# Repeat Migration and Cumulative Remittances as Mechanisms for Wealth Inequality in Mexico*

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## Abstract

Migrant remittances are one of the largest sources of external finance for many developing countries in the world. To evaluate the distributional impact of these flows in origin communities, prior research focused on how migrants' selectivity by wealth varies with migration prevalence in a community. This study advances prior work by demonstrating that the selectivity pattern changes over an individual's migration career. Based on data from 17,531 household heads in 119 Mexican communities surveyed by the Mexican Migration Project, the findings show that first-time migrants are selected from poor households, which, over repeated migration trips and cumulative remittances, reach levels of wealth to surpass households without migrants. This dynamic leads to increasing wealth disparities between households with and without migrants.

Scholarly interest in remittances, funds and goods sent by migrants to their origin families and communities, has grown dramatically in recent years. Estimates indicate that international remittances to developing countries have reached US$240 billion annually in 2007, becoming the second largest source of external finance for these countries after foreign direct investment (Ratha and Xu 2008). Remittance flows relax budget and credit constraints of origin households, and create investment opportunities in origin communities (Durand, Parrado, and Massey 1996a, 1996b; Rapaport and Docquier 2006; Rempel and Lobdell 1978; Stark and Levhari 1982; Taylor 1999). These flows also provide a potential pathway for income redistribution and poverty reduction as they are directed toward the most deprived regions of the world (Jones 1998).

Recent research on global income inequality tells us that disparities between countries have stabilized in the past decades (Bourguignon and Morrisson 2002; Firebaugh 1999). As a result, the direction of trends in global inequality depends on the current changes in income disparities *within* countries (Firebaugh 2000). Through their effect on income disparities in developing countries, remittance flows are likely to shape future trends in global inequality.

Remittance flows are particularly important to understanding the inequality in Latin America, the most unequal region of the world (Hoffman and Centeno 2003) and the recipient of 25 percent of all remittances to developing countries (Ratha and Xu 2008). The roots of disparities in the region have been traced back to the distribution of land tenure and political influence by the colonial order (Gonzalez Casanova 1970; Paige 1997), and more recently to the weakness of democratic institutions (Huber et al. 2006). Research finds that inequality in the region has increased in the past decades (Morley 2001). A number of studies have linked this trend to international remittances, but yielded conflicting findings. In rural Mexico, for example, Taylor (1992) and Taylor et al. (2005) found an equalizing effect of remittances on the income distribution, whereas Mora (2005) and Acosta et al. (2008) observed the opposite pattern.

To reconcile these conflicting empirical patterns, in their seminal work, Stark et al. (1986) considered how migrants' selectivity by wealth varies with migration prevalence in a community. The authors argued that inequality increases in the early stages of migration, due to positive selectivity of initial migrants by income or wealth, but gradually levels off and declines as a community reaches high levels of migration. Taylor et al. (2005) and Koechlin and Leon (2006) observed this relationship at the macro-level, while in a recent study, McKenzie and Rapoport (2007) tested its underlying assumption at the micro-level. Using Mexican data, the latter authors showed that, in communities with a high prevalence of migration, first-time migrants were less likely to be selected on wealth; hence, remittances reached poor households and decreased the overall wealth inequality.

Similar to this prior work, we study how individuals' wealth status impacts their propensity to migrate and remit, in order to draw implications for inequality. We focus on the largest remittance flows in Latin America, between the United States and Mexico, using data from the Mexican Migration Project, which contain information on the migration and remittance decisions of more than 17,000 household heads from 119 communities between 1965 and 2008. We ask two related questions: Who migrates in these communities, individuals from wealthy or poor households? Who, among the migrants, sends back remittances, the wealthy or the poor?

Different from prior work, we consider how selectivity by wealth varies over an individual's migration career. A migrant may take multiple trips to a destination, send cumulative remittances and acquire wealth over time. Selectivity by wealth status, hence, may vary, and become endogenous to migration and remittance decisions, over multiple trips. We show that this recursive relationship between wealth, migration and remittances, neglected in prior work, provides the key to understanding the impact of remittances on wealth inequality. Specifically, we find that first-time migrants originate from poor households. Repeated trips to the United States lead to continued remittance flows and wealth accumulation, and households with migrants eventually move to the ranks of the wealthy in their communities. This dynamic leads to increasing economic disparities between migrants and non-migrants in the 119 Mexican communities in this study.

## BACKGROUND

Remittance flows to developing countries have been increasing consistently in the past decade, reaching 20 percent of the GDP in many countries in Latin America and Africa (World Bank 2008). An influx of funds of this magnitude is bound to create disruptive effects on the distribution of income or wealth in these countries.

To evaluate the distributional impact of remittances, some researchers have used macro-level data to link the trends in remittance flows to trends in economic inequality (Acosta et al. 2006; Koechlin and Leon 2007). Others have relied on household-level data and inequality decomposition techniques to measure the contribution of remittances on the overall inequality (Adams 1989, 1992; Barham and Boucher 1998; Stark et al. 1986; Taylor 1992; Taylor et al. 2005). These studies have yielded conflicting findings.

Adams (1989), for example, observed that international remittances increased the inequality in the distribution of income in rural communities in Egypt. In his later study in rural Pakistan, the same author (1992) found remittances did not alter the distribution of income. Researchers also observed contradictory findings in the same setting. In rural Mexico, for instance, Stark et al. (1986), Taylor (1992) and Taylor et al. (2005) all showed that remittances reduced income inequality, while Mora (2005) observed the opposite pattern.

These studies, with the exception of Adams (1989), assumed remittances to be an exogeneous source of income. Barham and Boucher (1998) showed that, when they relaxed this assumption, their results from the Nicaraguan setting were reversed. Namely, when the authors treated remittances as a substitute for migrants' local income (imputed in a counterfactual scenario of no migration), rather than an exogeneous transfer, they found that remittances increased, rather, than decreased income inequality. Similarly, Acosta et al. (2008) showed that remittances had an overall inequality-reducing effect in 10 Latin American countries, but this effect disappeared in some countries if remittances were considered endogeneous.

Stark et al. (1986) attributed these conflicting patterns to a link between migrant selectivity and inequality. The authors envisioned an inverted-U relationship of income inequality to migration prevalence, akin to a Kuznets curve, which suggests a similar relationship between inequality and economic growth (Kuznets 1955). Inequality is expected to increase in the initial take-off period of migration, and then to gradually level off and decline as a community reaches high levels of migration. The reason underlying this pattern is the declining selectivity of migration with increasing migration prevalence. Initial migrants in a community incur high costs to migration, and typically come from middle or upper parts of the income distribution. As migration gains prevalence, experiences of prior migrants help mitigate the costs of migration, and individuals from lower income strata can afford to migrate. Therefore, in communities where migration is already prevalent, remittances are expected to decrease inequality, with the opposite effect in communities at the initial stages of migration.

This curvilinear relationship was supported with empirical evidence from various settings. In their original study, Stark et al. (1986) found a more equalizing effect of remittances in a Mexican village that had a history of U.S. migration, compared to another that had only recently begun to send migrants. Extending this analysis to rural households from 14 Mexican states, Taylor et al. (2005) showed that inequality-reducing effects of remittances were concentrated in regions with high migration prevalence. Koechlin and Leon (2006) generalized this result with data from 78 countries.

In recent work, McKenzie and Rapoport (2007) developed an individual-level model of migrant selectivity to study the relationship between migration prevalence in a community and changes in wealth inequality. Using data from the Mexico-U.S. migration setting, the authors showed that, in communities with high migration prevalence, first-time migrants are less likely to be selected on wealth; therefore, remittances reach mostly poor households and reduce the overall inequality.

To connect migration to wealth inequality, we also start with an individual-level model of migrant selectivity. We establish where in the wealth distribution migrants are drawn from, and investigate which wealth groups among migrants send remittances. Different from prior work, however, we consider how this selectivity on wealth varies between migrants' first and subsequent trips. Migrants may take multiple trips to a destination, send cumulative remittances and acquire wealth over time. Hence, their selectivity by wealth status may change over multiple trips. As we will see in the remainder of the paper, this dynamic relationship is crucial to evaluate the impact migration-remittance flows on wealth inequality in Mexican communities.

