Migration Experience and Earnings in the Mexican Labor Market

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Abstract

We present an empirical analysis of the relationship between U.S. migration experience and labor market earnings in Mexico. Using Mexican Migrant Project (MMP) data, we find a return to migration experience of about 2.7% per year. Our estimates are robust to the inclusion of controls for unobserved skill, and we thus believe that our estimates are not greatly influenced by standard forms of self-selection bias or the endogeneity of migration experience. A comparison with patterns in the Mexican Census suggests that our results are robust across data sets and are driven by a relationship between migration experience and wages, not hours worked. We also explore the plausibility of multiple mechanisms that might given rise to a return to migration experience. We find the most evidence for the theory that individuals are acquiring occupation-specific work experience in the United States. The return to a year of occupation-specific migration experience is estimated to be as high as 9.3% for some occupations.

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1 Introduction

There is a growing literature assessing the effects of out-migration on the economies of migrant-sending countries. Research on this topic has been dominated by two main strands: one exploring the consequences of skilled migration (the "brain drain"), and one focusing

on the determinants and effects of remittances[1]. However, if migration is temporary and migrants eventually return home, there is another channel at work, which we call the skill-upgrading of return migrants. Migrants may be accumulating skills while working abroad that are transferable to the labor markets in their home country. If these individuals eventually move back home, they return as potentially more skilled and productive workers. This paper presents an empirical analysis of this phenomenon among migrants who return to Mexico after spending some time abroad in the United States.

A number of studies, including Borjas and Bratsberg (1996), Dustmann and Weiss (2007), and Dustmann et al. (Forthcoming), develop models of temporary migration in which migrants acquire additional skills while working abroad that are rewarded in the home country. If the return to such skill is higher in the home country than in the foreign country, then this mechanism provides an incentive for individuals to return home. As Dos Santos and Postel-Vinay (2003) argue, this effect of temporary migration may help to expand a source country's human capital stock and increase its rate of economic growth. Mayr and Peri (2009) further link this mechanism to the literature on the "brain gain" by developing a model of return migration, skill-upgrading, and endogenous schooling to analyze the conditions under which temporary migration opportunities can raise the education level of a sending country.

While there is an existing empirical literature on temporary migration and skill-upgrading, it tends to focus on the European experience. De Coulon and Piracha (2005) analyze data from Albanian workers and find that the return migrants in their sample are negatively selected on the basis of pre-migration earnings, but experience a wage premium as a result of temporary migration. Using Hungarian data, Co et al. (2000) conclude that time spent abroad improves the labor market performance of female migrants, but not the performance of male migrants. Barrett and O'Connell (2000) and Barrett and Goggin (2010) also find a premium for return migrants in Ireland.

While the high volume of recent intra-European migration certainly justifies the attention paid to temporary migration and skill upgrading in Europe, relatively little research assesses the skill upgrading hypothesis in the context of Mexican migration to the United States. Beginning with the Bracero guestworker program (1942-1964), Mexico-US migration has been distinguished by a high propensity for return migration (Massey et al., 2003). Although much has been written on the development impact of migrants' remittances in Mexico[2], the possibility of skill upgrading on the part of return migrants has not received much attention.

[1]See Docquier and Rapoport (2009) for a review of recent literature on the positive and negative consequences of skilled migration for human capital accumulation in sending countries. Rapoport and Docquier (2006) provide a survey of recent work on the economics of remittances.

[2]For examples, see Woodruff and Zenteno (2007) and Durand et al. (1996).

Using data from the 2000 Mexican census, Lacuesta (2006) finds that migrants tend to earn about 7-10 percent higher wages than non-migrants upon returning. However, he attributes much of this to the selectivity of migrants and not to any skills that migrants may have acquired in the United States.

In this study, we use data from the Mexican Migrant Project (MMP) and the Mexican Census to document the relationship between past U.S. migration experience and the labor market earnings of return migrants in Mexico. Our baseline specification suggests that there is a 2.7% return to a year of U.S. migration experience in the Mexican labor market. This exceeds the estimated return to age at every point in the life-cycle, and we cannot reject the null hypothesis that this is equal to the return to education. One may be concerned that the observed relationship between earnings and migration experience reflects the self-selection of high-ability or high-skill individuals into return migration, or the endogeneity of length-of-stay in the United States. To assess the likelihood and consequences of such biases, we develop a model of temporary migration with heterogeneity in unobserved ability or skill. Under plausible assumptions, the model suggests that our empirical estimates may understate the true effect of migration experience on earnings. Furthermore, we use observed wage data from the United States for the migrants in our sample to construct a control for ability and unobserved skill. When we add this control to our basic specification, our estimates are very close to the baseline estimates.

Another contribution of the paper is to compare results on the returns to migration experience across both the MMP and the Mexican Census. While the MMP data contain superior information on migration histories, they do not contain data on wages, but only labor market earnings. However, the Census reports hours data that allow us to construct wage rates. When using comparable regressors and samples, we find nearly identical results in both the MMP and the Census. Furthermore, the analysis using the Census wage data reveals that our results are almost entirely driven by a relationship between migration experience and wages.

