the migrant remitted for business purposes or for any other motive. All the migrants who reported their motivations to remit are considered in the final sample, independently of the amount remitted (i.e. zero or positive remittances).[8] For the period of 1999-2009, the questions on the motives to remit are only asked to migrants who worked in the United States during their last trip. Where their last trip refers to the time they spent in the United States right before the survey took place. Meanwhile in the period 2010-2012, migrants are asked if they remitted *during the last 12 months* of their stay whether they worked or not. In order to keep consistency across these two periods and since I can identify those who worked during 2010-2012. For the period 2010-2012 I only include in the estimated sample those who worked while living in the United States. As a result, the final sample only includes migrants who worked in

[8]Unless migrants missed to report any of the variables of interest or control.

the United States and reported their motives to remit, independently of the amount remitted.

Since 1999, the EMIF collects information on the main motive to remit, but from 2005 onwards besides the main motive it also records additional motives to remit.[9] To sum up, the dependent variable takes the value of 1 if migrants reported to remit to buy, establish or expand a business (i.e. as main *or* additional reason) and takes the value of 0 if migrants reported any other motive to remit than for business. See Table 2.7 in the Appendix for the descriptives of main and additional reasons to remit.

2.2.4.2 Exposure to entrepreneurship

The exposure to entrepreneurship in this research is measured as the density of entrepreneurs in both migrants' place of origin and destination. Both measures of entrepreneurial exposure are measured at the locality level, that is, municipalities in Mexico and counties in the United States. Both variables try to capture the degree of the entrepreneurial environment to which the migrant is exposed before and after migration. Let's recall that in this study, I use entrepreneur to refer to either a self-employed individual or business owner. For the exposure to entrepreneurship in Mexico the ENOE provides self-employment data whereas the SBO contains information on the business owners in the United States.

The exposure to entrepreneurship at home is measured as the proportion of self-employed in the municipality a migrant reported to live before migration. That is, a ratio of the number of self-employed individuals relative to the population in the labour force per municipality, as reported in Table 2.1. This

[9]The motives to remit are the following: *1)* to buy land or agricultural implements, *2)* to buy, establish or expand a business, *3)* to improve or buy a house, *4)* to buy a car or home appliances, *5)* to pay debts, *6)* to buy food and/or pay rent, and *7)* something else.

ratio aims to capture the degree of entrepreneurial skills and information that migrants from a municipality are exposed to before their migration to the United States. The ratio *EMX* is calculated at the municipality level, using the average across years (2005-2012 from the ENOE) of individuals in self-employment and population in the labour force. Therefore, the ratio does not vary across years. This is due to the design of the ENOE.

For my purpose, this dataset has two limitations. First, data for some municipalities across years is not available. Second, not all the municipalities are included in the sample period 2005-2012. Thus, labour characteristics are missing for some municipalities. Since the changes in self-employment rates are not drastic over time, using the *EMX* as time invariant does not represent a problem. Besides, using the average across years also addresses the problem posed by those municipalities where data is not available for all the years of the survey. This is because the *EMX* uses the average of the years that each municipality is surveyed. Regarding the second issue of missing municipalities, although it reduces the observations used on regressions because there is no data for self-employment in some municipalities migrants reported to live, for the analysis of this paper I only use data of sampled municipalities to obtain sharper results.[10]

For the exposure to entrepreneurship in the United States, *EUS*, I want to capture the influence that Mexican entrepreneurs can have among Mexican migrants. Therefore, I use the proportion of Mexican entrepreneurs relative to the total population of Mexicans living in a county, as shown in Table 2.1. The information on the population of Mexicans per county is obtained

[10]One way to include the missing municipalities on the model is calculating the average of the *EMX* of each state using the available sampled municipalities and assign this average to the missing municipalities within that state. The estimations including missing municipalities yield similar results. Also instead of using the mean to replace missing municipalities, using either the state's mode or minimum value show similar results.

Table 2.1: Measures of Entrepreneurial Exposure

Variable	Formula
Entrepreneurial Exposure in Mexico	$EMX = \frac{\text{No. Self-employed in } m}{\text{Population in the labour force in } m}$
Entrepreneurial Exposure in US	$EUS = \frac{\text{Mexican business owners in } c}{\text{Mexican population in } c}$
Exposure to Non-Mexicans Entrepreneurship in US	$EUS_{NMX} = \frac{\text{Non-Mexican business owners in } c}{\text{Non-Mexican population in } c}$
Exposure to Latinos Entrepreneurship in US	$EUS_{L} = \frac{\text{Latino business owners in } c}{\text{Latino population in } c}$

Note: m is Mexican municipality and c is US county.

through the 2010 US Census. Using the 2007 or 2012 waves from the SBO gives very similar results, for the estimations of this paper I use the wave of 2012. With this data, I compute a ratio where the numerator is the number of Mexican business owners in a county, and the denominator is the total Mexican population of that county. I argue that *EUS* is a good proxy for the exposure to entrepreneurial environment from other co-ethnics that Mexican migrants experienced while living and working in the United States.

Evidence suggests that migrants tend to cluster in specific areas of the host country and to interact more with people of similar cultures (Strielkowski, 2011). In addition to the entrepreneurial exposure of Mexicans in the United States, I compute a ratio of Latino business owners to test whether a broader exposure to entrepreneurship has a similar impact on the intentions to get involved in entrepreneurial activities. Similarly, non-Mexican entrepreneurs could encourage entrepreneurship among migrants. Kanas et al. (2009) find that immigrants who have more contact with natives are more likely to be self-employed. Consequently, I use the ratio of non-Mexicans to exploit the possi-

bility that Mexican migrants might learn not only from Mexican entrepreneurs but also from other entrepreneurs around them. These ratios are computed in the same fashion, and are shown in Table 2.1. They consist in the number of business owners by race and county relative to the total population of non-Mexicans and Latinos, respectively.

2.2.5 The characteristics of migrants

During the period of 1999-2012 the EMIF collected information on 92,350 individuals. As mentioned before, information about the purposes of remittances is conditional on having worked and remitted during the migrant's last stay in the United States for the period 1999-2009, and having remitted during the last 12 months of their stay from 2010 to 2012. From the total sample, around 55% stated they have worked in the United States and around 30% send money back home. Almost all who remitted also reported the motives to do it, 25% out of the total sample. From the almost 23,300 migrants who reported the motives to remit, close to 4,500 did not report the county where they were living in the United States. Nevertheless, the vast majority reported the U.S. state. Although almost all migrants reported the municipality of origin, as mentioned before the data on self-employment is not available for all municipalities. Therefore, more observations are dropped from the dataset, almost 3,200 of them. A few observations of the missing data for the counties and municipalities overlap. Thus the final sample consist of 15,680 individuals who worked, remitted, and reported the motives to remit as well as the localities in Mexico and United States.

Table 2.2 contains the descriptive statistics for the variables used in the estimations, for the total sample of 15,680 migrants. To begin with, the proportion of remitters for business purposes is small, only 5% of the sample send

Table 2.2: Descriptive statistics

	Mean	SD	Min	Max
Remitted for business	0.05	0.22	0.00	1.00
Entrepreneurial exposure in Mexico	0.22	0.09	0.06	0.76
Entrepreneurial exposure in US	0.05	0.02	0.00	0.18
Age	36.49	10.59	16.00	70.00
Male	0.91	0.28	0.00	1.00
Married	0.72	0.45	0.00	1.00
High school	0.61	0.49	0.00	1.00
Illegal	0.45	0.50	0.00	1.00
Years since migration (YSM)	11.22	10.49	0.00	64.00
Number of family earners (NFE)	1.93	1.29	0.00	20.00
N	15680			

Source: EMIF 1999-2012, own elaboration.

