# Globalization, Migration and Development: The Role of Mexican Migrant Remittances

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**Abstract**

This note starts from the premise that, in current debates on the impact of globalization on economic development, the role of international migration has been under-emphasized. In an effort to contribute toward filling that gap, it presents evidence suggesting that remittances sent by international migrants are associated with improved developmental outcomes. Using a cross-section of all Mexican municipalities (over 2400) in the year 2000, it shows that an increase in the fraction of households receiving international remittances is correlated with better schooling and health indicators, and with reductions in poverty. These results are confirmed when we look at migration propensity instead of remittance flows. The econometric exercises control for the likely endogeneity between remittances and migration variables, on the one hand, and developmental outcome variables, on the other.

*Keywords:* Remittances, migration, globalization, development, Mexico
*JEL Classification:* I0, F2, O15

## 1    Introduction

Recent debates on the merits and shortcomings of globalization have focused on the implications stemming from increased capital and goods flows. In existing studies, a number of authors have tried to ascertain whether financial and commercial integration promote growth, reduce poverty, and, ultimately, foster economic development. The motivation for this paper is that a third dimension of globalization —international migration— has received relatively little attention in the present debate. To some extent this oversight is surprising, since historical accounts of the first wave of globalization, toward the end of the nineteenth

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century, highlight the impressive movements of people around the world.[1] In view of the paucity of reliable data on migration, however, one can be more understanding of why the subject remains under-studied.

The present paper contributes toward filling that gap. It explores whether the movement of people across borders, just as in the debate regarding capital and trade flows, fosters development. In particular, the paper focuses on the role played by migrants' remittances to their families in their countries of origin. It analyzes the case of Mexico, a country that has not only experienced a fast integration to the global economy through trade and capital flows, but through migration flows as well.

Remittances worldwide grew steadily throughout the 1990s. According to the World Bank's *Global Development Finance* 2003 report, in 2002 remittances reached 80 billion dollars and were second only to FDI as a source of foreign capital for developing countries [Ratha (2001)]. The report points out that remittance flows are less volatile than other private capital flows and might even be counter-cyclical. Remittances to Latin America and the Caribbean in 2002 were 32 billion dollars, allowing poor households in some Central American countries to double their incomes [Inter-American Dialogue (2004)]. Their magnitude, stability and direct links to low-income households make remittances a potentially important tool for raising living standards and alleviating poverty in recipient nations.

The paper looks at a cross-section of all Mexican municipalities in the year 2000 and analyzes whether, as the fraction of remittance-receiving households in a given municipality rises, development indicators improve. We pay particular attention to schooling and health status, as well as poverty and *marginalization* more broadly. We present evidence showing that international remittances play an important role in improving household welfare. An increase in the fraction of

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[1] See for example Kevin H. O'Rourke and Jeffrey G. Williamson (1999).

households receiving remittances reduces infant mortality and illiteracy among children 6 to 14 years of age, while raising school attendance among the latter group. In addition, poverty levels and a broader *marginalization index* decline as remittances increase. Similar findings emerge when we focus on the fraction of households with family members in the United States, instead of on those receiving remittances. Our results take into account the possibility of reverse causality, endogeneity, and omitted variables problems that could bias the econometric estimates. Moreover, the statistical exercise incorporates a number of explanatory variables that, while interesting in and of themselves, might be correlated with our variables of interest and thus could bias our results if left out of the econometric specification.

The results presented herein complement an incipient literature that finds a strong causal impact from remittances to improved developmental outcomes. Recent studies in this literature use household-level data to provide a finer and more rigorous treatment of the topic at hand. We believe that line of research should be pursued further. Despite the fact that our paper looks at more aggregate data, we believe its findings are remarkably robust and therefore should provide additional incentives to carry micro-level studies. The results are also interesting in their own right, as they offer a crisp depiction of the correlates of under-development in Mexico and highlight the role of remittances and migration in mitigating its adverse consequences.

The rest of the paper is organized as follows. Section 2 provides an overview of the importance of international migration and remittances for Mexico. Section 3 discusses how remittances and migration might affect developmental outcomes and reviews the incipient empirical literature on the subject. The next section delineates the empirical strategy adopted in the paper and presents our econometric results. We conclude in section 5 with final comments and recommendations for future research.

## 2 Migration, remittances and globalization in Mexico

During the last decade and a half Mexico experienced a rapid shift from an inward-looking, closed economy to an economy with tight global links. Familiar indicators of *globalization* changed drastically from 1970 to 2000; see Table 1. Trade in goods and services jumped from 17 percent of GDP in 1970 to 64 percent in 2000, with a 26-percentage point leap from 1990 to 2000; similarly, FDI remained at levels under one percent of GDP through 1990, but reached 2.4 percent of GDP in 2000.

Parallel to such remarkable increases in trade and FDI flows, international migration —which for Mexico is essentially equivalent to migration to the United States— continued to gain importance. According to U.S. Census figures [Schmidley (2001)], in 1970 the Mexican-born resident population in the United States amounted to less than 800 thousand, or 8.2 percent of the total U.S. foreign-born population. The proportion of Mexicans in the foreign-born population reached 16.7 percent in 1980, 22.7 percent in 1990, and 27.6 percent (7.8 million people) in 2000. According to Schmidley (2001, p. 12), "Mexico's proportion in 2000 is the largest recorded share any country has held since the decennial census in 1890 when about 30 percent of the foreign-born population was from Germany."

But Mexican migration to the United States is not only substantial relative to migration from other countries. An increasing fraction of Mexico's population now lives and works in the United States as well. Prachi Mishra (2003) estimates that, as a percent of Mexico's labor force, Mexican workers in the United States increased fivefold, from 3 percent in 1970 to 16 percent in 2000. Mexico's 2000 Census figures show that, from 1995 to 2000, 4.1 percent of all Mexican households saw at least one family member migrate to live in the Unites States, while an additional 1.8 percent of households had family members migrating

back and forth between the two countries or returning to Mexico during the same period [CONAPO (2002), *Cuadro* A].

Not surprisingly, parallel to the increase in the number of Mexicans migrating to the United States, worker remittances flowing to the Mexican economy grew in importance. While in 1980 remittances were less than 700 million dollars, or 0.3 percent of GDP, by 2000 they surpassed 6.5 billion dollars, or 1.1 percent of Mexico's GDP. In 2001, Mexico ranked second only to India as the top recipient of remittances in absolute terms [Ratha (2003), p. 159]. Moreover, *Banco de México* official estimates set remittances received by Mexico at 13.3 billion dollars in 2003, equivalent to 80 percent of oil exports and 120 percent of net foreign direct investment in the country during that year.[2] All of the above are official estimates of remittance flows. Nonetheless, it is important to keep in mind that official figures may underestimate actual remittance flows, as migrants often rely on informal arrangements for sending money to their relatives back home. A recent report prepared by the Inter-American Development Bank's Multilateral Investment Fund and the Pew Hispanic Center, based on an extensive survey among recipients of remittances, estimates that in 2003 Mexican migrants sent approximately 14.5 billion dollars to their home country [see MIF-PHC (2003a, b)].

A substantial and rising number of Mexican households benefit from remittances. Out of approximately 22.6 million Mexican households, 985 thousand, or 4.4 percent, received remittances in 2000, according to Census figures. Moreover, household surveys show that the fraction of families receiving remittances rose steadily through the 1990s, from 3.7 percent in 1992 to 5.7 percent in 2002. The increase was particularly striking for rural households, as the fraction receiving remittances more than doubled from 6.2 to 12.6 percent. Remittances also grew in importance relative to the share of household income

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[2] Banco de México, "Ingresos por Remesas Familiares en 2003", Press Release, 3 February 2003. (Available at http://www.banxico.org.mx).

they represent. For the country as a whole, that share went from 0.9 percent to 1.7 of total household income from 1992 to 2002; during the same period, remittances as a share of rural household income went from 2.7 to 6.5 percent. While the increase in remittances flowing to Mexico is remarkable, even more important perhaps is the fact that the additional income accrues directly to families in low-income communities. As we will see in section 4 below, the top 10 percent of all municipalities with the largest fraction of remittance-receiving households are predominantly rural, exhibit high income inequality and low incomes per capita relative to the rest of the country.

While migration and remittance flows are important for the country as a whole, there is substantial variation across Mexican states; see Map 1. In 2001, five Mexican states, out of 32 including the Federal District, received more than 40 percent of all remittances to the country (see Table 2). As a percent of GDP, remittances sent to Michoacán, Guerrero or Nayarit in 2001 were 8.3, 5.6 and 5.2 percent, respectively, compared to 1.6 percent for the country as a whole or a mere 0.4 in Mexico City or Nuevo León. Moreover, the figures in Table 2 show that whereas in the central states of Zacatecas, Michoacán and Guanajuato the share of households with migrants in the United States reached 12.2, 10.4, and 9.6 percent, respectively, in Campeche, Chiapas, Quintana Roo, and Tabasco, less than one percent of households sent migrants to the United States from 1995 to 2000. The former states also have the largest percent of remittance-receiving households in the country.

It is not a coincidence that Zacatecas, Michoacán and Guanajuato also exhibit the highest historical rates of migration. Figures presented by Woodruff and Zenteno (2001) indicate that from 1955 to 1959 the population migrating to the United States from these states was 6, 4 and 3 percent, respectively, suggesting that past migration reduces the cost of migrating for future generations. Nevertheless, Table 2 also shows that remittances have been flowing fast to states that traditionally have not sent many migrants to the United States.

The Gulf state of Veracruz and Chiapas, along the Guatemalan border, for example, saw remittances rise at an annual rate of 35 and 46 percent, respectively, in contrast to an average national rate of only 13 percent.