The paper also contributes to the literatures on migration and human capital accumulation by suggesting and empirically testing some possible explanations for the existence of a return to migration experience. While other papers have documented returns to migration experience in other empirical scenarios, we feel our study is unique in attempting to understand the mechanisms that give rise to a migration premium. We find evidence that much of the return to migration can be accounted for by occupation-specific job experience. The return to migration experience is largest for migrants who worked in occupations in the United States that match their current occupation in Mexico. Indeed, the return to a year of this kind of job-relevant migration experience is estimated to be a little less than

5.2% in the whole sample, and as high as 9.3% when restricting the sample to unskilled manufacturing workers. It is noteworthy that our basic estimate of the return to a year of job-relevant migration experience is almost twice as large as our estimate of the return to a year of education.

Another mechanism that could explain our results is the effect of exposure to urban labor markets. As documented by Glaeser and Mare (2001) and others, it could be the case that experience in large urban labor markets is more valuable than experience elsewhere because of greater knowledge spillovers that might occur in cities. The rich migration information available in the MMP allow us to test whether the return to migration experience is actually a return to urban labor market experience in the United States. However, we do not find evidence that urban migration experience is more valuable than non-urban experience.

We also test whether the return to migration experience is related to the acquisition of English skills. Data limitations prevent us from drawing firm conclusions here, but controlling for English ability does not substantially reduce the return to migration experience. This suggests that English language acquisition does not explain much of the relationship between migration experience and earnings. However, we do find that the return to migration experience is higher for those with some English skills. This is consistent with the idea that individuals who can more easily communicate while abroad might be better able to absorb skills while working.

Finally, we investigate the role that legal status might play in shaping the relationship between migration experience and earnings. While we find evidence of a greater return to documented migration experience, and this appears to be driven by a greater propensity for documented migrants to acquire job-relevant work experience.

2 A Simple Model

Here we present a simple theoretical model of temporary migration to investigate how plausible self-selection patterns are expected to affect the observed differences in earnings between return migrants and non-migrants. The model considered here builds on the temporary migration models of Dustmann (2003) and Dustmann and Weiss (2007).

Consider the following environment. There are two countries: the home country (h), and the foreign country (f). Individuals are endowed with a unit of continuous time, and they start life in the home country. An individual can only migrate at time $t = 0$, and chooses some fraction of time τ to spend in the foreign country. If the individual chooses $\tau = 1$, then the individual is a permanent migrant. If the individual chooses $0 < \tau < 1$, the individual is a temporary migrant and returns home after τ units of time. Note that this model restricts

immigrants to taking at most one migratory trip to the United States. In reality, many Mexican migrants engage in patterns of repeated circular migration involving multiple trips to the United States (see Massey et al. (2003), Thom (2010), Rendon and Cuecuecha (2007)). To keep the theoretical analysis tractable, we assume a one-trip structure.

While working in the foreign country, the individual earns a wage of w_f per unit of time, and while working at home, the individual earns a wage of $w_h(\tau)$ per unit of time. We explicitly allow the wage at home to depend on accumulated migration experience. However, living abroad incurs disutility of η per unit of time. In addition to migration duration, τ, the individual also chooses a flow of consumption c_t through time, and we assume that the instantaneous utility from consumption is given by $u(c_t) = \log(c_t)$. If an individual migrates, she must pay a migration cost of λ. In this general formulation, the individual's problem is stated as:

$$\begin{aligned} \max_{\tau, c_t} \quad & V = \int_0^1 \log(c_t) e^{-\delta t} dt - \int_0^\tau \eta e^{-\delta t} dt \\ s.t. \quad & \int_0^1 c_t e^{-rt} dt = \int_0^\tau w_f e^{-rt} dt + \int_\tau^1 w_h e^{-rt} dt - \lambda 1(\tau > 0) \\ & 0 \leq \tau \leq 1 \end{aligned}$$

For simplicity, we follow Dustmann (2003) and assume that individuals do not discount future utility, and that the individuals can freely borrow and save at a real interest rate of 0. These assumptions ensure that the instantaneous flow of consumption is constant over time and is entirely determined by the chosen migration duration, τ. The decision problem becomes:

$$\begin{aligned} \max_{\tau} \quad & V(\tau) = \log(c) - \tau\eta \\ s.t. \quad & c = \tau[w_f - w_h(\tau)] + w_h(\tau) - \lambda 1(\tau > 0) \\ & 0 \leq \tau \leq 1 \end{aligned}$$

An interior solution is characterized by the following First Order Condition:

$$\frac{1}{c}\frac{\partial c}{\partial \tau} - \eta = 0 \tag{1}$$

Individuals choose τ so that the marginal benefit of time spent abroad is equal to the marginal cost, and the first order condition above implicitly defines τ^* as a function of the model parameters. The marginal benefit of extra time spent abroad is given by the first term in Equation 1, where $\frac{1}{c}$ is the marginal utility of consumption, and the marginal effect

of time spent abroad on consumption is given by:

$$\frac{\partial c}{\partial \tau} = \left[(1-\tau^*)\frac{\partial w_h}{\partial \tau} + (w_f - w_h(\tau^*)) \right] \tag{2}$$

Increasing τ an extra bit has two effects on lifetime consumption. First, it allows the individual to reap the benefits of the international wage gap $(w_f - w_h(\tau^*))$. Secondly, if skills acquired abroad are transferable to the home labor market, it also increases earnings at home at the rate $(1-\tau^*)\frac{\partial w_h}{\partial \tau}$.