## THE MEXICO-U.S. MIGRATION SETTING

The labor migration of workers from Mexico to the United States is the largest contemporary international migration flow in the world. In Latin America, a region characterized by severe economic inequality, where the income share of the richest 20 percent of the population is at least 18 times that of the poorest 20 percent, Mexico is the recipient of the largest remittance flows, amounting to US$25 billion annually (Ratha and Xu 2008). Understanding whom these flows reach is crucial to determine the future direction of inequality in the country.

This study employs data from the Mexican Migration Project (MMP) from 119 communities located in major migrant-sending areas in 21 Mexican States. Each community was surveyed once in this period, during the winter months, when migrants are likely to visit their origin households.[1] Detailed migration information was obtained from about 200 randomly selected household heads, mostly men, in each community. These data, collected retrospectively in a life history survey, allow us to observe migration and remittance decisions of more than 17,000 household heads from multiple communities (ranging from small villages to metropolitan areas) over several years.

The MMP data are not strictly representative of the Mexican population. Yet, prior work found that these data yield an accurate profile of the U.S. migrants in Mexico, consistent with national data (Durand et al., 2001; Zenteno and Massey, 1998). The data contain information on migrants who have returned to Mexico, or who have at least one household member remaining there, and cannot capture permanent migrants who have taken their whole household to the

[1] Detailed information about the MMP is available at http://mmp.opr.princeton.edu. The 5 communities surveyed as part of the pilot study in 1982 are excluded, as are the data collected non-randomly from a small number of migrants in the United States.

United States. This study focuses on the inequality trends in sending communities of Mexico; therefore, observing households with at least one member residing in those communities is not only sufficient, but also desirable.

## EMPIRICAL STRATEGY

### Modeling Migration and Remittances

This study seeks to understand how individuals' wealth status affects their migration and remittance behavior in order to draw implications for inequality. Because remittances are only observed for migrants, a non-random segment of the population, an accurate evaluation of wealth-remittance relationship requires a correction for migrant selectivity. To pose the problem formally, let the amount remitted by individual $i$ be represented by $y_{1i}$ and governed by the following equation:

$$y_{1i} = \boldsymbol{x}_{1i}\boldsymbol{\beta}_1 + \varepsilon_{1i} \qquad (1)$$

where $\boldsymbol{x}$ represents a vector of independent variables, $\boldsymbol{\beta}$ is the corresponding vector of coefficients, and $\varepsilon$ is the identically and normally distributed error term. Let migration decision of individual $i$ be represented by a binary dependent variable $y_{2i}$ generated by a probit equation and related to an unobserved latent variable $y_{2i}^*$ as follows:

$$y_{2i}^* = \boldsymbol{x}_{2i}\boldsymbol{\beta}_2 + \varepsilon_{2i} \qquad (2)$$

$$y_{2i} = \begin{cases} 1 & \text{if } y_{2i}^* > 0 \\ 0 & \text{if } y_{2i}^* \leq 0 \end{cases}$$

We observe $y_{1i}$ if and only if a person migrates ($y_{2i} = 1$). This leads to a specification where the probit equation (2) for migration is completely observed, but for the remittance equation (1), we have a selected sample. In the case of a non-zero correlation (ρ) between the error terms $(\varepsilon_{1i}, \varepsilon_{2i})$, separately estimating the migration and remittance equations with standard OLS will lead to selectivity bias in the estimates of the latter. We can account for this bias by employing Heckman's (1979) two-stage selection model. The estimation of this model calls for an independent variable, known as an instrument or exclusion restriction, in the migration (selection) equation, which is not included in the remittance (outcome) equation. This restriction is not strictly required for identification. However, if the set of regressors are identical for the selection and outcome equations, the estimation is poor due to high multicollinearity (Berk 1983).

In prior research, Hoddinott (1994) was the first to employ a Heckman two-stage model of remittances to control for migrant selectivity in the Kenyan setting. In two recent studies, Taylor et al. (2003) and Mora (2005) used a similar model of selection-correction in the Chinese and Mexican settings, respectively. Both studies used an indicator of community migration prevalence as an instrument, but did not test its validity for identification. Given that migration prevalence is likely to be related to unobserved community conditions (e.g., lack of job opportunities) which also affect remittance patterns, one might suspect that this instrument may not satisfy the 'exclusion restriction' in the Heckman specification.

To address this issue, in this study, we propose an alternative instrument, the interaction between community migration prevalence and distance to the U.S. border. The intuition can be simply explained as follows. Individuals living in communities far to the border typically face higher costs to migration. The detrimental effect of distance on migration should be lower in communities with high migration prevalence, as prior migrants provide useful information or help. The effect of distance on the amount remitted, however, should not vary with the community migration prevalence. (A supplementary analysis presented in Appendix B evaluates the validity of these assumptions.)

**Operational Measures**

The sample for the study is 17,531 *household heads* residing in 119 Mexican communities. Life history survey provides a panel data set of individuals' migration decisions from 1965 (the end of the Bracero program) to 2008 (the year of the last survey). All the moves an individual makes until the survey year are recorded, yet information about remittances is only collected for the *last migration trip* to avoid recall bias. Therefore, the migration model is estimated with data from all migration trips, whereas the remittance model is estimated with data from the last trip only. The person-year observations are supplemented with contextual information from the household and community surveys, several macro-economic indicators provided by Massey and Espinosa (1997), and geographic data collected by the author.

The dependent variables are a binary indicator of whether a person migrated to the United States in a year, and the amount of remittances sent or savings brought home by a migrant in that year. For the purposes of this study, both transfers are referred to as remittances. The total amount of remittances is computed by multiplying the duration of the last trip by monthly remittances and adding up the total savings brought by a migrant upon return. The monthly amount (total divided by the duration of the last trip) is converted to constant US dollars (in year 2000) and used in logarithm form in analysis.

The key independent variable is household wealth. Household income is measured in the survey year alone, therefore does not permit a longitudinal analysis. Household land and properties, on the other hand, are recorded in each year, and provide useful proxies for household wealth. We compute the total value of household land by multiplying the hectares owned with the average price of land in the community (in 2000 US$).[2] Focusing on value, rather than amount, assures that land owned in a rural area is not treated equally as land in a more expensive, urban region. Because we rely on average prices in each community, however, we cannot measure the variation in land prices *within* communities. There is no information on average property values in the community survey. We use the total number of rooms in household properties as a proxy for their value. Land and property measures are used in logarithm form to take into account their skewed distribution, lagged by a year to prevent simultaneity with migration decisions, and standardized to mean 0 and standard deviation 1 for comparability. Figure A1 in Appendix A shows histograms for land, properties, remittances and savings (non-zero values only). Logarithms of all four indicators are approximately normal in distribution.

Several individual characteristics related to migration and remittance behavior are included in models: age, sex, education (primary, secondary, advanced), marital status (also if spouse is in the United States), and the number of children in the household. Prior research shows that individuals are more likely to migrate if they have prior migration experience, or if they are related to prior migrants through household or community ties (Massey and Zenteno 1999). To capture this pattern, we measure individuals' prior migration experience by their accumulated number of U.S. trips. Prior household experience is measured by a binary indicator

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[2] Municipality or state average prices are used for communities with missing values. Average price is recorded for four types of land: irrigated, rain-fed, pasture and orchard. Household land is recorded in six categories: irrigated, wetland, dry land, pasture, orchard and other. We assume that dry land and other land are similarly priced as rain-fed land (the most common kind in the data).

of whether an individual's parents were U.S. migrants. Community experience is captured by migration prevalence ratio, defined as the proportion of individuals who have ever migrated in a community, and measured at the population level with the community survey. Agriculture production is highly dependent on weather conditions, and differences across communities in this respect are controlled with an indicator of average rainfall to the state in the past three years. Community distance to the U.S. border is included as a proxy for costs of migrating. State and year indicators account for the geographic or temporal patterns not captured with the independent variables.

