Can remittances improve the households' well-being? Evidence from 150 Mexican communities

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Abstract

Using data from 150 Mexican communities and a relative multidimensional well-being measure, this research shows that remittances might have limited impact on specific social contexts. This occurs because neither the sender nor the receiver see these transfers as investment resources. In principle, to achieve a significant impact, these transfers must increase significantly, in more than 50 per cent at least. The effect of remittances disappear when endogeneity problems are considered. However, the instrumented results consistently confirm that the dependence on remittances increases the likelihood to be below the well-being threshold.

1. The remittances-development debate

Migration around the world has been increasing rapidly in recent decades and the net balance of immigrants in high developed countries has enlarged since the second half of the 20th century (Özden et al., 2011). The latest estimations foresee more than 250 million international migrants by 2015 (The World Bank, 2015).

Remittances are the financial trace of labor migration, and in some developing countries they represent nearly three times the size of official development assistance and exceed the foreign exchange reserves. In Haiti remittances represent more than 21% of the Gross Domestic Product (GDP) and in Tajikistan this financial flow represents almost half of it (The World Bank, 2015). Remittances sent to developing countries reached 436 billion dollars in 2014, 4.4% more than in 2013.[1]

In absolute terms, the most important remittances receivers were India (70 billion US), China (64 billion), Philippines (28 billion), Mexico (25 billion), Nigeria (21

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[1]Implementing the methodology of Ratha and Shaw (2007), the global bilateral remittances during 2014 are estimated at 583 U.S. billion dollars.

billion), Egypt (20 billion), Pakistan (17 billion) and Bangladesh (15 billion).

However, all these countries present high poverty rates and low development indicators. For instance, 45.5% of the Mexican population is considered poor by CONEVAL (2013), the national agency that measures poverty and inequality in Mexico. In Egypt and Philippines, more than one fourth of the population lives below the national poverty line. Regarding the Human Development Index (HDI) reported by the United Nations (2014), India is ranked on the 135th place out of 187 countries. Nigeria's HDI is 0.504, which places the country in the 152th position, and Bangladesh is located in the 142th place, although it has improved in the last decades.

This contrasting scenario has motivated the debate addressing the impact of remittances on economic development and growth. Despite their undeniable importance, there is no consensus about the remittances' effect and different results arise depending on the analyzed migration flow, period covered and analytical approach implemented. In general, previous research can be classified in two groups.

On the one hand, there is an agnostic or pessimistic position. Studies like Hinojosa-Ojeda (2003) argue that remittances could perpetuate migration, economic dependence and low productivity in sending societies. Basok (2000) concludes that remittances are a sort of unconditional cash transfers, mainly used for households' consumption, which impact on development and growth is limited. Furthermore, emigration effects (remittances and return migration) may increase interpersonal and inter-household inequality in rural areas (Lipton, 1980). In the same way, Gibson (2011) analyzed the migration flow Tonga-New Zealand and found no significant evidence about the impact of remittances on childhood education. Moreover, evidence from Mexico suggests that living in a migrant household lowers the chances of completing high school (McKenzie and Rapoport, 2011).

On the other hand, Brown (1999); Massey and Parrado (1998); Adams (1998); and Mesnard (2004) claim that, in some societies, remittances are used to finance small businesses and, thus, generate positive effects on development indicators. In addition, remittances increase the disposable income and contribute to the well-being of societies through consumption channels (Roberts, 2009; Taylor et al., 2006; López-Córdova et al., 2005). Cox-Edwards and Ureta (2003); and Adams (2005) argue that remittances positively impact child schooling and Hamilton (2009) found they reduce infant mortality in rural Mexican communities. Similarly,

Orrenius et al. (2010) and Ahlburg (1996) propose that remittances can reduce inequality.

From a macroeconomic point of view, Chami et al. (2005) found a robust negative correlation between remittances and GDP growth, suggesting that they do not serve as a source of capital. Also, Amuedo-Dorantes and Pozo (2012); and Airola (2008) propose that receiving remittances is associated with fewer hours of work, negatively impacting the aggregate output. However, Bugamelli and Paternó (2011); and Brown (2006) argue that remittances can help to reduce output growth volatility due to their size, stability and low pro-cyclicality.

The review presented in the previous lines evidences that further research is needed in both the macro and micro front. As Grabel (2010) concludes, most of the research that explores the nature and impact of remittances tend to be descriptive (ethnographic) and focused on specific case studies that provide results for a couple of non-representative communities. These studies fail to understand remittances from a broader economic context.

In contrast, the research approaching the remittances-development relation from a macro perspective assume these financial flows are uniformly distributed across households and ignore the heterogeneity among receivers.

The principal reason for this is the absence of representative data able to capture migrant household's decisions over long periods of time. In other words, there is a lack of micro-founded research addressing the long-run nature of remittances.

The objective of this paper is to contribute to the remittances-development debate, but following a methodology that overcomes local results and at the same time captures the effects of remittances across migrant sending societies in Mexico. To do so, I use household data from 150 Mexican communities and test if remittances decrease the likelihood of suffering hardship in those communities. Furthermore, this paper intends to understand which are the drivers of such results.

The next section addresses the main features of remittances and migration in Mexico. Subsequently, I present the data and methodology followed. The last section offers some final remarks.

2. Unauthorized Migration and Remittances in Mexico

The Mexican-American migration flow has been present since the late nineteenth century, but during the 1950s the migration of Mexicans to the United States started to gain importance in absolute and relative terms due to the *Programa Bracero*.[2] This migration policy aimed to satisfy the labor demand during the Second World War through temporal and circular migration of Mexican peasants. However, since 1964, when the *Programa Bracero* ended, the Mexican-American migration flow has continued with its circular character but transformed to an unauthorized (illegal) migration flow (Rodriguez, 2014).

Since 1970, the sustained growth of emigrants has been translated to increasing levels of remittances (Figure 1). In almost twenty five years (1980-2014), these transfers passed from 1 to 25 U.S. billion dollars.[3] In 2007, they reached their peak at 27 billion, and during the first years of the 2000s these financial flows presented an average annual growth rate of 20%, becoming the second largest source of foreign currency for Mexico (Urciaga, 2006).

This exponential growth can be decomposed in a migration, remitting propensity and average amount effect. According to Sana (2008), the last ones were important drivers for the remittances growth during the period 1990-2004.

Hence, the question that naturally arises is whether these non-debt financial transfers have had any effect on the well-being of their receivers, but as I argued before, the answer is far from obvious.

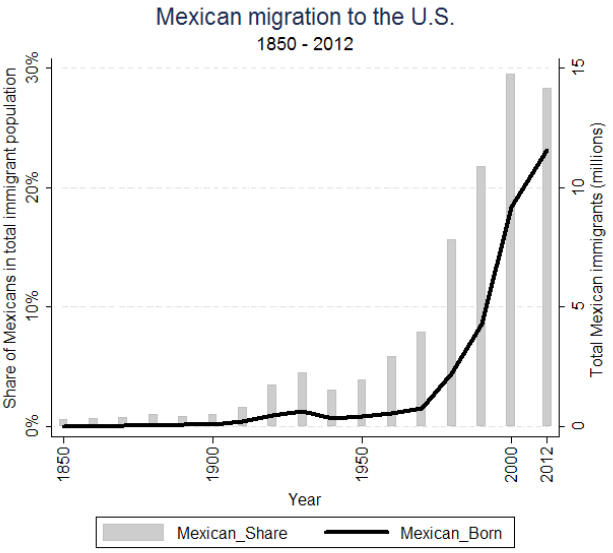
For answering this question, it is necessary to clarify who receives such resources, and then understand her decisions regarding the use of them. Traditionally, remittances are understood as a macroeconomic phenomenon, while this is true, I propose that remittances' dynamics are determined at a micro level. For this reason, any study addressing the remittances' impact on any development indicator should consider the household as analytical unit.