There are two possible corner solutions. Either the individual can become a permanent migrant, $\tau^* = 1$, or the individual can choose not to migrate, $\tau^* = 0$. The value of permanent migration is given by $V^{pm} = log(w_f - \lambda) - \eta$, while the value of not migrating is given by $V^h = log(w_h(0))$. Individuals will choose to permanently migrate if the value function is increasing in τ at $\tau = 1$, and permanent migration is more desirable than staying home: $V'(\tau) \mid_{\tau=1} > 0$ and $V^{pm} > V^h$. Alternately, individuals will choose to stay home if staying home is preferred to permanent migration, and the value function is decreasing in τ at $\tau = 0$: $V^{pm} \leq V^h$ and $V'(\tau) \mid_{\tau=0} < 0$.

2.1 Skill-Upgrading and Worker Heterogeneity

Here we extend the basic model to consider heterogeneity in the population. Let s_i denote the unobserved skill of individual i. We think of this as reflecting both innate ability, and also any skills that the individual has acquired before making the migration decision. We call this unobserved skill, but this is really reflecting anything responsible for permanent differences in the productivity of workers. We assume that there is some population distribution of unobserved initial skill, $s_i \sim F$, and that some of the model parameters depend on skill. Clearly, skill should affect both the foreign and home wages, w_f and w_h. However, we also have reason to believe that skill may be related to the cost of migration. As Chiquiar and Hanson (2005) point out, the costs of migration might be lower for high-ability people if such individuals are more capable or ambitious. We assume that skill positively affects wages, $\frac{\partial w_f}{\partial s} > 0$, $\frac{\partial w_h}{\partial s} > 0$, and that skill negatively affects costs, $\frac{\partial \lambda}{\partial s} < 0$. Crucially, we assume that $\frac{\partial w_h}{\partial s} > \frac{\partial w_f}{\partial s}$. That is, we assume that the return to skill is higher in the home country than abroad. This is reasonable because in a scenario like Mexico-US migration, we observe migration from a relatively skill-scarce country to a relatively skill-abundant country. Empirical evidence suggests that the returns to skill, or at least observable dimensions of skill such as education, are larger in Mexico than they are in the United States. (see Hanson (2006) pp. 893-894, Chiquiar (2003)). Secondly, even if the return to skill is constant across

countries, we have reason to believe that there is some lack of transferability of skills across countries, perhaps because skills might be tied to the specific language or institutions of the home country. (Friedberg, 2000).

Given these assumptions, we can investigate how unobserved initial skill is related to observed migration decisions, starting with the decisions of temporary migrants. We now write $w_f = w_f(s)$, $w_h = w_f(s, \tau)$, and $\lambda = \lambda(s)$ to acknowledge the dependence of wages and the migration cost on skill. Returning to the first order condition for an interior solution, we can multiply Equation 1 by c to get the following:

$$\left[(1-\tau^*)\frac{\partial w_h}{\partial \tau} + (w_f(s_i) - w_h(s_i, \tau^*))\right] - \eta c = 0 \tag{3}$$

Implicit differentiation of the first order condition implies the following relationship between τ^* and s_i:

$$\frac{\partial \tau^*}{\partial s_i} = -\left[\frac{(1-\tau^*)\frac{\partial^2 w_h}{\partial \tau \partial s_i} + \left(\frac{\partial w_f}{\partial s_i} - \frac{\partial w_h}{\partial s_i}\right) - \eta \frac{\partial c}{\partial s_i}}{(1-\tau^*)\frac{\partial^2 w_h}{\partial \tau^2} - 2\frac{\partial w_h}{\partial \tau} - \eta \frac{\partial c}{\partial \tau}}\right] \tag{4}$$

As long as the second order terms $\frac{\partial^2 w_h}{\partial \tau \partial s_i}$ and $\frac{\partial^2 w_h}{\partial \tau^2}$ are small, the relationship between skill and optimal migration length will be negative, since $\left(\frac{\partial w_f}{\partial s_i} - \frac{\partial w_h}{\partial s_i}\right) < 0$ by assumption, and lifetime consumption is increasing in skill ($\frac{\partial c}{\partial s_i} > 0$) for everyone, and increasing in duration for anyone who migrates ($\frac{\partial c}{\partial \tau} > 0$). The marginal utility cost of time spent abroad is equal to the constant $-\eta$, which the marginal benefit is related to the marginal utility of earning the international wage gap $(w_f(s_i) - w_h(s_i, \tau)$. This marginal benefit of earning this wage gap is declining in skill, both because the marginal value of wealth is declining in skill, and because the international wage gap is declining in skill. Thus, under quite general assumptions, we should expect $\frac{\partial \tau^*}{\partial s_i} < 0$. This might not hold if for example, $\frac{\partial^2 w_h}{\partial \tau \partial s_i}$ is positive and sufficiently large, so that more skilled individuals have a greater skill-upgrading incentive for migration.

To assess the generality of this result, suppose that wages are linear, so that $w_f = \alpha_0^f + \alpha_1^f s_i$, and $w_h = \alpha_0^h + \alpha_1^h s_i + \alpha_2^h \tau$. In this case, the second-order terms disappear, and the relationship between optimal duration and skill becomes:

$$\frac{\partial \tau^*}{\partial s_i} = -\left[\frac{(1-\eta)\alpha_1^f - (1+\eta(1-\tau))\alpha_1^h + \eta \frac{\partial \lambda}{\partial s_i}}{-2\alpha_2^h - \eta[(1-\tau^*)\alpha_2^h + (w_f - w_h)]}\right] \tag{5}$$

This is unambiguously negative given the assumptions that the return to skill is higher at home ($\alpha_1^h > \alpha_1^f$), migration costs are declining in skill $\frac{\partial \lambda}{\partial s_i} < 0$, and that $(w_f - w_h > 0)$, or wages are always higher abroad[3]

