# Mexican Migration to the U.S.: Socio-economic Success of Permanent and Return Migrants[1]

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**Abstract**

Uniquely rich longitudinal data from the Mexican Family Life Survey provide new evidence on the socio-economic success of Mexicans who migrate to the U.S., comparing those who stay in the U.S. with those who return to Mexico. Comparisons in labor market outcomes between stayers and returners show that returners are negatively selected in terms of U.S. earnings, even though there is no evidence of negative selection on pre-migration characteristics. However, despite the negative selection on U.S. earnings, upon returning to Mexico, there are no significant differences on hourly earnings between return migrants and non-US migrants. Moreover, return migrants show higher levels of household wealth relative to non-migrants, particularly if living in rural places. These results suggest that, even though return migrants earn lower earnings relative to stayers when in U.S., they might be able to save enough to increase their wealth in Mexico.

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## 1. Introduction

Migration of Mexicans to the United States, who among them stays in the U.S., who returns to Mexico and the factors that underlie these decisions are major policy and scientific questions that are not well-understood. Mexican-origin migrants are the largest Hispanic population in the U.S., accounting for nearly two-thirds of all Hispanic migrants (Lopez and Patten, 2015). Patterns of Mexican-origin migration have changed substantially since the massive surge in migrants starting in the 1970s from being overwhelmingly dominated by single males to including females, couples and children, as well as, shifting from being temporary and cyclical to including more long-term migrants. These changing patterns have major implications for the socio-economic well-being of populations in both the origin and destination countries (Nobles, 2013).

Mexican migration to the U.S. has been extensively studied in the literature and is an active line of inquiry.[2] Much of this literature documents the consequences of immigrant inflows on labor market outcomes of natives.[3] Recent findings show effects depend on the skill composition of immigrant workers, and whether these skills substitute or complement those of native workers (Borjas, 2003; Ottaviano and Peri, 2012; Dustmann et al., 2017; Lee et al., 2017; East et al., 2018). These findings highlight the importance of providing rigorous evidence about the selectivity of migrants to the U.S. in order to assess impacts on labor market outcomes of natives.

Another important line of inquiry examines the process of migration into the U.S. by Mexican citizens.[4] Whereas selection of those who move to the U.S. has been extensively described, evidence on the characteristics that determine which migrants stay in the U.S. rather than return to Mexico is less well understood as is the factors that underlie the successful assimilation of migrants in the U.S.

A key impediment to advancing understanding of the assimilation and integration processes of migrants is the lack of sufficiently rich data. To provide scientific evidence on the selectivity of migrants, and their integration in the country of destination it is vital to have information about their characteristics prior to the migration decision. The ideal source of data for a study of the selectivity of Mexicans who move to the U.S. would be a sample that is representative of the Mexican population and proceeds to follow all respondents that migrate to the U.S., including those who stay for a short period and those who remain in the U.S. long-term. We designed and implemented an approach to study migrant selectivity using this methodology.

This paper makes significant contributions to the literature, highlighting the roles of selectivity of those who move to the U.S., those who stay in the U.S. and those who return to Mexico as well as

[2] Hanson (2006) provides a thoughtful and insightful review of the literature.
[3] For reviews of this literature see Friedberg and Hunt (1995), Longhi et al. (2005), and Longhi et al. (2006).
[4] See, for example, Borjas (1987), Donato, Durand, and Massey (1992), Durand, Kandel, Parrado and Massey (1996), Durand, Massey and Zenteno (2001), McKenzie and Rapoport. (2004), Orrenius and Zavodny (2005), Hanson, (2006), Hoefer, Rytina and Campbell (2006), Ibarraran and Lubotsky (2007), Fernández-Huertas Moraga (2011), Rendall, Brownell and Kups (2011), Kaestner and Malamud (2014).

linking patterns to the extent of integration in the U.S. using innovative data collected in the Mexican Family Life Survey (MxFLS) that was specifically designed to provide new insights into these questions.

The MxFLS is a longitudinal data set that is representative of the Mexican population at baseline (in 2002). The first follow-up started in 2005 and the second in 2009. In both follow-ups, movers to the U.S. were tracked and interviewed in the U.S. The baseline respondents who are thought to have moved to the U.S. were found and interviewed at a rate of 90% in the first and second follow-up surveys. For the purpose of this paper we will focus on the sample of baseline respondents who migrated to the United States between 2002 and 2005 (774 migrants). Due to the transient part of the Mexican migrant population, it is important to not only follow migrants that moved from Mexico to the U.S. but also to track those that return to Mexico after having lived in U.S. at some point between the waves. Out of the total U.S. migrants successfully re-interviewed, near 64% were still in the U.S. and the other 36% were found and interviewed back in Mexico (Table 1).

The combination of successfully tracking and interviewing movers, including international movers, with detailed information on their labor market and migration experiences, families and resources of each respondent yields a uniquely rich set that assures the research in this project will make significant contributions to science. Specifically, we will contribute through four main goals: First, we provide evidence on the selectivity associated to migration from Mexico to the U.S. We extend the work by Rubalcava, et al. (2008), and Kaestner and Malamud (2014) which use information from the first two waves of MxFLS to document selectivity of Mexican-origin migrants to the U.S. We complement this work by fully exploiting the rich information contained in MxFLS to predict migration to the U.S. including human capital, broadly defined to cover education, health and cognition, along with migrant networks, family resources and access to safety nets. Importantly, we reach beyond describing the selectivity of Mexican-origin migrants to the U.S. by following respondents who cross the U.S.-Mexico border, and track their experiences in the U.S.. We thus directly compare the selection of those who stay in the U.S. with those who return to Mexico and compare these migrants with siblings or others like them who remain in Mexico. These comparisons have not been conducted in prior studies.