The first aspect to notice about remittances in Mexico is their heterogeneous distribution across states. Sana and Massey (2005); and Durand et al. (2001), among

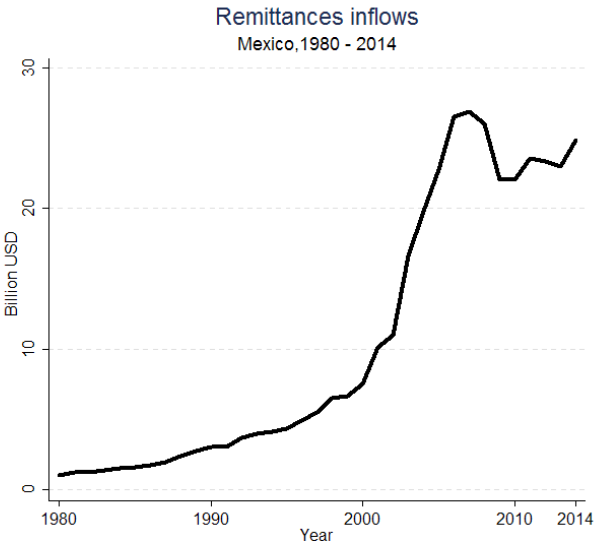
[2]The Migration Policy Institute estimates a stock of 11.5 million Mexican-born individuals in the United States, which represented 28.3% of the total immigrant population in 2012. Data available at: http://www.migrationpolicy.org/. These estimates are in line with Orraca (2015), who calculates a stock of 11.2 million in 2010 using Mexican census data and American Community Surveys.

[3]In 2014, remittances represented 1.9% of Mexico's GDP.

Figure 1



Source: Migration Policy Institute. Data available at http://www.migrationpolicy.org/



Source: World Bank calculations. Data available at http://www.worldbank.org/en/research

other researchers, have documented that most of the Mexican migrants come from western states, also known as the traditional migrant-sending region (Durango, Guanajuato, Jalisco, Michoacán, Nayarit and Zacatecas). Nevertheless, since the 1980s non-western states like Guerrero, Oaxaca, Morelos and Puebla have become important migrant senders (CONAPO, 2012). In consequence, remittances should be concentrated in these regions.[4] Looking at state level statistics from the Central Bank of Mexico and controlling for population density, it is clear that the principal migrant-sender states are the main receivers of remittances as well, at least for the last 20 years (Appendix B).

The historical concentration of migration and remittances in specific states is a characteristic that must be considered in any research addressing the remittances-development relation. In other words, methodologies studying the remittances' effect at a state or country level could be reporting biased results, even if they control for unobservable differences across states.

Like Orrenius et al. (2010) research, most of the macro panels delimit their models to high-migration states facing endogeneity and time varying data constraints. These models assume an uniform distribution of remittances across and within states and deny the private character of these transfers.

[4]The western states receive every year, on average, 30% of Mexico's remittances. Author's estimations based on official balance-of-payments data from the Central Bank of Mexico.

If it is recognized that remittances are received by households and not by states or countries, it is clear that any primary effect of these transfers is experienced by the household members.

Traditionally, the sender and receiver profile can be identified through the *Encuesta sobre Migración en la Frontera Norte de México* (EMIF-NORTE). This survey is implemented on the main entrance points of the Mexico-U.S. border and in some important Mexican airports, and captures the socioeconomic characteristics of the migrant and her migratory experience in the United States. In addition, the migrant provides information about her household in Mexico, thus the remittances receiver characteristics are indirectly capture through returning migrants.[5]

Since the mid 1980's the characteristics of the household receiving remittances can be identified through income-expenditure surveys (ENIGH). However, this survey is only representative at a national level and for some states in specific years. Since 2008, an extension of the ENIGH, the *Modulo de Condiciones Socioeconómicas* (ENIGH-MCS) also identifies the social deprivations experienced by the receiver with a state level representativeness. Moreover, there is the *Encuesta Nacional de la Dinámica Demográfica* (ENADID), which is a survey focused on women's mortality, fertility and migration. It is available for only five years since 1992 and it is representative at a national and state level, and for some major cities. Finally, the 2000 national census contains a migration supplement with a municipal representativeness, but until the author's knowledge, it was not implemented again.[6]

The absence of representative data at a local or community level has been filled by the Mexican Migration Project (MMP), which is described in the next section.

3. The people behind remitances

The latest update of the MMP (April 2015) contains data from 150 Mexican communities. Since 1982, three to five communities located throughout Mexico are randomly surveyed each year. The selection criteria is based on the existence of some migration in the community. The sample size is generally 200 households and communities with different characteristics have been chosen to provide a

[5]Further information about the EMIF-NORTE is available at: http://www.colef.mx/emif/.

[6]Further information about the ENIGH-MCS, ENADID and the Mexican census is available at http://www.inegi.org.mx/.

range of diverse sizes, regions, ethnic compositions, and economic activities.

The MMP gathers social, demographic, and economic information of the household and its members. Also, it collects basic migration information on each person's first and last trip to the United States. From household heads and spouses, it is compiled year-by-year labor history and migration information; in addition, for household head migrants, detailed questions about their last trip to the U.S. are included, focusing on employment, earnings, remittances, besides other data. These microdata allows to identify the remitting behavior of the migrant as well as the decisions of the receivers regarding the use of such transfers.

This section looks closely to the characteristics of the sender and describes the main features of the household receiving remittances. Moreover, I introduce some analytical categories that help to understand the asymmetric social contexts of the receivers.

3.1 Who sends remittances?

The following lines refer to the household heads that remitted during their last migration spell to the United States.[7] Clearly, a household could receive remittances from other members besides the head and from individuals beyond the household. However, the MMP only reports the remitting behavior of all undocumented border crossings of each household head and from other member when the head was not a migrant.[8]

The MMP corroborates that most of the migrants are men (97%). Thus, the following descriptive statistics will not be broken down by sex. Yet, there are two categories that might influence the migrant's remitting behavior.

The first one is the size of the community of origin. Household needs differ based on to their social context, i.e. urban or rural. Indeed, the amount remitted could vary according to the receiver constraints. This paper uses the population density categories of the MMP to identify remitting patterns across migrants. The communities of origin are classified as Metropolitan Areas (more than 100,000 habitants), Urban Areas (10,000-100,000), Towns (2,500-10,000) and Ranchos (less than 2,500).

[7] In the sample, 65.5% of the household heads remitted (4,612 out of 7,044).

[8] Further information about the MMP150 is available at: http://mmp.opr.princeton.edu/home-en.aspx .

The second aspect to take into account is the prevalence of migration in the community of origin. As I explained previously, this phenomenon has been present for more than one hundred years in western states. I call this the "historic character" of migration. In historic migrant-sending societies, migration networks are more developed, and migratory experiences are easily transmitted. Hence, the remitting behavior of western natives might differ from non-western migrants. Along this research, the historic migrant region is conformed by communities located in the states of Durango, Guanajuato, Jalisco, Michoacán, Nayarit and Zacatecas (Appendix C). I will refer to this communities as "historic or western societies". This characteristic of the Mexican-American migration flow is widely used and recognized by previous literature.

Considering the complete sample, the migrant's average age at the moment of the last trip is 33 years, but the mean age increases as the community becomes more rural. In ranchos, the average age is 35 while in metropolitan areas is 32. Migrants from western communities are two years older than their counterparts.