[3]One may ask at this point if this is always a reasonable assumption, since migration decisions are

Alternately, suppose that wages are log-linear, so that $w_f = \exp(\alpha_0^f + \alpha_1^f s_i)$, and $w_h = \exp(\alpha_0^h + \alpha_1^h s_i + \alpha_2^h \tau)$. Then the relationship between optimal duration and skill reduces to:

$$\frac{\partial \tau^*}{\partial s_i} = -\left[\frac{[-1-\eta(1-\tau^*)+(1-\tau^*)\alpha_2^h]\alpha_1^h w_h + [1-\eta\tau^*]\alpha_1^f w_f + \eta\frac{\partial \lambda}{\partial s_i}}{[(1-\tau^*)(\alpha_2^h)^2 - 2\alpha_2^h - \eta(1-\tau^*)\alpha_2^h]w_h - \eta(w_f - w_h)}\right] \tag{6}$$

In this case, a sufficient set of conditions that ensure that $\frac{\partial \tau^*}{\partial s_i} < 0$ are that $\alpha_2^h < 2$ and that the following inequality holds:

$$[1-\eta\tau^*]\alpha_1^f w_f < [1+\eta(1-\tau)-(1-\tau^*)\alpha_2^h]\alpha_1^h w_h \tag{7}$$

Since $\frac{\partial w_f}{\partial s_i} = \alpha_1^f w_f$ and $\frac{\partial w_h}{\partial s_i} = \alpha_1^h w_h$, the above condition is satisfied whenever the return to skill in the home country is sufficiently larger than the return to skill abroad. This is also satisfied whenever η is very large, making the left hand side negative and the right hand side positive. The condition that α_2^h not be too large makes sense because with log-linear wages, an extra bit of migration experience increases the home country wages of high-skill individuals by more than it increases the home country wages of low-skill individuals. Furthermore, as α_2^h gets larger, this difference in marginal effects also gets larger since $\frac{\partial^2 w_h}{\partial \tau \partial s} = \alpha_2^h \alpha_1^h w_h$. Thus, highly skilled individuals have a larger skill-upgrading incentive to accumulate migration experience. If α_2^h is sufficiently large, then high-skill individuals will end up spending more time in the foreign country.

We proceed by assuming that wages are log-linear in skill and migration experience, and that the parameters are such that $\frac{\partial \tau^*}{\partial s_i} < 0$ for an interior solution. In the population individuals will choose to stay home, become permanent migrants, or become temporary migrants depending on their unobserved initial skill level. For those who migrate temporarily, the amount of time spent abroad will vary negatively with skill. However, non-migrants will be drawn from both the lower end of the skill distribution and those at the upper end of the of the skill distribution. At the lower end, there will be some group of individuals that either cannot afford to migrate (so lifetime resources under migration are negative), or who can afford to migrate but are better off not paying the cost of migration. At the upper end, there will be some group of individuals that do not have a wage incentive to migrate since the international wage gap is declining in skill.

endogenously changing the wages that people face in Mexico. As shown in Hanson (2006) pp. 893-894, the US-Mexico wage gap is enormous. Real wages (measured in US dollars) are twice as high in the United States for nearly every age-education group, and are as much as six times as high in the United States for groups with low education. Even assuming the substantial returns to migration experience that we find in this study, it is unlikely for the accumulation of migration experience to actually reverse the sign of the international wage gap.

Now suppose that the model parameters are such that some individuals become permanent migrants and some become temporary migrants, and that there are both low-skill and high-skill non-migrants, as is observed in the data. Consider the marginal migrant at the lower end of the skill distribution. If anyone migrates permanently, they will be the least skilled individuals among the set that migrates because τ^* is declining in skill. Thus, the marginal migrant at the lower end of the skill distribution will be indifferent between migrating permanently and staying home. That is there will exist a cutoff, $\underline{S}$, that satisfies the following:

$$\log(w_h(\underline{S},0)) \;=\; log(w_f(\underline{S}) - \lambda(\underline{S})) - \eta$$

which requires:

$$w_h(\underline{S},0) \;=\; (w_f(\underline{S}) - \lambda(\underline{S}))\exp(-\eta)$$

Individuals with $s_i < \underline{S}$ will not find it optimal to migrate. Additionally, there exists a cutoff at the upper end of the skill distribution, $\overline{S}$, such that no individual with $s_i > \overline{S}$ will find it optimal to migrate. $\overline{S}$ is that level of skill at which the value of not migrating is exactly equal to the value of temporarily migrating with the optimal duration, $\tau^*(s)$. This satisfies:

$$\log(w_h(\overline{S},0)) \;=\; \log\left(w_h(\overline{S},\tau^*(\overline{S})) + \tau^*(\overline{S})\left[w_f(\overline{S}) - w_h(\overline{S},\tau^*(\overline{S}))\right] - \lambda(\overline{S})\right) - \eta\tau^*(\overline{S})$$