Notes: The sample is composed of migrants between 16-70 years old. The dependent variable, takes value of 1 if the migrant ever sent money for business purposes and 0 if the migrant sent money for any other reason. The entrepreneurial exposure in Mexico is measured as the ratio of self-employed people over the labour force population in a given municipality. The entrepreneurial exposure in United States is calculated as the ratio of Mexican business owners over the total Mexican population in a county. Age, *YSM*, and *NFE*, are continuous variables, whereas Male, Married, High School and Illegal are dichotomous. Married takes value of 1 if the migrant is or has been married before and 0 if he is single. High school takes value of 1 if the migrant has more than 7 years of education, and 0 otherwise. Illegal takes value of 1 if the migrant crossed the border without a legal document and 0 if he crossed the border with a valid document.

Table 2.3: Descriptive statistics for business and non-business remitters

	Remit for business				Remit for other purposes				t-test	
	Mean	SD	Min	Max	Mean	SD	Min	Max	Diff.	p-value
EMX	0.22	0.08	0.11	0.59	0.22	0.09	0.06	0.76	0.01	0.093
EUS	0.06	0.02	0.01	0.18	0.05	0.02	0.00	0.18	-0.00	0.000
Age	35.41	10.08	18.00	70.00	36.55	10.62	16.00	70.00	1.24	0.000
Male	0.94	0.24	0.00	1.00	0.91	0.28	0.00	1.00	-0.03	0.003
Married	0.69	0.46	0.00	1.00	0.72	0.45	0.00	1.00	0.04	0.002
High sch.	0.70	0.46	0.00	1.00	0.60	0.49	0.00	1.00	-0.12	0.000
Illegal	0.50	0.50	0.00	1.00	0.44	0.50	0.00	1.00	-0.07	0.000
YSM	10.37	9.94	0.05	64.00	11.27	10.52	0.00	62.00	0.66	0.051
NFE	2.02	1.23	0.00	9.00	1.92	1.29	0.00	20.00	-0.10	0.016
N	821				14859					

Source: EMIF 1999-2012, own elaboration.

Notes: The sample is composed of migrants between 16-70 years old. The Remit for business group includes migrants who ever sent money for business purposes and the Remit for other purposes includes migrants who sent money for any other reason. The entrepreneurial exposure in Mexico is measured as the ratio of self-employed people over the labour force population in a given municipality. The entrepreneurial exposure in United States is calculated as the ratio of Mexican business owners over the total Mexican population in a county. Age, *YSM*, and *NFE*, are continuous variables, whereas Male, Married, High School and Illegal are dichotomous. Married takes value of 1 if the migrant is or has been married before and 0 if he is single. High school takes value of 1 if the migrant has more than 7 years of education, and 0 otherwise. Illegal takes value of 1 if the migrant crossed the border without a legal document and 0 if he crossed the border with a valid document.

money to buy, establish or expand a business. Regarding the main variables of interest, the exposure to entrepreneurship in Mexico varies between 6 and 76% with a mean of 22%. On the other hand, the exposure to entrepreneurship in the United States ranges from 0 to 18% and the mean is 5%. This is consistent with the literature and past empirical evidence, that the rate of self-employment among Mexican immigrants in the United States is low compared to the rate of self-employment in Mexico (Fairlie and Woodruff, 2007).

The rest of the Table 2.2 shows the control variables used on the model. The sample is delimited to migrants in working age between 16 and 70 years old. High school is a dummy that captures migrants' education and takes the value of 1 for migrants with seven or more years of education, 0 otherwise. Illegal is a binary variable that takes value of 1 if the migrant crossed the border without a legal document or visa, 0 otherwise. Years since migration, represents the number of years since the migrant crossed for the first time to the United States to look for a job. The last variable accounts for the number of family members that contribute to migrant's household expenses.

Table 2.3 shows the same descriptive variables for the two groups of migrants. On the left hand side are those migrants who remitted to buy, establish or expand a business, whereas on the right hand side are the migrants who stated any other purpose to send money. A t-test is presented in the last columns showing that the group means are statistically different from zero. The exposure to entrepreneurship in both countries have around the same proportion of entrepreneurs for both groups. For the entrepreneurial exposure in Mexico, those who remitted for business the minimum and maximum value range between 11 and 59% while for migrants who remitted for other motives the proportion of self-employment oscillates from 6 to 76%. Whereas the values for the exposure to entrepreneurship in the United States are very similar

for both groups.

2.3 Estimation

To test the hypotheses of entrepreneurial exposure determining migrants' intentions to become entrepreneurs, the following equation is modelled:

$$\begin{aligned} R\_Business_{it} =& \beta_0 + \beta_1 EMX_i + \beta_2 EUS_i + \beta_3 X_{it} + \beta_4 \phi_{MX} + \beta_5 \phi_{US} \\ &+ \beta_6 \phi_{MX} * \phi_{US} + \beta_7 \phi_t + \varepsilon_{it} \end{aligned} \tag{2.1}$$

where $R\_Business_{it}$ takes value of 1 if migrant i sent remittances for business purposes in period t, and takes the value of 0 if the migrant remitted for any other motive. The entrepreneurial exposure in Mexico is given by EMX_i and the entrepreneurial exposure of Mexican entrepreneurs in the United States is represented by EUS_i. The migrants' individual characteristics are included in vector X_{it}, containing the migrant's age, gender, marital status, level of education, legal status, years since migration and the number of family earners. While vectors ϕ_{MX}, ϕ_{US} and $\phi_{MX} * \phi_{US}$ correspond to sets of state dummies for Mexico, United States, and their interaction, that account for fixed state differences determining the outcome. Similarly, ϕ_t represent year dummies to absorb shocks in any given year of the sample. Lastly, the error term is given by ε_{it}.

As mentioned before, residing in highly entrepreneurial localities might have a positive influence on entrepreneurship. Individuals rely on information and reassurance from others, and also learn from other entrepreneurs how to develop and manage businesses. Both the entrepreneurial exposure in Mexico and United States are included to account for the opportunity to learn and acquire managerial skills, and how these affect migrants' decisions to remit for

business purposes.

2.3.1 Results

Table 2.4 shows the main results of this research estimating equation (2.1) using a probit model, average marginal effects are reported. In all regressions a set of year dummies is included, although is not reported in the table. The estimation of column (1) contains the entrepreneurial exposure at the host and the home country plus the year dummies. In column (2) the socio-demographic and individual characteristics are included. First I focus on the variables of interest and later I discuss the results for the control variables.

From the first two columns of Table 2.4 it is observed that entrepreneurial exposure in United States has a positive effect on the probability to remit for business and is statistically different from zero. Whereas the entrepreneurial exposure in Mexico has a negative coefficient although it is not significant. Another noticeable difference is that the effect of entrepreneurial exposure abroad is considerably larger than the one of entrepreneurial exposure at home. If we interpret the results from this estimation -without controlling for states fixed effects- we wrongly conclude that on average one point increase in the exposure to entrepreneurship abroad leads to a 40% increase in the probability to remit for business purposes, whereas the entrepreneurial exposure in Mexico has no effect on remitting for businesses. However, the data level disaggregation of the EMIF allows to control for states level fixed effects. The ENADID only registers the state an individual migrate to, and the MMP records metropolitan statistical areas, which may be comprised of two or more counties of different states. As a result is not possible to control for differences across states in United States using those datasets.

In column (3) a set of dummies for the states of Mexico and United States

are included. Thus, column (3) eliminates unobservable across-state differences and restricts variation within each state over time. From this estimation it can be observed that the coefficient of entrepreneurial exposure in United States decreases by more than three-quarters compared to column (2) from 0.402 to 0.061 and loses significance. Furthermore, the coefficient for the entrepreneurial exposure in Mexico changes from -0.027 to -0.038 and becomes statistically different from zero. Namely, one point increase in the entrepreneurial exposure in Mexico on average decreases the probability to remit for business purposes by 2.7%.