Indicators for migrant characteristics are only included in remittance models. Prior research finds remittances to be a repayment for migration costs incurred by the household. An indicator for whether family paid for coyote (smuggler) fees captures this idea. Prior work also shows that remittances decrease as migrants' ties to origin weaken over time (Durand et al. 1996a), which is captured by indicators of years since an individual migrated, and whether migrant has U.S. documentation. Other control variables are migrants' monthly wages (in 2000 US$), and binary indicators for their destination (Northeast, Midwest, South and West).[3]

[TABLE 1]

Table 1 displays means for all variables separately for the overall sample, migrants and remitters along with results from cluster-adjusted difference-of-means tests comparing migrants

[3] Because wage in destination is a critical determinant of remittance behavior, migrants with missing wage information (about one-third of migrants) are not used in the analysis. Alternative analysis with all the migrants, and without the wage variable, leads to similar wealth coefficient estimates in both migration and remittance models (available upon request).

to non-migrants, and remitters to non-remitters. (The means for non-migrants and non-remitters are not shown to conserve space.) Strikingly, migrants (about 20 percent of individuals, who have migrated at least once) differ significantly from non-migrants in all variables, but the indicator for distance to the U.S. border. Compared to the overall population, migrants are wealthier in land and properties, more likely to be male, married and with a spouse in the U.S. The cumulative dynamic of migration is apparent in the high number of prior trips for each migrant, and the high percentage of migrants with parents who were also U.S. migrants. Migrants come from communities where migration is already prevalent, and where cultivation may have recently suffered from low levels of rainfall. These comparisons suggest that migrants are a highly selective group in Mexican communities. The differences between the remitter and non-remitter samples are less noticeable, possibly due to the small size of the latter. 92 percent of migrants brought funds to Mexico as remittances ($457 per month on average) and/or savings upon return ($249 per month) adding up to 45 percent of their U.S. earnings ($1564 per month).

## RESULTS

### Migration

How does wealth affect individuals' propensity to migrate? The first column of Table 2 reports the estimated marginal effects of wealth on migration from a specification including as controls demographic information (9 variables), prior migration indicators (3 variables), community characteristics (3 variables), fixed effects for state (21 variables) and year (42 variables). Land and property indicators are in logarithm form and standardized to mean 0 and standard deviation 1. Standard errors are adjusted for clustering at the individual level.

[TABLE 2]

The results, summarized in the first column of Table 2, indicate that the propensity to migrate is strongly associated with land and property ownership. Specifically, one standard deviation increase in the logarithm of land value above its mean generates a 0.2 percentage-point increase in the probability of migration. Similarly, one standard deviation increase in the logarithm of number of rooms in household properties increases the migration probability by 0.3 percentage-points. (Non-linear terms for wealth indicators, found significant in prior work such as McKenzie and Rapoport (2007), Mora (2005), and Taylor and Wyatt (1996), do not have an effect here, potentially because these indicators are already in logarithm form.) In subsequent analysis, we will differentiate between first-time and repeat migration to explain this curious positive link between wealth and migration. But first, we describe the estimates for the other covariates in the migration model, as well as the estimates in the remittance models.

Probability of migrating increases with age, and then declines once a threshold age (around 28) is reached. Men are more likely to migrate, partially due to a gender bias in the data, which come from household heads alone. Migrants are typically negatively selected on education, because educated individuals secure desirable jobs in the domestic labor market, and face a high opportunity cost to migrating. In this sample, the likelihood of migrating is lower for individuals with secondary education (compared to those with primary education or less), and lowest for those with advanced degrees. Individuals are more likely to migrate if they have a spouse in the United States. Having a spouse in Mexico, which is the case for the majority of migrants, reduces the migration probability. Having young children also has a negative effect on migration. Having family members who are prior U.S. migrants, or living in a community with a high proportion of prior migrants, significantly increases the likelihood of migration. Rain shortages in a community decrease income from agriculture, and are expected to increase migration. In our case, migration is higher in states that have received higher than average rainfall in the past three years. This surprising positive effect may be due to the failure of the state-level rainfall variable to capture the within-state variations, which may be higher than the variation between states. Finally, the effect of distance to the U.S. border is non-linear and depends on the migration prevalence in the community (as described in Appendix B).

**Remittances**

How does wealth affect the amount remitted by migrants? Columns 2 and 3 of Table 2 present coefficients from the remittance model estimated with OLS and Heckman's 2-stage least squares, respectively. The selectivity-corrected Heckman model estimates in the third column indicate that the amount of remittances sent by a migrant is strongly related to household land and properties. A standard deviation increase in the logarithm of land value and number of properties above the mean increases the logarithm of remittances by 0.06 and 0.13, respectively. A migrant in an average wealth household sending $1000 a month would send an additional $63 if household land increased by a standard deviation, all else equal. A commensurate increase in household properties would bring an additional $137 to the migrant-sending household. The OLS estimates in the second column are slightly smaller for both the land and property indicators.

The amount of remittances increases with age, at a decreasing rate as a migrant gets older, and decreases with a migrant's education. Men remit more than women, and the difference is larger in the Heckman estimates, which account for men's higher propensity to migrate. Migrants with spouses in destination remit less in the OLS model, an effect that is smaller in the

Heckman estimate. In both models, migrants with children send more remittances; and the longer migrants stay in the destination, the less remittances they send, attributable to a weakening of ties to origin household. Expectedly, migrants earning higher wages in destination send more remittances.

The fact that the coefficient estimates of the Heckman are almost identical to the estimates of OLS suggests that the unobserved factors influencing migration do not significantly alter the effect of the observed factors on remittances. The insignificant correlation coefficient between the errors of the migration and remittance equations ($\rho = 0.08$) also supports this conclusion. Thus we conclude that in estimating a model of remittances, researchers working with the MMP data can confidently ignore migrant selectivity, given that their intended inference is about migrants only.

In this study, we are interested in predicting the impact of the migration-remittance behavior in the *overall population*. Therefore, we need to consider the models of migration and remittances (OLS or Heckman) jointly to determine (i) where in the wealth distribution migrants are drawn from, and (ii) how much remittance migrants in each wealth group send. In the Mexican case, we found that migrants are selected from wealthy households, and tend to send more remittances back home the wealthier they are. In the subsequent section, we seek to explicate these patterns by considering the differential selectivity of first-time and repeat migrants.

**Differential Selectivity Patterns between First-Time and Repeat Migrants**

Why are wealthier individuals more likely to migrate? One explanation is the high costs of crossing the border, which, in addition to the cost of transportation, may include the smuggling fees for undocumented migrants amounting to $1680 according to 2005 estimates (Cornelius 2005). Given these costs, it is understandable that migrants come from the middle or upper part of the wealth distribution to be able to afford migration (Massey et al. 1994; Stark et al. 1986). An alternative explanation suggests that household wealth may be a result, rather than a cause, of migration and remittance flows (Wong, Palloni and Soldo 2007). That is, households with migrants may accumulate disproportionate amounts of wealth due to migrants' remittances.

We investigate this latter possibility by examining first-time and repeat migrants separately. If past migration and remittances lead individuals to acquire wealth, then first-time and repeat migrants should vary significantly in their selectivity by wealth. Table 3 presents estimates from probit models of migration estimated on two different samples. The first sample, used in the models for the first two columns, includes non-migrants (individuals who have never migrated) observed annually through the year of the survey, and migrants observed annually through the year of their first migration. The second sample, used in the models for the last two columns, includes non-migrants observed in each year, and repeat migrants observed annually *after* (and not including) the year of their first migration.

[TABLE 3]

The effects of wealth indicators are dramatically different across the two samples. Comparing the estimates in column 1 to those in column 3, we see that the probability of first-time migration *decreases* significantly with the number of properties a household owns. By contrast, the probability of repeat-migration *increases* significantly, and by a large margin, with both property and land ownership. Compared to non-migrants, first-time migrants are likely to be poorer, and repeat migrants are likely to be richer.