Most of the Mexican migrants are married (89%). This share holds even if we break down the marital status by population density and historic character. The proportion of never married migrants that remit is minuscule (1.4%). This is an important finding since it reflects the cohesive character of migration among the Mexican migrants (Sana and Massey, 2005). In other words, the migrant must ensure the flow of remittances as a cultural arrangement established with his family, specially if the migrant is a male household head.

On average migrants complete five years of school, but the ones from metropolitan areas study two years more (seven) than the rest. The same difference is observed between migrants from historic and non-historic societies, where the number of school years completed is higher in the latter.

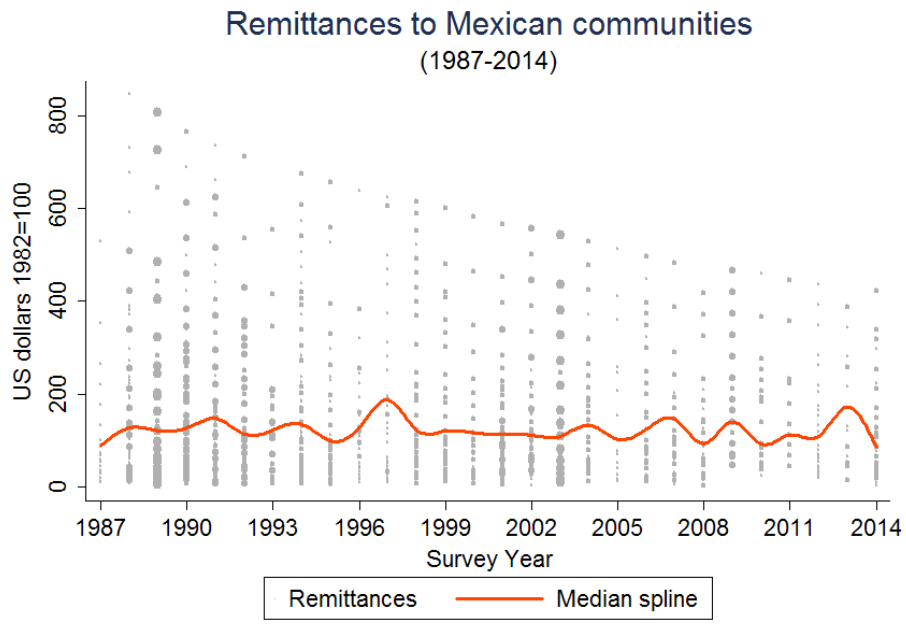
Forty per cent of the migrants made only one trip, 25% migrated twice and one in ten reported three migration spells. The average number of trips in the sample is three, but while migrants form ranchos made four trips, those from towns made three and the ones from metropolitan areas only two. In western societies, the average number of trips to the U.S. is four, two more than in their counterparts.

The duration of the migration spell is, on average, 27 months. Nevertheless, as the community becomes more rural the trip lasts less. In ranchos the mean duration is 23 months while in metropolitan areas is 38. In other words, rural migrants make frequent trips but with shorter duration, and locals from big cities present fewer

spells but, on average, last fifteen months more. A similar pattern is observed when the historic character is considered. In societies where migration has been present for generations, the trip lasts seventeen months less than in those where migration has not a historic character. This finding reflects that it is easier to emigrate from societies where migration is part of their culture and where the migratory "knowhow" is transfered easily. In consequence, individuals from those societies can do more trips with less duration. In contrast, the costs to migrate in non-migrant societies is higher, limiting the migrant's capacity to carry out several migration spells. It is important to highlight that almost 70% of the migrants crossed the border illegally; this fact holds when controlling by population density and historic category.

The average monthly amount remitted during the whole period (1987-2014) is 159 U.S. dollars.[9] Figure 2 shows the stability of such transfers during the period covered by the sample. However, as the community becomes more rural, the average amount remitted increases. Migrant-sending households receive 146 dollars when located in metropolitan areas, 158 in urban areas, 162 in towns and 170 in ranchos. There are no differences when considering the historic aspect.

Figure 2



[9] All the remittances and monetary variables were converted to real values, being 1982 the base year (1982=100).

The MMP allows to analyze the purpose of remittances. It records the sender's will regarding the use of such transfers. The survey offers a variety of purposes that can be classified as consumption or investment objectives, and the migrant can choose up to five purposes.

Ninety five per cent of the migrants reported at least one purpose. As principal purpose, 46% choose "food and maintenance". Meaning that daily consumption should be the main objective of remittances. Thirty one per cent choose "health expenses", 7% "Construction or repair of house", and 6% "debt payment". The main finding is that, at least from the sender's point of view, remittances will never play a productive or investment role. Furthermore, excluding the "construction and repair of house" category, all purposes can be classified as consumption activities. This results are on line with the findings of Urciaga (2006).

Only 48% of the sample registered a second purpose. Among these migrants, 27% choose "health expenses", 19% "education expenses", 15% "construction or repair of house", 10% "purchase of consumer goods" and 7% "food and maintenance". It is clear that education, the unique investment activity, comes as a secondary purpose. The investment options available, besides education, were "purchase of livestock", "purchase of tools", "start/expand new business", "purchase agricultural inputs", "savings", among others. Third purposes where registered by a minimum number of migrants.

The distribution of remittances' purposes is very similar when controlling by population density and there is no evidence of investment or productive purposes in neither of them. Even in rural communities, the purposes "purchase of livestock" and "purchase of agricultural inputs" are insignificant. Small differences arise when comparing migrants from metropolitan areas with their counterparts from ranchos, specially when considering the "food" and "construction/repair of house" categories. There is no clear differences regarding "debt payment" or "health expenses" options when breaking down communities by population density.

However, there are some differences when considering the historic category. Only 34% of the migrants from western communities choose "food and maintenance" as principal purpose, while 67% of their counterparts did. Four out of ten western migrants chose "health expenses" as main purpose, whereas 14% of the non-western did. This reflects pure preferences since there are no differences in the average amount remitted. Hence, the purpose of remittances are more diversified in historic migrant-sending societies. Perhaps receiving remittances for generations

have modified the use of such transfers.

Remittances are not the only monetary transfer that migrant-sending households receive. At the end of the migration spell, migrants return home with savings made during their stay. On average, they bring back 631 dollars, but migrants from urban communities (metropolitan and small urban areas) bring less money than the rural ones. Indeed, migrants form towns return with 12% more savings than metropolitan migrants. When considering the historic character, the difference is small (27 dollars) between non-historic and historic societies.

The marginal product of labor is an important variable when looking at the migrant's remitting behavior. In principle, wages might be the main determinant of the amount remitted. Considering the complete sample, the average monthly wage of a migrant is 583 dollars. Controlling by population density, metropolitan migrants earn 533 dollars, 49 less than locals from urban areas. Migrants from towns and ranchos earn almost the same, 602 dollars. Similarly, individuals from historic societies make 574 dollars, 25 less than their counterparts.

What could explain these differences? Looking at the hourly wage, all migrants earn the same, around 5 dollars per hour. Hence, the differences must be explained by the number of hours worked. Precisely, migrants work less as the community becomes more urban. While individuals from ranchos work 47 hours per week, migrants from metropolitan areas work 43. Meaning that, on average, the latter work 16 hours less per month, explaining the differences in monthly wages. Also, migrants from communities with historic prevalence of migration work 4 hours more per week than the rest.

Finally, remittances represent, on average, 42% of the migrants' wage. This confirms the high commitment that migrants have with their community and family. There is no clear pattern when breaking down this share by community size categories. However, individuals from metropolitan areas are the ones who relatively remit less (36% of their wage). Households from western societies receive 44% of the migrant's wage, whereas in non-western communities the migrant family receives 38%.[10]

[10]In the sample, 169 out of 4,406 individuals reported monthly remittances that overcome the migrant's monthly wage. I keep these observations since migrants could have income sources other than wages.