In sum, during the last three decades millions of Mexican nationals have migrated to the United States. They have not only become the largest immigrant group in the United States, but represent an increasingly large share of the Mexican labor force. As a result, the remittances they sent grew rapidly and surpassed FDI inflows in 2003. Moreover, although a handful of states concentrate the bulk of remittances, in recent years states without an emigration tradition have seen remittances grow at a fast pace. Last, and perhaps more important, close to a million Mexican households benefit directly from money sent by migrants in the United States. As we will discuss in section 4, while not the poorest of the poor, many of these households concentrate in municipalities with dismal welfare indicators. To the extent that the additional income they receive in the form of workers remittances allows them to improve their living conditions, international migration may play an important role as a development tool in Mexico and other migrant-sending countries. The next section reviews the existing evidence regarding the link between remittances and development.

## 3      Remittances and development: Existing literature

*(Section in progress)*

Although some researchers have been looking at the topic of remittances for a few years, it is probably safe to say that interest in the subject has been gaining more attention in the last couple of years. The renewed interest might be a direct consequence of the growth of remittances worldwide. It might also be encouraged by the availability of household level data in some developing countries that explicitly incorporate information on overseas transfers, which in turn makes it possible to apply more sophisticated econometric tools to the study of remittances.

Hillel Rapoport and Frédéric Docquier (2003) provide an extensive survey of the motivations to remit and of some of the implications regarding human capital formation, entrepreneurship, and inequality. While considerable efforts have been devoted to understanding why workers might migrate and send remittances, the impression one gets from the survey is that considerable work still needs to be done regarding their effects on economic development.

A few fairly recent papers look at how remittances, by relaxing households' liquidity constraints, allow investment in human capital, education more precisely. Alejandra Cox Edwards and Manuelita Ureta (2003) look at households' schooling decisions in El Salvador and conclude that remittances reduces the likelihood of quitting school among individuals aged 6 to 24 years old. Dean Yang (2003) looks at money sent by overseas Filipino workers and finds `that a rise in remittances of 10-percent of initial income increases the fraction of children aged 17 to 21 attending school by more than 10 percentage points; he also finds that child labor hours decline by almost 3 hours a week. Gordon H. Hanson and Christopher Woodruff (2003) use Mexico's 2000 Census data and conclude that "children in migrant sending households complete significantly more years of schooling". To my knowledge there are no studies looking at remittances impact on human capital more broadly, such as investment in health and nutrition.

Regarding entrepreneurship, Christopher Woodruff and René Zenteno (2001) look at a sample of small Mexican firms and conclude that "remittances are responsible for almost 27% of the capital invested in microenterprises" in Mexican cities, and that that share reaches 40 percent in states with high emigration rates to the United States. Rapoport and Docquier (2003) cite works on Tunisia, Turkey and Pakistan with related findings.

Richard H. Adams Jr. and John Page (2003) analyze a cross-section of 74 low- and middle-countries and consider whether poverty falls as international emigration from and remittances rise to these countries rise. They find that a 10

percent increase in the number of international migrants or in the amount of remittances received reduces by 1.9 and 1.6 percent, respectively, the fraction of people living with less than one dollar per day.

David Mckenzie and Hillel Rapoport (2004) present a theoretical model suggesting that international migration initially deepens inequality, as the poor cannot afford to cover the cost of migration. However, as migration networks are created, the costs of migration fall for future migrants fall and inequality is reduced. They find empirical support for those predictions using Mexican data that indicate that inequality falls in communities with historically high emigration rates.

## 4 Remittances and development: Mexican evidence

In light of the importance that migration and remittances play in Mexico's insertion in the world economy, described in section 2, and considering the emerging literature that finds a positive link between remittances and development, reviewed in section 3, in this section we use a detailed database at the municipal level to assess how international migration has affected household welfare in Mexico; the data is described in the Data Appendix. We begin by describing some municipal welfare indicators and other relevant characteristics, classifying municipalities by the extent to which they receive remittances, to get a first glance at how the latter may affect living conditions. We then perform a more rigorous econometric exercise to control for a host of factors that simultaneously affect developmental outcomes and to address the potential two-way causality between remittances and migration, on the one hand, and welfare on the other.

### 4.1 Municipal welfare and remittances

Tables 3 and 4 relate welfare indicators to the importance of remittances at the municipal level. Municipalities are classified in deciles of the distribution of

the fraction of households that receive remittances, so that, for instance, municipalities in the 10th decile are those were proportionally the most households receive income from abroad. Table 3 shows that municipalities in the top two deciles have the lowest income per capita, excluding remittances, of all municipalities, with the exception of the bottom decile. A similar pattern can be seen regarding income distribution, indigenous population and rural population: starting from the first decile, the Gini coefficient, the percent of households speaking an indigenous language, and the percent of the population living in localities with less than 5000 inhabitants initially drop, but then begin to rise as the remittances grow.[3]

As we will see in the econometric exercises below, income distribution, indigenous population and rural population are strong predictors of poor living conditions. Table 4 offers support to this view. Infant mortality, schooling indicators and poverty levels initially fall as more households receive remittances, but then begin to worsen. Relative to the national average, municipalities receiving the most remittances (deciles 8 to 10) show higher infant mortality and child illiteracy rates, have less children attending school and less years of schooling among the adult population, and a larger share of their population living in poverty.

What these patterns suggest is that, while regions with a strong tendency to send migrants abroad and receive remittances are not the poorest of the poor, they lag behind the rest of the country in basic indicators of well-being. In fact, migration from these regions, and their consequent reliance on remittances, may be the result precisely of such poor living conditions.

The figures that we have seen in this section have at least two implications for the econometric exercise that follows. First, while municipalities for whom remittances are important have substandard welfare indicators, they also exhibit

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[3] Similar patterns can be seen when we classify municipalities by the fraction of households migrating to the United States instead of remittances.

some characteristics —low income per capita, income inequality, large rural and indigenous populations— that have a strong impact on those indicators and on the propensity to migrate. Therefore, the econometric exercise must incorporate suitable controls in order to avoid omitted variable biases. Second, while we are interested in measuring the impact that remittances have on development, causality may likely run in the opposite direction as well. Consequently, we must look for appropriate instrumental variables and run two-stage least squares regressions to isolate the causal direction of interest.

## 4.2 Econometric strategy

In order to provide more conclusive evidence on the relationship between remittances and developmental outcomes, we perform an econometric exercise that controls for other relevant factors affecting infant mortality, schooling and poverty.

We estimate equations of the following form

(4.1) $$Y_i = \beta_r REM_i + \beta_{rsq} REM_i^2 + \mathbf{X}_i \mathbf{\Gamma} + \varepsilon_i,$$

where $Y_i$ represents the developmental outcome of interest in municipality $i$; $REM_i$ is the fraction of households in municipality $i$ that receive international remittances; $\mathbf{X}_i$ is a matrix of additional variables that might explain $Y_i$, with a corresponding vector of coefficients $\mathbf{\Gamma}$; and $\varepsilon_{it}$ is an error term.

There are a number of issues that arise in trying to obtain consistent estimates of $\beta_r$ and $\beta_{rsq}$. First, there may be unobserved variables that affect both the number of households receiving remittances and the outcome variable of interest. For example, adverse shocks to the local economy may force some family members to migrate to the United States in order to complement household income, while, at the same time, having a deleterious impact on, say, school attendance. Second, there may exist unobserved municipal characteristics that again are correlated with both the outcome variable and with the number of

remittance-receiving households. Either of these problems would result in an "omitted variable" bias in estimating equation (4.1). Last, municipalities with poor welfare indicators may be more prone to sending people overseas, generating an endogeneity bias when equation (4.1) is estimated with ordinary least squares.

In order to deal with the possibility that the coefficient estimates might be biased, I use two-stage least squares estimation. I instrument the potentially endogenous variable, *REM*, with the product of the distance of the municipality to the US-Mexico border (in logarithms) and historical migration rates to the United States at the state level. Distance to the US-Mexico border is the minimum distance from the municipality to the main municipalities lying along the border (e.g., Tijuana, Juárez, Reynosa, etc.) and is calculated based on the geographic coordinates of each municipality. Historical migration rates are the percent of residents migrating annually between 1955 and 1959 from each Mexican state to the United States.[4]

With estimates for the coefficients of interest in hand, $\hat{\beta}_r$ and $\hat{\beta}_{rsq}$, the marginal impact of an increase in the fraction of households receiving remittances, evaluated at the mean of all municipalities ($\overline{REM}$), is

(4.2)
$$\left.\frac{\partial Y}{\partial REM}\right|_{REM=\overline{REM}} = \hat{\beta}_r + 2\hat{\beta}_{rsq}\overline{REM}.$$

Since we are interested in assessing whether the expression above is statistically significant, we perform an F-test of the null hypothesis:

(4.3)
$$H_o : \hat{\beta}_r + 2\hat{\beta}_{rsq}\overline{REM} = 0$$

Then, when we reject the null hypothesis, the impact of a change $\Delta REM$ on the outcome variable is

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[4] Data come from Woodruff and Zenteno (2001, Table 1). Hanson and Woodruff (2003) also use state historical migration, interacted with *household* level characteristics, in their study on migration and schooling.

$$(4.4) \qquad \Delta Y = \left( \hat{\beta}_r + 2 \hat{\beta}_{rsq} \overline{REM} \right) \Delta REM \; .$$

## 4.3 Econometric results

Let us now turn now to our estimation of equation (4.1). The econometric exercises incorporate a number of regressors, other than remittances, that may affect the developmental outcomes under analysis. Such controls include an estimate of the municipal income per capita, since richer locations would exhibit better welfare indicators; the percent of the population in rural communities (less than 5000 inhabitants), as rural dwellers often lack access to proper medical and schooling facilities; the fraction of indigenous people, a social group that has been historically been at the fringe of economic development; an estimate of the Gini coefficient, since a more equitable income distribution has been linked to better welfare indicators; the share of employment in agriculture and in government, as well as the unemployment rate, to capture labor market characteristics; the homicide rate at the municipal level, a proxy for governance; distance to the US-Mexico border; and distance to all other municipalities, weighed by population, which in essence captures distance to Mexico City, in an attempt to capture the centralized character of the Mexican government. In addition, when analyzing health outcomes we include the percent of population with access to tap water and health coverage, the percent of female-headed households and average years of schooling among people 15 years and older; regressions looking at educational outcomes also include the latter two variables. Table 5 proved summary statistics.

