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Migration history, remittances and poverty in rural mexico

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Abstract

During the last twenty years, Mexico experienced a big increase in the migration of rural labor force to the United States. This phenomenon has been accompanied by an increase in remittances; by 2002, remittances accounted on average for more than 10% of rural households' income. In this context, the present work analyses the way in which the migration history of the recipient village affects the impact that reductions in remittances have on rural poverty levels. The hypothesis is that for a given decrease in remittances the increase in poverty is bigger in villages with a higher migration history. The results show that impacts do vary according to the migration history of the villages.

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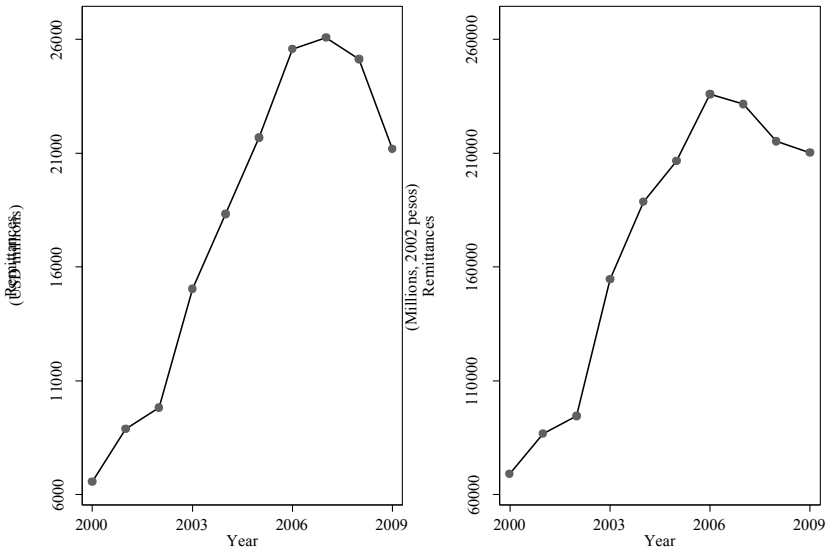
1. Introduction

During the last twenty years, Mexico experienced a big increase in the migration of rural labor force to the United States. From 1990 to 2002 the proportion of the rural Mexican population working in the US increased from 7 to 14% (Mora and Taylor, 2005). This phenomenon has been accompanied by an increase in remittances, which went from less than US$700 million in 1980 to more than US$6 500 million in 2000, reaching US$16 600 million in 2004 (López-Córdova, 2005). By 2002, remittances accounted on average for more than 10% of rural households' income (Taylor *et al*., 2008). The recent world economic crisis had as one of its consequences for Mexico a decrease in the reception of US remittances (see Fig. 1).

Stark *et al.* (1986) argue that migration implies risks and costs and that these can be especially high when talking about international migration. This is one of the reasons why the first migrants from a given village usually belong to the highest segment of the income distribution (Lipton,1980; Massey *et al*., 1994; Portes and Rumbaut, 1990), which frequently results in an increase in inequality in those villages. Nevertheless, as time goes by, migration networks form and grow and with them migration costs decrease benefiting those in the middle and lower segments of the income distribution, eventually decreasing income inequality at the village level. Mckenzie and Rapoport (2007) present a theoretical model of the effects of networks on migration and inequality. They find evidence for Mexico that supports the hypothesis that inequality decreases as the prevalence of migration increases.

The logic about the impacts that information diffusion and migration costs reductions have on inequality could be used to analyze poverty as well. When remittances flow to a few households that belong to the upper section of the income distribution the impact on poverty is expected to be small or even nonexistent. On the other hand, when the networks grow and migration and remittances start to flow to households all over the income distribution, poverty becomes more sensitive to changes in remittances.



Source: Own calculation using monthly data from Banxico (2010).

Fig. 1. Annual remittances flows

The present work analyses the way in which the migration history of the recipient village affects the potential impact that reductions in remittances have on poverty levels. I look at the hypothesis that the higher the migration prevalence the bigger the effect that changes in remittances have on poverty. Contrary to previous work that uses migration prevalence at the regional or state level (see Taylor *et al*., 2008; Esquivel and Huerta-Pineda, 2007), I use

migration history information at the village level which allows me to trace more closely the implications of different migration prevalence levels.