This pattern is also evident in descriptive statistics. While first-time migrants own on average US$2,019 worth of land and 1.07 rooms in properties, repeat migrants own an average of $6,769 worth of land and 2.66 rooms (difference-of-means tests are significant 0.001 level). These results suggest that sending migrants and collecting remittances may be a mechanism through which households achieve wealth, eventually overcoming their initial disadvantage and surpassing the households without migrants.[4]

[4] The results also hint at the potential endogeneity of wealth indicators to migration and remittance outcomes, which may bias the empirical conclusions. To address this issue, in all analyses in this paper, we lag the household wealth indicators by a year to ensure that wealth is not the result of the current remittance decisions. This approach does not solve the endogeneity problem if current remittance decisions are correlated with past remittances, which affect household wealth in the past, or if there are omitted variables related to both wealth and remittances. To test if this is the case, we perform a procedure suggested by Spencer and Berk (1981). We estimate a model of wealth (for both land and property indicators) with exogenous regressors (past rainfall and real interest rates, which are likely to affect wealth). Then, in the remittance equation, we add the residuals from the two wealth equations as extra regressors. The coefficients for both regressors are jointly insignificant (F-statistic = 0.47, $df = 2984$, $p = .63$), and the null hypothesis that the wealth indicators are orthogonal to the errors cannot be rejected. This result suggests that the lagged wealth indicators can be treated as exogenous to current remittances. Crucially, this treatment does not preclude an association between wealth and past remittances. In fact, the comparison of first-time and repeat migrants in Table 3 suggests a positive link between past remittances and current wealth. But this link does not seem to bias our estimates of the effect of lagged wealth on remittances.

Research to date has shown how migrant selectivity varies over the different stages of migration prevalence in a community. The results in the present study, by contrast, suggest that *migrant selectivity also varies over the different stages of individuals' migration career*. To consider both patterns jointly, we interact the wealth measures with an indicator of community migration prevalence. The estimates for first and repeat migration samples are presented in columns 2 and 4 for Table 3 respectively. The results show that the selectivity of migration by wealth is lower in communities with high migration prevalence, but this effect only holds for first-time migrants. For repeat migrants, by contrast, the selectivity by wealth is higher in communities with high migration prevalence.

This finding implies that migration becomes a less selective process in communities with high levels of migration, but only if repeat migrants are excluded from the analysis. Indeed, studying the *first-time migrants* in the MMP data, McKenzie and Rapoport (2007) found a declining selectivity of migrants with increasing prevalence of migration in a community. Our analysis confirms their result, but also shows that it does not hold for repeat migrants. We now turn to the implications of these findings for inequality trends in Mexican communities.

**Implications for Inequality**

We employ a descriptive analysis to trace the changes in the wealth distribution in the 119 Mexican communities over time. Similar to Stark et al. (1986), we divide all the communities into two roughly equally sized groups based on the proportion of individuals who have ever migrated by the survey year. Each group contains about 60 communities that share similar migration levels.

[FIGURE 1]

Figure 1 provides a detailed graphical presentation of the changes in the migrant composition, remittance patterns, distribution of wealth and inequality from 1975 to 1995.[5] The top and bottom panels correspond to high and low migration communities, respectively. The panels in the first column display the percentage of first-time and repeat migrants over time. In the low migration group (panel 1b), the migrant population contains about equal shares of first-time and repeat migrants, while in the high migration group (panel 1a) it comprises mostly of repeat migrants.

Prior analysis in the paper showed that first-time migrants are likely to come from poor households, while repeat migrants originate from relatively wealthy households. This differential selectivity carries implications for how remittances will affect the overall inequality. That is, in the low migration communities, first and repeat-migrants each comprise about half of the migrant population. Hence the equalizing effects of remittances sent to poor households by first-time migrants can cancel out the inequality-inducing effects of remittances sent to wealthier households by repeat migrants. In the high migration communities, by contrast, repeat migrants make up a larger share of the migrant population than first-time migrants. Then, the inequality-

[5] Communities were surveyed in different years by the MMP, therefore our sample contains a different number of communities in each year. For example, the number of communities is 119 in 1975, drops to 85 in 1995, and then to 48 by 2000. While the variation in the number of observations can be controlled for in statistical analysis, it can bias the simple descriptive graphs, especially for the years with few community observations. Therefore, we restrict this analysis to the 1975-1995 period, when the majority of the communities are observed consistently.

inducing effects of remittances by repeat migrants will overwhelm the equalizing effects of remittances by first-time migrants. This expectation rests on one crucial assumption, however, that repeat migrants send remittances in similar (or greater) amounts compared to first-time migrants.

To check this assumption empirically, the panels in column (2) of Figure 1 show the average monthly remittances (US$ per capita) sent by first-time and repeat migrants pooled over five-year periods. (Because remittance information is recorded for a migrant's last trip alone, there are a small number of observations per year.) In the pool of high migration communities (panel 2a), remittances per capita increase over time, at a higher rate than the increase in the percentage of migrants (shown in panel 1a), and come mostly from repeat migrants as opposed to first-time migrants. By contrast, in the low migration villages, remittances are much lower, and equally likely to come from migrants on their first or repeat trips. Separate analysis shows that in all villages combined, first-time migrants send $420 on average, compared to $564 sent by repeat migrants. This difference (significant at the 0.001 level) may be attributed to the higher earning potential of repeat migrants afforded by prior experience in destination.[6]

Given that the same individuals migrate repeatedly and continue to send remittances in the high migration communities, households with migrants are likely to accumulate wealth

[6] Prior research suggested a decline in remittances over time, as migrants settle in destination and sever ties with the origin (Durand et al. 1996a). The coefficient estimates in Table 2 supported this claim, and showed that remittances decrease by 6 percent per year a migrant spends in destination. These estimates are obtained while controlling for earnings differences among migrants, and therefore are not inconsistent with the raw comparisons presented here, which show that repeat migrants, on average, send higher remittances than first-time migrants.

quickly. The panels in column (3) compare the average wealth (number of rooms in properties) among non-migrants, first-time migrants and repeat migrants. (Due to the retrospective nature of the data, older, and consequently, wealthier individuals are observed in later years. To assure that the same age group is compared across time, we restrict the age group to 25-45 year olds in each year.) In high migration communities (panel 3a), households with repeat migrants own on average 3 rooms, a number that is significantly higher than the 2.5 rooms owned by households of non-migrants and first-time migrants. The differences are negligible in low migration communities (panel 3b), where an average household, regardless of its migration status, owns about 2.5 rooms, a figure that remains constant over time.

These patterns provide further evidence that migration is a mechanism for wealth accumulation, and imply dramatic changes in the distribution of wealth in communities with high levels of migration. To isolate the changes in wealth inequality due to migration and remittance flows, the panels in column (4) show the inequality *between* migrant and non-migrant households in the number of properties owned. Gini coefficient is the measure of choice, and between-group inequality is computed by setting the wealth of each individual to the group (migrant or non-migrant) mean.

In the low migration communities (panel 4b), the inequality due to differences between migrants and non-migrants is negligible and stable over time. By contrast, in communities with high levels of migration (panel 4a), the inequality between migrants and non-migrants increases dramatically over time. From 1975 to 1995, the inequality due to the wealth gap between migrants and non-migrants increases from 0.05 to almost 0.15. (In a supplementary analysis in Appendix C, we provide additional evidence showing a positive relationship between property inequality and migration prevalence in the 119 communities.)

These results are not informative of the *overall* trends in inequality, which may change due to idiosyncratic economic shocks and indeed vary across communities in the data (results available upon request). Yet, the results strongly establish that migration and remittance flows systematically create *a divide between households that send migrants to the United States and those that do not*, and potentially generate a new system of stratification in Mexico.

## CONCLUSION

In a period when inequalities between countries have reached a "great plateau," understanding the disparities within countries became crucial to predict future trends in global inequality (Firebaugh 1999, 2000). Despite their growing magnitude and importance for the developing regions of the world, remittance flows have not been considered as an integral component of within-country inequalities. This study focused on the largest contemporary migration stream in the world between Mexico and the United States, which generates the largest remittance flows to Latin America, the most unequal region of the world.

We explored the distributional impact of migration-remittance flows in the migrant-sending communities of Mexico by asking two related questions: Where in the wealth distribution are migrants drawn from? How much remittance do migrants in each wealth group send? To answer these questions, we presented an integrated statistical model, which treated migration as a mechanism for selection in a Heckman specification of remittances. The empirical analysis employed the Mexican Migration Project data from about 17,000 individuals in 119 communities observed retrospectively from 1965 to 2008.