In addition, we estimate these models separately for male and female respondents. Preliminary results highlight the importance of estimating these models disaggregated by sex. For example, we find that Mexican males in the lowest and highest end of the distribution of education are the least likely to move to the United States. This inverted U-shape corroborates previous findings on the relationship between education and migration from Mexico to the United States for males (Chiquiar and Hanson, 2005; Fernández-Huertas Moraga, 2011; Kaestner and Malamud, 2014; and Orrenius and Zavodny, 2005). However, few studies have analyzed these patterns for female migrants. When estimating these models for female migrants we find that higher education increases the likelihood of migration, but contrary to our findings for males we do not see an inverted U-shape effect of

education in the prediction of U.S. migration. This preliminary evidence highlights that the selectivity of male and female migrants follows different patterns that may have important consequences on their economic and social integration in the U.S., and these differential patterns have not been explored before in the literature. A full understanding of the selectivity of Mexican migrants has powerful implications for interpretation of evidence on the assimilation of migrants in the U.S., the impact of migrants on local labor markets, and the consequences of migration on the family members that remain in the country of origin.

Second, we provide evidence on the selectivity of Mexican-origin migrants who stay in the U.S. relative to those who return to Mexico. The evidence on the characteristics that determine which migrants stay in the U.S. rather than return to Mexico is not well documented. Moreover, there is little known about the link between the characteristics that determine the dynamic process of migration to the U.S., the decision to return to Mexico, and success in the U.S. labor market. The longitudinal nature of the data and the fact that we follow all migratory behavior over the sample period allows us to provide novel evidence. Importantly, using pre-migration characteristics, that are usually not available in other datasets, as controls in these models, we can directly explore whether selectivity into return migration and socio-economic success in the U.S. are driven by the initial selection into migration or by local conditions in the U.S.

The MxFLS is designed to fulfil this goal. The rich set of characteristics measured at baseline, allows determining the pre-migration characteristics that predict *both* migration to the U.S. and return migration to Mexico. Using characteristics measured at baseline before moving to the U.S. we explore whether return migration is predicted by such observed characteristics as human capital, family resources and U.S. networks prior to migration. Contrasting this specification with parallel models explaining the decision to move to the U.S. provides new insights into whether the choice to move to the U.S. and the subsequent choice to lay down roots for the long haul in the U.S. are similar processes that are associated with the same pre-migration characteristics.

Moreover, the data has a rich array of indicators of the migrants' wellbeing in the U.S. including, for example, performance in the U.S. labor market, location and living arrangements, and health outcomes. We use data collected in the U.S. to identify which of these characteristics measured in the U.S. predict return migration to Mexico. These results will significantly advance the recent literature on migration by developing a fuller understanding of the dynamics of migration among Mexican-origin migrants.

Third, we provide novel insights into characteristics linked to socio-economic success among Mexican migrants in the U.S. Exploiting the rich array of indicators of human capital, family resources and connections in the U.S., measured at baseline, we examine the characteristics that are predictive of socio-economic success in the U.S. By drawing on the same specifications that are used to predict migration to the U.S. and return migration, we provide a comprehensive picture of those

characteristics that are predictive of both selection into migration, and success in the new destination. Further, comparing the extent of economic success in these dimensions of those who continue to stay in the U.S. with those who return to Mexico provides insights into the likely mechanisms that underlie decisions to set down roots for the longer haul. We also exploit the longitudinal nature of the data to estimate the determinants of trajectories of socio-economic outcomes of interest.

The paper proceeds as follows. Section 2 describes the MxFLS dataset and provides descriptive statistics. Section 3 outlines the empirical models. Section 4 discusses the results, and we conclude in section 5.

## 2. Data

MxFLS is a large-scale population-representative longitudinal survey of Mexicans who were living in Mexico in 2002 when the baseline was conducted. The baseline survey, MxFLS-1, collected detailed information on 35,677 individuals living in 8,440 households in 150 communities spread across 16 states in Mexico (Rubalcava and Teruel, 2006a, 2006b).

The second wave, MxFLS-2, was conducted in 2005-2006. All baseline respondents and their biological children born after the 2002 baseline are eligible to be tracked in the follow-up surveys. They are considered "panel respondents." Over 89% of the panel respondents were re-interviewed in MxFLS-2. The third wave, MxFLS-3, started in 2009, and it achieved the same re-contact rates.

A novel feature of MxFLS, which is key for this research, is that it does not only follow panel members that had moved within Mexico but also follows respondents that had migrated to the U.S. Following movers is not straightforward. In the Mexican context, it poses special challenges because a significant number of people move to the U.S. Moreover, Mexican migrants are generally very mobile and the great majority is undocumented, adding additional challenges to the tracking process. In the context of the MxFLS, following migrants to the U.S. is important not only because it allows us to have a representative sample of recent migrants to the U.S. but also because it is crucial to maintain the representativeness of the baseline sample. If migrants to the U.S. are not followed, not only would attrition rates be higher than otherwise, but attrition would also be selected on characteristics associated with migration to the U.S. Inferences about the evolution of many indicators of well-being of the Mexican population over the last decade would potentially be contaminated if domestic and international migrants were not followed.