3.2 The household that receives remittances

The following lines describe the household that receive remittances, and contrast it with the non-receiver. The analytical categories considered in the sender analysis are used as well.

It is important to clarify that the MMP does not record continuous data for remittances at a household level. Instead it reports a binomial variable that identifies the households receiving such transfers. This question was introduced from 1999, meaning that only 79 communities (12,343 households) will be considered in this section.

The share of households receiving remittances is higher in historic societies than in non-historic (17 versus 13%), but as the community becomes more rural, the proportion of receivers increases: metropolitan areas (9), urban areas (17), town (15) and rancho (24).

The income sources registered in the survey are the wages of the household head and her spouse.[11] On average, the monthly household income in the sample is 230 dollars, but those households receiving remittances have a lower income (139 dollars). However, the non-receivers income is above the mean (245 dollars). The household income has a clear increasing trend as the community's size increases, i.e. while metropolitan households dispose 291 dollars per month, in ranchos their counterparts earn 51% less. Looking at communities where migration has been present for generations, households earn on average 50 dollars more than those in non-historic societies.

Considering the receivers of remittances only, the previous trend and differences across population density categories hold. However, the monthly income in western and non-western households is the same. More important is the size of such transfers in the household's income. Half of the households say remittances represent an "small" part of their income, 16% believed their size is "intermediate" and almost one third consider that remittances are a "substantial" share of their income. Breaking down this perception by the historic category no clear differences arise. Nevertheless, it is clear that in ranchos the share of households considering that remittances have a "substantial" importance is higher than in metropolitan areas (37 versus 26%). But still, in most of the households remittances only have an "small" size regardless the category considered. This results contradicts previous

[11] The household income is the sum of both wages.

research arguing that remittances represent a significant portion of the family income, and in some cases almost all of it (Ochoa, 2004).

The average household in the sample has four members, two of them working. This household size holds when controlling for population density, prevalence of migration and reception of remittances. The household structure with the higher likelihood to receive remittances is the one in which all children are adults (50%), followed by households where some children are teenagers (33%). Households where all children are teenagers or with no children commonly do not receive remittances. The previous result holds when considering the size and historic character of the community.

The migration experience within the household can be captured by summing up all the trips made by its members. On average, households receiving remittances record two trips, while their counterparts have no experience. Within the households receiving remittances, those located in western communities record one migration spell more than the non-western. Considering the population density category, there are no clear differences.

Besides the household characteristics, it is important to identify any relation between remittances and the household's well-being. In the MMP, the well-being can be captured through variables recording the access to basic services and amenities.[12] Almost all receivers and non-receivers of remittances are covered with all the services. However, the share of households with only two services is slightly higher when receiving such transfers.

Limiting the analysis to the receivers of remittances, 96% of the households in historic societies have all services, while in non-historic only 81% are fully covered. Furthermore, the share of households with only two services is considerably lower in historic communities (3.6 versus 16.4). Even though migrants from ranchos remit more, only 58% of the households access to the three services. Small urban and metropolitan areas are almost fully covered with all the services. This reveal that the supply of basic infrastructure has not been accomplished in rural Mexico, and the reception of remittances cannot overcome this deprivation.

Regarding the number of amenities available in the household, we can observed that 75% of the households receiving remittances count with at least 6 of the

[12]The three basic services in the survey are running water, electricity and sewage. The eight amenities considered are stove, refrigerator, washing machine, sewing machine, radio, television, stereo and phone.

amenities, while only 63% of the non-receivers count with them. Within the receivers, 31% of the western households have the total amenities, whereas 21% of the non-western households have them. Again, as the community becomes more rural the number of available amenities decrease significantly. Only, 14% of the ranchos receiving remittances have access to the eight amenities.

Another aspect to consider are the assets owned by the household, but more important is knowing the proportion of such assets financed with remittances. Thus, the following lines refer to receivers only. Almost one fourth of the households have at least one land holding, but only 17% of the owners financed those assets with remittances. Non-western households are more likely to own land holdings but in western societies the share of land holdings financed with remittances is higher.

Also, four fifths of the households own at least one property, however the minor part of them (28%) financed it with remittances. This share is lower in metropolitan areas (16%) but higher in ranchos (32%). Small differences are observed considering the historic category.

Almost half of the households have at least one vehicle, but as the community becomes more rural, the likelihood to finance a vehicle with remittances increases. In historic societies, financing vehicles with remittances is less common than in non-historic societies.

If we consider that remittances can be used as investment, then it is compulsory to look at productive assets. In this sense, one in three households receiving remittances own at least one business, but only 28% of the owners use remittances as a financial source.[13] Urban households tend to finance relatively more businesses, and no differences are observed when controlling for the historic character of migration.[14] Considering livestock as a productive asset, in non-western ranchos, households finance 26% of their livestock with remittances, while in western societies only 13% does. However, on average, the former owns less livestock than the latter.

[13]For example, Canales and Montiel (2004) found that in Los Altos de Jalisco, a historic migrant-sending region, 29% of local business use remittances as principal source of funding or initial investment, and 7% use this flows to finance capital reinvestment processes.

[14]Twelve business categories are registered by the MMP: store, street vendor, restaurant-bar, workshop, factory, middleman, personal service, professional-technical service, other service, agriculture, cattle raising and other businesses.

The previous descriptive statistics suggest that remittances are associated with higher standards of well-being in societies where migration has been present for more than one century. Also, in rural communities, remittances might play an important role in the household's prosperity since they are used relatively more to finance properties and livestock.

However, it is difficult to believe that remittances, by themselves, could have transformative effects. The access to basic services is still limited in rural communities. This negatively affects the household living standards. Moreover, the results reveal that among receivers, remittances are not commonly used to finance productive activities, and few households use such transfers as investment. Furthermore, most of the households consider that remittances are a "small" part of their income. This matches with the sender's will and in principle, there is no evidence suggesting that remittances might be a sustainable source to increase the receivers well-being. Nevertheless, the impact of remittances must be tested considering the social context of the household, i.e. within the previous analytical categories.

4. Can remittances improve relative well-being?

To address the impact of remittances on the household's relative wellbeing, I firstly implement seven *probit* models, which can be specified as follows.

$$Prob(H_{jk} = 1|x_{jk}) = Prob(x_{jk}\beta + e_{jk} \geq 0|x_{jk}) \tag{1}$$

where e_{jk} has a standard normal distribution (Wooldridge, 2010). $H_{jk} \in \{0, 1\}$ identifies if the household j is below the wellbeing threshold within the social context k, i.e. if it suffers hardship.[15] The methodology followed to define and measure well-being is described in the Appendix A.

x_{jk} represents the regressors vector, which can be grouped in three analytical spaces. The first captures the presence of migration and the importance of remittances in the household. The variables in this group are: 1) *rem:* multinomial variable that captures the importance of remittances in the household, where 1 is "Small", 2 is "Intermediate", 3 is "Substantial" and 4 is "No remittances received"; and 2) *trip:* total number of trips to the U.S. made by household members.

[15]The social contexts are the ones used along the paper: Metropolitan, Urban, Town, Rancho, Historic/Western and Non-historic/Non-western communities.

The second group considers the characteristics of the household. The regressors are: 1) *members:* number of household members; 2) *workers:* number of workers in the household; 3) *hempl:* employment status of the household head, where 1 is "Not in labor force", 2 is "Unemployed" and 3 is "Employed"; and 4) *sempl:* employment status of the head's spouse.

The third group of regressors (continuous variables) capture the assets owned by the household: current land holdings, properties, vehicles and livestock. *Farm* and *lstock_dol* are binomial variables that identify if the household performs farming activities or if any animal was bought with remittances. Those assets and productive activities financed with remittances have the suffix "dol".