2.2 Implications for Relationships in the Data

The simple model outlined here is useful in interpreting reduced-form estimates of the relationship between migration experience and earnings in the home country's labor market. Consider a cohort of individuals who behave according to the model presented here, and suppose that we have cross-sectional data on this cohort at age t back in the home country. In this cross section, we observe non-migrants with skill levels in the set: $S_{nm} = \{s_i \mid s_i < \underline{S} \text{ and } s_i > \overline{S}\}$. We also observe the temporary migrants who have returned by age t. Let $\widetilde{s}(\cdot)$ represent then inverse of the optimal duration function. Then the return migrants that we observe in the data have skill levels that fall on the interval $\mathcal{S} = [\widetilde{s}(t), \overline{S}]$, and optimal migration durations that fall on the interval $\mathcal{T} = [\tau^*(\overline{S}), t]$. Suppose that we observe the log of earnings, $\log(w_{h,i})$, where the true data generating process is given by the log-linear form considered above:

$$\log(w_{h,i}) = \alpha_0^h + \alpha_1^h s_i + \alpha_2^h \tau^* \tag{8}$$

A researcher interested in the relationship between migration experience and earnings might naturally estimate the following specification, which includes observed τ^* and a dummy indicating $\tau^* > 0$:

$$\log(w_{h,i}) = \delta_0 + \delta_1 1(\tau_i^* > 0) + \delta_2 \tau_i^* \tag{9}$$

The OLS estimates of the parameters can be decomposed into the following summary statistics (See the Appendix for a derivation):

$$\begin{aligned}
\widehat{\delta}_0 &= (\overline{y_i} \mid_{\tau^*=0}) \\
\widehat{\delta}_1 &= (\overline{y_i} \mid_{\tau^* \in \mathcal{T}}) - (\overline{y_i} \mid_{\tau^*=0}) - (\overline{\tau^*} \mid_{\tau^* \in \mathcal{T}}) \widehat{\delta}_2 \\
\widehat{\delta}_2 &= \frac{\widehat{Cov}(y_i, \tau_i^* \mid \tau \in \mathcal{T})}{\widehat{Var}(\tau^* \mid \tau^* \in \mathcal{T})} = \alpha_2^h + \alpha_1^h \frac{\widehat{Cov}(s_i, \tau_i^* \mid \tau^* \in \mathcal{T})}{\widehat{Var}(\tau^* \mid \tau^* \in \mathcal{T})}
\end{aligned}$$

Since τ^* is negatively related to s_i, then $E\left[\alpha_1^h \frac{Cov(s_i, \tau_i^* \mid \tau^* \in \mathcal{T})}{Var(\tau^* \mid \tau^* \in \mathcal{T})}\right] < 0$, and $E[\widehat{\delta}_2] < \alpha_2$. This demonstrates that the effect of the endogeneity of τ^* is to bias the OLS estimate of δ_2 downwards relative to α_2. Under the assumptions made here, the model predicts that $\widehat{\delta}_2$ will provide a lower bound for the true effect of migration experience on earnings. Note the importance of including both a dummy variable for any migration experience $1(\tau^* > 0)$, and a continuous measure of total migration experience, τ^*. When these two variables are included, the coefficient on the dummy variable absorbs the difference in earnings due to the selectivity of migrants, since it is captured by the difference $(\overline{y_i} \mid_{\tau^* \in \mathcal{T}}) - (\overline{y_i} \mid_{\tau^*=0})$. The coefficient on τ^* is still potentially biased, but only because migrants with different levels of skill choose difference migration durations. Migrants could be selected from any portion of the skill distribution. They could be less skilled or more skilled, on average, than non-migrants. However, as long as more skilled migrants choose shorter trips, this ensures that the OLS estimate $\widehat{\delta}_2$ will be biased downwards relative to α_2^h.

3 Data and Descriptive Statistics

The data collected by the MMP present researchers with the unique opportunity to observe earnings for particular individuals along with detailed migration histories. Each year, the MMP selects a group of Mexican communities and surveys a random sample of the households in each location. After surveying a particular community in Mexico, the MMP also attempts to locate individuals from that community who are currently residing in the United States, forming a sample that includes non-migrants, migrants who have returned to Mexico, and migrants who are still in the US. The MMP survey collects demographic and economic data

on households and individuals, with a particular emphasis on migration experience. The survey also requests a detailed, self-reported life history from household heads recording some economic, demographic, and migration variables for every year in their lives. These life histories record whether or not an individual migrated in a given year, how many months an individual spent in the U.S., and what documents, if any, were used to migrate.

Our sample consists of male household heads aged 18-65 who were surveyed during the years 1987-2008, and who were in Mexico at the time of the interview. The MMP asks each household head to report his or her current occupation, and income information for their last job in Mexico. Although the income variable is reported at different rates (e.g. weekly, biweekly, monthly), we convert all income measures to monthly values throughout the paper. We only consider those individuals who are currently employed, and who are not self-employed and do not own their own business. After imposing these restrictions, and dropping those individuals with missing values for important regressors, we also trim the data by dropping individuals in the the top and bottom 1% of the monthly earnings distribution, and those return migrants in the top 1% of the migration experience distribution (where migration experience is measured in years). After making these restrictions, our full sample consists of 6,210 men. For the descriptive statistics and throughout the paper, we deflate earnings using CPI indices for Mexico and the US (2000 base year) taken from the IMF's *International Financial Statistics* series. The Data Appendix provides a more thorough description of the data and the sample selection criteria.

We present summary statistics of log earnings and important characteristics of migrants and non-migrants in Table 1. The first pair of columns displays statistics for the full sample of individuals interviewed while in Mexico. This includes non-migrants and return migrants, but excludes individuals who have migrated but have not returned to Mexico. The average age for the full Mexican sample is about 41, and the average level of education is about 6.6 years. Most individuals are married (88%). A substantial fraction of individuals have some experience migrating to the U.S. (27.0%). The average log of real monthly earnings is about 7.90, while the average real monthly income in levels is roughly 3,268 pesos per month.