These differences in the estimation results highlights the importance of using county and municipality level data allowing to include states fixed effects. The comparison of columns (2) and (3) on the variables of interests suggest that the states fixed effects are capturing some bias affecting the results. Before the states fixed effects, the entrepreneurial exposure in Mexico was downward biased whereas the entrepreneurial exposure in United States was upward biased. In specific, when controlling separately for Mexican and American states the estimations results suggest that US states are the ones driving the results.[11]

One way to better understand the systematic differences across states that are not captured by the observables is by plotting the fixed effect coefficients. Figure 2.1 shows the plots of the US states fixed effects coefficients, with 90 and 95% confidence intervals.[12] The baseline is the state with the lowest number of Mexican business owners as well as Mexican population, Mississippi. The states are ordered by regions and from the coefficient plots it is observed that

[11] Estimations not reported in this chapter.

[12] Some states were omitted in the regression due to insufficient observations: Alaska, Connecticut, Delaware, D.C., Hawaii, Maine, Maryland, Massachusetts, Montana, Nebraska, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont, West Virginia, and Wyoming.

Table 2.4: Probit AME - Effect of entrepreneurial exposure in Mexico and United States

	(1)	(2)	(3)	(4)
EMX	-0.0293	-0.0268	-0.0381*	-0.0515**
	(0.0224)	(0.0209)	(0.0199)	(0.0274)
EUS	0.4062***	0.4018***	0.0608	0.0439
	(0.1394)	(0.1309)	(0.1166)	(0.1505)
Age		0.0003	0.0003	0.000351
		(0.0002)	(0.0002)	(0.0003)
Male		0.0201***	0.0171**	0.0166**
		(0.0082)	(0.0079)	(0.0080)
Married		-0.0036	-0.0038	-0.00299
		(0.0045)	(0.0049)	(0.0048)
High sch		0.0163***	0.0146***	0.0166***
		(0.0045)	(0.0040)	(0.0046)
Illegal		0.0049	0.0067	0.00812
		(0.0046)	(0.0043)	(0.0050)
3-5 YSM		0.0198***	0.0202***	0.0223***
		(0.0049)	(0.0046)	(0.0064)
6-10 YSM		0.0076	0.0098*	0.00857
		(0.0051)	(0.0051)	(0.0066)
11-20 YSM		0.0099*	0.0133**	0.0140**
		(0.0056)	(0.0054)	(0.0060)
21 or more YSM		-0.0098	-0.0040	-0.00294
		(0.0057)	(0.0052)	(0.0077)
NFE		0.0027**	0.0019	0.00178
		(0.0013)	(0.0014)	(0.0015)
N	15680	15680	15581	13177
Year FE	X	X	X	X
Mx States FE			X	X
US States FE			X	X
Mx*US States FE				X
Clusters	c,m	c,m	c,m	c,m

Notes: The sample includes migrants between 16-70 years old who worked in the United States and reported the purposes for sending remittances. The dependent variable is a dichotomous variable that takes the value of 1 if the migrant ever send money for business purposes and 0 if the migrants send money for any other reason. The entrepreneurial exposure in Mexico is measured as the ratio of people self-employed over the population force in a given municipality. The entrepreneurial exposure in United States is calculated as the ratio of Mexican business owners over the total Mexican population on a county. Year fixed effects contain indicator variables for the surveyed years, 1999-2012, where 1999 is the baseline. US and Mexican states fixed effects only contain dummies for the states with localities where migrants reported to live. Some observations are dropped due to model underidentification when including the states fixed effects. All estimations are two-way clustered at municipality and county level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 2.1: Estimated US States Fixed Effects

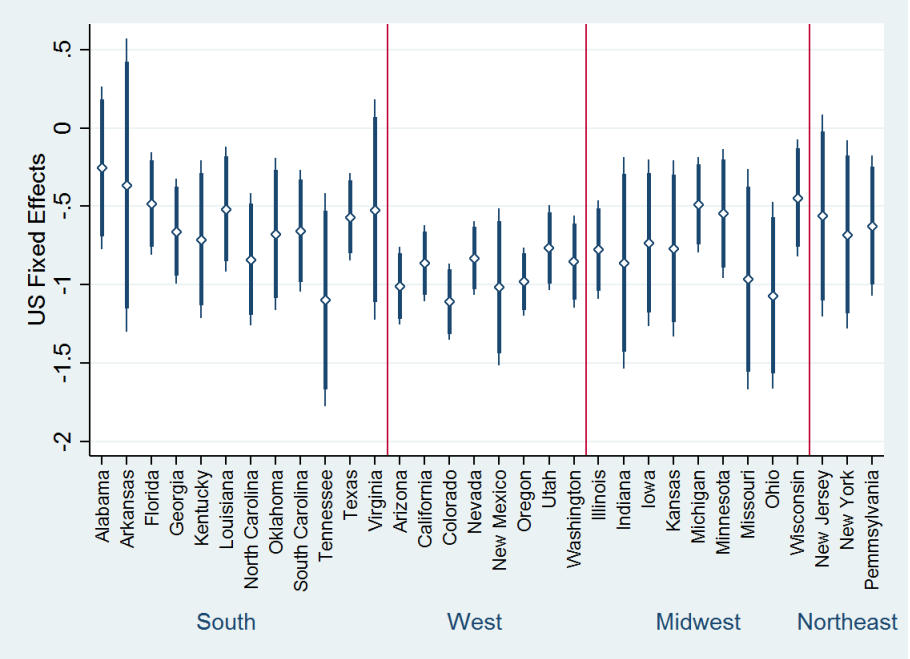
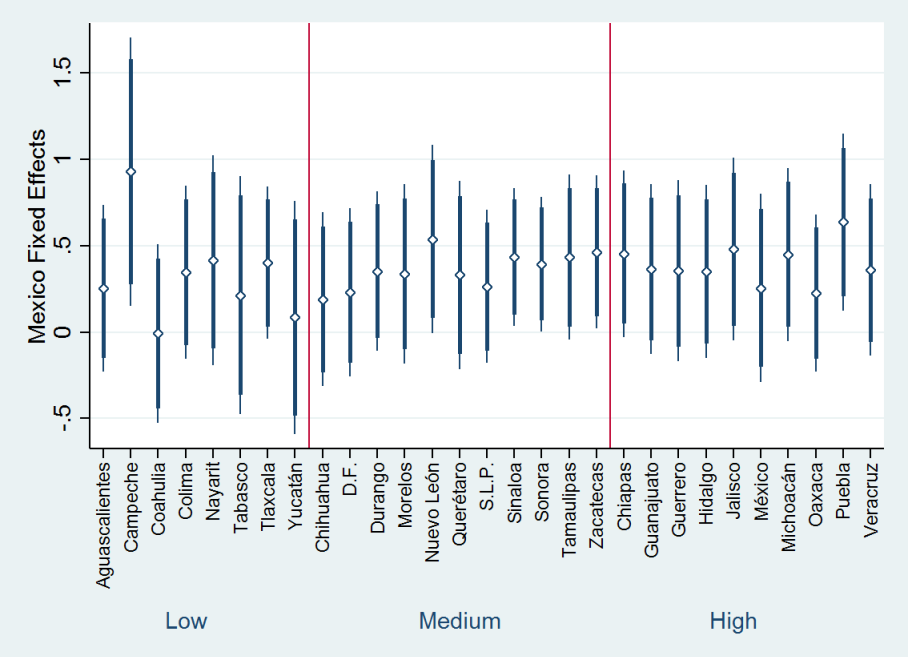


Figure 2.2: Estimated Mexican States Fixed Effects



states in the west region have the highest fixed effects followed by those in the south, whereas the north-east region has the lowest fixed effects. It is very likely that this fixed effects are picking up the self-selection of Mexican migrants into specific states of United States situated along the border and west of US. According to the 2000 and 2010 US censuses, Mexican migrants are highly concentrated in the west and south regions, more specifically in the states of Arizona, California, Colorado, New Mexico, and Texas. Thus, fixed effects help to control for the self-selection of Mexican migrants into states in the United States.