The results showed that migrants in the overall sample, and remitters among migrants are both likely to belong to wealthier households. This puzzling pattern is explained by comparing migrants on their first trip to those who have migrated repeatedly. First-time migrants typically originate from poor households that lack the economic means or opportunities for young adults. Over repeated trips to the United States, which lead to cumulative remittance flows, households with migrants become more prosperous. This pattern changes the distribution of wealth in the Mexican communities. Specifically, the repeat migration of the increasingly wealthy individuals, who continue to send remittances, leads to disproportionate wealth accumulation in households with migrants. The result is an increasing divide between households with migration ties to the United States and those without them.

In their seminal work, Stark et al. (1986) have suggested that inequality in a community would initially increase due to the migration of the wealthy, but eventually decline as migration gained prevalence and became a less selective endeavor. McKenzie and Rapoport (2007) confirmed this pattern in rural Mexico. These authors, however, focused only on *migrants on their first trip* to the United States. As the present study demonstrated, migrants make multiple trips, send continued remittances, and acquire wealth over time.

Future work could study how these cumulative patterns alter Stark et al.'s (1986) prediction of first increasing, then declining, inequality with migration prevalence. Researchers could also use a longitudinal research design to explore individuals' migration-remittance trajectories over time. This approach was not possible here because the MMP data only recorded remittances during the last migration trip. Future research could also evaluate whether the patterns observed here persist if remittances are treated as a substitute for local earnings, rather than an exogeneous source of income. Finally, research could study remittances from all migrants, not just the household heads measured in the MMP, using different data sets (for example, the ENADID).

This study restricted attention to the direct effects of remittances on wealth accumulation. Yet, there are also indirect pathways through which these flows may increase inequality. Prior work has elaborated on the implications of a remittance influx on wages, land and housing prices (Papademetriou and Martin 1991). More work is necessary to establish these indirect links through which remittances can shape opportunities for individuals in receiving economies.

To conclude, the increasing inequality observed between migrant and non-migrant households in the migrant-sending communities of Mexico points to the need to think critically about the implications of remittances. Researchers and policy makers have consistently emphasized the positive and multiplier effects of remittances for receiving countries. However, remittances may also have enormous disruptive effects on the income or wealth distribution in a country. To evaluate the implications of remittance flows, it is necessary to weigh their positive effects on the average income or assets by the potentially negative distributional impact.

## APPENDIX A

**Distribution of Household Wealth and Remittances in Mexico**

[FIGURE A1]

## APPENDIX B

### Using Geographic Variation as an Instrument for Migration

To identify a credible instrument for migration, we consider the geographic variation in the data. Environmental or geographic variables have been used as instruments in various applications, based on the underlying assumption that individuals have no control over the characteristics of the region in which they live in (Moffitt 2003). In the Mexican case, individuals who live in a community far from the border face higher travel costs to migration, which may reduce their migration propensity.

A central concern with distance as an instrument is that it might be associated with the unobserved determinants of migration and remittances, leading to spuriously estimated effects. The unobserved characteristics of communities close to the border (say, lack of economic opportunities) could simultaneously increase both migration propensity and the amount of remittances. Moreover, proximity to the border could encourage frequent visits to origin households, and increase remittances independently of its effects on migration. To assess the empirical relevance of these concerns, we examine how the effect of distance on migration varies across individuals. If the estimated effect of distance reflects variation in costs of migrating (rather than omitted characteristics), then, this effect should be especially severe for individuals who have low migration propensities (Card 1995).

This insight is verified with a descriptive analysis. The 119 communities are split into three groups based on their distance to the U.S. border. A community is considered 'far' (n=36) if it is more than 750 km away from the border, 'medium distance' (n=35) if it is 600 to 750 km away, and 'close' (n=48) otherwise. We fit a probit model to migration outcomes of individuals who live in far villages to better capture the migration behavior of this presumably disadvantaged group. All indicators of interest are included, while the distance indicator is deliberately left out.

We compute the predicted migration probabilities for the whole sample based on the estimated model, then divide the sample into quartiles of predicted migration, and observe how the odds of migrating differ by distance in each quartile.

The black line in Figure B1 shows the odds ratios of migration in close versus far communities by quartiles of predicted migration probability. The effect of distance to border is most pronounced in the lowest quartile of migration (odds ratio of 3.1), and relatively smaller, but still considerable (odds ratio around 2.5), in the higher quartiles. The gray line plots the odds ratios of migration in close versus medium-distance communities. In this comparison, the effect of distance to border is nil (odds ratio around 1) in all quartiles of migration. Hence, distance to border seems to have a non-linear effect on migration, and to be especially detrimental for individuals in far communities who have low propensities to migrate.

[FIGURE B1]

Prior research on the MMP data shows that individuals' migration propensity increases with the prevalence of migration in their community because prior migrants act as resources of information or assistance reducing the costs, and increasing the benefits, of migration (Massey and Espinosa 1997). If these resources indeed facilitate migration, the observed negative effect of distance on individuals' migration propensity should be *weaker* in high migration prevalence communities. We can use the *interaction* between distance to the border and community migration prevalence as an instrument for migration. The maintained assumption is that the direct effect of distance on remittances does not vary by migration prevalence in an individual's community. This is not to say that distance or migration prevalence do not affect remittance behavior. It is plausible that migrants from communities close to the border visit more frequently and remit in larger amounts due to their stronger ties to origin households. Similarly, in communities where migration is prevalent, migrants may be more likely to send remittances due to social norms of remitting, or relative ease of sending funds with other migrants in the community. To capture these patterns, the model of remittances includes distance and prevalence indicators, but excludes their interaction. The underlying assumption is that the interaction term affects remittances only indirectly through its effect on migration. This assumption of instrument exogeneity is essentially untestable, although ad hoc empirical evidence presented below suggests its viability, and firmly establishes instrument validity.

[TABLE B1]

The first column of Table B1 presents the marginal effects of distance by community migration prevalence estimated in a probit model of U.S. migration. Migration prevalence is measured by the proportion of individuals who ever migrated in a community. (The Pearson's correlation between distance and prevalence is only -0.02.) Reflecting the non-linear pattern detected in Figure B1, distance to border increases the odds of migrating, while its squared term decreases it. The effect of distance also depends on the migration prevalence in the community. For individuals in zero migration prevalence communities, for example, increasing the distance to border from zero to 100 kilometers decreases the probability of migrating by about ten-fold. For individuals in medium prevalence communities, where about 13 percent of individuals have migrated, a similar increase in distance decreases the probability of migrating by only three-fold. As expected, the results confirm that the negative effect of distance is concentrated among individuals living in communities with low migration prevalence, and suggest the validity of the interaction term for explaining variation in migration. As an alternative check for instrument validity, we tested for weak instruments by excluding the distance-prevalence interaction from the migration model. The resulting F-statistics was 80.23 (df=473,863), eight-fold the lower bound of 10 required to reject the hypothesis of weak instruments (Staiger and Stock 1997).

To provide evidence for instrument exogeneity, which is not directly testable, we examine the partial correlations between the instrument and migrants' U.S. wages, which are strongly correlated with remittances. If the instrument is associated with the unobserved determinants of remittances, we would expect it to be correlated with the observed measures, such as U.S. wages, as well. The regression results in the second model of Table B1 show that distance to border or migration prevalence in community have statistically insignificant associations with migrants' U.S. wages. Overall the evidence in Table B1 suggests the distance-prevalence interaction as a valid source of identification in the Heckman model.

## APPENDIX C
### Relationship of Property Inequality to Community Migration Prevalence

Figure C1 displays scatter plots of property inequality by migration prevalence in the 119 MMP communities. The communities are grouped into four categories by their population size (metropolitan, small urban, town and rancho) and observed in the same year (1985, the mid-point of the 1975-1995 period covered in Figure 1) to discard temporal patterns. In each group, property inequality between households with and without migrants increases with the prevalence of migration in a community (measured as the proportion of individuals who have ever migrated). We regress property inequality on migration prevalence, and find a positive and significant relationship summarized in the solid line in each panel. (We tried adding a quadratic term for migration prevalence to test the inverted-U relationship suggested by Stark et al. (1986), which remained insignificant in all groups.)