As such, the MxFLS tracking is based on an approach that allows us to have a representative sample of recent migrants to the U.S. for whom we have a rich set of characteristics measured at baseline, prior to migration. To achieve this, all panel respondents that remain in Mexico, as well as,

respondents who move to the U.S. are tracked and interviewed. The MxFLS is the first population-representative large-scale longitudinal study that has attempted to follow migrants across an international border. Aware of the additional challenges this poses, there was a substantial effort into developing and testing procedures to facilitate successfully interviewing migrants in the U.S. Those efforts have allowed us to maintain a very high re-contact rate: as shown in panel A of Table 1, in the second wave, 89.2% of the baseline respondents were re-interviewed. Moreover, we interviewed 91% of the 854 respondents believed to be in the U.S. (This includes anyone who was reported by an informant to have moved to the U.S. and was not interviewed in Mexico.)[5]

The successful tracking experience of MxFLS-2 provided a strong foundation for the following of migrants in the second follow-up (MxFLS-3). Out of the total U.S. migrants successfully re-interviewed, near 64% were still in the U.S. and the other 36% were found and interviewed back in Mexico (Table 1). In the rest of the analysis we will focus on respondents older than 15 in the second wave (before return migration to Mexico takes place). We make this choice because children are likely to move because of a migration decision made by their parents and it is their parents' characteristics most likely driving the selection.

Four features of the data are key for the analysis conducted in this paper. First, we have detailed information about the lives of all the movers – and those who do not move – *prior* to the index international move (which occurred after 2002). The MxFLS contains a far richer array of information on the lives of respondents than has been used in prior analyses. This includes information at baseline, before the migration event, not typically found in surveys used to analyze migration such as questions about own wealth and the wealth of household and family members, living arrangements, and the presence of networks in locations other than the baseline community. Second, the tracking design of the survey allows us to categorize U.S. migrants into stayers and returners. This survey is unique in this regard. Focusing on the respondents who moved to the U.S. during the hiatus between the baseline and first re-survey, we will describe the characteristics that distinguish those who subsequently return to Mexico with those who stay in the United States. Importantly, because of the design of the MxFLS, these analyses are not contaminated by undercounts of the most mobile migrants or by the loss of complete households. Third, our sample of U.S. migrants is drawn from the broader MxFLS sample that also continues to survey baseline respondents who stayed in Mexico. By comparing outcomes of returners with non-U.S. migrants living in the same community at baseline, and with their siblings who did not move, we provide direct evidence on the economic success of returning migrants relative to those who did not move. The depth of the information collected on our respondents allows us to measure the returns to U.S. migration on a broad set of individual and household outcomes.

In order to explore the migration status (between baseline and the third wave) of each respondent we use data from the three waves of the MxFLS. Exploiting the place of residence at the moment of

[5] For a detailed description of the tracking methods used in the second wave see Genoni et al. (2017)

each survey we can classify the migration status of each respondent in each wave. We classify the respondents as: "non-U.S. movers", if they were not interviewed in the U.S. in MxFLS2 or MxFLS3; "moved to U.S. and returned", if they were interviewed in the U.S. in MxFLS2, and in the third wave were found and interviewed in Mexico; and "moved to the U.S. and stayed", if they were found and interviewed in the U.S. in both the second and third wave.[6]

*Baseline information*

Along with a migration component, the MxFLS contains information about the economic, social and health status of each member of a surveyed household. The questionnaire for adults includes sections on education, labor supply and earnings, marriage and fertility history, health status, and use of health care. In addition, one member is interviewed about information at the household level. This questionnaire includes a complete household roster including basic socio-demographic characteristics of each household member, and information of household expenditure, and asset ownership. We use this information to understand whether baseline characteristics predict: 1) return migration to Mexico; 2) success in the U.S. labor market; and, 3) success in the Mexican labor market upon return.

Another useful section of the MxFLS is the assessment of the presence of relatives in the U.S. for all baseline respondents. An important variable for predicting migration is the presence of networks in the destination place. Specifically, the presence of networks in the U.S. could affect the decision to migrate through several different channels. For example, networks in the place of destination may reduce the initial costs of migration if the relatives help with living expenses. In addition, they can offer valuable information about available jobs or connect the recent migrant to job networks. Our measure of direct networks in the U.S. prior to migration allows exploring these hypotheses. [7]

*Information collected in the U.S.*

Even though the U.S. interviews in MxFLS-2, given their experimental nature, were shorter compared to those applied in Mexico, the U.S. component of MxFLS-2 still includes very rich information. A comprehensive set of modules follow those applied in Mexico in order to facilitate the comparison of information collected in Mexico and in the U.S., and specific changes are incorporated to the U.S. questionnaire to capture the relevant aspects of the life of Mexicans in the United States. In the third wave, MxFLS-3, the questionnaire was expanded, and we collected information on all the household members living with the panel respondent in the U.S.

[6] The MxFLS has migration history component that includes all long-term movements (more than one year) and temporal movements (between one and 12 months) that occurred after age 12. This allows us to determine who has moved to the U.S. and who has moved within Mexico prior to 2002. In future steps we will use this information as robustness check to our migration categories.

[7] Kaestner and Malamud (2014) use this information from the MxFLS to predict migration to the U.S., and find that the number of relatives in the U.S. at baseline is a strong predictor of migration.

We use information collected in the U.S. to compare socio-economic outcomes of returners and stayers in the U.S. and as control variables to predict the probability of return migration. Table A1 shows descriptive statistics based on information collected in the U.S. for both return migrants and stayers who were older than 15 during the MxFLS-2 interview.

## 3. Empirical specification

***Migration to the U.S.: Who migrates to the U.S.***

Selection into migration to the U.S. has been widely studied. While one strand of the literature suggests that Mexican migrants are drawn from the lower tail of the income and education distribution (negative selection hypothesis (Borjas, 1987)), another part of the literature has found evidence of an inverted U-shape, where those at the bottom and the top of the distribution are the least likely to migrate (Chiquiar and Hanson, 2005; Fernández-Huertas Moraga, 2011; Kaestner and Malamud, 2014; and Orrenius and Zavodny, 2005). Although previous studies have analyzied the composition of Mexican migrants living in the U.S., most of the analysis has been conducted using data measured after migration. This poses important endogeneity challenges. Exploiting information measured at baseline can sove this problem. Kaestner and Malamud (2014), also using the MxFLS data, find that although migrants are selected from the middle of the education distribution, they are negatively selected on earnings, which is explained by the differential returns to skills in the two countries.