In general, the econometric estimates confirm our prior beliefs about the impact that the aforementioned controls have on developmental outcomes; see Tables 6 to 10. For instance, infant mortality and child illiteracy are higher in low-income municipalities, and rise with the fraction of rural and indigenous population and with inequality. In contrast, they are inversely correlated with the fraction of female-headed households and with adult schooling.

We now turn to the impact that remittances have on the developmental outcomes of interest. Tables 6 to 10 present econometric estimates of equation (4.1) using as dependent variables infant mortality, child illiteracy and school attendance, poverty and a broad *marginalization* index. Each table also reports the marginal impact of an increase in the fraction of household receiving remittances, given in expression (4.2), as well as the P-value for the F-test of the null hypothesis in expression (4.3).

*(a)     Infant mortality*

As Table 6a shows, the marginal impact of an increase in the fraction of remittance-receiving households on infant mortality is negative and statistically significant. Moreover, two-stage least square estimates suggest an impact at least twice as important vis-à-vis OLS results, although statistical significance drops but remains above 90 percent. The latter results suggest that controlling for endogeneity is not only an econometric requirement, but yields substantively different results. Table 6b shows that migration to the United States more broadly is also negatively correlated with infant mortality. In this case, however, statistical significance in the specification with the most controls (regression 8) drops just under 90 percent.

How important is the decline in infant mortality? From Table 5 we know that infant mortality across municipalities is on average 30.4 children per one thousand live births.[5] Using expression (4.4) and the marginal impact of minus 0.2 estimated in regression 8 of Table 6a, we can see that a one-standard deviation increase in the fraction of remittance-receiving households (or 7.7 percent points) would result in a decline of 1.5 infant deaths on average, equivalent to a 5 percent decline in infant mortality.[6]

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[5] This figure is a simple, unweighted average. The population-weighted average in 2000 was 24.2.

[6] To put things in perspective, from 1990 to 2000 infant mortality in Mexico declined by almost 20 percent according to figures from the World Bank's *World Development Indicators.*

*(b)*    *Educational outcomes*

Regarding educational outcomes, the econometric exercise shows that remittances have an important and statistically significant impact in reducing child illiteracy (Table 7a) and raising school attendance (Table 8a). As in the case of infant mortality, controlling for the potential endogeneity of receiving remittances has a substantial effect in the marginal effects and, for school attendance, statistical significance of our estimates. Once again, using migration to the United States as the explanatory variable of interest confirms these findings (see Tables 7b and 8b).

Our estimates are also quantitatively important. A one-standard deviation increase in the fraction of remittance-receiving households reduces child illiteracy by 6.5 percent points, or almost 40 percent on average; moreover, it improves school attendance by 3.3 percent points, or 3.7 percent. Thus, for example, children in the state of Guanajuato would see illiteracy drop to levels comparable to those in Aguascalientes and school attendance similar to that in Baja California.


*(c)*    *Poverty and marginalization*

In order to assess the extent to which remittances and migration may prop efforts to alleviate poverty in Mexico, I estimated different versions of equation (4.1) using as a dependent variable the fraction of the population in a given municipality whose income is equivalent to at most the minimum wage or, alternatively, at most two minimum wages. For the country as a whole, roughly 17 percent of the population lives in households with income less than one minimum wage, while around 53 percent live in households earning less than two minimum wages. While the use of these figures does not coincide with standard definitions of poverty, interestingly, the percentage of people under each alternative definition is close to the percent of the Mexican population considered to live in poverty by Mexican official statistics and other researchers.

For instance, 24.2 percent of all Mexicans do not earn enough income to cover their food requirements satisfactorily; and, in addition to food, 53.7 percent cannot cover their needs regarding health, clothing, transportation, housing, and education.[7] Thus, the dependent variables used in this study may act as good proxies for actual poverty levels in Mexico.

Tables 9a and 9b present our econometric results. Remittances have a statistically and economically significant impact in reducing poverty. A one-percent point increase in the fraction of remittance-receiving households reduces the fraction of the population earning at most one minimum wage by 4.5 percentage points, and that of people earning at most two minimum wages by almost 3 percentage points. As before, controlling for endogeneity boosts the estimated impact.

In addition to the previous two measures of poverty, I also used a "marginalization index" for the year 2000 calculated by Mexico's *Consejo Nacional de Población* (CONAPO).[8] Using a principal components method, the marginalization index summarizes in one number municipal performance regarding schooling, housing quality, and demographic and income characteristics. As such, the index captures some of the dimensions already considered piecemeal in this study. The results in Table 10 confirm our previous findings: remittances reduce average municipal marginalization and, thus, improve welfare.

## 5    Final remarks

In this paper we present compelling evidence suggesting that international migration, through the flow of remittances, plays an important role in improving living conditions in migrant-sending regions. Using a large cross-section of

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[7] Figures from *Comité Técnico para la Medición de la Pobreza* (2002) and Córtes Cáceres et al (2002).

[8] See CONAPO (2001).

Mexican municipalities, we have shown that as the proportion of households receiving remittances rises, developmental outcomes improve. Specifically, if the fraction of remittance-receiving households increases by one-standard deviation, infant mortality falls by as much as five percent, children's school attendance rises by almost 4 percent, while illiteracy drops by a remarkable 40 percent. Moreover, the fraction of the population living in poverty is reduced by as much as 4.5 percentage points when an additional one-percent of households in a municipality receives remittances. The econometric exercises in which the above results are based include a good number of additional control variables and take into account the possibility of an endogenous relation between remittances and living conditions. Moreover, our results complement and confirm some of the findings of an incipient literature based on detailed household data that explores how remittance income results in improved welfare indicators.

We believe the findings in this paper and in the related literature strongly support the premise of this paper, namely, that international migration is an important dimension of global economic integration that cannot continue to be under-emphasized. Therefore, current discussions regarding the virtues and vices of globalization should focus not only on the role of trade and capital flows, but should explicitly incorporate migration in the debate.

Perhaps more importantly, policy makers in both sending and receiving countries, and the international community in general, must dedicate efforts to understanding the migration phenomenon as a prerequisite for designing mechanism that harness its potential as a development tool. It may not be realistic to propose easing restrictions on the international movement of people since migration is a thorny political issue in both host and sending countries. In the former, immigration from low-income countries, typically comprising a large number of unskilled workers, has an adverse impact on unskilled wages and thus has been blamed for deepening wage inequality. In addition, animosity stemming from cultural or religious differences feeds the fear that immigration

will cause not only economic dislocation in host countries, but that it will tear their social fabric as well. In sending countries some observers argue that emigration of the most talented and entrepreneurial individuals may hamper future economic prospects. Aside, it would be at a minimum awkward for politicians in those countries to promote emigration as a development strategy. Nevertheless, the fact is that migration takes place despite existing legal restrictions and open opposition in some quarters.

Therefore, the issue is how countries, within the political constraints they face, may regulate existing migration flows in a way that acknowledges the root causes of their existence and promotes development in the sending regions as a long-term solution. This is another reason why understanding the developmental impact of remittances is important. If remittances, by allowing for better educational opportunities and healthier lives, break the cycle of poverty and social exclusion that forces some people to look for job opportunities abroad, they may reduce misapprehensions toward, and pressures for migration in the future.

## Data Appendix

Data is collected from a number sources. Most of those sources use Mexico's 2000 Population and Housing Census as a basis. The 2000 Census applied an extended questionnaire to a 10-percent sample of all Mexican households, compromising more than 2 million observations. The extended questionnaire collected data on schooling, housing conditions, income, migration, and vital statistics, among others.

*(To be completed)*

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# Tables and Figures

## Table 1: Mexico's global links, 1970-2000
(Percent of GDP unless otherwise noted)

|  | *1970* | *1980* | *1990* | *2000* |
|---|---|---|---|---|
| Trade in goods and services | 17.4 | 23.7 | 38.3 | 64.0 |
| Foreign direct investment | 0.9 | 1.0 | 1.0 | 2.4 |
| Tourism receipts | -- | 2.4 | 2.1 | 1.4 |
| Mexican-born U.S. population (million) | 0.8 | 2.2 | 4.3 | 7.8 |
| As % of foreign-born population | 8.2 | 16.7 | 22.7 | 27.6 |
| As % of Mexico's labor force | 3 | -- | 11 | 16 |
| Remittances (million current USD) | -- | 698 | 2,492 | 6,572 |
| As % of GDP | -- | 0.3 | 0.9 | 1.1 |

Sources: World Bank, *World Development Indicators;* Schmidley (2001); Mishra (2003).