2. Data and Descriptive Statistics

The data used in this research comes from the Mexico National Rural Household Survey (ENHRUM by its acronym in Spanish). This survey provides detailed data on socio-demographic characteristics, production, income sources, and migration from a nationally representative sample of rural households surveyed in 2003. The sample includes 1782 households from 80 villages in 14 states. In the analysis I use the 1757 households for which information is complete. The sample is representative of more than 80% of the population that the Mexican census office considers to be rural.To implement the survey Mexico was divided into five regions, reflecting INEGI's standard regionalization of the country: Center, South-Southeast, West-Center, Northwest, and Northeast. Data from this survey make it possible to quantify migration and remittances at the household level, as well as to test for influences of these variables on households' total income.

As a proxy for migration history at the village level I created a variable measuring the percentage of adults that ever worked in the US at any point in time from 1980 to 2001. This variable captures, to some degree, the migration networks and the level of information about the migration process (costs, employment opportunities, risks, etc.) available at each village. The idea is that the higher the percentage of adults with migration experience the more disseminated the information will be. This contributes to the diffusion of migration and remittances across all income levels.

I use the terciles of the migration history variable to create three levels of historic migration (low, medium and high) to group the 80 villages included in the sample. Table 1 shows that in low history villages, on average, less than 1% of the adults ever worked in the US between 1980 and 2001. The percentage goes to 8% for medium history villages and to 26% for those with a high migration history. Almost half of the households in high migration history villages had a migrant in 2002. That percentage goes to 15% for those with middle history and is only 2% for the low history tercile.

Table 1. Migration history and migration in 2002

Migration history level	Migration history at the village level (average)	% of households with at least a migrant in the US in 2002 (average)
Low	0.8%	1.5%
Medium	8.1%	14.5%
High	26.3%	44.4%

Table 2 shows the distribution of villages by region and tercile of migration history. The majority of the South-Southeast villages are classified in the low history category; meanwhile, 69% of the villages in the Center-West region are in the high history category. Nevertheless, it is important to stress that three villages in the South-Southeast are in the medium or high categories and five villages in the Center-West region have a low or medium migration history. Table 2 shows that generalizations at the regional level hide much of the heterogeneity that exists at the village level in terms of the migration history patterns. A regional analysis is not adequate to illustrate the importance of migration history.

Table 2. Village distribution by region and migration history tercile

Migration history level	South-Southeast	Center	Center-West	Northwest	Northeast
Low	81%	31%	6%	31%	19%
Medium	13%	44%	25%	56%	31%
High	6%	25%	69%	13%	50%

Table 3 provides information about some basic characteristics of the households included in each one of the three migration categories. For the three cases we have that the head of the household is almost always a male with an average education of less than five years. Households have on average almost five members and, although the average amount of land owned goes from 3.6 for households in the low migration history category to 5.6 hectares for those in the high migration history the difference is not statistically significant (the same is true for gender, education of the household head and size of the household).[1] The only statistically significant difference between households in low migration villages and those in medium or high migration villages is in terms of the number of household members with at least nine years of schooling; the average for households in low migration history villages is 0.18 while in the other two categories it is 0.31 and 0.36.

Table 3. Socio-demographic characteristics by migration history tercile

	Low migration history (n=603)	Medium migration history (n=588)	High migration history (n=566)
Gender of the household head (1=male)	0.86	0.85	0.88
Education of the household head (in years)	4.52	4.53	4.30
Household size (number of members)	4.79	4.58	4.50
Land owned by the household (Ha)	3.66	5.41	5.60
Number of household members with at least 9 years of education	0.18	0.31	0.36

Table 4 shows income distribution by quintiles for the three migration history groups as well as for the distribution of remittances. For all the levels of migration history there is a clear pattern that shows a positive relation between income and remittances, that is, households with higher income receive more remittances. Nevertheless, in terms of the relative importance of remittances this pattern is not preserved. In the low history villages, remittances account for a higher percentage of total income (2%) for the richest households (quintile five) than for all the rest. Meanwhile, in villages with medium history, households

[1] Analysis of variance (ANOVA) was used to test the equality of means across the three migration history categories.