Assuming no endogeneity, the marginal effects in Table 1 adjust to the panorama described in the previous section.[16] Remittances have an effect in specific social contexts and only when they represent an "intermediate" size in the household's income. Receiving remittances decrease in 10% (towns) and 13% (western communities) the probability of suffering hardship.

Regarding the members' characteristics, the employment status of the head and her spouse has an important and significant impact. When the head is unemployed, a household has, on average, 34% more chances to be below the well-being threshold, and in small rural societies (ranchos) this likelihood increases up to 44%. By contrast, when the head is employed, the probability of suffering hardship decreases. This effect is greater in metropolitan areas (30%) and societies where migration has been present for generations (27%). The spouses that report being unemployed are almost inexistent in the sample, but being employed significantly decrease the likelihood of suffering hardship. This impact reduces as the community becomes more rural.

The possession of assets brings mix results. In general, owning properties, businesses and vehicles decreases the chances to be below the well-being threshold. Specially, the possession of an additional vehicle has a large and significant effect in all social contexts. Nevertheless, no impact is observed when properties and businesses are financed with remittances.

A household developing farming activities has more chances to be experimenting hardship, specially in urban areas (32%) and historic communities (26%).[17] This is not surprising since rural activities are commonly developed in the periphery of

[16] Regressors with no data for the estimations were excluded.

[17] Most historic communities (73%) are considered metropolitan or urban areas.

the cities, where poverty and social deprivations are concentrated. This effect holds for all contexts except ranchos. Again, funding farming activities with remittances has no impact.

Households financing an additional land holding with remittances are less likely to suffer hardship, but only in urban areas (21%) and towns (16%). In ranchos, this ownership is associated with a higher probability of being below the threshold (14%). This evidences that owning land holdings in rural communities is not a sufficient condition to assure the household's well-being.

Furthermore, owning livestock financed with remittances increases the chances (14%) of suffering hardship in western communities. This reflects that remittances by themselves do not guarantee well-being, even when they are used as farm inputs. Of course, livestock could be for productive or self-consumption purposes.

In sum, the evidence suggests that remittances could have a significant effect in specific social contexts (towns and western communities), confirming the importance of the analytical categories proposed.

It is clear that remittances have no impact when used as investment. When they fund vehicles or livestock, the chances of suffering hardship increase. While this could be a symptom of economic dependence, it might reflect as well that migrant-sending households face, on average, worst living conditions.

The results of the non-linear models along with the findings of the previous section corroborate that remittances might have limited effects and are far from being a source for sustainable economic development.

However, these models have two weaknesses. First, they do not capture the variation of remittances across households and within social contexts. Instead they introduce subjective categories that might bring biased results.[18] To better understand the impact of remittances it is necessary to introduce a continuous variable of these transfers.

Second, the household's well-being might be influenced by the amount of remittances received, but at the same time the amount remitted would depend on the well-being conditions of the migrant's household, i.e. the models might face a type of endogeneity known as reverse causality or two-way causation. Hence, to estimate causal effects, it is necessary to use an instrument, which must be

[18]The MMP do not provide a variable capturing the amount of remittances received by the household.

Table 1: Well-being predictors I. Average marginal effects (dy/dx)

well-being	Pop. Size (Model 1)	Metro (Model 2)	Urban (Model 3)	Town (Model 4)	Rancho (Model 5)	Hist. Character (Model 6)	Historic (Model 7)	Non-historic (Model 8)
2.rem	-0.05	0.00	0.01	-0.10*	-0.06	-0.04	-0.13**	0.03
	(0.04)	(0.10)	(0.10)	(0.06)	(0.07)	(0.04)	(0.05)	(0.05)
3.rem	0.01	-0.10	0.06	0.03	-0.04	0.02	-0.07	0.06
	(0.03)	(0.08)	(0.06)	(0.06)	(0.05)	(0.03)	(0.05)	(0.04)
4.rem	0.01	-0.00	-0.00	0.00	0.02	-0.02	-0.05	-0.00
	(0.02)	(0.05)	(0.04)	(0.03)	(0.04)	(0.02)	(0.03)	(0.02)
trip	0.01***	0.02	0.01***	-0.00	-0.00	0.00	0.01***	-0.00
	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)
members	-0.01*	-0.03***	-0.01	-0.00	0.01	0.00	0.01	0.00
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
workers	0.01**	0.02*	0.02	0.01	0.01	0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
2.hempl	0.34***	0.34***	0.34***	0.37***	0.44***	0.36***	0.35***	0.35***
	(0.04)	(0.07)	(0.09)	(0.06)	(0.09)	(0.04)	(0.06)	(0.05)
3.hempl	-0.23***	-0.30***	-0.29***	-0.14***	-0.16***	-0.18***	-0.27***	-0.13***
	(0.02)	(0.04)	(0.06)	(0.04)	(0.06)	(0.02)	(0.03)	(0.03)
2.sempl	-0.07	-0.19**		0.05		-0.04		
	(0.14)	(0.09)		(0.23)		(0.15)		
3.sempl	-0.12***	-0.16***	-0.15***	-0.07***	-0.07**	-0.12***	-0.13***	-0.11***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)
land	0.04*	-0.02	-0.07	0.11***	0.03	0.07***	0.01	0.07***
	(0.02)	(0.06)	(0.08)	(0.04)	(0.03)	(0.02)	(0.05)	(0.03)
land_dol	-0.03		-0.21*	-0.16*	0.14***	-0.04	-0.01	-0.05
	(0.04)		(0.11)	(0.08)	(0.06)	(0.04)	(0.06)	(0.05)
prop	-0.02**	-0.04*	-0.02	-0.02	0.01	0.01	0.01	0.00
	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)
prop_dol	-0.01	0.05	0.02	-0.01	-0.05	-0.00	-0.03	0.02
	(0.02)	(0.06)	(0.04)	(0.03)	(0.04)	(0.02)	(0.03)	(0.02)
vehicles	-0.13***	-0.14***	-0.11***	-0.12***	-0.23***	-0.15***	-0.13***	-0.16***
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
veh_dol	0.03	-0.00	0.01	0.01	0.15***	0.06***	0.08***	0.05**
	(0.02)	(0.04)	(0.04)	(0.03)	(0.04)	(0.02)	(0.03)	(0.03)
business	-0.02**	0.02	-0.04**	-0.06***	0.00	-0.02**	-0.06***	-0.01
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
b_dol	-0.03	0.02	-0.08	0.01	-0.05	-0.03	0.04	-0.06*
	(0.03)	(0.08)	(0.05)	(0.05)	(0.06)	(0.03)	(0.05)	(0.04)
1.farm	0.11***		0.32***	0.08*	0.04	0.17***	0.26***	0.14***
	(0.03)		(0.09)	(0.05)	(0.05)	(0.03)	(0.07)	(0.03)
1.farm_dol	0.01		-0.11	0.09	0.01	-0.03	-0.01	-0.03
	(0.04)		(0.07)	(0.06)	(0.06)	(0.04)	(0.07)	(0.04)
lstock	-0.00		-0.00	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
1.lstock_dol	0.04		0.12	0.03	0.03	0.09**	0.14*	0.06
	(0.04)		(0.12)	(0.06)	(0.07)	(0.04)	(0.08)	(0.05)
Observations	7,987	1,916	1,673	2,982	1,417	7,992	2,504	5,483

Standard errors in parentheses

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

exogenous to the household's relative well-being.[19] Such variable will capture the variation of remittances exogenously.