We add to this strand of the literature by estimating a discrete choice model that predicts the probability of migration to the U.S. using baseline characteristcs for the sample of panel respondents age 15 and older at baseline. We estimate a linear probability model. The model can be summarized in the following regression framework:

$$U.S.migrant_i = \beta_0 + z'_{i02}\beta + \varepsilon_i \qquad (1)$$

Where $\mathrm{U.S.migrant_i}$ is a dummy variable, equal to one if the respondent was interviewed in the U.S. during the MxFLS2 interview and zero if not, and $z'_{i02}$ represents a rich set of controls measured at baseline, prior to any potential migration. Importantly, although some of these controls are time-invariant (e.g, gender, height or parents' education), another set of controls is time-varying (e.g., earnings, marital status, aversion towards risk). For this model, it is important that the controls are measured at baseline, so that they are not a result of the respondents' future migration status.

This set of independent variables can be grouped into five main catagories, which are chosen with the purpose of providing evidence on different hypotheses about migration currently posed in the

literature. The first group contains basic demographic information including age and marital status. The second group includes measures of human capital, like years of education and height.

Leveraging an innovative feature of the MxFLS, our third group of covariates includes variables that provide the number of relatives living in the U.S. prior to migration and their relationship with our migrants. Specifically, the MxFLS collects information about social networks in the U.S. prior to migration, which we believe is important given the fact that migrating to the U.S. is costly and the presence of relatives in the U.S. can diminish the initial migration costs. Moreover, arriving to the U.S. with a social network can ease the assimilation process. Fourth, many studies have suggested that migrants with more assets in Mexico are more likely to keep ties with their home country and eventually return to Mexico and more assets at baseline can serve as an important resource to finance migration, thus we explicitly explore household characteristics. The final type of covarite we add is a control for whether the respondent lives in a rural locality. The skills of rural farmers might be useful in agricultural and seasonal jobs in the U.S., which could make U.S. migration more appealing, profitable, and sustainable for these individuals.

***Migration to the U.S.: Who stays in the U.S. and who returns to Mexico***

While selectivity into migration to the U.S. has been previously studied, the evidence on return migration is more scarce. Our analysis has two parts. First, we estimate a model a model for the probability of return migration conditional on being a U.S. migrant interviewed in the U.S. during the second wave of the MxFLS. This is a relevant analysis for the discussion of migratory policies, since the composition of Mexican migrants who decide to stay in the U.S. for the long term has implications for both countries. To shed light on the determinants of staying in the U.S. we estimate the following model:

$$(return\ to\ Mexico_i | U.S.migrant) = \alpha_0 + z'_{i02}\alpha + e_i \qquad (2)$$

Where $(return\ to\ Mexico_i)$ is a dummy variable equal to 1 if the U.S. migrant is living in Mexico at the time of the MxFLS-3 interview. To predict model (2) we use the same set of controls measured at baseline from model (1).

Second, we estimate whether there is a gap in the hourly earnings of stayers and returners when both groups of immigrants are working in the U.S. We estimate the following model using information from the first follow-up in the U.S.:

$$\left(U.S.\ln(HrEarns)_{ij05} \middle| U.S.migrant\right) = \delta_0 + \delta_1 I(returner = 1) + x'_{ij05}\delta + \gamma_j + \eta_{ij05} \qquad (3)$$

Where $U.S.\ln(HrEarns)_{ij05}$ are hourly earnings measured in the U.S. for the sample of immigrants interviewd in the U.S. in the second wave of the survey (MxFLS2 - conducted in 2005); returner is a dummy for return migrants (those wo returned by the third wave but where in US in the second

wave); $x'_{ij05}$ is a vector of controls measured at the time of the MxFLS2 survey including gender, age, attained education, and year of arrival to U.S.; and $\gamma_j$ representes state of residence fixed effects. The estimate of $\delta_1$ measures the wage gap between stayers and returners.

To explore whether the gap in earnings is driven by the initial selection into migration we add controls for pre-migration characteristics of the migrants, $\mathrm{z}'_{\mathrm{i02}}$. These are the same controls used in models (1) and (2). Empirically we estimate the following model:

$$\left(U.S.\ln(HrEarns)_{ij05}\,\middle|U.S.migrant\right) = \delta_0 + \delta_1 I(returner = 1) + x'_{ij05}\delta + z'_{i02}\rho + \gamma_j + \eta_{ij05} \qquad (4)$$

The results of this model provide a comprehensive picture of the characteristics that are informative about selection into migration and success in the new destination.

***Economic Success of Stayers and Returners***

In the second part of the paper we provide evidence on the benefits and costs of migrating to the U.S. and we estimate a model that compares a broad set of outcomes between non-U.S. movers and U.S. migrants who returned to Mexico, and their non-migrant household and family members. In order to do this we estimate the following model for all respondents interviewed in Mexico in the second follow-up, MxFLS-3:

$$Y_{itm} = \beta_0 + \beta_1 I(returner = 1) + x'_{iMxFLS1}\beta + \gamma_m + \eta_{itm} \qquad (5)$$

Where $Y_{itm}$ is an outcome measured at the individual level or at the household level, in Mexican municipality *m*, at time *t* (third wave of the survey – MxFLS-3). The estimate of $\beta_1$, the coefficient on an indicator variable that distinguishes return migrants, measures the costs or benefits of migration to the U.S. By including a rich set of characteristics measured at baseline, the estimate of $\beta_1$ controls for the observed component that predicts selection into migration. In addition, we remove time-invariant geographic heterogeneity by including municipality of residence in MxFLS-3 fixed effects.