**Table 2: International remittances to Mexico, by state, 1995 and 2001**

| State | Remittance flows | | | | | | | | | Percent of households | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Million 1995 USD | | Annual % Growth | Distribution (%) | | As % of State GDP | | Per capita (USD) | | Receiving remittances | With migrants in the US |
| | *1995* | *2001* | | *1995* | *2001* | *1995* | *2001* | *1995* | *2001* | | |
| Michoacán | 597 | 895 | 7.0 | 16.3 | 11.7 | 9.7 | 8.3 | 152 | 242 | 11.4 | 10.4 |
| Guanajuato | 376 | 636 | 9.1 | 10.3 | 8.3 | 4.4 | 4.2 | 84 | 148 | 9.2 | 9.6 |
| Jalisco | 466 | 604 | 4.4 | 12.7 | 7.9 | 2.9 | 1.9 | 77 | 106 | 7.7 | 6.5 |
| Estado de México | 161 | 548 | 22.6 | 4.4 | 7.2 | 0.6 | 1.1 | 14 | 48 | 2.1 | 2.6 |
| Guerrero | 224 | 480 | 13.5 | 6.1 | 6.3 | 4.8 | 5.6 | 76 | 173 | 7.9 | 6.8 |
| Veracruz | 76 | 459 | 34.9 | 2.1 | 6.0 | 0.6 | 2.4 | 11 | 74 | 2.7 | 3.2 |
| D.F. | 196 | 434 | 14.2 | 5.3 | 5.7 | 0.3 | 0.4 | 23 | 57 | 1.7 | 1.6 |
| Oaxaca | 159 | 308 | 11.6 | 4.3 | 4.0 | 3.8 | 4.1 | 47 | 99 | 4.1 | 4.8 |
| Puebla | 178 | 304 | 9.3 | 4.8 | 4.0 | 2.0 | 1.6 | 38 | 68 | 3.3 | 4.0 |
| Hidalgo | 72 | 298 | 26.8 | 2.0 | 3.9 | 2.1 | 4.7 | 33 | 148 | 5.1 | 7.1 |
| Morelos | 131 | 216 | 8.7 | 3.6 | 2.8 | 3.7 | 3.0 | 91 | 155 | 6.4 | 7.5 |
| San Luis Potosí | 120 | 216 | 10.3 | 3.3 | 2.8 | 2.5 | 2.7 | 54 | 102 | 8.2 | 7.4 |
| Tamaulipas | 47 | 206 | 28.1 | 1.3 | 2.7 | 0.6 | 1.4 | 18 | 86 | 3.6 | 3.0 |
| Sinaloa | 110 | 201 | 10.6 | 3.0 | 2.6 | 2.0 | 2.2 | 45 | 93 | 4.6 | 3.6 |
| Chiapas | 20 | 192 | 46.0 | 0.5 | 2.5 | 0.4 | 2.4 | 5 | 54 | 0.8 | 0.8 |
| Durango | 76 | 162 | 13.3 | 2.1 | 2.1 | 2.2 | 2.6 | 53 | 121 | 9.7 | 7.3 |
| Zacatecas | 115 | 161 | 5.8 | 3.1 | 2.1 | 5.2 | 4.5 | 85 | 127 | 13.0 | 12.2 |
| Chihuahua | 64 | 157 | 16.0 | 1.8 | 2.1 | 0.6 | 0.7 | 23 | 58 | 4.3 | 3.7 |
| Nayarit | 58 | 146 | 16.8 | 1.6 | 1.9 | 3.9 | 5.2 | 64 | 175 | 9.6 | 6.8 |
| Querétaro | 71 | 137 | 11.6 | 1.9 | 1.8 | 1.7 | 1.6 | 57 | 110 | 3.7 | 4.8 |
| Coahuila | 68 | 129 | 11.4 | 1.8 | 1.7 | 0.8 | 0.9 | 31 | 62 | 3.4 | 2.2 |
| Sonora | 28 | 128 | 28.9 | 0.8 | 1.7 | 0.4 | 1.0 | 13 | 65 | 3.2 | 1.6 |
| Baja California | 31 | 126 | 26.1 | 0.9 | 1.6 | 0.4 | 0.7 | 15 | 60 | 4.0 | 2.4 |
| Nuevo León | 39 | 119 | 20.7 | 1.1 | 1.6 | 0.2 | 0.4 | 11 | 35 | 2.5 | 1.9 |
| Aguascalientes | 114 | 95 | -3.0 | 3.1 | 1.2 | 4.0 | 1.6 | 132 | 109 | 6.7 | 6.7 |
| Colima | 28 | 88 | 21.4 | 0.8 | 1.2 | 2.0 | 3.4 | 57 | 184 | 7.3 | 5.6 |
| Tlaxcala | 22 | 57 | 17.3 | 0.6 | 0.8 | 1.7 | 2.1 | 25 | 66 | 2.2 | 2.7 |
| Tabasco | 3 | 54 | 59.1 | 0.1 | 0.7 | 0.1 | 0.9 | 2 | 32 | 0.6 | 0.6 |
| Yucatán | 11 | 32 | 18.9 | 0.3 | 0.4 | 0.3 | 0.5 | 7 | 22 | 1.4 | 1.0 |
| Quintana Roo | 5 | 28 | 34.5 | 0.1 | 0.4 | 0.1 | 0.4 | 7 | 39 | 1.0 | 0.7 |
| Campeche | 4 | 21 | 34.2 | 0.1 | 0.3 | 0.1 | 0.4 | 6 | 34 | 1.0 | 0.9 |
| Baja California Sur | 4 | 16 | 24.1 | 0.1 | 0.2 | 0.3 | 0.6 | 12 | 45 | 1.1 | 1.0 |
| TOTAL | 3,673 | 7,655 | 13.0 | 100.0 | 100.0 | 1.4 | 1.6 | 40 | 88 | 4.4 | 4.1 |

*Sources*: Based on Banco de México, INEGI, and CONAPO data.

## Table 3: Municipal characteristics and remittances, 2000
(By deciles of the fraction of remittance-receiving households across municipalities)

| Deciles | Per capita GDP | Indigenous population | Rural population | Gini coefficient | Distance to US-Mexico border |
|---|---|---|---|---|---|
| 1 | 2,301.2 | 57.9 | 78.3 | 0.624 | 930.4 |
| 2 | 4,154.5 | 25.1 | 63.1 | 0.592 | 860.5 |
| 3 | 6,974.2 | 11.9 | 38.0 | 0.566 | 850.8 |
| 4 | 11,656.8 | 3.6 | 12.3 | 0.558 | 654.1 |
| 5 | 7,641.6 | 3.6 | 16.5 | 0.529 | 539.2 |
| 6 | 7,920.7 | 2.9 | 21.0 | 0.534 | 514.4 |
| 7 | 5,947.4 | 3.3 | 34.5 | 0.548 | 664.3 |
| 8 | 4,944.3 | 4.4 | 48.7 | 0.558 | 700.8 |
| 9 | 3,739.6 | 3.3 | 58.2 | 0.574 | 713.6 |
| 10 | 3,042.3 | 4.9 | 73.3 | 0.591 | 698.2 |
| All | 7,495.7 | 7.3 | 31.0 | 0.555 | 662.2 |

## Table 4: Municipal welfare and remittances, 2000
(By deciles of the fraction of remittance-receiving households across municipalities)

| Deciles | Infant mortality | Child illiteracy | School attendance | Avg. Adult Schooling | Poverty |
|---|---|---|---|---|---|
| 1 | 37.2 | 25.2 | 85.0 | 4.3 | 56.3 |
| 2 | 30.6 | 17.5 | 89.5 | 5.7 | 37.3 |
| 3 | 25.2 | 12.9 | 92.4 | 7.2 | 24.0 |
| 4 | 21.3 | 8.4 | 94.7 | 8.6 | 11.9 |
| 5 | 22.1 | 9.3 | 93.7 | 8.0 | 11.9 |
| 6 | 22.5 | 10.7 | 92.5 | 7.7 | 9.9 |
| 7 | 24.4 | 12.3 | 91.6 | 7.1 | 14.5 |
| 8 | 26.3 | 14.0 | 89.5 | 6.1 | 16.8 |
| 9 | 27.6 | 14.3 | 88.8 | 5.6 | 19.0 |
| 10 | 28.5 | 13.7 | 88.6 | 5.2 | 21.7 |
| All | 24.2 | 11.6 | 92.2 | 7.3 | 16.9 |

**Table 5: Descriptive statistics**

| Variable | Observations | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Infant mortality rate | 2442 | 30.4 | 7.1 | 17.2 | 66.9 |
| Child illiteracy | 2442 | 15.8 | 8.1 | 0.0 | 69.0 |
| Child school attendance | 2442 | 89.9 | 5.2 | 43.2 | 100.0 |
| Population earning less than one min. wage (%) | 2442 | 31.4 | 20.4 | 0.0 | 95.0 |
| Population earning less than 2 min. wages (%) | 2442 | 73.0 | 16.6 | 18.4 | 98.9 |
| Marginalization index | 2442 | 0.0 | 1.0 | -2.4 | 3.4 |
| Remittance-receiving households (%) | 2443 | 6.5 | 7.7 | 0.0 | 53.7 |
| Squared % remittance-receiving hhlds | 2443 | 101.9 | 223.0 | 0.0 | 2,884.8 |
| Income per capita (logs) | 2442 | 7.9 | 0.7 | 5.0 | 10.5 |
| Rural population (%) | 2443 | 74.1 | 34.2 | 0.0 | 100.0 |
| Indigenous population (%) | 2442 | 20.5 | 32.4 | 0.0 | 99.8 |
| Female-headed households | 2442 | 19.3 | 5.4 | 2.5 | 46.1 |
| Population without health coverage | 2442 | 76.2 | 18.5 | 17.6 | 100.0 |
| Population living in housing without tap water (%) | 2410 | 19.1 | 20.5 | 0.0 | 100.0 |
| Adult schooling | 2443 | 5.4 | 1.6 | 0.0 | 12.0 |
| Agricultural employment (%) | 2427 | 43.6 | 24.1 | 0.1 | 98.3 |
| Government employment (%) | 2427 | 3.0 | 2.0 | 0.0 | 21.3 |
| Unemployment rate | 2427 | 1.0 | 1.2 | 0.0 | 37.2 |
| Homicide rate | 2442 | 2.7 | 7.9 | 0.0 | 119.0 |
| Remoteness (logs) | 2443 | 6.5 | 0.3 | 6.1 | 9.5 |
| Distance to Mexico-US border (log) | 2443 | 6.5 | 0.7 | -0.7 | 9.4 |