With regards to the Mexican states fixed effect results, the baseline is Baja California since it has the lowest rate of self-employment.[13] Figure 2.2 shows the coefficients for Mexican states fixed effects, the states are ordered according to their level of migration. The states with a coefficient statistically different from zero come from states with medium or high levels of migration, with the exception of Campeche and Tlaxcala.

Moreover the estimation on column (4) controls for years, Mexican states, American states, and the interaction between the last two. The results are even stronger when controlling for the pair Mexican-American states. It is observed a larger and negative coefficient for the entrepreneurial exposure at home -0.052, and it gains significance. On the contrary, the coefficient of the entrepreneurial exposure in the United States decreases even more 0.044, and remains insignificant. Thus, from column (4) we can infer that the states where migrants come from and go to are crucial determinant to remit for business purposes. After controlling for selection the results suggest that only the exposure to entrepreneurship in Mexico has a significant and negative effect on the decision to remit for business purposes whereas the exposure to

[13]Baja California Sur and Quintana Roo are omitted in the regression due to insufficient observations.

entrepreneurship in United States has no impact on migrants' intentions to get involved in entrepreneurial activities. On average one point increase in the entrepreneurial exposure in Mexico leads to a 5.2% decrease in the probability to remit for business purposes.

With respect to the control variables, I observe that age has no effect on the decision to send remittances for business purposes neither the migrant's marital status. Regarding gender, males are more likely to remit for business purposes than females. As to education, migrants with seven or more years of education tend to remit more for business reasons. This result contrast with Wahba and Zenou (2012) and McCormick and Wahba (2001) who find that for returnee migrants the level of education is negatively related to the probability to become entrepreneur. Regarding illegal migrants, the positive sign suggest that migrants who crossed the border illegally (without legal documents) are more likely to send money for business motives. Contrary to Fairlie and Woodruff (2008), they find that among Mexican migrants the rate of business ownership is lower for those who are illegally residing in United States. Years since migration accounts for the number of years from the first time the migrant crossed to the United States to work until the year of the survey. The baseline category is from zero to two years of migration, that is, new migrants. It can be observed that mainly all categories are positive and significant with exception of more experienced migrants who have 21 or more years since first migrated and are less likely to remit for business purposes compared to recent migrants. Finally, the number of family earners has the expected sign but is not statistically significant.

The results of entrepreneurial exposure at the home and host country are robust using OLS and Logit estimations, in the Appendix, tables 2.8 and 2.9 show the results respectively. Both tables show the same specifications

described before, column (1) includes the entrepreneurial exposure at both the host and home country and years fixed effects and in column (2) the socio-demographic variables are added. Columns (3) and (4) incorporate state fixed effects for both countries and column (4) includes the interaction of these. The variables of interest show similar results. The entrepreneurial exposure in Mexico has a negative and non-significant effect on the decision to remit for business purposes before controlling for selection, after including states fixed effects the coefficient is more negative and significant. Whereas the entrepreneurial exposure in United States before controlling for selection has a positive and significant effect but it decreases and becomes insignificant after controlling for selection.

I also explore the presence of non-linear effects on both exposures to entrepreneurship, however the results did not support this relationship. For the estimation controlling by-origin-and-destination fixed effects, the entrepreneurial exposure in Mexico showed a negative sign on both terms whereas the exposure in United States showed a positive effect at first and negative for the quadratic term but none of them significantly different from zero.

2.3.2 Entrepreneurial exposure of non-Mexicans and Latinos in the United States

I use both the entrepreneurial exposure of Latinos and non-Mexicans in the United States, to test whether a broader entrepreneurial exposure at the host country have an influence on migrants' decisions to remit for business purposes. Like Mexicans, Latinos also share similar cultures and traditions. One fundamental factor making Mexican and Latinos more likely to interact is the language. Especially if Mexican migrants are not fluent in English, this might facilitate to make links with other Latino migrants in the same situation. Us-

Table 2.5: Probit AME - Effect of entrepreneurial networks in Mexico and Latinos in the Unitesd States

	(1)	(2)	(3)	(4)
EMX	-0.0312	-0.0285	-0.0383*	-0.0518**
	0.0226	0.0211	0.0200	(0.2006)
EUS_L	0.4612***	0.4473***	0.1249	0.0911
	0.1417	0.1361	0.1373	(1.4111)
Age		0.0003	0.0003	0.0003
		0.0002	0.0002	(0.0022)
Male		0.0198**	0.0172**	0.0168sym*
		0.0082	0.0079	(0.0791)
Married		-0.0035	-0.0037	-0.0027
		0.0045	0.0049	(0.0555)
High sch		0.0162***	0.0145***	0.0163***
		0.0045	0.0040	(0.0450)
Illegal		0.0047	0.0067	0.0083*
		0.0046	0.0043	(0.0438)
3-5 YSM		0.0197***	0.0202***	0.0216***
		0.0050	0.0046	(0.0532)
6-10 YSM		0.0074	0.0099**	0.0079
		0.0051	0.0051	(0.0544)
11-20 YSM		0.0100*	0.0133**	0.0140**
		0.0057	0.0054	(0.0562)
21 or more YSM		-0.0096*	-0.0040	-0.0023
		0.0058	0.0052	(0.0552)
NFE		0.0027**	0.0019	0.0018
		0.0013	0.0014	(0.0146)
N	15680	15680	15581	13177
Year FE	X	X	X	X
Mx States FE			X	X
US States FE			X	X
Mx*US States FE				X
Clusters	c,m	c,m	c,m	c,m

Notes: The sample includes migrants between 16-70 years old who worked in the United States and reported the purposes for sending remittances. The dependent variable is a dichotomous variable that takes the value of 1 if the migrant ever send money for business purposes and 0 if the migrants send money for any other reason. The entrepreneurial exposure in Mexico is measured as the ratio of people self-employed over the population force in a given municipality. The entrepreneurial exposure of Latinos in United States is calculated as the ratio of Latino business owners over the total Latino population on a county. Year fixed effects contain indicator variables for the surveyed years, 1999-2012, where 1999 is the baseline. US and Mexican states fixed effects only contain dummies for the states with localities where migrants reported to live. Some observations are dropped due to model underidentification when including the states fixed effects. All estimations are two-way clustered at municipality and county level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.6: Probit AME - Effect of entrepreneurial exposure in Mexico and non-Mexicans in United States

	(1)	(2)	(3)	(4)
EMX	-0.0301	-0.0265	-0.0383*	-0.0518**
	0.0225	0.0209	0.0201	(0.2013)
EUS_{NMX}	0.0843	0.0987	0.1233	0.0890
	0.1497	0.1419	0.0882	(0.8864)
Age		0.0003	0.0003	0.0003
		0.0002	0.0002	(0.0021)
Male		0.0193**	0.0172**	0.0169*
		0.0082	0.0080	(0.0796)
Married		-0.0037	-0.0036	-0.0026
		0.0045	0.0050	(0.0556)
High sch		0.0173***	0.0145***	0.0163***
		0.0046	0.0040	(0.0448)
Illegal		0.0040	0.0065	0.0081*
		0.0047	0.0043	(0.0437)
3-5 YSM		0.0191***	0.0203***	0.0216***
		0.0051	0.0046	(0.0533)
6-10 YSM		0.0064	0.0098**	0.0079
		0.0052	0.0050	(0.0541)
11-20 YSM		0.0089*	0.0132**	0.0139**
		0.0055	0.0054	(0.0557)
21 or more YSM		-0.0113*	-0.0041	-0.0024
		0.0062	0.0052	(0.0557)
NFE		0.0028**	0.0019	0.0018
		0.0013	0.0014	(0.0146)
N	15680	15680	15581	13177
Year FE	X	X	X	X
Mx States FE			X	X
US States FE			X	X
Mx*US States FE				X
Clusters	c,m	c,m	c,m	c,m