The second pair of columns reports summary statistics for non-migrants, while the last pair of columns reports summary statistics for return migrants - those observed in Mexico with some past migration experience. Return migrants tend to be less educated, with an average number of years of education (5.55) that is almost a year and a half lower than the average education level of non-migrants (6.93). This pattern is consistent with a pattern of negative, or intermediate-negative selection into migration with respect to education. The average earnings of return migrants is about 5% lower than the average earnings of non-migrants.

Table 1 also presents some summary statistics related to the migration experience of return migrants. About 91% of return migrants have some experience as an undocumented migrant, while only 21% have any documented migration experience. The migrants in our sample are thus predominantly engaging in undocumented migration. The average return migrant has accumulated about 2.76 years of experience in the United States, with about 2.22 years of undocumented migration experience, and about 0.54 years of documented experience.

4 Empirical Results

4.1 Basic Patterns

Table 2 presents OLS estimates of the relationship between the log of monthly earnings in Mexico and U.S. migration experience. Each column adds an additional set of controls. Unless otherwise specified, all regressions throughout the paper will include dummy variables for year, Mexican state, and occupation. All regressions also make use of the sampling weights provided by the MMP. The main regressors of interest are the number of years of migration experience (USExp), and a dummy for any migration experience (US). Column 1 presents results when the only additional controls (beyond the year and Mexican state dummies) are Age and $Age^2/100$. The estimate of the coefficient on US suggests that the average migrant earns about 14% less in Mexico than the average non-migrant. As demonstrated in Section 1, the coefficient on this variable partially reflects the difference in the average skill level of return migrants and non-migrants, and thus the selectivity of return migrants. The coefficient on years of migration experience, $USExp$, is about 0.023 and highly significant, suggesting that the return to a year in the United States (above any beyond the increase in age), is about 2.3%. This is larger than the return to age for all but the youngest individuals.

The successive columns of Table 2 introduce additional explanatory variables to the basic regression that are likely to be correlated with unobserved skill. Column 2 adds years of education, which we expect to be highly correlated with unobserved skill. After introducing education, the coefficient on the US dummy is cut in half, reflecting (on average) negative selection of return migrants relative to non-migrants. The coefficient on $USExp$ rises slightly to 0.025, which is consistent with the theoretical prediction of a negative correlation between optimal migration duration and unobserved skill.

Columns 3-4 add further controls for marriage and occupation (dummies), respectively. Looking across the first four columns of Table 2, one notices that the coefficient on the US

dummy in general falls as we add more and more controls that might be correlated with unobserved skill. This is expected, since in theory the coefficient on US should be directly related to the average skill difference between return migrants and non-migrants. However, the estimate coefficient on $USExp$ tends to rise as we add more controls. This is consistent with negative correlation between accumulated migration experience and unobserved components of skill. When occupation fixed effects are added in column (4), we estimate a return to migration experience of about 2.7% per year. However, looking across the specifications reported in Columns 1-4, the stability of the estimated coefficient on $USExp$ is noteworthy. The coefficient rises, but not drastically, with the inclusion of important controls that are likely to be correlated with the unobserved determinants of earnings. Thus, while $USExp$ is endogenous, the results presented here suggest that the effects of endogeneity bias on our basic estimates may be limited. We take 0.027 as our baseline estimate of the effect of migration experience on log monthly earnings. The magnitude of the estimated coefficient on migration experience is noteworthy. The estimated coefficient always exceeds the estimated marginal effect of age on log-earnings, and although the estimated coefficient on education is larger, we cannot reject the null hypothesis that the two are equal. Migration experience appears to be an economically substantial determinant of earnings in the Mexican labor market.

Column 5 of Table 2 also adds an interaction between years of education and the two migration experience variables, US and $USExp$. Adding the interactions boosts the estimated coefficient on $USExp$ substantially to 0.043, and there is a negative estimated coefficient of -0.003 on the interaction between years of education and $USExp$. This suggests that the less educated tend to gain more from a year of *U.S.* migration experience. This is an interesting pattern in its own right, but it also suggests that our earlier assumption that $\frac{\partial^2 w_h}{\partial \tau \partial s_i}$ is not large and positive is quite reasonable.

4.1.1 Using U.S. Wage Data

One of the biggest concerns in interpreting our results is the possibility that observed migration experience is correlated with unobserved skill. If we had access to panel data on wages in Mexico before and after migration to the United States, we could use traditional fixed-effects methods to control for permanent unobserved components of skill. While the MMP data does not contain repeated observations of earnings in Mexico, we do observe data on the hourly wage rates that migrants earned on their first and last trips to the United States. Assuming that unobserved skill is rewarded in both the United States and Mexico, we can thus use information from the U.S. wage data to control for unobserved skill in the Mexican earnings regressions. We do this by first regressing an individual's first U.S. wage on a set of

controls, and then adding the U.S. wage residual as a regressor in our basic Mexican earnings specification.