[FIGURE C1]

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# TABLES

**Table 1. Sample Characteristics for the Overall Sample, Migrants and Remitters**

| Variable | All | Migrants[a] | Remitters[b] |
|---|---|---|---|
| Household wealth | | | |
| Value of household land in 2000 US$ (mean) | 4584 | 9400 | 5400 |
| Number of rooms in household properties (mean) | 2.1 | 2.8 | 2.3 |
| Demographic characteristics | | | |
| Age (mean) | 37.6 | 42.0 | 34.1 |
| Sex (Male=1) (%) | 84.0 | 97.4 | 97.1 |
| Primary education or less (%) | 72.8 | 83.7 | 73.4 |
| Some secondary education (%) | 14.9 | 10.5 | 17.8 |
| Complete secondary education (%) | 7.2 | 3.9 | 6.4 |
| Advanced education (%) | 5.0 | 1.9 | 2.5 |
| Unmarried (%) | 34.8 | 17.4 | 23.9 |
| Spouse in Mexico? (%) | 64.7 | 80.5 | 71.1 |
| Spouse in the U.S.? (%) | 0.5 | 2.1 | 5.1 |
| Number of children under 18 (mean) | 2.1 | 2.7 | 2.4 |
| Prior migration experience | | | |
| Trips by individual (mean) | 0.14 | 0.83 | 2.93 |
| Parents U.S. migrants? (%) | 7.93 | 20.66 | 24.84 |
| Proportion ever migrated in community (mean) | 0.13 | 0.22 | 0.22 |
| Community characteristics | | | |
| Average rainfall to state in past 3 years in mm (mean) | 8.1 | 7.3 | 7.6 |
| Kilometers to U.S. border (mean) | 649 | 649 | 666 |
| Migrant characteristics (on last trip) | | | |
| Family paid for coyote fees? (%) | | 13.4 | 13.6 |
| Have documentation in the U.S.? (%) | | 28.2 | 27.1 |
| Years since migrated (mean) | | 2.0 | 1.9 |
| Monthly wages in destination in 2000 US$ (mean) | | 1573 | 1564 |
| Monthly remittances sent in 2000 US$ (mean) | | 424 | 457 |
| Monthly savings brought upon return in 2000 US$ (mean) | | 232 | 249 |
| Migrant destination in the U.S. (on last trip) | | | |
| Northeast (%) | | 4 | 4 |
| Midwest (%) | | 10 | 10 |
| South (%) | | 24 | 24 |
| West (%) | | 62 | 61 |
| N (person-years) | 473,943 | 81,229 | 2850 |
| n (persons) | 17,531 | 3,101 | 2,850 |

[a] Means for migrants and nonmigrants (not shown) differ significantly (p<.05, two-tailed test) for all variables except the indicator for distance. Migrants are individuals who have migrated at least once (considered non-migrants prior to their first trip). Tests account for clustering at the individual level.

[b] Remitters include migrants who sent monthly remittances or brought back savings upon return. Means for remitter and non-remitter migrants (not shown) differ significantly (p<.05, two-tailed test) for all variables except the indicators for value of land, advanced education, prior migration experience (by individual, parents or community members), whether family paid for coyote, as well as wages and destination in the U.S.

**Table 2. Estimated Marginal Effects of Household Wealth on Migration and Remittances** [a]

| Variable | Migration (1) | | Remittances (2) | | Remittances (3) Selection corrected [b] | |
|---|---|---|---|---|---|---|
| Household wealth | | | | | | |
| Logaritm of value of household land in 2000 US$ | 0.002 | ** | 0.056 | † | 0.061 | † |
| | (0.001) | | (0.033) | | (0.033) | |
| Logarithm of number of rooms in household properties | 0.003 | *** | 0.125 | ** | 0.128 | *** |
| | (0.001) | | (0.039) | | (0.037) | |
| Demographic characteristics | | | | | | |
| Age | 0.002 | *** | 0.043 | * | 0.046 | † |
| | (0.0003) | | (0.020) | | (0.024) | |
| Age-squared/100 | -0.003 | *** | -0.061 | * | -0.068 | * |
| | (0.0004) | | (0.024) | | (0.030) | |
| Sex (Male=1) | 0.020 | *** | 0.665 | *** | 0.730 | ** |
| | (0.001) | | (0.192) | | (0.254) | |
| Some secondary education | -0.004 | ** | -0.247 | ** | -0.254 | ** |
| | (0.001) | | (0.094) | | (0.098) | |
| Complete secondary education | -0.010 | *** | -0.141 | | -0.163 | |
| | (0.001) | | (0.140) | | (0.166) | |
| Advanced education | -0.017 | *** | -0.109 | | -0.164 | |
| | (0.001) | | (0.215) | | (0.236) | |
| Spouse in Mexico? | -0.003 | * | 0.117 | | 0.117 | |
| | (0.001) | | (0.095) | | (0.102) | |
| Spouse in the U.S.? | 0.466 | | -0.664 | *** | -0.483 | * |
| | (0.032) | | (0.162) | | (0.233) | |
| Number of children under 18 (in 10s) | -0.007 | ** | 0.376 | * | 0.377 | * |
| | (0.003) | | (0.189) | | (0.188) | |
| Prior migration experience | | | | | | |
| Trips by individual [c] | - | | 0.010 | | 0.010 | |
| | | | (0.008) | | (0.009) | |
| Parents U.S. migrants? | 0.042 | *** | 0.071 | | 0.115 | |
| | (0.004) | | (0.084) | | (0.089) | |
| Proportion ever migrated in community | 0.194 | *** | -0.335 | | -0.164 | |
| | (0.052) | | (0.350) | | (0.356) | |
| Community Characteristics | | | | | | |
| Average rainfall to state in past 3 years in mm | 0.002 | *** | 0.003 | | 0.006 | |
| | (0.0003) | | (0.038) | | (0.034) | |
| Distance to the U.S. border (in 10 kms) | 0.001 | * | 0.048 | * | 0.051 | * |
| | (0.0004) | | (0.022) | | (0.026) | |
| Distance-squared | -0.001 | *** | -0.037 | * | -0.039 | * |
| | (0.0003) | | (0.016) | | (0.018) | |

*(continued)*

*(Table 2, continued)*

| Variable | Migration (1) | | Remittances (2) | | (3) Selection corrected [b] | |
|---|---|---|---|---|---|---|
| Distance x Proportion ever migrated | -0.005 | ** | | | | |
| | (0.002) | | | | | |
| Distance-squared x Proportion ever migrated | 0.005 | *** | | | | |
| | (0.001) | | | | | |
| Migrant Characteristics | | | | | | |
| Family paid for coyote fees? | | | 0.160 | | 0.161 | |
| | | | (0.113) | | (0.103) | |
| Have documentation in the U.S.? | | | -0.002 | | -0.002 | |
| | | | (0.090) | | (0.088) | |
| Years since migrated | | | -0.058 | *** | -0.058 | *** |
| | | | (0.011) | | (0.016) | |
| Monthly wages in destination in 2000 US$ | | | 0.403 | *** | 0.403 | *** |
| | | | (0.056) | | (0.073) | |
| Migrant Destination in the U.S. | | | | | | |
| Midwest | | | -0.156 | | -0.154 | |
| | | | (0.213) | | (0.197) | |
| South | | | -0.299 | | -0.297 | |
| | | | (0.199) | | (0.180) | |
| West | | | -0.290 | | -0.289 | † |
| | | | (0.193) | | (0.173) | |
| State and year indicators | yes | | yes | | yes | |
| Intercept | -3.74 | *** | -0.230 | | -0.906 | |
| | (0.359) | | (1.067) | | (1.457) | |
| ρ | | | | | 0.079 | |
| | | | | | (0.071) | |
| N | 473,943 | | 3,101 | | 3,101 | |
| $R^2$ | 0.215 | | 0.114 | | | |

***p<0.001, **p<0.01, *p<0.05, †p<0.1 (two-tailed tests).

[a] The dependent variable in column 1 is whether a person is a U.S. migrant in a given year, and the estimates are based on a probit model. The dependent variable in columns 2 and 3 is the logarithm of monthly remittance migrant sent to his or her household, and the estimates are OLS coefficients. Standard errors, adjusted for clustering at the individual level, are given in parentheses. Wealth indicators are standardized to mean 0 and standard deviation 1. All models include state and year dummies.