We complement this estimation strategy with two additional models, the first adds controls for municipality of residence at baseline fixed effects, and in ongoing work we will also add household fixed effects. The first model compares movers and non-U.S. movers from the same baseline municipality, and the second compares movers and non-movers from the same household. These models control for time-invariant unobserved heterogeneity at the regional and household level, respectively.[8] As mentioned previously, an extended literature has examined the effect of migration and remittances on the relatives left-behind. However, there is scarcer evidence on these effects when the migrant returns and the family reunites. By estimating these models we make a contribution to this literature.

[8] Abramitzky, et al. (2016) estimates the economic returns of migration to the U.S. for return migrants from U.S. to Norway during the age of mass migration.

## 4. Results

***Migration to the U.S.: Who migrates to the U.S.***

We start our analysis showing evidence that confirms previous results about the selectivity of migration to the U.S. in Table 2. Columns 1 to 3 in Table 2 show the results of model (1) that estimates the probability of migration to the U.S. based on baseline characteristics, for all migrants, male and female migrants. We start our analysis showing evidence that confirms previous results about the selectivity of migration to the U.S. Columns 1 to 3 show four main results. First, human capital is an important predictor of migration to the U.S. The results for education suggest that those in the lowest end of the distribution of education are the least likely to move to the United States, but higher levels of education do not increase the probability of migrating to the U.S. This inverted U-shape corroborates previous findings on the relationship between education and migration from Mexico to the United States for males (Chiquiar and Hanson, 2005; Fernández-Huertas Moraga, 2011; Kaestner and Malamud, 2014; and Orrenius and Zavodny, 2005)[9]. The effects of the presence of networks in the U.S. prior to migration provide our second set of results of interest. In columns 2 and 3 we show that both male and female migrants are more likely to move to the U.S. if they have more relatives living in the U.S. The third result from this analysis is related to the covariates that measure household resources. While families with more wealth can help to provide the resources necessary to finance migration, it can also be a measure of a higher willingness to set roots in the place of origin. For our sample of male migrants we find evidence that supports the latter statement. Living in a household with higher per capita expenditure (PCE) decreases the likelihood of migration to the U.S. for males. Fourth, individuals from rural places show a higher likelihood of migration to the U.S.

Columns 4 to 6 show the results for model (2) that predicts return migration to Mexico conditional on being an U.S. migrant. Both models use the same baseline covariates. The results in Table 2 provide evidence that selection into migration and, then, into laying down roots for the long haul at the destination are dissimilar processes determined by different characteristics.

The first divergence between the predictors of migration and determinants of staying in the U.S. is that education does not seem to be a significant predictor in the decision to return to Mexico. The sign of the coefficients suggest that, if there is any type of selection, it seems like the most educated

[9] Similar to the males in our sample, we find that female migrants with levels of education in the middle of the distribution (primary complete and high school incomplete and complete) are more likely to migrate to the U.S. than those with no education. However, contrary to our findings for males, we do not see a U-shape effect of education in the prediction of U.S. migration.

migrants are the most likely to stay in the U.S. for a longer term. Second, while networks are an important predictor of migration to the U.S., they do not seem to predict return migration.

Taking these results as a whole we can conclude that first, the variables at baseline that predict migration to the U.S. are not necessarily the same predicting return migration. Second, what seems more relevant to predict return migration are variables that measure how successful the migrant has been in the U.S. relative to pre-migration variables. These results raise questions about what characteristics, if any, are predictive of success in the labor market in the U.S.

***Economic Success of Stayers and Returners***

The second goal of this research is to provide evidence about the markers for economic success of Mexican migrants in the U.S. and return migrants in Mexico. For this analysis, we exploit information collected in U.S. during the second and third waves of MxFLS. First, information collected in the second wave allows us to compare return migrants to those that stayed in the U.S. to determine whether characteristics at baseline are predictors of economic outcomes for either group. A second analysis we conduct uses baseline characteristics to predict economic outcomes measured in the third wave of MxFLS for stayers in the U.S. and returners in Mexico.

We start our analysis by estimating equation (3) for the sample of U.S. migrants. The results in Panel A of Table 3, shows that migrants who by MxFLS-3 are back in Mexico earn on average 10% lower hourly earnings, relative to those who by MxFLS-3 stayed in the U.S. Importantly, the results are robust to including controls for gender, age, education, year of arrival to the U.S. and state of residence in the U.S. fixed effects. This wage gap is significant for males as well (Panel B), and the magnitude of the wage gap is similar for the sample of females, but we lose statistical power (Panel C). These results show that return migrants are negatively selected on wages. This negative selection can be driven by pre-migration characteristics or different living conditions in U.S. In Table 3 we estimate model (4) to test whether pre-migration characteristics explain the negative selection on wages of return migrants.

Table 4 shows the results of this model. All the estimations include the covariates included in Table 3, and we add variables measured at baseline that have been shown to be strong predictors of moving to the U.S. Each column in the table incorporates a new set of covariates to check the robustness of the results to the inclusion of each new set of controls. The results in Table 4 show that the wage gap between returners and stayers does not change when adding baseline characteristics. This suggests that the economic success of migrants in the U.S. is not explained by pre-migration characteristics, but rather by characteristics in the U.S. In addition, the results suggest that pre-migration characteristics that predict migration into the U.S. do not necessarily predict success in the U.S. and return migration to Mexico.

***Economic Returns to Migration***

The second goal of this research is to provide evidence about the markers for economic success of return migrants in Mexico. For this analysis, we exploit information collected in Mexico during the third wave of the MxFLS and compare outcomes of U.S. migrants and non-migrants.