Notes: The sample includes migrants between 16-70 years old who worked in the United States and reported the purposes for sending remittances. The dependent variable is a dichotomous variable that takes the value of 1 if the migrant ever send money for business purposes and 0 if the migrants send money for any other reason. The entrepreneurial exposure in Mexico is measured as the ratio of people self-employed over the population force in a given municipality. The entrepreneurial exposure non-Mexicans in United States is calculated as the ratio of non-Mexican business owners over the total of non-Mexican population on a county. Year fixed effects contain indicator variables for the surveyed years, 1999-2012, where 1999 is the baseline. US and Mexican states fixed effects only contain dummies for the states with localities where migrants reported to live. Some observations are dropped due to model underidentification when including the states fixed effects. All estimations are two-way clustered at municipality and county level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

ing the entrepreneurial exposure of Latinos in the United States I find very similar results as with the entrepreneurial exposure of Mexicans in the United States.

The estimations are included in Table 2.5, where the entrepreneurial exposure in Mexico and the entrepreneurial exposure of Latinos in United States are included. The specification of each column is as before, column (1) and (2) only include year dummies, column (3) includes Mexican and American states fixed effects, and column (4) adds the interaction between states fixed effects. The entrepreneurial exposure of Latinos has a positive and significant effect on the probability to remit for business purposes before controlling for selection. Once the states fixed effects are included, the coefficient EUS_L drops and losses significance as in the estimations shown in Table 2.4 for entrepreneurial exposure of Mexicans in United States EUS. In contrast to the EUS, the entrepreneurial exposure of Latinos in the United States have a larger impact. Regarding the entrepreneurial exposure in Mexico, the coefficient shows similar patterns as in previous estimations. For the final estimation, one point increase in the exposure in Mexico on average leads to a decrease on the likelihood to remit for business purposes of 5.2%.

In the case of the entrepreneurial exposure of non-Mexicans in the United States the same estimations are presented in Table 2.6. The results show a positive although non significant relationship with the likelihood to remit for business purposes. Unlike previous results with the other entrepreneurial exposures, after controlling for selection the change in the coefficient is not dramatic. Moreover, compared to previous results from Tables 2.4 and 2.5 the coefficient instead of decreasing it increases, although is not statistically different from zero. The results from a broader exposure suggest that entrepreneurial exposure from Latinos behave very similar to Mexican entrepreneurial expo-

sure and even have a larger effect. Failing to control for selection would have generated biased results. However, for the non-Mexican entrepreneurial exposure this might not be the case since the results do not change much when including state fixed effects.

2.4 Concluding Remarks

Research on the determinants of entrepreneurial migrants its a growing literature. These studies focus mainly on the factors that affect entrepreneurship at the place of origin and at the place of destination separately. Moreover, the literature suggests that a person's local environment such as entrepreneurial neighbourhoods affect positively the likelihood of becoming an entrepreneur. This study contributes to this literature by investigating the entrepreneurial exposure at both the host and the home country as determinants of migrants' intentions to get involved in entrepreneurial activities.

The results suggest that the entrepreneurial environment where migrants resided affect the probability to send money for business motives. Specifically, after controlling for selection I find that the entrepreneurial exposure in Mexico has a negative effect on migrants' decision to remit for business purposes, whereas the entrepreneurial exposure in the United States has no effect on migrants' intentions to get involved in entrepreneurial activities. Controlling for selection was crucial since failing to account for selection leads to biased results. In particular, the entrepreneurial exposure in Mexico was downward biased whereas the entrepreneurial exposure in United States was upward biased.

The Mexican government implemented the programme *3x1 for Migrants* where the government has helped migrants' initiatives to carry out projects of

social infrastructure, community services, educative projects and productive projects. Under this last category the projects could be at community level, family (2-4 families), individual (1 family), or business training. Migrants have to form an organization or club of at least 10 migrants and they will decide in which of the projects mentioned above want to invest, the different levels of government will triplicate the remittances, hence the name 3x1. Unfortunately, this programme is just intended for organizations or clubs of migrants, making it more difficult for those migrants who do not belong to a club or want to start a small business on their own (without partners). Policy-makers should also consider policies or implement a programme that helps individual migrants to start up or expand a business, specially in areas where self-employment is low.

2.5 Appendix

Table 2.7: Main and additional motivations to remit

	Main		Independently	
	Mean	SD	Mean	SD
Buy land	0.02	0.13	0.03	0.17
Business	0.02	0.13	0.05	0.23
Buy-repair house	0.11	0.31	0.34	0.47
Buy car	0.01	0.08	0.13	0.33
Pay debts	0.07	0.25	0.45	0.50
Food and/or rent	0.74	0.44	0.86	0.35
Other	0.04	0.21	0.10	0.30
N	15,677		11,936	

Note: Although through all the years of the survey, the main motivation to remit was recorded, three migrants did not report their main reason to remit but responded they remitted for business purposes when asked independently. For this reason, the sample for main motivation is 15,677 rather than 15,680.

Table 2.7 summarizes the main and additional reasons why migrants send money back home. The first columns only take into account the main reason migrants gave as to why they send money. In the first place, migrants send money mainly to buy food and/or pay the house rent, almost 75% reported to remit for this purpose. On the same line, followed in ranking by importance 11% of the migrants send money either to buy a house or make improvements in the current house. The 2% of remitters reported that the money sent was mainly used to expand an actual business or either to buy or establish a new business. The second part of Table 2.7 reports the additional motivations to remit, from these columns its observed that the three more recurrent reasons to remit are to buy food and/or pay rent, to pay debts, and to buy or repair the house. 5% of those who sent money remitted for business purposes.

Table 2.8: OLS estimates-Effect of entrepreneurial exposure in Mexico and United States

	(1)	(2)	(3)	(4)
EMX	-0.0261	-0.0237	-0.0340*	-0.0405**
	(0.0208)	(0.0197)	(0.0194)	(0.0198)
EUS	0.4852***	0.4885***	0.0390	0.0063
	(0.1598)	(0.1501)	(0.1535)	(0.1491)
Age		0.0003	0.0003	0.0003
		(0.0002)	(0.0002)	(0.0002)
Male		0.0187***	0.0155**	0.0134**
		(0.0066)	(0.0065)	(0.0067)
Married		-0.0041	-0.0044	-0.0033
		(0.0046)	(0.0051)	(0.0055)
High sch		0.0158***	0.0145***	0.0143***
		(0.0044)	(0.0040)	(0.0043)
Illegal		0.0059	0.0073	0.0069
		(0.0048)	(0.0045)	(0.0046)
3-5 YSM		0.0223***	0.0221***	0.0210***
		(0.0057)	(0.0057)	(0.0063)
6-10 YSM		0.0077	0.0094*	0.0075
		(0.0051)	(0.0052)	(0.0055)
11-20 YSM		0.0103*	0.0129**	0.0122**
		(0.0055)	(0.0053)	(0.0054)
21 or more YSM		-0.0083	-0.0037	-0.0031
		(0.0051)	(0.0046)	(0.0047)
NFE		0.0028**	0.0019	0.0015
		(0.0014)	(0.0014)	(0.0015)
N	15680	15680	15678	15443
R^2	0.010	0.014	0.024	0.070
Year FE	X	X	X	X
Mx States FE			X	X
US States FE			X	X
Mx*US States FE				X
Clusters	c,m	c,m	c,m	c,m