To have a continuous vector of remittances, I matched the migrant data with the household characteristics. Thus, the monthly amount remitted by the migrant will be the remittances received by the household. It is important to notice that the amount remitted corresponds to the last migration spell. The models are specified as the previous, but *rem:* a continuous vector of remittances; *rem_inc:* the share remittances have in the household's income, i.e. $rem\_inc \in \mathbb{R}_0^+$; *savings:* amount of money brought at the end of the trip; and *years:* number of years since the last trip.

Looking at the average marginal effects in Table 2, the first thing to notice is that the number of years since the last migration spell has no impact in the models. This implies that the likelihood of suffering hardship does not depend on the moment of the reception, but on the amount received. Indeed, the monthly remittances received are significant in all the models. Despite its significance, their effect is limited in all social contexts, except in metropolitan areas. For example, in ranchos, an increase of one dollar in the amount remitted leads to a 0.16% decrease in the probability of suffering hardship. It would be necessary to increase the amount remitted by 100 dollars to attain a 16% effect. This seems difficult if we consider that ranchos' migrants remit 133 dollars.

A higher impact is received by western households. On average, a one dollar increase will reduce the chances of suffering hardship by 0.41%. Again, a 100 dollars increase in the amount remitted will reduce in 41% this likelihood. Since the average amount received by western households is 116 dollars, the previous seems difficult to happen. Migrants from western societies remit, on average, 44% of their wage. Thus, increasing remittances by 10 dollars appears to be suitable, though this will drive a 4.1% reduction only. While positive, this effect is limited.

The share of remittances in the households' income can be interpreted as a measure of remittances dependence. The higher its value, the greater its importance to the household. Its interpretation can be made as follows: an increase of 1 unit of *rem_inc*, implies that remittances augmented by the full amount of the household's income.

The regressor *rem_inc* is positive and highly significant in all the analytical cat-

[19] The well-being measure is based on the social context of the household, so it is convenient to use an instrument exogenous to the community and social context.

egories. In other words, the more dependent a household is, the higher the likelihood to be above the well-being threshold. Looking at the distribution of this variable, rural communities present an average ratio of 2.1, while in metropolitan areas it is 0.57. Meaning that, in ranchos, households are heavily dependent on remittances since this transfers represent 200% of their income. In general, households experimenting hardship have an average ratio of 2.7, whereas those above the well-being threshold present a ratio of 0.58.

If *rem_inc* increases by 1, households in urban areas have 59% more chances to be suffering hardship, while their counterparts living in ranchos have a likelihood of 19%. This is an expected result because households in ranchos have very high remittances-income rates, making them less sensible to dependence. In addition, the well-being measure in this research considers a monetary and non-monetary aspect. Thus, households with constrained access to basic services or amenities will be less sensible to remittances dependence, which is the case of rural communities.

Figure 3 illustrates the previous analysis, and shows that small amounts remitted have high marginal effects, which rapidly tend to zero as the amount remitted increases. Also, it depicts small marginal effects when the ratio remittances/income is small. As this ratio increases, the marginal effects increase as well, but then the variable starts loosing effect.

Regarding the other regressors, the employment status of the spouse lost all significance. In contrast, the impact of an unemployed head is still significant in the overall sample, but only when considering the well-being thresholds by population size. Having assets financed with remittances do not lower the households' chances to be below the well-being threshold. Only farming activities funded with remittances decrease the likelihood of suffering hardship, specially in ranchos.

When a binomial response model has endogenous or mismeasured regressors, there are three methods to estimate such models (given a vector of instrumental variables that are uncorrelated with the error term): maximum likelihood, linear probability, and control functions estimators. In particular, this research use the latter because they are consistent only when the endogenous regressors are continuously distributed, which is the case of the models used. Lewbel, et al. (2012) offer a complete review and suitability of these techniques.[20]

[20]The correction was implemented with the STATA program "ivprobit" and the MLE (conditional maximum likelihood estimators) option. The program treats all independent variables as

Table 2: Well-being predictors II. Average marginal effects (dy/dx)

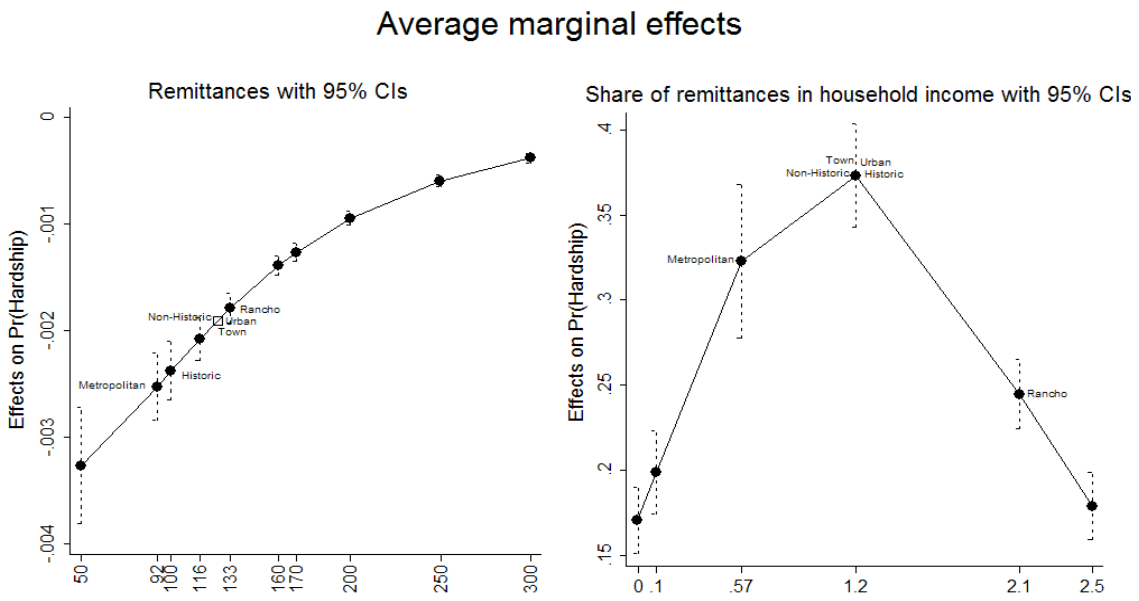
well-being	Pop. Size (Model 1)	Metro (Model 2)	Urban (Model 3)	Town (Model 4)	Rancho (Model 5)	Hist.Character (Model 6)	Historic (Model 7)	Non-historic (Model 8)
rem	-0.0028***	-0.0168	-0.0046***	-0.0033***	-0.0016***	-0.0033***	-0.0041***	-0.0034***
	(0.0003)	(0.0054)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0005)	(0.0003)
rem_inc	0.33***	2.84***	0.59***	0.35***	0.19***	0.41***	0.61***	0.36***
	(0.02)	(0.85)	(0.05)	(0.03)	(0.03)	(0.03)	(0.06)	(0.02)
savings	-0.00	-0.00	-0.00**	-0.00	-0.00	-0.00**	-0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
years	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
trip	0.01	-0.01	0.01*	-0.01	0.01	0.00	-0.01	-0.00
	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)
members	-0.01	0.02	-0.01	-0.00	-0.00	0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
workers	0.01	-0.04*	-0.01	0.01	-0.02	-0.00	-0.01	0.01
	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)
2.hempl	0.20*	0.40***		0.06	0.38***	0.10	0.08	0.08
	(0.11)	(0.05)		(0.12)	(0.18)	(0.10)	(0.14)	(0.11)
3.hempl	-0.08*	0.02	-0.07	-0.00	-0.09	-0.06	-0.08	-0.03
	(0.05)	(0.05)	(0.07)	(0.07)	(0.13)	(0.04)	(0.06)	(0.06)
3.sempl	-0.01	0.03	-0.00	0.09*	-0.03	0.00	-0.02	0.04
	(0.03)	(0.05)	(0.04)	(0.05)	(0.05)	(0.03)	(0.04)	(0.04)
land	-0.00		0.18	0.08	0.02	0.02	0.02	-0.00
	(0.05)		(0.14)	(0.05)	(0.06)	(0.05)	(0.06)	(0.06)
land_dol	-0.07		-0.09	-0.13	0.07	-0.03	-0.08	0.00
	(0.05)		(0.08)	(0.12)	(0.06)	(0.05)	(0.08)	(0.05)
prop	0.02	0.05	-0.02	0.06*	0.06	0.04*	0.05*	0.05*
	(0.02)	(0.05)	(0.02)	(0.03)	(0.05)	(0.02)	(0.03)	(0.03)
prop_dol	-0.02	0.09*	0.05	-0.04	-0.01	-0.00	-0.04	0.03
	(0.02)	(0.06)	(0.04)	(0.04)	(0.04)	(0.02)	(0.04)	(0.03)
vehicles	-0.04***	-0.05	-0.06*	-0.08***	-0.01	-0.08***	-0.08***	-0.09***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)
veh_dol	-0.01	-0.04	0.01	0.03	-0.02	0.04	0.07*	0.03
	(0.03)	(0.04)	(0.03)	(0.04)	(0.05)	(0.03)	(0.04)	(0.03)
business	-0.07***	-0.14*	-0.03	-0.09**	0.01	-0.04*	-0.04	-0.05**
	(0.02)	(0.07)	(0.03)	(0.04)	(0.03)	(0.02)	(0.03)	(0.02)
b_dol	0.04	0.25**	-0.02	0.07	-0.02	0.02	0.04	0.04
	(0.04)	(0.10)	(0.07)	(0.06)	(0.06)	(0.04)	(0.08)	(0.04)
1.farm	0.02		-0.07	-0.01	-0.05	0.05	0.04	0.10
	(0.05)		(0.11)	(0.07)	(0.07)	(0.06)	(0.08)	(0.08)
1.farm_dol	-0.06		0.08	-0.06	-0.10**	-0.07*	-0.07	-0.08*
	(0.04)		(0.09)	(0.06)	(0.04)	(0.04)	(0.06)	(0.04)
lstock	-0.00		0.00	-0.00*	-0.00*	-0.00	0.00	-0.00
	(0.00)		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
1.lstock_dol	-0.01		0.05	0.11	-0.04	0.13**	0.16**	0.13
	(0.06)		(0.15)	(0.12)	(0.06)	(0.07)	(0.08)	(0.09)
Observations	1,364	177	399	475	307	1,364	583	781