For a sub-sample of return migrants, we observe complete data on the hourly wage rate and other control variables related to the last trip to the United States. We have many fewer first-trip observations with complete data on explanatory variables, so we only use responses on an individual's last migratory trip. We discuss the construction of this sample in the Data Appendix. After dropping the top and bottom 1% of U.S. wage observations, we are left with 1185 return migrants with U.S. wage data. In the first column of Table 3, we report the results of regressing the real hourly wage rate in the U.S. on age, the square of age, education, accumulated migration experience, as well as dummies for year, U.S. state, and occupation. All of these variables reflect characteristics at the time of the last migration. While the coefficient estimates from this regression are not of interest by themselves, we extract the residual from this regression as a measure of unobserved skill. In the next column of Table 3, we re-estimate our basic Mexican earnings regression using only the 1185 return migrants with U.S. wage data. Since we are restricting ourselves to migrants in this sub-sample, we drop the US dummy variable. With this smaller sub-sample of migrants, we again estimate a return to U.S. migration experience of about 2.7%, which is identical to the estimate obtained in the baseline specification and reported in Column 4 of Table 2. In Column 3 of Table 3, we add the normalize U.S. wage residual (expressed in standard deviations) to the Mexican earnings specification. The coefficient on the U.S. wage residual suggests that a one standard deviation increase in the U.S. wage residual is associated with a 3.2% increase in earnings back in Mexico. The p-value associated with this coefficient estimate is 0.11, so while this is not significant at conventional levels, the estimate is not terribly imprecise either. Crucially, when the U.S. wage residual is added, the coefficient on U.S. migration experience hardly changes at all. If endogeneity were driving our results, we would expect the coefficient on years of migration experience to drop substantially with the inclusion of a the U.S. wage residual as a control. The estimated coefficient in this specification is still highly significant and is estimated to be 0.026, which is nearly identical to our baseline estimate. This exercise provides some evidence against the claim that selection and endogeneity bias are driving our main results.

4.2 Comparison with the Mexican Census

Two further concerns naturally present themselves related to the empirical specifications in Tables 2- 3. First, it might be the case that the communities selected by the MMP are not generally representative of Mexico, or even of the states in which they are located. Secondly,

the MMP is only able to provide data on monthly labor market earnings and not hourly wage rates. Thus, we might be concerned that the estimates presented in Table 2 do not reveal much about the effect of migration experience on productivity (as measured through wages), but rather reflect a combination of the effect of migration on wages and hours worked. To assess these concerns, and more generally test the robustness of the findings, we compare the patterns found here with those present in the 1995 Mexican Census.

No other data set contains as much information about the entire history of a respondent's migration experience as the MMP. However, the survey used for the 1995 wave of the Mexican Census contained some special questions about whether an individual previously resided in a different location, and if so, how many years the individual spent in that location. Individuals who respond that that they previously resided in the US can thus be classified as return migrants, although this under-counts return migration if people move around within Mexico after returning. Furthermore, the duration measure available from the Mexican Census will tend to understate the amount of past migration experience if individuals make multiple trips back and forth between the United States and Mexico. Thus, while we can compute $USExp$, or total accumulated migration experience, from the MMP data, we can only compute $USExpLast$, or migration experience on the most recent trip to the United States, from the Census.

To make a cleaner comparison between the Mexican Census and the MMP data, we use a sample from the Census that most closely matches our sample from the MMP. We consider all male household heads, aged 18-65, who are working but are not self-employed or entrepreneurs. We initially restrict our attention to individuals who live in the same states as those represented by the communities in our MMP sample.[4] As before, we drop individuals in the top and bottom centile of the earnings distribution. This gives us a sample of 14,609 individuals from the Census. In Column 1 of Table 4, we present results from a regression of log real monthly earnings on the available migration variables and our standard controls. The coefficient on $USExpLast$ is estimated to be 0.014, which suggests a year of migration experience is associated with a 1.4% increase in monthly earnings. This is substantially smaller than the estimate that we obtained from the MMP sample of around 0.027 (we replicate our baseline estimates in Column 2 of Table 4). However, estimate derived from the Census sample may be biased because of non-classical measurement error since the $USExpLast$ variable is always less than the true regressor of interest, $USExp$.

[4]The MMP communities in our sample are draw from the states of Aguascalientes, Baja California Norte, Chihuahua, Colima, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Nayarit, Nuevo Leon, Oaxaca, Puebla, San Luis Potosi, Sinaloa, Tlaxcala, Veracruz, and Zacatecas. Some individuals are observed working in other states, but only because they are temporarily working away from their primary residence in Mexico.

To explore the possible consequences of measurement error in the Census, we impose the kind of censoring of migration experience observed in the Census survey on our MMP sample. That is, for each person in the MMP, we ignore total accumulated lifetime migration experience and only calculate migration experience gained from the last trip to the United States. Column 3 of Table 4 presents the regression results when we use $USExpLast$ instead of $USExp$ as our measure of migration experience for the MMP sample. Remarkably, we now get a coefficient on $USExpLast$ (0.013) that is almost same as the point estimate derived using the Census data. With an associated p-value of just over 0.10, this estimate is imprecise, but not terribly so. The fact that we get such similar point estimates using both the Census and the MMP gives us some confidence that the patterns observed in the MMP data are not likely to be due to idiosyncratic features of the MMP sampling procedure.

In Column 4 of Table 4, we return to the Census sample, but now use the hourly wage as our dependent variable.[5] The estimated coefficient on $USExpLast$ is again 0.014, the same point estimate obtained when monthly earnings is used as the dependent variable. Although migration experience is measured with error in Columns 1 and 4, it is striking that the coefficient estimate on $USExpLast$ hardly changes across the different dependent variables. We interpret this as evidence that the correlations we observe between Mexican earnings and migration experience reflect changes in wages and thus productivity, and not changes in hours worked. Since we get such similar patterns in both the MMP and Census data, this gives us confidence that the results from the MMP data are not substantially affected by any changes in labor supply behavior.