Table 4. Migration and remittances by quintile of per-capita income

	Low migration history			Medium migration history			High migration history		
Income quintile	Average income (pesos)	% of households with US remittances	Average remittances (pesos)	Average income (pesos)	% of households with US remittances	Average remittances (pesos)	Average income (pesos)	% of households with US remittances	Average remittances (pesos)
1	1,026	0.6%	8	-3,162	10.9%	154	-383	28.9%	471
2	5,017	1.4%	12	5,146	10.1%	259	5,307	34.3%	932
3	9,633	2.3%	55	9,400	9.1%	213	9,823	37.3%	1,905
4	16,786	0%	0	16,875	19.1%	1,155	16,778	41.6%	2,956
5	44,396	4.8%	850	77,235	14.8%	1,766	63,001	45.9%	7,857
Total	10,982	1.5%	106	24,437	13.1%	789	22,766	38.7%	3,287

in quintile four present the highest dependence from remittances (7% of total income). In high history villages, those households at quintile three are the ones with the highest percentage of total income derived from remittances (19%). Table 3 also shows that in the low history villages less than 2% of households in either quintile one or two receive remittances. This increases to almost 10% for those households in medium history villages and is close to 30% for those at high history villages. These results are consistent with the idea that when international migration is a relatively new phenomenon migration and remittances concentrate on households that are relatively better off, but as information flows more households in the village start to have access to migration and remittances. The next section shows in a more direct way the relationship between poverty, remittances and migration history.

3. Poverty and Remittances

To measure poverty I use three variants of the Foster-Greer-Thorbecke (FGT) Poverty Index (Foster *et al*., 1984). The FGT Index is calculated using the formula:

$$FGT(\alpha) = \frac{1}{N}\sum_{n=1}^{N} I_n \left(1 - \frac{y_n}{z}\right)^{\alpha}$$

where $I_n = 1$ if $y_n \leq z$ and zero otherwise. Per capita income is represented by y_n, z is the poverty line, N is the population size, and α is a weighting parameter that can be viewed as a measure of poverty aversion. The poverty line is the extreme poverty line used by the Mexican government (CONEVAL, 2006). When $\alpha = 0$, the formula collapses to the incidence or headcount index of poverty, that is, the percentage of poor in the population.

The headcount index, while intuitive and easy to interpret, has some drawbacks. Among other things, it treats poverty as a discrete rather than continuous characteristic. The headcount measure of poverty does not change if the income of very poor individuals increase but not enough to put them above the poverty line. Similarly, the headcount measure does not increase if only those below the poverty line face a negative shock that decreases their income, no matter how severe the shock might be.

In addition to the headcount measure, the poverty gap and sensitivity (poverty gap-squared) measures are commonly used. The poverty gap measure corresponds to $\alpha = 1$; it reflects how far below the poverty line the average poor household's income falls (i.e., the depth of poverty). If the income of a poor household increases but not enough to nudge it above the poverty line, total poverty as measured by this index will decrease (even though the headcount measure does not change).