Standard errors in parentheses

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

To correct for endogeneity, I instrument the amount of remittances received with *admissions:* temporary Mexican workers and families admitted under a labor visa. This variable considers several work permits, including agricultural and non-agricultural workers, which represented 49% of the temporal-labor visas issued in 2013.[21]

Figure 3



To understand the exogenous character of this instrument, it is important to remember that most of the Mexico-U.S. migration is unauthorized. Because migrating illegally entails high economic and social costs, migrants always seek to ensure a successful crossing. Of course, only those that successfully overcome the border can decide how much to remit, and such decision is strongly influenced by the risk experimented during the crossing. If it was risk free (low probability of apprehension or death) the migrant commonly remits smaller amounts and her trip lasts less. This happens because the spell can be repeated easily, and migration is seen as a sustainable source of income over time.

In contrast, if the probability of apprehension or failure is high, the migrant will try to make the trip worthwhile, i.e. remit more and extend the migration spell

instruments, i.e. it estimates a nonrecursive model that depicts a reciprocal relationship between two endogenous variables. Thus, "ivprobit" is a suitable tool for solving a simultaneous equation problem. Further information is available at: http://www.stata.com/manuals13/rivprobit.pdf

[21] Data from the Statistical Yearbook of the Immigration and Naturalization Service for the years 1999-2013. Available at: http://www.uscis.gov/.

as much as possible. This idea fits the new economics of migration framework, where measures of risks explain the migrants decisions (Massey and Espinosa, 1997). Thus, anything lowering the risks and costs of the migration spell would decrease the amount remitted, which is the case of the temporal-labor visas.[22]

The amount of available labor visas depend on various factors, including a global quota fixed by the American Congress and the existence of insufficient labor supply. Furthermore, many labor visas are granted only to nationals of countries specified by the Secretary of Homeland Security. Some labor permits face statutory numerical limits or "caps" on the total number of individuals who may receive one. This caps are defined according to the immigration and political agendas of each administration.

Hence, the bigger the quota or caps assigned to Mexicans, the higher the probability to obtain a work permit, which eliminates the crossing risks and lowers substantially the trip costs. Clearly, the number of temporal-labor visas issued effects the endogenous variable (remittances), but it is exogenous to the household's social context and well-being.

Table 3 displays the final results of those models where the instrument was relevant and satisfied a Walt test of exogeneity. The results reveal remittances loose any effect when endogeneity problems are addressed. The dependence variable (*rem_inc*) is still significant and increases the likelihood of suffering hardship. The variables *hempl* and *sempl* confirm that when a head or her spouse is employed, the household has considerably less chances to experiment hardship.

The ownership of assets financed with remittances do not improve the household's wellbeing, except properties. However, owning an additional business (not funded with remittances) has an important effect lowering the household's likelihood to suffer hardship. Again, developing farming activities is strongly associated with higher chances to present well-being constraints.

In sum, receiving remittances do not guarantee better well-being conditions for the migrant-sending household. In contrast, the employment status of those left behind and the ownership of productive assets significantly impact the household's chances to be below the wellbeing threshold.

[22]Looking at the migrants' remitting behavior, those that migrate under a labor visa remitted, on average, 18 dollars less than those that reported an unauthorized trip.

Table 3: Well-being predictors IV. Average marginal effects (dy/dx)

well-being	**Pop. Size (Model 1)**	**Hist. Character (Model 6)**
log_rem	0.32	0.09
	(0.87)	(1.00)
rem_inc	0.73*	0.92*
	(0.40)	(0.49)
savings	-0.00*	-0.00***
	(0.00)	(0.00)
trip	-0.00	-0.01
	(0.02)	(0.02)
members	-0.04	-0.02
	(0.03)	(0.04)
years	0.02	0.01
	(0.01)	(0.02)
workers	0.09*	0.03
	(0.05)	(0.06)
2.hempl	0.52	0.07
	(0.53)	(0.43)
3.hempl	-0.43**	-0.29
	(0.17)	(0.23)
3.spempl	-0.22*	-0.17
	(0.12)	(0.14)
land	-0.17	-0.08
	(0.15)	(0.20)
land_dol	-0.01	0.12
	(0.20)	(0.24)
prop	0.19*	0.27**
	(0.10)	(0.13)
prop_dol	-0.22**	-0.19*
	(0.10)	(0.10)
vehicles	-0.05	-0.16
	(0.09)	(0.14)
veh_dol	-0.12	0.01
	(0.13)	(0.10)
business	-0.28***	-0.19**
	(0.11)	(0.09)
b_dol	0.07	0.01
	(0.18)	(0.16)
1.farm	0.32	0.40*
	(0.24)	(0.24)
1.farm_dol	-0.28	-0.30
	(0.23)	(0.23)
lstock	0.00	0.00
	(0.00)	(0.00)
1.lstock_dol	-0.17	0.11
	(0.23)	(0.32)
Observations	1,118	1,118

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4. Final remarks and policy implications

When analyzing the relation between remittances and development in Mexico, it is important to consider that these financial transfers are not uniformly distributed across regions. Furthermore, remittances have different effects when considering the social context of the receiver.