Notes: The sample includes migrants between 16-70 years old who worked in the United States and reported the purposes for sending remittances. The dependent variable is a dichotomous variable that takes the value of 1 if the migrant ever send money for business purposes and 0 if the migrants send money for any other reason. The entrepreneurial exposure in Mexico is measured as the ratio of people self-employed over the population force in a given municipality. The entrepreneurial exposure in United States is calculated as the ratio of Mexican business owners over the total Mexican population on a county. Year fixed effects contain indicator variables for the surveyed years, 1999-2012, where 1999 is the baseline. US and Mexican states fixed effects only contain dummies for the states with localities where migrants reported to live. Some observations are dropped due to model underidentification when including the states fixed effects. All estimations are two-way clustered at municipality and county level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.9: Logit AME -Effect of entrepreneurial exposure in Mexico and United States

	(1)	(2)	(3)	(4)
EMX	-0.0051	-0.0057	-0.0108*	-0.0539*
	0.0046	0.0050	0.0065	(0.0288)
EUS	0.0699***	0.0788***	0.0096	0.00498
	0.0327	0.0340	0.0284	(0.1451)
Age		0.0001	0.0001	0.000364
		0.0000	0.0001	(0.0003)
Male		0.0042**	0.0046**	0.0180**
		0.0022	0.0024	(0.0088)
Married		-0.0008	-0.0011	-0.00313
		0.0010	0.0014	(0.0050)
High sch		0.0034***	0.0040***	0.0173***
		0.0014	0.0013	(0.0048)
Illegal		0.0011	0.0019	0.00825
		0.0010	0.0012	(0.0051)
3-5 YSM		0.0040***	0.0053***	0.0216***
		0.0014	0.0014	(0.0065)
6-10 YSM		0.0016	0.0027*	0.00930
		0.0011	0.0015	(0.0067)
11-20 YSM		0.0021**	0.0036***	0.0149**
		0.0013	0.0017	(0.0062)
21 or more YSM		-0.0019*	-0.0012	-0.00370
		0.0014	0.0015	(0.0081)
NFE		0.0006**	0.0005	0.00183
		0.0003	0.0004	(0.0015)
N	15680	15680	15581	13177
Year FE	X	X	X	X
Mx States FE			X	X
US States FE			X	X
Mx*US States FE				X
Clusters	c,m	c,m	c,m	c,m

Notes: The sample includes migrants between 16-70 years old who worked in the United States and reported the purposes for sending remittances. The dependent variable is a dichotomous variable that takes the value of 1 if the migrant ever send money for business purposes and 0 if the migrants send money for any other reason. The entrepreneurial exposure in Mexico is measured as the ratio of people self-employed over the population force in a given municipality. The entrepreneurial exposure in United States is calculated as the ratio of Mexican business owners over the total Mexican population on a county. Year fixed effects contain indicator variables for the surveyed years, 1999-2012, where 1999 is the baseline. US and Mexican states fixed effects only contain dummies for the states with localities where migrants reported to live. Some observations are dropped due to model underidentification when including the states fixed effects. All estimations are two-way clustered at municipality and county level. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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Chapter 3

Mexican Remittances: A brief literature review

Miriam Saldaña Hernández

Abstract

In this paper I analyse relevant aspects regarding the impact of Mexican remittances. The literature suggest that remittances reduce inequality and poverty in communities with strong historical migration, while they increase in communities with low migration levels. The effects on education are inconsistent, however, child health improves when remittances are received. Moreover, remittances decrease the labour supply of households receiving remittances. In contrast, remittances have a positive effect on the development and creation of business. The determinants of remittances are also analysed.
JEL classification: *F22, F24, J61*

Key words: *Remittances, Mexican migrants, determinants*

Introduction

Over the last few decades remittances have grown steadily. Remittances in the world reached to 553.975 US billions in 2015, the highest amount registered by the World Bank. In 1975 the amount of remittances totalled 10.203 US billions, and Italy was the largest recipient country followed by Spain and Turkey. Nowadays, the top five recipient countries are India, China, Philippines, Mexico, and France, altogether these countries receive around 35% of remittances inflow.[1] Moreover, the largest migration corridor in the world is Mexico-United States. According to the Department of Economic and Social Affairs, for 2015 Mexican migrants represent almost the 26% of the migrant population in the United States. The importance of Mexican migration to United States has been widely studied, specially its impact on the labour market. OECD (2009) reports that by 2008 the number of Mexican immigrants employed represented around 4.5% of the labour force in the United States, which contributes largely to the US economic growth.

Remittances can have a significant economic impact on the receiving country, specially for developing ones like Mexico. In this study I review literature about the effects of remittances on various aspects of Mexico's development. In particular, remittances can affect the redistribution of income and poverty levels. Moreover, literature about child education and health is discussed. Furthermore, I analyse evidence suggesting that the inflow of remittances can affect the labour market and entrepreneurship at the home country.

Given the significant impact of remittances, it is also important to understand what determines migrants' decisions to remit. Evidence for the Mexican case suggests that socio-demographic factors such as gender, age, and educa-

[1]The World Bank, Personal remittances received (current US) https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT?end=2016&start=2016&year_high_desc=true

tion level as well as community characteristics are the main determinants of remittances.

In the following section I describe some characteristics of the actual inflow of remittances in Mexico as well as some statistics about the largest a lowest recipient states within the country. Next, I point out some literature regarding the impact of remittances on development. Last, the determinants of Mexican remittances found in the literature are presented. The last section contains some final remarks.

3.1 Mexican Remittances

In 2016 Mexico was the largest recipient country of remittances in Latin America by receiving 28.7 US billions. Meanwhile, worldwide Mexico ranked fourth according to World Bank statistics. Mexican remittances are a result of the migratory phenomenon between Mexico and the United States. This migratory process began around the middle of the 20th century, when Mexican workers moved to United States to cover the shortage of labour during the Second World War.

For over 20 years the Mexican Farm Labour Programme was held between these countries, allowing the legal entry of Mexican workers to temporarily work in the United States, mostly in the agricultural sector. This programme, commonly known as *Braceros*, ended in 1964. As of its completion, Mexican workers started to cross the frontier illegally to look for a job. Furthermore, some of the temporal workers under the *Braceros* programme where allowed by the government to stay legally in the United States. As a result of these events and the geographical proximity of both countries, the creation of migratory patterns began. One factor that might affect migration patterns is the

implementation of regularization programs.[2] However, Orrenius and Zavodny (2003) study the effect of amnesty programs such as the 1986 Immigration Reform and Control Act (IRCA) on undocumented migration and their findings suggest that IRCA has no impact on the long-term pattern of undocumented Mexican migrants. Similar results are found by Donato et al. (1992), their evidence suggests that IRCA has not changed the undocumented migration from Mexico.

According to Ratha et al. (2016), the migration corridor Mexico-United States is the largest in the world. By 2015, 98% of Mexicans living outside Mexico resided in the United States, according to the United Nations. Furthermore, for the same year Mexican migrants constitute almost 26% of the migrant population in the United States.[3] Since the 80's Mexicans represent the largest immigrant group for this country. Moreover, Ratha et al. (2016) also show that the United States-Mexico remittance corridor is the largest worldwide with an inflow of 25.2 US billions in 2015. Table 3.1 shows the remittances received by state and their correspondent percent distribution. Also it shows the flow of emigration to United States between 2004 and 2009 by state and the Absolute Migration Intensity Index (IAIM), 2010. The IAIM is based on the percentage of dwellings with remittances, emigrants, circular migrants, and returning migrants; the ranking is an overall summary of these. The top three states receiving remittances are Michoacan, Guanajuato, and Jalisco all three located west-central of Mexico, altogether these states receive almost 30% of the annual remittances flow. Furthermore, these states along with Veracruz are also the ones with highest emigration flow to the United States. On the contrary, the states expelling less migrants to the United States

[2]According to Donald (2010) the Immigration Reform and Control Act is the largest legislation program since 1986.