Table 5 estimates the model laid out in equation (5). This specification predicts labor outcomes for respondents in Mexico in the third wave. All the models controls for age, gender, attained education by MxFLS3, rural/urban place of residence in MxFLS3, and municipality of residence fixed effects. Columns 1 and 2 measure returns of migration on the log of hourly earnings. Column 1 controls only for variables measured in MxFLS3, with no pre-migration variables. The results in Column1 show no significant differences on hourly earnings between US migrants who returned to Mexico and non-migrants. In Panel B we explored this relationship for the sample of males, and in Panel C for the sample of individuals living in rural places. In every case we cannot reject that there are no differences in hourly earnings between migrants and non-migrants. In order to control for selection on baseline characteristics we add pre-migration controls in column 2. The results are similar, with exception of the rural sample. In this case the effect becomes significant at a 10% level of significance. Return migrants who live in rural places earn on average 21% more than non-migrants. The positive premium for U.S. migrants in the rural sample might be related with the fact that migrants may accumulate savings that allows them to invest in productive assets that increase their productivity. In order to test this hypothesis, we estimate this model for the log of wealth per capita, where wealth measures household assets including agricultural land. Column 3 and 4 show this is the case. The value of the assets of return migrants living in rural places is on average 33% higher relative to non-migrants' assets. These results suggest that, despite being negatively selected on U.S. earnings, return migrants might be able to save enough to accumulate wealth once they go back to Mexico.

## 5. Conclusion

This paper provides evidence on three main subjects. First, it complements previous research that studies the selectivity of Mexican migration to the U.S. by looking at the determinants that predict return migration. Second, by estimating parallel models of multiple economic markers in the United States, we can draw conclusions about the predictors of both selection into migration and the predictors of success in the destination among those who move and stay. Third, it estimates a model for the returns of migration in the Mexican market for the sample of return migrants.

The paper's findings can be summarized in four main points. First, return migrants seem to be negatively selected on their U.S. earnings. The negative selection can be explained by selection on pre-migration characteristics or conditions in the U.S. that measure how successful the migrant has

been in the destination. We find evidence supporting the latter. The baseline characteristics that significantly predict migration to the U.S. are not necessarily the same ones predicting return migration. In fact, baseline characteristics do not seem to be highly predictive of return migration, but what seems more important to predict return migration are variables collected in the U.S. measuring the level of success of the migrant in the U.S.

Second, human capital (as measured by education and height) is predictive not only of migration to the United States, but also of higher earnings in the U.S. labor market. As found previously in the literature we find that those who move to the United States are not likely to be drawn from the bottom or top of the education distribution. Moreover, conditional on moving to the United States, higher levels of education increase the migrant's earnings in the short term, and evidence suggests that education carries a premium in terms of earnings in the labor market.

Third, upon return to Mexico, return migrants do not show significantly different earnings relative to non-movers. However, there is evidence of higher level of assets, particularly for migrants living in rural places. Return migrants might be able to save enough to improve their economic situation in Mexico, despite their worse labor outcomes in the U.S. The positive returns to migration to the U.S. can have positive effects on the well-being of the household of the migrant. While the effects of migration on the family left-behind has been explored widely in the literature, the evidence on the effects of return migration is more scarce. These results highlight the importance of investigating this additional pathway through which migration may have long-lasting effects on the relatives left-behind.

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# Tables

# Table 1. Sample sizes and recontact rates in MxFLS

**Panel A. Recontact rates in MxFLS2**

| | Eligible for survey | Interviewed | % Interviewed |
|---|---|---|---|
| Total | 35,134 | 31,338 | 89.20 |
| In Mexico | 34,280 | 30,564 | 89.16 |
| In US | 854 | 774 | 90.63 |

**Panel B. Migration Status of US migrants by MxFLS3**

| | Interviewed | % |
|---|---|---|
| Stayer in US by MxFLS3 | 471 | 60.85 |
| Returner to Mx by MxFLS3 | 268 | 34.63 |
| Attrited by MxFLS3 | 35 | 4.52 |

Source: MxFLS

Note - Excluded panel respondents who died between waves

# Table 2. Prediction of migration to the U.S. and return migration to Mexico

Respondents Age 15 and older at baseline
Linear Probability Models

| | = 100 if migrated to the U.S. between baseline and MxFLS2 | | | = 100 if returned to Mexico since MxFLS2* | | |
|---|---|---|---|---|---|---|
| | All | Male | Female | All | Male | Female |
| Variables measured in Mexico at baseline | (1) | (2) | (3) | (4) | (5) | (6) |
| *Human Capital* | | | | | | |
| (1) Primary complete [Omitted Primay incomplete] | 0.012** | 0.016** | 0.010** | -0.097 | -0.076 | -0.055 |
| | [0.005] | [0.008] | [0.004] | [0.081] | [0.105] | [0.119] |
| (1) High school incomplete | 0.012** | 0.012 | 0.012*** | -0.13 | -0.07 | -0.141 |
| | [0.005] | [0.008] | [0.005] | [0.088] | [0.111] | [0.123] |
| (1) High scool complete | 0.007 | 0.004 | 0.011* | -0.273** | -0.081 | -0.360** |
| | [0.005] | [0.008] | [0.006] | [0.109] | [0.135] | [0.139] |
| (1) Some college or more | -0.003 | -0.002 | 0 | -0.043 | 0.201 | -0.342* |
| | [0.005] | [0.008] | [0.005] | [0.146] | [0.183] | [0.182] |
| *Networks in the U.S.* | | | | | | |
| (1) One relative in US [Omitted No relatives in US] | 0.013*** | 0.020*** | 0.008*** | 0.002 | -0.016 | 0.091 |
| | [0.003] | [0.006] | [0.003] | [0.063] | [0.075] | [0.111] |
| (1) Two relatives in US | 0.021*** | 0.020** | 0.022*** | 0.018 | 0.003 | 0.167 |
| | [0.006] | [0.008] | [0.007] | [0.082] | [0.100] | [0.141] |
| (1) Three or more relatives in US | 0.048*** | 0.054*** | 0.044*** | -0.028 | -0.084 | 0.143 |
| | [0.008] | [0.012] | [0.008] | [0.067] | [0.086] | [0.134] |
| *Household characteristics* | | | | | | |
| (1) Quartile 2 PCE | -0.009** | -0.018*** | 0 | -0.02 | -0.062 | 0.106 |
| | [0.004] | [0.007] | [0.004] | [0.053] | [0.069] | [0.105] |
| (1) Quartile 3 PCE | -0.009** | -0.016** | -0.002 | -0.052 | -0.075 | 0.005 |
| | [0.004] | [0.008] | [0.004] | [0.071] | [0.096] | [0.125] |
| (1) Quartile 4 PCE | -0.008* | -0.017** | 0 | -0.111 | -0.136 | -0.002 |
| | [0.005] | [0.007] | [0.005] | [0.075] | [0.101] | [0.122] |
| *Locality characteristics* | | | | | | |
| (1) Rural | 0.019*** | 0.024*** | 0.014*** | -0.024 | -0.03 | -0.129 |
| | [0.005] | [0.007] | [0.004] | [0.057] | [0.077] | [0.091] |
| Sample size | 20,358 | 9,598 | 10,760 | 522 | 330 | 192 |
| Adjusted R-squared | 0.043 | 0.053 | 0.034 | 0.075 | 0.029 | 0.093 |