## Table 6a: Remittances and infant mortality

Dependent variable: Infant mortality (children under 1) per 1000 live-births

| | OLS | | | | 2SLS | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Remittance-receiving households (%) | -0.1845 (0.0274)*** | -0.1149 (0.0187)*** | -0.1140 (0.0195)*** | -0.1073 (0.0189)*** | -0.5732 (0.2150)*** | -0.3416 (0.1398)** | -0.3201 (0.1582)** | -0.2889 (0.1505)* |
| Squared % remittance-receiving hhlds | 0.0029 (0.0008)*** | 0.0011 (0.0006)** | 0.0011 (0.0006)** | 0.0011 (0.0005)* | 0.0242 (0.0100)** | 0.0149 (0.0064)** | 0.0151 (0.0071)** | 0.0136 (0.0067)** |
| Income per capita (logs) | -3.7546 (0.1657)*** | -0.8040 (0.1456)*** | -0.7562 (0.1696)*** | -0.7388 (0.1690)*** | -3.6091 (0.1888)*** | -0.9311 (0.1696)*** | -0.7108 (0.1940)*** | -0.7179 (0.1895)*** |
| Rural population (%) | 0.0511 (0.0025)*** | 0.0211 (0.0018)*** | 0.0183 (0.0020)*** | 0.0202 (0.0020)*** | 0.0448 (0.0036)*** | 0.0180 (0.0022)*** | 0.0132 (0.0026)*** | 0.0154 (0.0026)*** |
| Indigenous population (%) | 0.0640 (0.0041)*** | 0.0410 (0.0026)*** | 0.0411 (0.0026)*** | 0.0421 (0.0026)*** | 0.0659 (0.0050)*** | 0.0443 (0.0035)*** | 0.0449 (0.0037)*** | 0.0455 (0.0036)*** |
| Gini coefficient | 9.3574 (0.8999)*** | 3.3070 (0.6442)*** | 2.8375 (0.6591)*** | 2.4121 (0.6475)*** | 8.3332 (1.0892)*** | 2.8729 (0.7573)*** | 2.1872 (0.7904)*** | 1.8094 (0.7582)** |
| Female-headed households (%) | | -0.1023 (0.0123)*** | -0.0957 (0.0126)*** | -0.1127 (0.0125)*** | | -0.1474 (0.0191)*** | -0.1479 (0.0206)*** | -0.1594 (0.0194)*** |
| Population in housing w/o tap water (%) | | 0.0896 (0.0038)*** | 0.0889 (0.0038)*** | 0.0857 (0.0037)*** | | 0.0950 (0.0045)*** | 0.0956 (0.0047)*** | 0.0920 (0.0046)*** |
| Population w/o health coverage (%) | | -0.0042 (0.0048) | -0.0048 (0.0049) | -0.0056 (0.0051) | | -0.0046 (0.0054) | -0.0108 (0.0057)* | -0.0100 (0.0058)* |
| Population w/incomplete primary schl (%) | | -2.2628 (0.0759)*** | -2.2537 (0.0879)*** | -2.3309 (0.0873)*** | | -2.0499 (0.1033)*** | -1.9031 (0.1316)*** | -2.0057 (0.1279)*** |
| Agricultural employment (%) | | | 0.0192 (0.0049)*** | 0.0181 (0.0052)*** | | | 0.0265 (0.0063)*** | 0.0234 (0.0064)*** |
| Government employment (%) | | | 0.0587 (0.0332)* | 0.1002 (0.0340)*** | | | 0.0129 (0.0439) | 0.0563 (0.0428) |
| Unemployment rate | | | 0.0522 (0.0531) | 0.0519 (0.0527) | | | 0.0441 (0.0567) | 0.0440 (0.0541) |
| Population earning less than 2 min. wages (%) | | | -0.0119 (0.0084) | 0.0042 (0.0086) | | | 0.0045 (0.0113) | 0.0226 (0.0115)* |
| Homicide rate | | | | 0.0600 (0.0103)*** | | | | 0.0657 (0.0115)*** |
| Remoteness (logs) | | | | -0.9930 (0.2189)*** | | | | -0.8700 (0.2441)*** |
| Distance to Mexico-US border (logs) | | | | -0.4147 (0.0867)*** | | | | -0.4882 (0.1013)*** |
| *Marginal impact of increase in % of remittance receiving households* | | | | | | | | |
| Point estimate | -0.1654 | -0.1074 | -0.1066 | -0.1004 | -0.4155 | -0.2445 | -0.2216 | -0.2002 |
| F-test (p-value) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0030 | 0.0123 | 0.0718 | 0.0934 |
| Observations | 2442 | 2410 | 2395 | 2395 | 2442 | 2410 | 2395 | 2395 |
| R-squared | 0.6807 | 0.8542 | 0.8544 | 0.8603 | 0.5773 | 0.8062 | 0.7977 | 0.8136 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 6b: Migration and infant mortality

Dependent variable: Infant mortality (children under 1) per 1000 live-births

| | OLS | | | | 2SLS | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Households with migrants in the U.S. (%) | -0.1655 | -0.1307 | -0.1199 | -0.1191 | -0.8288 | -0.4483 | -0.4146 | -0.3980 |
| | (0.0354)*** | (0.0281)*** | (0.0283)*** | (0.0276)*** | (0.2728)*** | (0.1549)*** | (0.1768)** | (0.1871)** |
| Squared % hhlds w/ migrants in U.S. | 0.0028 | 0.0026 | 0.0024 | 0.0024 | 0.0423 | 0.0237 | 0.0237 | 0.0225 |
| | (0.0015)* | (0.0012)** | (0.0012)* | (0.0012)** | (0.0149)*** | (0.0082)*** | (0.0093)** | (0.0096)** |
| Income per capita (logs) | -3.8487 | -0.8826 | -0.7741 | -0.7482 | -3.5545 | -0.8508 | -0.6127 | -0.6022 |
| | (0.1695)*** | (0.1463)*** | (0.1698)*** | (0.1690)*** | (0.2254)*** | (0.1706)*** | (0.2039)*** | (0.1978)*** |
| Rural population (%) | 0.0498 | 0.0200 | 0.0171 | 0.0193 | 0.0430 | 0.0164 | 0.0110 | 0.0139 |
| | (0.0025)*** | (0.0018)*** | (0.0020)*** | (0.0020)*** | (0.0037)*** | (0.0023)*** | (0.0029)*** | (0.0028)*** |
| Indigenous population (%) | 0.0654 | 0.0420 | 0.0421 | 0.0430 | 0.0611 | 0.0412 | 0.0420 | 0.0425 |
| | (0.0041)*** | (0.0026)*** | (0.0026)*** | (0.0026)*** | (0.0067)*** | (0.0045)*** | (0.0048)*** | (0.0047)*** |
| Gini coefficient | 9.2098 | 3.2075 | 2.7556 | 2.3156 | 8.3636 | 2.9768 | 2.2685 | 1.8427 |
| | (0.9116)*** | (0.6526)*** | (0.6690)*** | (0.6547)*** | (1.0861)*** | (0.7643)*** | (0.7814)*** | (0.7549)** |
| Female-headed households (%) | | -0.1127 | -0.1077 | -0.1246 | | -0.1714 | -0.1736 | -0.1863 |
| | | (0.0123)*** | (0.0126)*** | (0.0124)*** | | (0.0225)*** | (0.0238)*** | (0.0231)*** |
| Population in housing w/o tap water (%) | | 0.0909 | 0.0905 | 0.0868 | | 0.0969 | 0.0976 | 0.0936 |
| | | (0.0038)*** | (0.0038)*** | (0.0037)*** | | (0.0049)*** | (0.0051)*** | (0.0050)*** |
| Population w/o health coverage (%) | | -0.0008 | -0.0034 | -0.0045 | | 0.0002 | -0.0072 | -0.0077 |
| | | (0.0049) | (0.0051) | (0.0052) | | (0.0061) | (0.0066) | (0.0065) |
| Population w/incomplete primary schl (%) | | -2.2061 | -2.1675 | -2.2613 | | -2.0389 | -1.9012 | -2.0120 |
| | | (0.0757)*** | (0.0866)*** | (0.0861)*** | | (0.1003)*** | (0.1243)*** | (0.1229)*** |
| Agricultural employment (%) | | | 0.0180 | 0.0174 | | | 0.0288 | 0.0272 |
| | | | (0.0050)*** | (0.0052)*** | | | (0.0075)*** | (0.0079)*** |
| Government employment (%) | | | 0.0411 | 0.0864 | | | 0.0352 | 0.0770 |
| | | | (0.0323) | (0.0331)*** | | | (0.0440) | (0.0433)* |
| Unemployment rate | | | 0.0530 | 0.0529 | | | 0.0176 | 0.0190 |
| | | | (0.0527) | (0.0523) | | | (0.0603) | (0.0583) |
| Population earning less than 2 min. wages (%) | | | -0.0039 | 0.0111 | | | 0.0034 | 0.0177 |
| | | | (0.0080) | (0.0082) | | | (0.0120) | (0.0130) |
| Homicide rate | | | | 0.0619 | | | | 0.0656 |
| | | | | (0.0104)*** | | | | (0.0109)*** |
| Remoteness (logs) | | | | -1.1201 | | | | -1.0380 |
| | | | | (0.2194)*** | | | | (0.3164)*** |
| Distance to Mexico-US border (logs) | | | | -0.4113 | | | | -0.3846 |
| | | | | (0.0865)*** | | | | (0.0918)*** |