[3]Department of Economic and Social Affairs. http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml

Table 3.1: Emigration and remittances flows in Mexico

State	Emigration flow	IAIM Ranking	Remittances Million USD	Remittances %
Total	1,639,814	-	24,784.77	100.00
Aguascalientes	20,171	23	349.87	1.41
Baja California	48,940	7	681.23	2.75
Baja California Sur	1,833	31	51.25	0.21
Campeche	5,991	32	56.45	0.23
Coahuila	15,719	14	387.12	1.57
Colima	12,795	29	219.27	0.89
Chiapas	67,826	24	593.56	2.40
Chihuahua	52,156	8	643.58	2.59
Ciudad de Mexico	43,391	5	1,090.27	4.40
Durango	28,971	22	533.60	2.15
Estado de Mexico	66,954	3	1,561.15	6.31
Guanajuato	142,691	1	2,263.50	9.12
Guerrero	79,742	15	1,277.74	5.16
Hidalgo	81,961	12	725.53	2.93
Jalisco	129,966	4	2,218.58	8.97
Michoacan	179,498	2	2,531.99	10.23
Morelos	26,383	25	551.07	2.23
Nayarit	12,769	20	399.72	1.61
Nuevo Leon	43,410	18	644.43	2.60
Oaxaca	83,386	11	1,289.40	5.21
Puebla	82,130	10	1,371.27	5.53
Queretaro	43,668	19	460.12	1.85
Quintana Roo	6,505	27	117.43	0.48
San Luis Potosi	40,868	9	849.43	3.42
Sinaloa	34,404	16	533.24	2.15
Sonora	32,421	21	375.84	1.52
Tabasco	9,154	30	130.17	0.53
Tamaulipas	29,773	17	665.00	2.68
Tlaxcala	17,627	28	224.88	0.91
Veracruz	141,174	6	1,086.14	4.38
Yucatan	12,314	26	134.68	0.55
Zacatecas	45,223	13	767.27	3.10

Source: Bank of Mexico, Workers' remittances income, (percent) distribution by state 2015. Yearbook of migration and remittances Mexico, 2017.

are Tabasco, Campeche, and Estado de Mexico, while the states receiving the lowest flow of remittances are Baja California Sur, Campeche, and Quintana Roo.

3.1.1 Why are Mexican remittances important?

Remittances are a fundamental income source for the recipient families, which are mostly low-middle and low-class families. Moreover, remittances are spent on products of the basic market basket, such as food and clothing; but also a large share is used to pay debts (CONAPO, 2017). Several studies analyse the impact of remittances on diverse aspects of development. In what follows, some studies that address these topics are reviewed.

3.1.1.1 Inequality and Poverty

One of the first papers to analyse remittances' effect on inequality is the paper of Stark et al. (1986). They use household data from both internal and international remittances as well as non-remittances income from two villages in the state of Michoacan with different migration patterns. The first village has low levels of migration to the United States while the second has more tradition sending migrants abroad. Their findings suggest that the impact on inequality depends on the villages' migration history. For the village with low migration level, remittances increase inequality. This is due to the higher migration costs that households face compared to the other village. These households investing in migration are more likely to be those from the village's upper income distribution, therefore the unequalising effect of remittances in this village. However, for the village with high migration, remittances have a positive outcome reducing inequality among the village members. In this case, migration costs are lower because the number of experienced contacts in the village can

help and provide information that ease migration, even for those at the bottom distribution of the village.

In a later paper (Stark et al., 1988), they study the robustness of their results by using different distributional weights when calculating an extended Gini index. Stark et al. (1988) find that households at the bottom of the income distribution face entry barriers to migration work when more weight is applied to these households. Like these, there is a large number of studies analysing the effect of remittances on inequality for rural areas. Taylor (1992) and Taylor and Wyatt (1996), find that remittances besides affecting inequality they also lighten credit constraints on household farm production.

Using a larger household dataset which includes 1,782 rural households from 14 states, Taylor et al. (2005) ivestigate the impact of migration and remittances on inequality and poverty. They find that both the equalizing effects of remittances and alleviating poverty are larger in regions with migration history, that is, regions where the share of migrant households is large. These results reinforce the findings of Stark et al. (1986). Arslan and Taylor (2012) using a household panel data which allow them to control for time-invariant variables find similar results.

De la Fuente (2010) instead of analysing the impact of remittances in poverty, he investigates whether remittances are sent to individuals more likely to be more vulnerable in the future. De la Fuente (2010) uses household panel data from 506 most deprived rural localities in Mexico. By instrumenting the vulnerability to poverty with rainfall distribution, this study finds a negative relationship between remittances sent and households' vulnerability to future poverty.

Furthermore, McKenzie and Rapoport (2007) study the relationship between emigration and inequality. They use two representative Mexican sur-

veys the Mexican Migration Project (MMP) consisting of 57 rural communities with high rates of migration, and the National demographic dynamics survey (ENADID) with information of 214 rural communities. Controlling for unobserved community factors correlated with migration decisions and inequality, using state-level migration rates, they find an inverse U-shaped relationship between migration and inequality. For communities in the MMP with high levels of migration they find that migration leads to a reduction in inequality, whereas for communities in the ENADID with more disperse levels of migration inequality increases at lower migration rates.

3.1.1.2 Health and Education

In a developing country such as Mexico, the remittances received by households can play an important role on health and education. Many studies have analysed these relationships often finding mixed evidence. Due to data availability, studies from Mexico analyse the impact of remittances in child health and education.

Córdova (2006) study the effect of the fraction of remittance-receiving households on children's schooling and health status. In addition to a rich set of controls, to address for endogeneity they use the municipal rainfall pattern and distance to the state of Guadalajara as instrumental variables. Their results suggest that a higher fraction of remittance-receiving households have a positive impact on children's education and health by reducing illiteracy and infant mortality. Additionally, remittances increase school attendance among children 5 years old, but decrease attendance among teenagers between 15-17 years old.

Hildebrandt et al. (2005) find that migration has a negative relationship with infant mortality and increases birth weights. They suggest that an ob-

vious channel affecting child health through migration is an increase in the household income.

The paper by Alcaraz et al. (2012) uses panel data from the Mexican National Occupation and Employment Survey (ENOE). They exploit the impact of the 2008 recession on Mexican immigrants employment status and therefore on remittances received by Mexican households and analyse if the decrease in remittances lead children to drop out from school and start to work. Estimating a differences-in-differences model,[4] they find that a shock in remittances lead to an decrease in school attendance and an increase in the incidence of child labour.

Anylising the *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) Amuedo-Dorantes et al. (2007) their results indicate that remittances increase the healthcare expenditure, in particular hospitalization and primary care. In a later paper, Amuedo-Dorantes and Pozo (2011) find evidence suggesting that remittances might help to equalise healthcare expenditures among households lacking healthcare coverage and those with it.

3.1.1.3 Labour Market and Entrepreneurship

Most of the studies analyse the impact of migration on the labour market focusing on the effects in the host country rather than at the home country. Moreover, little is know about the effects that remittances have on the home country labour market. Similarly, how migrants' entrepreneurial activities are affected by remittances is under-explored. The studies analysing the Mexican case find that remittances promote entrepreneurial activities, however, remittances often reduce the labour supply.

[4]The treatment group are children between 12-16 years old in households receiving remittances in a given period. In contrast, the control group consist of kids of the same age residing in households that did not receive remittances.

Hanson (2007) studies the role of migration and remittances on Mexican labour force participation using data from Mexico's censuses in 1990 and 2000. In particular, he finds that individuals are less likely to enter the labour force if they are members of a household which receives remittances or has a migrant abroad, although his results suffer from potential self-selection. Using a sample more likely to address for unobservables, Hanson (2007) find that women from states with high migration rates are less likely to work outside the home, relatively to women living in states with lower migration rates.