Standard errors clustered at the municipality of origin level in brackets
*** p<0.01, ** p<0.05, * p<0.1

Note: * Includes State of origin Fixed Effects
All models include height, household size, age and gender

**Table 3. US Ln(Hourly Earnings) measured in MxFLS2**

**Respondents older than 15 in MxFLS2**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| *A: All* | | | | | |
| =1 if returned to Mx | -0.057 | -0.104* | -0.102* | -0.110** | -0.110** |
| | (0.056) | (0.054) | (0.054) | (0.054) | (0.054) |
| =1 if female | | -0.241*** | -0.260*** | -0.269*** | -0.281*** |
| | | (0.063) | (0.062) | (0.062) | (0.063) |
| =1 if age: 20-34 | | 0.101 | 0.093 | 0.104 | 0.109 |
| | | (0.066) | (0.067) | (0.069) | (0.070) |
| =1 if age: 35-49 | | 0.123 | 0.133 | 0.176* | 0.190* |
| | | (0.089) | (0.088) | (0.104) | (0.099) |
| =1 if age: 50+ | | -0.407 | -0.396 | -0.263 | -0.219 |
| | | (0.260) | (0.244) | (0.276) | (0.275) |
| =1 if 7-12 grades | | | 0.109** | 0.106** | 0.094* |
| | | | (0.050) | (0.050) | (0.054) |
| =1 if 13+ | | | 0.391*** | 0.384*** | 0.308*** |
| | | | (0.115) | (0.115) | (0.118) |
| Year of arrival to US | | | | 0.007 | 0.008 |
| | | | | (0.008) | (0.008) |
| State US FE | | | | | X |
| N | 468 | 468 | 468 | 467 | 467 |
| *B: Males* | | | | | |
| =1 if returned to Mx | -0.095 | -0.104* | -0.102* | -0.111* | -0.104* |
| | (0.059) | (0.059) | (0.058) | (0.061) | (0.059) |
| =1 if age: 20-34 | | 0.104 | 0.096 | 0.114 | 0.107 |
| | | (0.068) | (0.068) | (0.072) | (0.070) |
| =1 if age: 35-49 | | 0.086 | 0.135 | 0.192 | 0.256** |
| | | (0.106) | (0.102) | (0.124) | (0.109) |
| =1 if age: 50+ | | -0.243 | -0.202 | -0.045 | 0.005 |
| | | (0.212) | (0.198) | (0.135) | (0.149) |
| =1 if 7-12 grades | | | 0.153*** | 0.148*** | 0.160** |
| | | | (0.055) | (0.056) | (0.063) |
| =1 if 13+ | | | 0.516*** | 0.520*** | 0.566*** |
| | | | (0.108) | (0.116) | (0.150) |
| Year of arrival to US | | | | 0.008 | 0.010 |
| | | | | (0.008) | (0.009) |
| State US FE | | | | | X |
| N | 325 | 325 | 325 | 324 | 324 |
| *C: Females* | | | | | |
| =1 if returned to Mx | -0.095 | -0.096 | -0.076 | -0.092 | -0.166 |
| | (0.134) | (0.116) | (0.119) | (0.119) | (0.128) |
| =1 if age: 20-34 | | 0.095 | 0.079 | 0.080 | 0.164 |
| | | (0.149) | (0.150) | (0.148) | (0.164) |
| =1 if age: 35-49 | | 0.194 | 0.151 | 0.193 | 0.237 |
| | | (0.165) | (0.171) | (0.187) | (0.199) |
| =1 if age: 50+ | | -1.218 | -1.321 | -1.169 | -0.915 |
| | | (1.013) | (0.936) | (1.069) | (1.000) |
| =1 if 7-12 grades | | | -0.017 | -0.010 | 0.008 |
| | | | (0.102) | (0.103) | (0.099) |
| =1 if 13+ | | | 0.266 | 0.255 | 0.065 |
| | | | (0.262) | (0.252) | (0.258) |
| Year of arrival to US | | | | 0.016 | 0.020 |
| | | | | (0.018) | (0.018) |
| State US FE | | | | | X |
| N | 143 | 143 | 143 | 143 | 143 |