*Marginal impact of increase in % of remittance receiving households*

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Point estimate | -0.1475 | -0.1144 | -0.1049 | -0.1042 | -0.5606 | -0.2980 | -0.2640 | -0.2551 |
| F-test (p-value) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0011 | 0.0073 | 0.0796 | 0.1106 |
| Observations | 2442 | 2410 | 2395 | 2395 | 2442 | 2410 | 2395 | 2395 |
| R-squared | 0.6771 | 0.8521 | 0.8519 | 0.8583 | 0.5071 | 0.7975 | 0.7887 | 0.8024 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 7a: Remittances and child illiteracy

Dependent variable: Illiteracy among people 6 to 14 years old

| | OLS | | | | 2SLS | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Remittance-receiving households (%) | -0.2278 | -0.2369 | -0.2657 | -0.2481 | -0.7087 | -0.6360 | -1.0017 | -1.0591 |
| | (0.0423)*** | (0.0357)*** | (0.0373)*** | (0.0368)*** | (0.2410)*** | (0.1835)*** | (0.2516)*** | (0.2553)*** |
| Squared % remittance-receiving hhlds | 0.0028 | 0.0018 | 0.0024 | 0.0020 | 0.0236 | 0.0173 | 0.0308 | 0.0330 |
| | (0.0013)** | (0.0011)* | (0.0011)** | (0.0010)* | (0.0108)** | (0.0081)** | (0.0112)*** | (0.0114)*** |
| Income per capita (logs) | -3.5349 | 0.3211 | 0.1100 | 0.2851 | -3.4159 | 0.3926 | 0.0249 | 0.1859 |
| | (0.2636)*** | (0.2832) | (0.3455) | (0.3452) | (0.2840)*** | (0.2997) | (0.3797) | (0.3849) |
| Rural population (%) | 0.0057 | -0.0367 | -0.0378 | -0.0302 | 0.0031 | -0.0368 | -0.0350 | -0.0278 |
| | (0.0039) | (0.0039)*** | (0.0042)*** | (0.0042)*** | (0.0046) | (0.0041)*** | (0.0050)*** | (0.0052)*** |
| Indigenous population (%) | 0.0737 | 0.0362 | 0.0374 | 0.0368 | 0.0678 | 0.0294 | 0.0255 | 0.0240 |
| | (0.0067)*** | (0.0056)*** | (0.0056)*** | (0.0056)*** | (0.0076)*** | (0.0062)*** | (0.0067)*** | (0.0067)*** |
| Gini coefficient | 7.8622 | 3.0261 | 1.6370 | 0.6279 | 7.5075 | 2.9549 | 1.3591 | 0.4251 |
| | (1.4394)*** | (1.2586)** | (1.2754) | (1.2685) | (1.5549)*** | (1.3043)** | (1.4051) | (1.4118) |
| Female-headed households (%) | | -0.0989 | -0.0646 | -0.1063 | | -0.0797 | -0.0252 | -0.0573 |
| | | (0.0295)*** | (0.0302)** | (0.0309)*** | | (0.0307)*** | (0.0355) | (0.0365) |
| Population w/incomplete primary schl (%) | | -3.6839 | -3.7964 | -3.9175 | | -3.6631 | -3.7718 | -3.8990 |
| | | (0.1399)*** | (0.1663)*** | (0.1665)*** | | (0.1518)*** | (0.2244)*** | (0.2303)*** |
| Agricultural employment (%) | | | 0.0418 | 0.0464 | | | 0.0476 | 0.0525 |
| | | | (0.0125)*** | (0.0125)*** | | | (0.0142)*** | (0.0143)*** |
| Government employment (%) | | | 0.0980 | 0.1259 | | | -0.0178 | 0.0068 |
| | | | (0.0612) | (0.0622)** | | | (0.0789) | (0.0806) |
| Unemployment rate | | | 0.2249 | 0.2128 | | | 0.2127 | 0.2008 |
| | | | (0.1414) | (0.1337) | | | (0.1523) | (0.1472) |
| Population earning less than 2 min. wages (%) | | | -0.0698 | -0.0779 | | | -0.1030 | -0.1135 |
| | | | (0.0158)*** | (0.0166)*** | | | (0.0208)*** | (0.0225)*** |
| Homicide rate | | | | 0.1024 | | | | 0.0902 |
| | | | | (0.0153)*** | | | | (0.0161)*** |
| Remoteness (logs) | | | | -1.1881 | | | | -1.3247 |
| | | | | (0.3729)*** | | | | (0.4017)*** |
| Distance to Mexico-US border (logs) | | | | 0.5832 | | | | 0.4366 |
| | | | | (0.1682)*** | | | | (0.1733)** |
| *Marginal impact of increase in % of remittance receiving households* | | | | | | | | |
| Point estimate | -0.2096 | -0.2250 | -0.2499 | -0.2351 | -0.5549 | -0.5231 | -0.8003 | -0.8437 |
| F-test (p-value) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0001 | 0.0000 | 0.0000 | 0.0000 |
| Observations | 2442 | 2442 | 2427 | 2427 | 2442 | 2442 | 2427 | 2427 |
| R-squared | 0.3909 | 0.5641 | 0.5669 | 0.5785 | 0.3362 | 0.5369 | 0.4737 | 0.4686 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 7b: Migration and child illiteracy
Dependent variable: Illiteracy among people 6 to 14 years old

| | OLS | | | | 2SLS | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Households with migrants in the U.S. (%) | -0.2010 | -0.2308 | -0.2364 | -0.2490 | -1.0193 | -0.8961 | -1.2996 | -1.5190 |
| | (0.0581)*** | (0.0487)*** | (0.0486)*** | (0.0489)*** | (0.3291)*** | (0.2373)*** | (0.2942)*** | (0.3398)*** |
| Squared % hhlds w/ migrants in U.S. | 0.0023 | 0.0027 | 0.0029 | 0.0034 | 0.0421 | 0.0308 | 0.0494 | 0.0596 |
| | (0.0024) | (0.0020) | (0.0019) | (0.0019)* | (0.0174)** | (0.0123)** | (0.0154)*** | (0.0177)*** |
| Income per capita (logs) | -3.6680 | 0.0842 | 0.0513 | 0.2522 | -3.5302 | 0.1879 | -0.0542 | 0.2897 |
| | (0.2702)*** | (0.2848) | (0.3508) | (0.3493) | (0.3130)*** | (0.3017) | (0.3933) | (0.4067) |
| Rural population (%) | 0.0040 | -0.0384 | -0.0404 | -0.0319 | 0.0009 | -0.0389 | -0.0380 | -0.0297 |
| | (0.0038) | (0.0039)*** | (0.0042)*** | (0.0042)*** | (0.0047) | (0.0043)*** | (0.0054)*** | (0.0058)*** |
| Indigenous population (%) | 0.0758 | 0.0388 | 0.0403 | 0.0392 | 0.0611 | 0.0228 | 0.0169 | 0.0146 |
| | (0.0067)*** | (0.0056)*** | (0.0057)*** | (0.0056)*** | (0.0090)*** | (0.0072)*** | (0.0083)** | (0.0088)* |
| Gini coefficient | 7.6526 | 2.9269 | 1.5681 | 0.4785 | 7.5748 | 3.0606 | 1.6371 | 0.3813 |
| | (1.4498)*** | (1.2651)** | (1.2903) | (1.2783) | (1.5692)*** | (1.3055)** | (1.3981) | (1.4292) |
| Female-headed households (%) | | -0.1173 | -0.0902 | -0.1320 | | -0.0884 | -0.0551 | -0.1130 |
| | | (0.0298)*** | (0.0304)*** | (0.0307)*** | | (0.0347)** | (0.0403) | (0.0450)** |
| Population w/incomplete primary schl (%) | | -3.6101 | -3.6237 | -3.7767 | | -3.6816 | -3.7086 | -3.8742 |
| | | (0.1403)*** | (0.1655)*** | (0.1658)*** | | (0.1495)*** | (0.2133)*** | (0.2259)*** |
| Agricultural employment (%) | | | 0.0389 | 0.0445 | | | 0.0421 | 0.0558 |
| | | | (0.0125)*** | (0.0125)*** | | | (0.0160)*** | (0.0175)*** |
| Government employment (%) | | | 0.0607 | 0.0952 | | | -0.0896 | -0.0395 |
| | | | (0.0613) | (0.0618) | | | (0.0808) | (0.0848) |
| Unemployment rate | | | 0.2358 | 0.2221 | | | 0.1911 | 0.1672 |
| | | | (0.1381)* | (0.1303)* | | | (0.1294) | (0.1209) |
| Population earning less than 2 min. wages (%) | | | -0.0484 | -0.0598 | | | -0.0843 | -0.1121 |
| | | | (0.0150)*** | (0.0158)*** | | | (0.0207)*** | (0.0253)*** |
| Homicide rate | | | | 0.1075 | | | | 0.0907 |
| | | | | (0.0156)*** | | | | (0.0158)*** |
| Remoteness (logs) | | | | -1.5258 | | | | -2.7826 |
| | | | | (0.3783)*** | | | | (0.5326)*** |
| Distance to Mexico-US border (logs) | | | | 0.5871 | | | | 0.6993 |
| | | | | (0.1710)*** | | | | (0.1838)*** |
| *Marginal impact of increase in % of remittance receiving households* | | | | | | | | |
| Point estimate | -0.1861 | -0.2140 | -0.2179 | -0.2277 | -0.7521 | -0.7008 | -0.9861 | -1.1407 |
| F-test (p-value) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Observations | 2442 | 2442 | 2427 | 2427 | 2442 | 2442 | 2427 | 2427 |
| R-squared | 0.3857 | 0.5559 | 0.5561 | 0.5697 | 0.2834 | 0.5076 | 0.4227 | 0.3760 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 8a: Remittances and child school attendance