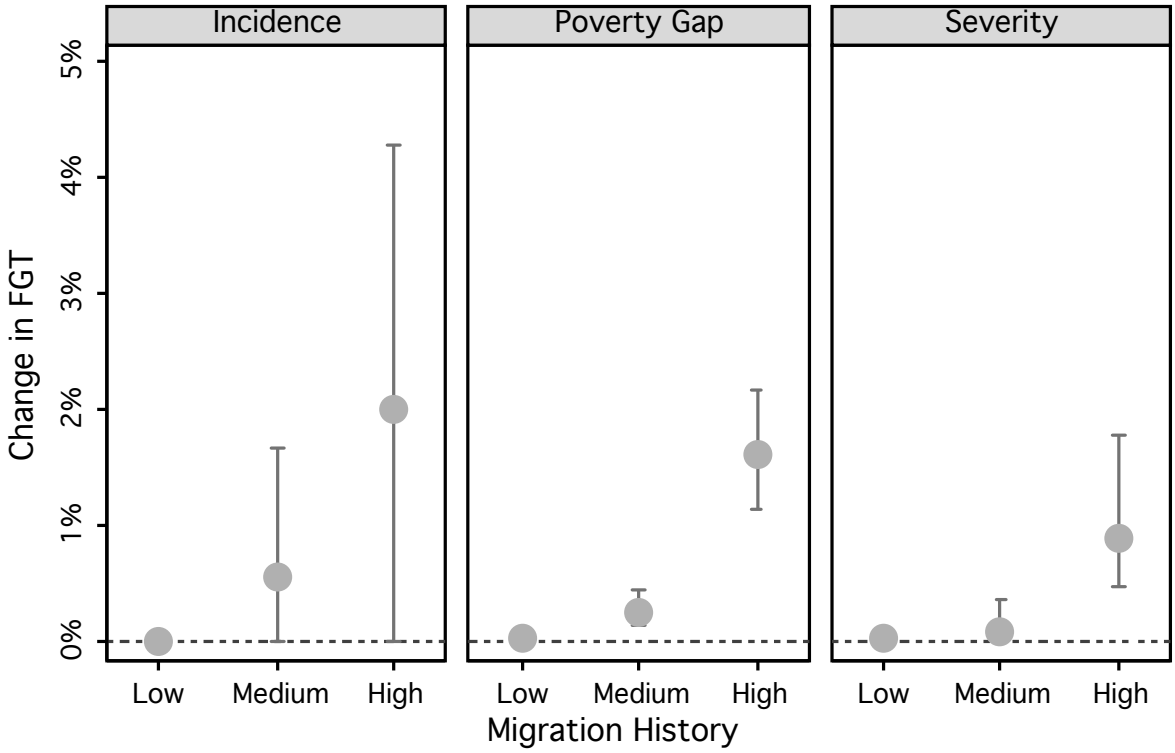
The poverty severity index is obtained when $\alpha = 2$. Like the poverty gap measure, it is sensitive both to the headcount and to changes in incomes of households that remain in poverty. However, it accords a greater weight to poor individuals who are further away from the poverty line. Poverty measured by this variant of the FGT index will decrease more if the individual receiving the income is extremely poor.

The first column of Table 5 shows that 35% of the households in the sample are below the poverty line. By separating households according to the level of migration history of the village in which they are located we see that 46% of households in villages with low migration history are below the poverty line, while 31% and 27% of the households in medium and high migration history villages are in poverty. There is no clear pattern for the poverty gap and the severity of poverty.

Table 5. Poverty indicators

Migration history level	$\alpha = 0$ (Incidence)	$\alpha = 1$ (Poverty Gap)	$\alpha = 2$ (Severity)
Low	0.46	0.27	0.26
Medium	0.31	0.29	2.26
High	0.27	0.18	0.31
All the villages (national total)	0.35	0.25	0.95

In order to look at the potential impact of remittances on poverty I simulate a 10% decrease in international remittances for all receiving households. Fig. 2 shows the changes in the FGT Index after this simulation. As expected, the impact of a decrease in remittances increases with the level of migration history for the three poverty measures. Nevertheless, it is important to notice that the calculated impacts for the poverty incidence are not statistically different from zero.



Source: Own estimations Using ENHRUM
Bootstrapped 90% confidence intervals

Fig. 2. Change in poverty when remittances decrease in 10%
(90% confidence intervals)

4. Conclusions

The data for rural Mexico shows that remittances have a differentiated impact on poverty levels in different villages. Part of those differences can be attributed to differences in the history of migration at each village.

The effects measured in this work should be seen as short run effects as it is expected that households will eventually change their livelihood strategies in response to sustained reductions in the remittances that they receive. In any case, the results presented shed some light on the potential impact that reductions in remittances can have on poverty in rural Mexico.

In villages with more migration history the poverty gap and the poverty severity are more responsive to changes in remittances than in villages with less migration history. Migration history, and therefore familiarity with the migration process, is more important in explaining the differences in poverty impacts than the geographic localization of the village. Policies aimed to ameliorate the impact that international crises and specifically the reduction in the reception of remittances could have on the wellbeing of rural households should take this into account.

This document is the first step of a research agenda that aims to disentangle the ways in which migration history affects both participation in migration and the amount of remittances that are sent back to the household.

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