Despite its undeniable importance at a macro level, remittances have a limited impact in the household's well-being, and it is lost when endogeneity is corrected. This result is not surprising. Indeed, when analyzing both the remittances' sender and receiver, it is clear that neither of them see these financial transfers as a source of investment. Education or funding productive activities are not primary purposes for remittances from the sender's point of view. Moreover, from the receiver's perception, these flows represent an small size in their overall income, even though they have a relative importance when using wages as a income proxy.

When testing this evidence using a relative multidimensional well-being measure, which considers monetary and non-monetary aspects, important results arise. First, in order to have a significant impact, the amount remitted should increase significantly, at least in more than 50%. This seems very difficult to happen since migrants already remit most of their income.

Second, the dependence on remittances significantly increases the household's probability to experiment hardship. This is an important outcome because it reveals that an expansion of remittances will not generate better living conditions if structural problems are not solved. This happens because the well-being measure used captures social deprivations (basic services) that remittances cannot overcome. This dependence on remittances is clearly higher in rural communities, where the provision of running water, electricity and sewage is still missing.

Third, it is not clear that when remittances finance any type of asset, the household's well-being improves. However, assets funded without remittances are more likely to reduce the probability to suffer hardship.

This research not only contributes to the remittances-development debate, but explains why these transfers might have a limited effect in specific contexts. Moreover, it introduces six analytical categories that consider the social and historic conditions of the remittances' receivers.

Can remittances improve the household's well-being? The answer is clear and

simple, no until policy makers recognize that remittances are received by individuals or households and not by states/countries. Any policy denying the private character of these transfers and based on their macroeconomic value will be misunderstanding the nature of remittances. They are transfers which impact depends on decisions at a household or individual level. Thus, policy makers must design economic incentives for the sender and receiver, and influence the use of such resources through market mechanisms.

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Appendix A. Measuring relative well-being

The measure of relative well-being considers two analytical dimensions: monetary and non-monetary. They are combined to obtain a single variable that identifies those households suffering relative hardship according to their social context.

This measure considers the k social contexts used along the research: metropolitan area, small urban area, town, rancho, historic and non-historic. It is important to recognize that households face market constraints and social deprivations that are closely related their community context. For example, the economic dynamics in rural communities are not comparable with the metropolitan ones. Also, the prevalence of migration modifies the economic and social development of a society in the long-run. The descriptive analysis of the third section provides evidence suggesting that social contexts must be taken in account.

The measure is "relative" because the well-being thresholds are calculated based on the conditions faced by most of the households in each social context. This not only allows to make fair comparisons across contexts, but also permits to identify whether remittances improve the household's well-being relative to the standard level of their social context.

Monetary dimension:

This dimension is based on the monthly income of the household. The hardship condition in the monetary dimension can be specified as follows.

$$Ti_k = p50_k * 0.6 \tag{2}$$

$$Hi_{jk} = \begin{cases} 1 & \text{if} \quad Inc_j < Ti_k \\ 0 & \text{if} \quad otherwise \end{cases} \tag{3}$$

where Ti is monetary threshold and equals the 60% of the median household income in the social context k. Inc is the monthly income of the household j and Hi is the hardship indicator of the household j located in the social context k. Hi identifies those households whose monthly income is below the monetary threshold.

Non-monetary dimension:

This dimension considers the basic services and amenities available in the household. It is proposed as a non-monetary dimension because the access to basic

services (electricity, running water and sewage) does not depend on the household's income. These services must be provided by the Mexican State and the lack of them severely undermines the household's well-being. Acquiring these services by the household is almost impossible in most of the cases.

In the other hand, the number of amenities available in the household reflects the comfort level within the household. This variable is closely related to the income level. However, it also reflects the effective access and integration of the household to basic markets. For example, to have a washer machine, a household must have a certain income level, but also access to electricity and stores selling appliances. There should be roads with good quality communicating the household and the seller. Also, the access to financial systems is key in acquiring durable goods. In this sense, the number of amenities and the access to services capture in a way, the structural development in each social context.The hardship condition in the non-monetary dimension can be specified as follows.

$$Ts_k = p50_k * 0.6. \tag{4}$$

$$Hs_{jk} = \begin{cases} 1 & \text{if} \quad Ser_j < Ts_k \\ 0 & \text{if} \quad otherwise. \end{cases} \tag{5}$$

$$Ta_k = p50_k * 0.6. \tag{6}$$

$$Ha_{jk} = \begin{cases} 1 & \text{if} \quad Ame_j < Ta_k \\ 0 & \text{if} \quad otherwise. \end{cases} \tag{7}$$

The thresholds *Ts* (services) and *Ta* (amenities) are estimated as in the monetary dimension. *Ser* is the number of services available at the household *j*, being three the maximum number of services. *Ame* is the number of amenities available at the household *j*, being eight the maximum number of amenities. The hardship indicators *Hs* and *Ha* identifies the households whose number of services and amenities is below the threshold according to the social context *k*.

The well-being measure

To obtain a multidimensional measure of well-being it is necessary to define how these dimensions will interact and to specify their relative weights (Alkaire and Foster, 2011). Despite its intellectual attractiveness, I do not explore any methodology to calculate weights and I assign equal importance to the monetary and non-monetary space. Hence, a household will be below the well-being threshold,

i.e. suffering hardship, when its income level, amenities or services are below the threshold of its social context. The well-being measure can be specified as follows.

$$H_{jk} = \begin{cases} 0 & \text{if } \; Hi_{jk},\ Hs_{jk},\ Ha_{jk} = 0 \\ 1 & \text{if } \; otherwise. \end{cases} \tag{8}$$

According to this measure, the share of households below the well-being thresholds are:

Table 4: Households suffering hardship by population size

	Metropolitan Area	**Small Urban Area**	**Town**	**Rancho**	**Total**
NO	50.4%	57.8%	44.1%	52.2%	50.6%
YES	24.1%	26.9%	28.0%	27.3%	26.4%
NA	25.5%	15.3%	27.9%	20.5%	23.0%
Total	*4,054*	*3,451*	*3,902*	*935*	*12,343*
	100%	100%	100%	100%	100%

Table 5: Households suffering hardship by historic migration character

	Non-historic	**Historic**	**Total**
NO	52.5%	53.1%	52.7%
YES	27.3%	19.6%	24.0%
NA	20.3%	27.3%	23.3%
Total	*7,073*	*5,270*	*12,343*
	100%	100%	100%

Appendix B. Distribution of remittances accross Mexican states 1995-2014

	1995		2005		2014	
National ranking	*State*	*Remmittances per capita current US*	*State*	*Remmittances per capita current US*	*State*	*Remmittances per capita current US*
1	Michoacán*	154	Michoacán*	616	Michoacán*	492
2	Aguascalientes	133	Zacatecas*	395	Zacatecas*	448
3	Morelos	91	Guanajuato*	389	Guanajuato*	363
4	Zacatecas	86	Guerrero	377	Guerrero	339
5	Guanajuato*	85	Hidalgo	347	Colima	305
6	Jalisco*	78	Nayarit*	319	Oaxaca	305
7	Guerrero	77	Morelos	313	Nayarit*	301
8	Nayarit*	64	Oaxaca	308	San Luis Potosí	282
9	Querétaro	57	Aguascalientes	303	Durango*	281
10	San Luis Potosí	54	Colima	291	Morelos	278
11	Durango*	53	Durango*	255	Aguascalientes	255
12	Oaxaca	49	Querétaro	254	Hidalgo	253
13	Sinaloa	45	Jalisco*	251	Jalisco*	250

Source: Author's estimations using data from the Central Bank of Mexico and the National Council of Population (CONAPO). Historic migrant-sending states (western region).*

Appendix C. Historic migrant-sending states