Dependent variable: Percent of population aged 6-14 yrs old attending school

| | OLS | | | | 2SLS | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Remittance-receiving households (%) | -0.0186 | -0.0122 | 0.0448 | 0.0329 | 0.2761 | 0.1567 | 0.5771 | 0.5948 |
| | (0.0313) | (0.0262) | (0.0283) | (0.0279) | (0.2181) | (0.1500) | (0.2215)*** | (0.2206)*** |
| Squared % remittance-receiving hhlds | -0.0009 | 0.0000 | -0.0012 | -0.0009 | -0.0172 | -0.0095 | -0.0253 | -0.0261 |
| | (0.0009) | (0.0008) | (0.0009) | (0.0009) | (0.0099)* | (0.0066) | (0.0100)** | (0.0099)*** |
| Income per capita (logs) | 1.9908 | -1.3869 | -0.9743 | -1.0551 | 1.8774 | -1.3056 | -0.9491 | -1.0086 |
| | (0.1972)*** | (0.1966)*** | (0.2376)*** | (0.2362)*** | (0.2145)*** | (0.2095)*** | (0.2789)*** | (0.2812)*** |
| Rural population (%) | 0.0061 | 0.0434 | 0.0372 | 0.0320 | 0.0112 | 0.0452 | 0.0388 | 0.0340 |
| | (0.0032)* | (0.0030)*** | (0.0031)*** | (0.0032)*** | (0.0039)*** | (0.0032)*** | (0.0040)*** | (0.0041)*** |
| Indigenous population (%) | -0.0104 | 0.0225 | 0.0221 | 0.0242 | -0.0123 | 0.0210 | 0.0262 | 0.0286 |
| | (0.0048)** | (0.0038)*** | (0.0038)*** | (0.0038)*** | (0.0058)** | (0.0043)*** | (0.0050)*** | (0.0049)*** |
| Gini coefficient | -4.6319 | -0.4056 | 0.5161 | 0.9659 | -3.8094 | -0.2330 | 0.9630 | 1.3822 |
| | (1.2705)*** | (1.0975) | (1.0925) | (1.0853) | (1.3742)*** | (1.1258) | (1.2194) | (1.2237) |
| Female-headed households (%) | | 0.0902 | 0.0561 | 0.0753 | | 0.1149 | 0.0657 | 0.0802 |
| | | (0.0209)*** | (0.0215)*** | (0.0220)*** | | (0.0230)*** | (0.0287)** | (0.0289)*** |
| Population w/incomplete primary schl (%) | | 3.2294 | 3.3518 | 3.3996 | | 3.1093 | 3.1332 | 3.1793 |
| | | (0.0970)*** | (0.1197)*** | (0.1198)*** | | (0.1111)*** | (0.1848)*** | (0.1879)*** |
| Agricultural employment (%) | | | -0.0253 | -0.0280 | | | -0.0329 | -0.0350 |
| | | | (0.0096)*** | (0.0096)*** | | | (0.0111)*** | (0.0111)*** |
| Government employment (%) | | | 0.1518 | 0.1706 | | | 0.2408 | 0.2614 |
| | | | (0.0443)*** | (0.0452)*** | | | (0.0614)*** | (0.0631)*** |
| Unemployment rate | | | -0.2271 | -0.2195 | | | -0.2196 | -0.2123 |
| | | | (0.1026)** | (0.0988)** | | | (0.1115)** | (0.1098)* |
| Population earning less than 2 min. wages (%) | | | 0.0879 | 0.1029 | | | 0.0984 | 0.1113 |
| | | | (0.0123)*** | (0.0129)*** | | | (0.0173)*** | (0.0186)*** |
| Homicide rate | | | | -0.0496 | | | | -0.0476 |
| | | | | (0.0087)*** | | | | (0.0099)*** |
| Remoteness (logs) | | | | -0.1104 | | | | -0.1082 |
| | | | | (0.2830) | | | | (0.3120) |
| Distance to Mexico-US border (logs) | | | | -0.7763 | | | | -0.6407 |
| | | | | (0.1192)*** | | | | (0.1269)*** |
| *Marginal impact of increase in % of remittance receiving households* | | | | | | | | |
| Point estimate | -0.0243 | -0.0122 | 0.0368 | 0.0271 | 0.1636 | 0.0950 | 0.4119 | 0.4248 |
| F-test (p-value) | 0.1452 | 0.4763 | 0.1123 | 0.2331 | 0.5815 | 0.6166 | 0.0103 | 0.0084 |
| Observations | 2442 | 2442 | 2427 | 2427 | 2442 | 2442 | 2427 | 2427 |
| R-squared | 0.1135 | 0.4311 | 0.4483 | 0.4607 | n.a. | 0.3925 | 0.2590 | 0.2569 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 8b: Migration and child school attendance

Dependent variable: Percent of population aged 6-14 yrs old attending school

| | OLS | | | | 2SLS | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Households with migrants in the U.S. (%) | -0.0373 | -0.0055 | 0.0400 | 0.0410 | 0.4041 | 0.1979 | 0.7492 | 0.8365 |
| | (0.0372) | (0.0328) | (0.0332) | (0.0330) | (0.2941) | (0.1872) | (0.2494)*** | (0.2791)*** |
| Squared % hhlds w/ migrants in U.S. | -0.0001 | -0.0005 | -0.0017 | -0.0018 | -0.0294 | -0.0145 | -0.0400 | -0.0442 |
| | (0.0014) | (0.0014) | (0.0014) | (0.0014) | (0.0157)* | (0.0096) | (0.0132)*** | (0.0146)*** |
| Income per capita (logs) | 1.9614 | -1.4009 | -0.9795 | -1.0620 | 1.6898 | -1.3940 | -1.0531 | -1.1939 |
| | (0.1994)*** | (0.1958)*** | (0.2387)*** | (0.2369)*** | (0.2419)*** | (0.2059)*** | (0.2858)*** | (0.2900)*** |
| Rural population (%) | 0.0057 | 0.0434 | 0.0378 | 0.0324 | 0.0120 | 0.0459 | 0.0421 | 0.0365 |
| | (0.0032)* | (0.0030)*** | (0.0032)*** | (0.0032)*** | (0.0041)*** | (0.0033)*** | (0.0044)*** | (0.0046)*** |
| Indigenous population (%) | -0.0104 | 0.0226 | 0.0217 | 0.0240 | -0.0106 | 0.0222 | 0.0312 | 0.0342 |
| | (0.0049)** | (0.0038)*** | (0.0038)*** | (0.0038)*** | (0.0071) | (0.0050)*** | (0.0063)*** | (0.0066)*** |
| Gini coefficient | -4.6865 | -0.4078 | 0.5288 | 0.9864 | -3.7977 | -0.3180 | 0.8392 | 1.3938 |
| | (1.2688)*** | (1.0979) | (1.0937) | (1.0849) | (1.3638)*** | (1.1195) | (1.2130) | (1.2266) |
| Female-headed households (%) | | 0.0913 | 0.0621 | 0.0802 | | 0.1326 | 0.1032 | 0.1290 |
| | | (0.0208)*** | (0.0212)*** | (0.0216)*** | | (0.0255)*** | (0.0335)*** | (0.0358)*** |
| Population w/incomplete primary schl (%) | | 3.2288 | 3.3298 | 3.3841 | | 3.1212 | 3.1442 | 3.2043 |
| | | (0.0969)*** | (0.1185)*** | (0.1191)*** | | (0.1076)*** | (0.1735)*** | (0.1805)*** |
| Agricultural employment (%) | | | -0.0254 | -0.0284 | | | -0.0367 | -0.0429 |
| | | | (0.0096)*** | (0.0097)*** | | | (0.0129)*** | (0.0138)*** |
| Government employment (%) | | | 0.1515 | 0.1710 | | | 0.2186 | 0.2332 |
| | | | (0.0445)*** | (0.0453)*** | | | (0.0625)*** | (0.0649)*** |
| Unemployment rate | | | -0.2264 | -0.2184 | | | -0.1835 | -0.1707 |
| | | | (0.1010)** | (0.0974)** | | | (0.0959)* | (0.0959)* |
| Population earning less than 2 min. wages (%) | | | 0.0854 | 0.1016 | | | 0.0968 | 0.1194 |
| | | | (0.0119)*** | (0.0125)*** | | | (0.0176)*** | (0.0210)*** |
| Homicide rate | | | | -0.0502 | | | | -0.0474 |
| | | | | (0.0086)*** | | | | (0.0101)*** |
| Remoteness (logs) | | | | -0.0829 | | | | 0.4030 |
| | | | | (0.2840) | | | | (0.4134) |
| Distance to Mexico-US border (logs) | | | | -0.7825 | | | | -0.8469 |
| | | | | (0.1200)*** | | | | (0.1388)*** |
| *Marginal impact of increase in % of remittance receiving households* | | | | | | | | |
| Point estimate | -0.0382 | -0.0086 | 0.0293 | 0.0297 | 0.2177 | 0.1058 | 0.4956 | 0.5560 |
| F-test (p-value) | 0.0750 | 0.5241 | 0.3208 | 0.3203 | 0.7562 | 0.8426 | 0.0070 | 0.0069 |
| Observations | 2442 | 2442 | 2427 | 2427 | 2442 | 2442 | 2427 | 2427 |
| R-squared | 0.1124 | 0.4313 | 0.4482 | 0.4609 | n.a. | 0.3831 | 0.1884 | 0.1475 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 9a: Remittances and poverty