[b] In column 3, the specification is a Heckman two-stage model of migration and remittances where the exclusion restriction is the interaction between distance and proportion ever migrated in a community. It is estimated via maximum likelihood.

[c] Individual trips predict migration perfectly (all individuals with prior trips migrate again), hence are not included in the migration model.

**Table 3. Estimated Marginal Effects of Household Wealth on First-Time versus Repeat Migration [a]**

| Variable | First Migration | | Repeat Migration | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Logaritm of value of household land in 2000 US$ | 0.0001<br>(0.0001) | 0.0002 **<br>(0.0001) | 0.0014 **<br>(0.0005) | 0.0004<br>(0.0007) |
| Logarithm of number of rooms in household properties | -0.0002 ***<br>(0.0001) | 0.0001<br>(0.0001) | 0.0028 ***<br>(0.0005) | 0.0015 *<br>(0.0007) |
| Proportion ever migrated in community | 0.0231 ***<br>(0.0054) | 0.0050 ***<br>(0.0005) | 0.1648 ***<br>(0.0447) | 0.0723 ***<br>(0.0032) |
| Household land x Proportion ever migrated | | -0.0010 *<br>(0.0004) | | 0.0051 *<br>(0.0026) |
| Household properties x Proportion ever migrated | | -0.0021 ***<br>(0.0004) | | 0.0061 *<br>(0.0024) |
| Demographic characteristics, prior migration experience, and community characteristics | yes | yes | yes | yes |
| State and year indicators | yes | yes | yes | yes |
| N | 458109 | 458109 | 471309 | 471309 |
| Pseudo-$R^2$ | 0.12 | 0.12 | 0.23 | 0.23 |

***p<0.001,**p<0.01, *p<0.05, †p<0.1 (two-tailed tests).

[a] The dependent variable in column 1 is whether a person has migrated for the first time in a given year. The dependent variable in column 2 is whether a person has migrated again after his or her first trip in a given year. Coefficient estimates are corrected for clustering at the individual level. 14 % of the person-year observations in the sample are from first-time migrants, 86 % are from repeat migrants. Sample sizes vary across models because we discard the observations of repeat (first-time) migrants in the analysis of first (repeat) migration.

## FIGURES

**Figure 1. Changes in Migrant Composition, Remittance Patterns, Wealth Distribution and Inequality in High vs. Low Migration Communities in the MMP Data (1975-1995)**

(1) Migrant Composition

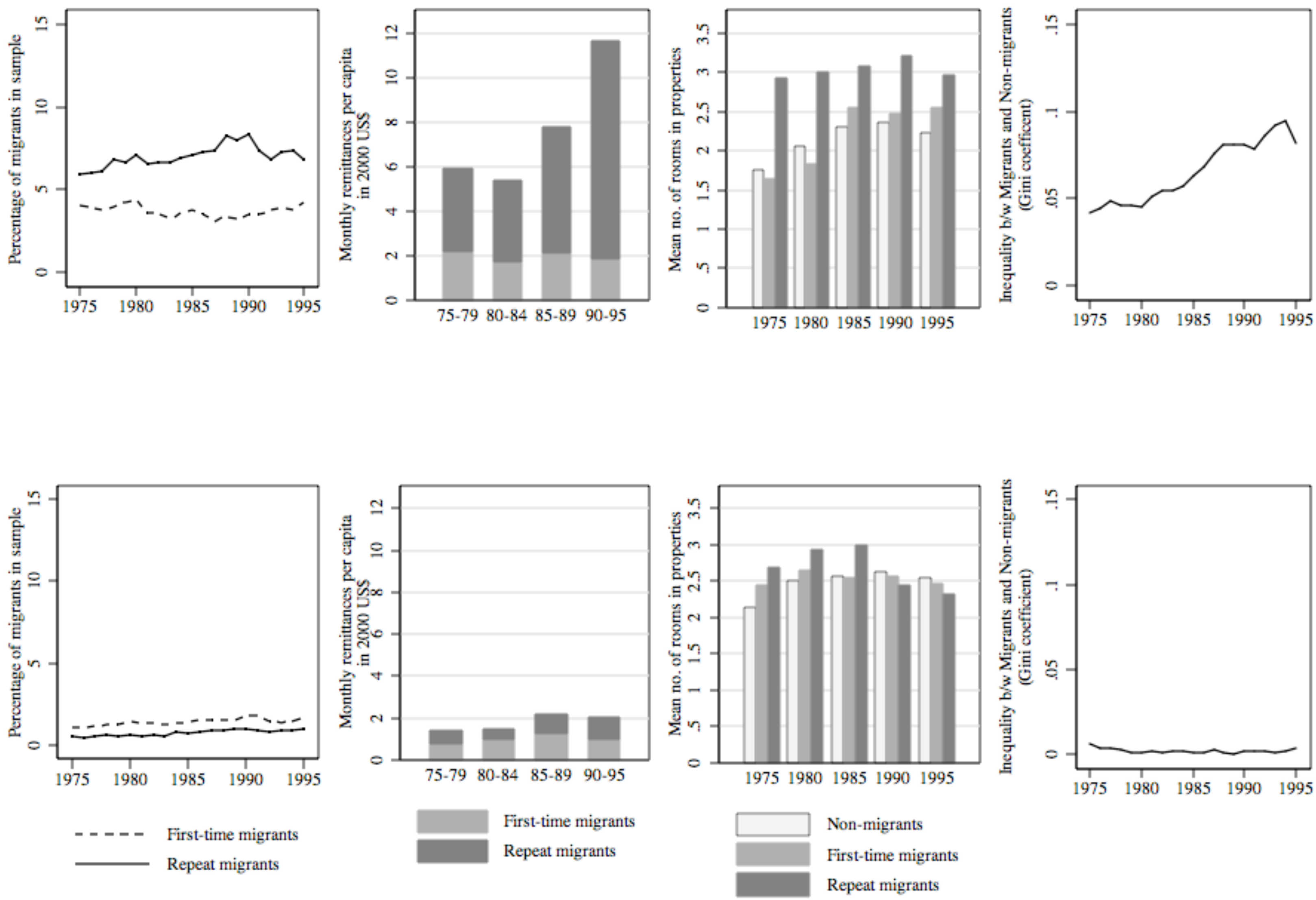
(2) Remittance Patterns

(3) Wealth Distribution

(4) Inequality between Migrants and Non-migrants

(a) High Migration Communities (N=60)

(b) Low Migration Communities (N=59)