Using data from the ENIGH, another paper studying the effect of remittances received on the labour supply is Airola (2008). Similarly, his results suggest that remittances lower the labour supply by decreasing the number of hours worked per week. Using also the ENIGH, Amuedo-Dorantes and Pozo (2006a) argue that the labour supplies of men and women might respond differently to remittances, as well as the impact they have on rural and urban areas. They explore how employment type and hours worked change in these groups when receiving remittances. Addressing for endogeneity of the outcome, they find that the hours worked increase or decrease at different type of work, gender, and local area. In specific, for males in both areas rural and urban, formal work decreases while informal increases, and self-employment decreases only in urban areas. Regarding females, only informal and non-paid work is negatively affected in rural areas.

Cox-Edwards and Rodríguez-Oreggia (2009) focus on persistent remittances rather than sporadic since they argue that persistent remittances are more likely to modify the behaviour of recipients while the sporadic might be the result of particular circumstances such as labour force status. They use a propensity score matching with quarterly employment data collected with a migration module taking place for the first and only time by the National

Quarterly Employment Survey. By comparing the labour force participation of remittances recipients with non-recipients, they find little evidence suggesting that persistent remittances affect labour force participation. The only subgroup where they find differences in labour participation is on women from urban areas with low migration history, in particular, these women increase their labour participation when the household receives persistent remittances.

Massey and Parrado (1998) use data collected from rural municipalities located in states with high migration history. They focus on male household heads to study the effect of savings and remittances on business creation. Controlling for selection, their results suggest that altogether remittances and savings increase individuals' likelihood of business creation.

Woodruff and Zenteno (2001) investigate the capital constraint on investment faced by microenterprises, emphasizing on the role of remittances have to overcome capital constraints. For this purpose, they use the National Survey of Microenterprises. They conclude that remittances are an important source of capital for the development of microenterprises, specially for those situated in urban areas.

3.1.2 What determines remittances?

Literature about the determinants of remittances is extensive, Carling (2008) and Hagen-Zanker and Siegel (2007) present a review of the factors affecting migrants' intentions to remit and/or the amount remitted worldwide. Among the main socio-demographic determinants found are: migrants' income, education level, age, legal status, gender, marital status, place of origin, household size (home and abroad), and time spent abroad. In some cases, there are inconsistent results. For instance, for migrants' income and education level some studies find a positive relationship while others find not effect at all. How-

ever, other effects are well established such as being male or married increases remittances, whereas the household size in the host country has a negative relationship.

For the Mexican case, Durand et al. (1996) investigate the determinants of migrants' savings and remittances at different tiers, such as macroeconomic, community, household and individual level. They use random samples collected in 30 communities during December and January of 1982-1983 and 1987-1992 in the states of Jalisco, Guanajuato, Nayarit, Michoacan, and Zacatecas; also non-random samples of out-migrants were gathered in the United States.

They estimate both the probability to remit and the amount remitted. Their results suggest that migrants are more likely to remit the older their working age is, if are married, with the cost of coyote,[5] and if the community of origin has a large share of self-employment; but less likely to remit with years of schooling and if accompanied by the spouse. The amount of money paid to be smuggled into the United States increases the probability and amount remitted, as well as years of schooling, monthly earnings, and duration of the trip.

Likewise, Amuedo-Dorantes and Pozo (2006b) analyse the probability and level of remittances. However, they use five waves from the Survey of Migration in the Northern Border of Mexico, EMIF, between 1993-2000. In particular, they find that older migrants and males tend to remit more. Moreover, remittances are positively associated with the number of household members. In another paper, using data from the MMP Amuedo-Dorantes and Pozo (2006c) find that remittances have an inverted U-shape with respect to time spent in US. Specifically, after spending over five years abroad the amount of remit-

[5]Person who smuggles people to the United States along the border.

tances sent to Mexico starts to decline. The decline is earlier for migrants with weak ties to Mexico and later for migrants with spouses at the community of origin (in Mexico).

Soltero (2009), studies the specific case of Mexican-born immigrants in Chicago. In particular, uses data from a multi-stage probabilistic sample of 510 Mexican immigrants living in Cook County, Illinois. Several new variables are included to investigate their effect on remittances, such as migrant's religion, English proficiency, whether he voted in Mexico and/or United States, or if he is registered to vote in US, the language used to communicate at home, school/work, and with friends. However, none of these were statistically significant. Among the new variables included that have significant effect was the preference of the lifestyle in Mexico over Chicago's, which increased the likelihood to remit.

3.2 Concluding Remarks

In this chapter, we review the importance of Mexican remittances. Data suggest that Mexican states receiving a large share of remittances are also the ones with the highest emigration flow. Although data availability has limitations, the literature suggests that socio-demographic factors such as gender, age, and education level as well as community characteristics are the main determinants of remittances.

Moreover, findings about the impact on inequality and poverty suggest that remittances have different effects depending on the level of migration from migrant's locality. Regarding the labour market and entrepreneurship of migrants, literature suggest that remittances decrease the labour supply of households receiving remittances. However, remittances have a positive effect

on the development and creation of business. With respect to education there is mixed evidence about the effects of remittances. However, child health improves when remittances are received. Also, some evidence suggest that remittances increase the healthcare expenditure.

Although the main determinants of remittances have been identified in the literature, the dynamics of migration and remittances is in constant evolution, therefore, the possibility to explore new research ideas is open. For example, little is know about the political implications remittances can have on the receiving community. Likewise, migrants residing in different political environments other thing equal can differ in their remittance behaviour. Moreover, recent changes on US anti-migration policies can have a direct effect not only in migration but also on money sent abroad.

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Conclusion

In this thesis I analyse how migrants' local environment affects their remitting behaviour. The characteristics of Mexican migration provide a good case of study, the Mexico-United States migration corridor is the largest in the world and the remittance corridor has an estimated outflow of US $25.2 billion remittances. Thus, remittances in Mexico are an importance source of income for migrants' families as well as for the economy of the country. The determinants of remittances have been widely studied, however little is know about how the local environment (i.e. social networks) of migrants affect their remitting behaviour. This thesis sheds some light in this regard, taking Mexican migrants as study case.

For migrants, co-ethnics living abroad are often their first contact point. They provide valuable information for the migration process as well as help for new migrants to assimilate in the host country. The clustering of immigrants provides a peculiar environment in which the interaction with co-ethnics can influence others decisions. That is precisely what this thesis is focused on.

The first chapter analyses theoretically and empirically how living around more Mexican migrants in the United States affect migrants' probability to remit as well as the amount remitted. After controlling for the endogeneity of the network, the empirical results suggest that living among more Mexicans have a negative effect on aforesaid probability and amount of money sent back

home. One possible explanation for this is that migrants in larger clusters of co-ethnics tend to contribute more towards social projects at the host community.

In the second chapter, I analyse how the exposure to entrepreneurship can affect migrants' decision to remit for business purposes. Specifically, I investigate how the exposure to Mexican entrepreneurs in both migrants' localities of origin and destination affect their intentions to get involved in entrepreneurial activities. After controlling for selection I find that only the entrepreneurial exposure at the home country has an impact on the decision to remit, and its effect is negative.

The last chapter highlights the importance of remittances in the Mexican context. This chapter also reviews literature regarding the impact of remittances on development as well as to analyse the main determinants leading Mexican migrants to remit.

Future research should explore beyond the main determinants of remittances considering the current political changes for Mexican migrants. Another research area unexplored due to data availability are the factors determining for which purposes migrants remit. Most of the studies in this line use indirect measures to proxy migrants' motivations to remit. However, new data provides more direct and precise information about the motives to remit.