Notes: Robust standard errors in brackets
* p<0.10, ** p<0.05, *** p<0.01

**Table 4. US Ln(Hourly Earnings) measured in MxFLS2**
**Adding pre-migration characteristics**
**Respondents older than 15 in MxFLS2**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| *A: Males* | | | | | |
| =1 if returned to Mx | -0.104* | -0.108* | -0.101* | -0.101* | -0.108* |
| | (0.059) | (0.059) | (0.058) | (0.059) | (0.064) |
| =1 if rural | | -0.107* | -0.112* | -0.112* | -0.096 |
| | | (0.060) | (0.060) | (0.060) | (0.063) |
| Father's education | | | -0.012 | -0.009 | -0.010 |
| | | | (0.009) | (0.010) | (0.010) |
| Mother's education | | | 0.021** | 0.020* | 0.021** |
| | | | (0.010) | (0.010) | (0.011) |
| =1 if 1 relative in US | | | | -0.070 | -0.071 |
| | | | | (0.075) | (0.075) |
| =1 if 2 relatives in US | | | | -0.133 | -0.136 |
| | | | | (0.107) | (0.111) |
| =1 if 3+ relatives in US | | | | -0.024 | -0.031 |
| | | | | (0.087) | (0.087) |
| Household size | | | | | 0.007 |
| | | | | | (0.013) |
| =1 if married | | | | | 0.057 |
| | | | | | (0.106) |
| Log PCE | | | | | 0.032 |
| | | | | | (0.038) |
| US Variables | X | X | X | X | X |
| State US FE | X | X | X | X | X |
| N | 324 | 324 | 324 | 324 | 321 |

Notes: Robust standard errors in brackets
* p<0.10, ** p<0.05, *** p<0.01

**Table 5. MX Ln(Hourly Earnings) measured in MxFLS3**

| | LogHourly Earnings | LogHourly Earnings | LogWealth PerCapita | LogWealth PerCapita |
|---|---|---|---|---|
| *A: All* | | | | |
| =1 if in US in MX2 | 0.119 | 0.130 | 0.080 | 0.091 |
| | (0.111) | (0.111) | (0.111) | (0.111) |
| Mpio MX FE | X | X | X | X |
| Baseline | | X | | X |
| N | 9652 | 9650 | 27249 | 27244 |
| *B: Males* | | | | |
| =1 if in US in MX2 | 0.127 | 0.139 | 0.199 | 0.212 |
| | (0.121) | (0.122) | (0.132) | (0.132) |
| Mpio MX FE | X | X | X | X |
| Baseline | | X | | X |
| N | 6411 | 6410 | 13061 | 13060 |
| *C: Rural* | | | | |
| =1 if in US in MX2 | 0.188 | 0.216* | 0.328** | 0.333** |
| | (0.121) | (0.120) | (0.154) | (0.156) |
| Mpio MX FE | X | X | X | X |
| Baseline | | X | | X |
| N | 3077 | 3077 | 9314 | 9314 |

Notes: Robust standard errors in brackets
* p<0.10, ** p<0.05, *** p<0.01

# Table A1. Descriptive Statistics by Migration Status in MxFLS3
## for Respondents age 15 and older in MxFLS2

| | Non US movers | | Return Migrants | | Stayers in US | |
|---|---|---|---|---|---|---|
| Variables measured at baseline | Mean | Sd | Mean | Sd | Mean | Sd |
| *Basic demographics* | | | | | | |
| % Female | 53.13 | 0.50 | 28.17 | 0.45 | 43.47 | 0.50 |
| Age | 35.32 | 18.06 | 25.02 | 12.08 | 23.07 | 10.18 |
| % Married* | 64.76 | 0.48 | 42.32 | 0.50 | 36.52 | 0.48 |
| # co-resident children* | 1.30 | 1.59 | 1.05 | 1.69 | 0.67 | 1.23 |
| Years of attained education | 6.78 | 4.25 | 6.85 | 3.38 | 7.45 | 3.16 |
| *Household characteristics* | | | | | | |
| Household size | 5.06 | 2.23 | 6.19 | 2.23 | 5.68 | 2.34 |
| % Renting | 4.97 | 0.22 | 2.38 | 0.15 | 1.33 | 0.11 |
| % Own a house | 69.94 | 0.46 | 65.87 | 0.48 | 67.47 | 0.47 |
| Log PCE | 6.69 | 0.91 | 6.39 | 0.81 | 6.47 | 0.90 |
| *Employoment characteristics** | | | | | | |
| % Worked last week | 54.95 | 0.50 | 67.46 | 0.47 | 56.11 | 0.50 |
| % Self-employed | 15.98 | 0.37 | 12.44 | 0.33 | 14.52 | 0.35 |
| Log Earnings Last Year (if working) | 9.65 | 1.36 | 9.51 | 1.32 | 9.24 | 1.47 |
| *Networks in the U.S.** | | | | | | |
| Number of Relatives in US | 1.62 | 0.94 | 1.69 | 1.04 | 1.96 | 1.16 |
| % Spouse in US | 3.55 | 0.18 | 5.83 | 0.24 | 10.50 | 0.31 |
| % Children in US | 19.11 | 0.39 | 9.17 | 0.29 | 7.73 | 0.27 |
| % Siblings in US | 37.14 | 0.48 | 43.33 | 0.50 | 59.67 | 0.49 |
| % Father in US | 3.80 | 0.19 | 10.00 | 0.30 | 11.60 | 0.32 |
| % Mother in US | 1.61 | 0.13 | 0.83 | 0.09 | 6.08 | 0.24 |
| *Locality characteristics* | | | | | | |
| % Rural | 42.75 | 0.49 | 60.32 | 0.49 | 66.13 | 0.47 |

* Variables measured for respondents age 15 and older at baseline