# APPENDIX TABLES

**Table B1. Estimated Marginal Effects of Community Distance to the U.S. Border on Migration and U.S. Wages** [a]

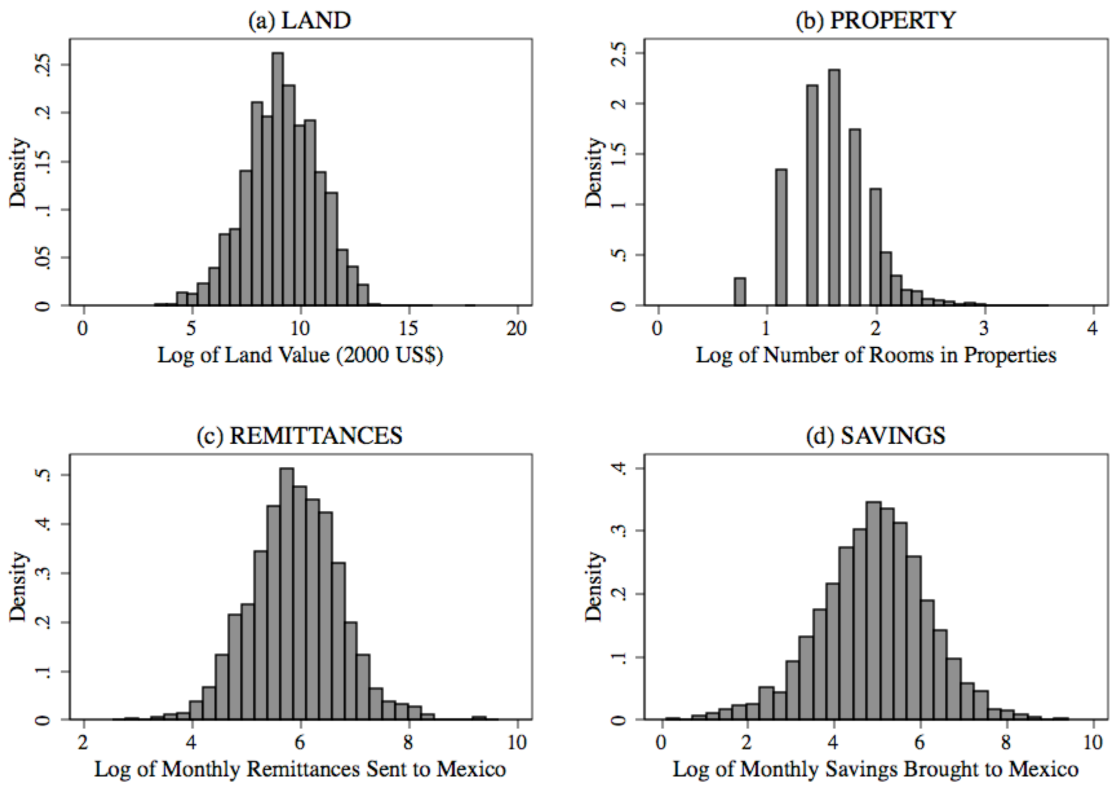
| Variable | Migration to the U.S. | | Wages in the U.S. |
|---|---|---|---|
| | (1) | | (4) |
| Distance to the U.S. border (in 10 kms) | 0.001 | ** | 0.005 |
| | 0.000 | | (0.008) |
| Distance-squared | -0.001 | *** | -0.002 |
| | 0.000 | | (0.006) |
| Proportion ever migrated in community | 0.194 | *** | -1.158 |
| | 0.052 | | (1.269) |
| Distance x Proportion ever migrated | -0.005 | ** | 0.032 |
| | 0.002 | | (0.039) |
| Distance-squared x Proportion ever migrated | 0.005 | *** | -0.02 |
| | 0.001 | | (0.030) |
| N | 473,943 | | 3,059 |
| Pseudo - $R^2$ | 0.215 | | 0.198 |

***p<0.001, **p<.01, *p<.05 (two-tailed tests).

[a] Both models include indicators for household wealth, demographic characteristics, prior migration experience, recent rainfall to state, as well as state and year dummies. The model in column 2 additionally includes indicators for migrant characteristics and destination. The dependent variable in column 1 is whether a person is a U.S. migrant in a given year, and the estimates are based on a probit model. The dependent variable in column 2 is the logarithm of the wages in the U.S. in a given year, the estimates are OLS coefficients. Standard errors, adjusted for clustering at the individual level, are given in parentheses.

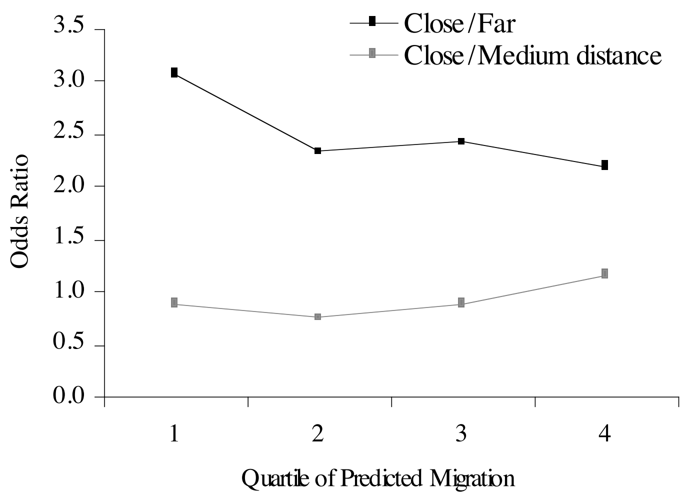
## APPENDIX FIGURES

**Figure A1. Distribution of Household Assets and Funds from Migrants**



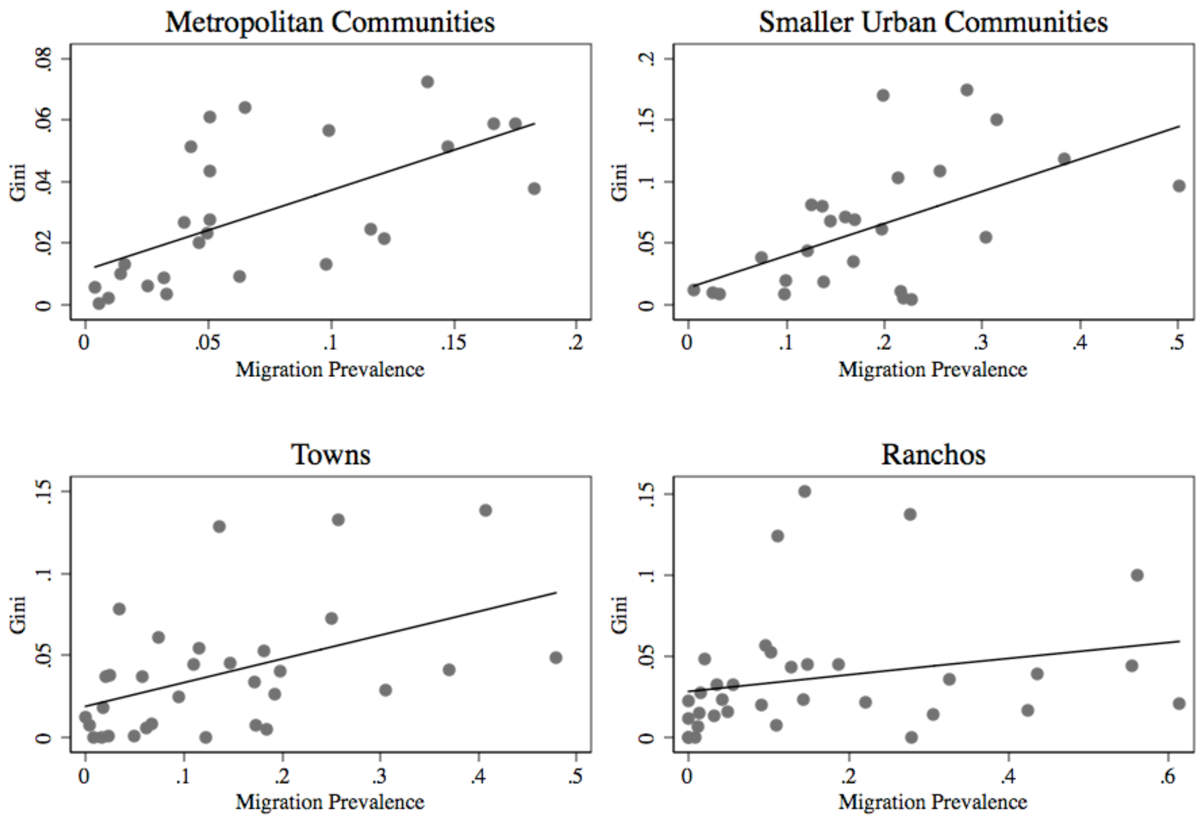

Note: Households with no land (85%) and no property (50%) are excluded from the respective panels (a) and (b). Households with migrants that receive no remittances (21%) and no savings (22%) are excluded from panels (c) and (d).

**Figure B1. Odds Ratios of Migration by Distance to the U.S. Border across Quartiles of Predicted Migration**




Note: Communities (N=119) are classified as close (n=36) if distance to the U.S. border is less than 600 km, medium distance(n=35) if it is between 600 and 750 km, and far (n=48) if it is greater than 750 km. Prediction equation does not contain distance indicators and is fit to subsample of individuals in far communities. Odds ratios are computed on the whole sample.

**Figure C1. Scatter Plots of Property Inequality (between Migrants and Non-Migrants) by Migration Prevalence in 119 Mexican Communities (Year = 1985)**




Note: Inequality is measured with the gini coefficient. Migration prevalence is defined as the proportion of individuals who have ever migrated in a community. Each dot presents a community observed in 1985. The fitted line is obtained by regressing inequality on migration prevalence. (In all types of communities, a quadratic term for migration prevalence, added to test the inverted-U relationship, remains insignificant.)