Dependent variable: Population earning less than one minimum wage (%)

| | OLS | | | 2SLS | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Remittance-receiving households (%) | -1.4229 | -1.3260 | -1.3108 | -5.5291 | -5.6755 | -5.8131 |
| | (0.1051)*** | (0.1034)*** | (0.1009)*** | (0.9127)*** | (0.9992)*** | (1.0372)*** |
| Squared % remittance-receiving hhlds | 0.0320 | 0.0311 | 0.0301 | 0.1804 | 0.1967 | 0.2036 |
| | (0.0038)*** | (0.0038)*** | (0.0037)*** | (0.0432)*** | (0.0477)*** | (0.0492)*** |
| Income per capita (logs) | -10.8599 | -6.2163 | -4.7234 | -10.1636 | -5.3822 | -4.0494 |
| | (0.6416)*** | (0.7775)*** | (0.8160)*** | (0.8002)*** | (1.0539)*** | (1.0893)*** |
| Rural population (%) | 0.0709 | 0.0091 | 0.0145 | 0.0756 | 0.0172 | 0.0166 |
| | (0.0089)*** | (0.0096) | (0.0096) | (0.0164)*** | (0.0203) | (0.0211) |
| Indigenous population (%) | 0.1761 | 0.1452 | 0.1445 | 0.0819 | 0.0573 | 0.0627 |
| | (0.0136)*** | (0.0133)*** | (0.0137)*** | (0.0200)*** | (0.0211)*** | (0.0214)*** |
| Gini coefficient | 3.8552 | -4.7425 | -5.5448 | 5.6258 | -3.6277 | -4.8505 |
| | (3.1655) | (3.0633) | (3.0069)* | (4.5682) | (4.8797) | (4.9240) |
| Agricultural employment (%) | | 0.2688 | 0.2777 | | 0.2316 | 0.2490 |
| | | (0.0250)*** | (0.0252)*** | | (0.0327)*** | (0.0331)*** |
| Government employment (%) | | -0.6510 | -0.5925 | | -1.1544 | -1.0445 |
| | | (0.1285)*** | (0.1277)*** | | (0.2252)*** | (0.2334)*** |
| Unemployment rate | | -0.7388 | -0.6837 | | -0.7656 | -0.7171 |
| | | (0.3300)** | (0.3221)** | | (0.3105)** | (0.3169)** |
| Homicide rate | | | -0.0264 | | | -0.0471 |
| | | | (0.0247) | | | (0.0285)* |
| Remoteness (logs) | | | -1.9386 | | | -3.6885 |
| | | | (0.9057)** | | | (1.2398)*** |
| Distance to Mexico-US border (logs) | | | 2.8872 | | | 1.5274 |
| | | | (0.3901)*** | | | (0.5571)*** |

*Marginal impact of increase in % of remittance receiving households*

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Point estimate | -1.2139 | -1.1228 | -1.1141 | -4.3519 | -4.3917 | -4.4844 |
| F-test (p-value) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Observations | 2442 | 2427 | 2427 | 2442 | 2427 | 2427 |
| R-squared | 0.5642 | 0.6105 | 0.6223 | 0.1755 | 0.1201 | 0.0835 |

**Notes:**

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 9b: Remittances and poverty

Dependent variable: Population earning less than two min. wages (%)

| | OLS | | | 2SLS | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Remittance-receiving households (%) | -0.5663 | -0.4882 | -0.4720 | -3.5799 | -3.7737 | -3.8562 |
| | (0.0627)*** | (0.0589)*** | (0.0563)*** | (0.6333)*** | (0.7204)*** | (0.7499)*** |
| Squared % remittance-receiving hhlds | 0.0122 | 0.0116 | 0.0104 | 0.1165 | 0.1338 | 0.1390 |
| | (0.0022)*** | (0.0021)*** | (0.0020)*** | (0.0298)*** | (0.0342)*** | (0.0355)*** |
| Income per capita (logs) | -13.4612 | -9.0656 | -7.2454 | -13.0004 | -8.5368 | -6.7820 |
| | (0.4099)*** | (0.4063)*** | (0.3958)*** | (0.5196)*** | (0.6405)*** | (0.6503)*** |
| Rural population (%) | 0.1181 | 0.0637 | 0.0634 | 0.1259 | 0.0737 | 0.0672 |
| | (0.0081)*** | (0.0079)*** | (0.0077)*** | (0.0123)*** | (0.0148)*** | (0.0154)*** |
| Indigenous population (%) | 0.0473 | 0.0189 | 0.0174 | -0.0287 | -0.0514 | -0.0463 |
| | (0.0062)*** | (0.0059)*** | (0.0055)*** | (0.0121)** | (0.0133)*** | (0.0133)*** |
| Gini coefficient | 6.3818 | -1.3671 | -1.4259 | 8.4330 | 0.0983 | -0.5230 |
| | (2.0757)*** | (1.7683) | (1.6396) | (3.1081)*** | (3.3143) | (3.3287) |
| Agricultural employment (%) | | 0.2448 | 0.2508 | | 0.2118 | 0.2266 |
| | | (0.0125)*** | (0.0122)*** | | (0.0201)*** | (0.0203)*** |
| Government employment (%) | | -0.7438 | -0.6771 | | -1.1282 | -1.0159 |
| | | (0.0908)*** | (0.0928)*** | | (0.1515)*** | (0.1595)*** |
| Unemployment rate | | -0.5705 | -0.4960 | | -0.5967 | -0.5240 |
| | | (0.2152)*** | (0.1960)** | | (0.2158)*** | (0.2187)** |
| Homicide rate | | | -0.1275 | | | -0.1452 |
| | | | (0.0373)*** | | | (0.0357)*** |
| Remoteness (logs) | | | -1.4705 | | | -2.8834 |
| | | | (0.6356)** | | | (0.8922)*** |
| Distance to Mexico-US border (logs) | | | 3.4397 | | | 2.4227 |
| | | | (0.3663)*** | | | (0.4492)*** |
| | | | | | | |
| *Marginal impact of increase in % of remittance receiving households* | | | | | | |
| Point estimate | -0.4869 | -0.4123 | -0.4038 | -2.8196 | -2.9002 | -2.9490 |
| F-test (p-value) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| | | | | | | |
| Observations | 2442 | 2427 | 2427 | 2442 | 2427 | 2427 |
| R-squared | 0.7200 | 0.7829 | 0.8105 | 0.4251 | 0.3857 | 0.3700 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

## Table 10: Remittances and *marginalization*

Dependent variable: Marginalization index

| | OLS | | | 2SLS | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Remittance-receiving households (%) | -0.0275 | -0.0245 | -0.0241 | -0.0596 | -0.0630 | -0.0679 |
| | (0.0033)*** | (0.0032)*** | (0.0031)*** | (0.0169)*** | (0.0177)*** | (0.0188)*** |
| Squared % remittance-receiving hhlds | 0.0005 | 0.0004 | 0.0004 | 0.0013 | 0.0019 | 0.0021 |
| | (0.0001)*** | (0.0001)*** | (0.0001)*** | (0.0008)* | (0.0008)** | (0.0008)** |
| Income per capita (logs) | -0.6535 | -0.4680 | -0.4102 | -0.6510 | -0.4619 | -0.4025 |
| | (0.0206)*** | (0.0241)*** | (0.0249)*** | (0.0221)*** | (0.0270)*** | (0.0273)*** |
| Rural population (%) | 0.0074 | 0.0055 | 0.0059 | 0.0077 | 0.0056 | 0.0059 |
| | (0.0003)*** | (0.0003)*** | (0.0003)*** | (0.0004)*** | (0.0004)*** | (0.0004)*** |
| Indigenous population (%) | 0.0075 | 0.0064 | 0.0065 | 0.0063 | 0.0056 | 0.0058 |
| | (0.0004)*** | (0.0004)*** | (0.0004)*** | (0.0005)*** | (0.0005)*** | (0.0005)*** |
| Gini coefficient | 1.3260 | 0.9792 | 0.9192 | 1.3849 | 0.9966 | 0.9161 |
| | (0.1046)*** | (0.1013)*** | (0.1003)*** | (0.1093)*** | (0.1110)*** | (0.1116)*** |
| Agricultural employment (%) | | 0.0093 | 0.0099 | | 0.0090 | 0.0097 |
| | | (0.0008)*** | (0.0008)*** | | (0.0008)*** | (0.0008)*** |
| Government employment (%) | | -0.0396 | -0.0363 | | -0.0441 | -0.0407 |
| | | (0.0050)*** | (0.0049)*** | | (0.0055)*** | (0.0055)*** |
| Unemployment rate | | 0.0101 | 0.0120 | | 0.0098 | 0.0118 |
| | | (0.0098) | (0.0098) | | (0.0100) | (0.0099) |
| Homicide rate | | | 0.0015 | | | 0.0014 |
| | | | (0.0011) | | | (0.0011) |
| Remoteness (logs) | | | -0.1282 | | | -0.1426 |
| | | | (0.0306)*** | | | (0.0325)*** |
| Distance to Mexico-US border (logs) | | | 0.1037 | | | 0.0903 |
| | | | (0.0134)*** | | | (0.0143)*** |
| | | | | | | |
| *Marginal impact of increase in % of remittance receiving households* | | | | | | |
| Point estimate | -0.0246 | -0.0217 | -0.0215 | -0.0508 | -0.0508 | -0.0540 |
| F-test (p-value) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| | | | | | | |
| Observations | 2442 | 2427 | 2427 | 2442 | 2427 | 2427 |
| R-squared | 0.7716 | 0.7984 | 0.8060 | 0.7626 | 0.7832 | 0.7832 |

*Notes:*

(1) Two-stage least squares regressions use the product of log-distance to US border and historical migration rates as instrumental variable.

(2) Robust standard errors in parentheses.

(3) * significant at 10%; ** significant at 5%; *** significant at 1%.

**Map 1: Remittance-receiving households across Mexican states, 2000**

(Percent of total households)

- 8.2 to 13.1 (6)
- 5.1 to 8.2 (5)
- 3.6 to 5.1 (7)
- 2.1 to 3.6 (7)
- 0.6 to 2.1 (7)