Finally, in Column 5 of Table 4, we replicate the Column 1 specification using Census data, but now we no longer restrict ourselves to the Mexican States represented in the MMP sample, but instead use observations for all States. When this sample restriction is lifted, the estimated coefficient on $USExpLast$ rises to 0.021, suggesting a larger return to migration experience than the one estimated using only the high-migration states of the MMP. This suggests that our estimates of the return to migration experience drawn from the MMP data may actually understate the true average return to a year of migration experience throughout Mexico.

Taken together, the results in Table 4 have the following implications. First, although the MMP data has certain well-known limitations, the relationship between last-trip migration experience and earnings estimated using this data is almost identical to the relationship observed in the Census data. This suggests that our results are not being driven by any idiosyncracies in the MMP earnings data, or by the selection of high-migration communities

[5]We use the sample as the one used to estimate the Column 1 specification, although we lose a few observations due to missing hours data.

within the states included in the MMP sampling frame. Secondly, the Census data suggests that essentially the same relationship exists between migration experience and earnings as between migration experience and wages, indicating that changes are labor supply are an unlikely explanation for our results. Finally, we estimate a greater association between migration experience and earnings when using data from all Mexican states in the Census as opposed to only the MMP states. Our results might then be interpreted as providing lower bounds on the Mexico-wide average return to U.S. migration experience.

4.3 Relevant Experience

Our hypothesis is that the return to migration experience observed in the data primarily reflects a causal effect of migration experience on earnings, and not correlation between migration and unobserved characteristics that influence earnings. In the following sections, we propose some mechanisms that might be generating such an effect, and test for empirical evidence of these mechanisms. There several possible reasons why a causal relationship might exist between migration experience and Mexican earnings. One of the most basic explanations is that individuals learn skills while working in the United States that are useful in the Mexican labor market. These skills could be occupation specific (e.g. working with occupation-specific machinery), or they could be more general, such as English skills that might be useful in a wide-variety of occupations and industries. Alternately, the process of successfully migrating and returning might make an individual more confident and motivated, increasing their productivity in a wide variety of tasks. Other stories, such as the role that migration might play in signalling quality to potential employers, could also be operative.

One advantage of the MMP data is that they provide a self-reported occupation for every year that an individual works, whether in Mexico or the United States. If human capital is strictly occupation-specific, then migration experience should only positively affect an individual's productivity in Mexico if that individual worked in the same occupation in both the United States and Mexico. In order to test this, we construct a new measure of experience, which we call relevant experience. This is the total number of years that an individual spent in the United States working in an occupation that matches the occupation that they currently hold in Mexico. Since there are a large number of occupations, we group occupations into nine categories: Agriculture, Manufacturing (Skilled), Manufacturing (Unskilled), Manufacturing (Operatives), Manufacturing (Supervisory), Transportation, Sales Workers, Service Workers, and Other. To construct the relevant experience measure, we identify which of these nine occupation groups individual worked in during the survey year, and we add up the number of years spent in the United States working in an occupation that falls into that

group.

Table 5 provides some summary statistics related to occupation groups and relevant experience. About 31% of individuals in the MMP sample are engaged in agricultural occupations, while about 36% are employed in some kind of occupation related to manufacturing. Smaller fractions of workers are engaged in Transportation, Service, and Sales occupations. About 19% of the individuals are employed in an occupation that doesn't fall into one of these other categories (Other). For the migrants in the MMP sample, Table 5 also provides summary statistics on relevant experience and the difference between total migration experience and relevant experience ($USExp - RelevantExp$). The distinction between relevant experience and total experience is statistically meaningful. That is, many individuals experience a significant gap between their observed level of overall migration experience and their level of job-relevant migration experience. The vast majority of return migrants, about 72%, have a higher level of total migration experience than relevant experience. The average gap between total experience and relevant experience is about 1.74 years, which is actually larger than the average number of years of relevant experience (1.10 years).

Table 6 presents estimation results for earnings regressions that include relevant experience as a regressor. Since the "Other" category is so heterogeneous, it doesn't make sense to construct the relevant experience of individuals in this group. Thus, these individuals are excluded in all of the regressions presented in Table 6. First, Column 1 presents results of the baseline regression including only total experience, or $USExp$ as a measure of migration experience. Since we are excluding the individuals working in the "Other" occupation category, the point estimate for the return to migration experience changes modestly compared to the past results, and is now estimated to be about 0.030. In Column 2, we add both total migration experience and relevant experience as regressors. An extra year of relevant experience also adds an extra year of generic migration experience, so the coefficient on the relevant experience regressor should be interpreted as an extra return, above and beyond the return to a generic year of experience. Strikingly, when relevant experience is added as a regressor, the return to a year of generic migration experience is cut in half (reduced to 0.014), while we estimate the extra return to a year of relevant experience to be 0.038 and highly significant. A year of relevant experience is thus associated with a 5.2% increase in earnings. Note that this is approximately twice the estimated effect of a year of education (2.6%).

Columns 3-5 show regression results when the sample is restricted to those employed in the three occupation groups accounting for the most observations: Agriculture, Skilled Manufacturing, and Unskilled Manufacturing. Across these different sub-samples, the return to a year of generic migration experience ($USExp$) is always quite small and statistically

insignificant. In all three specifications, the extra return to a year of relevant experience is estimated to be larger than the return to a year of generic U.S. experience, although there is tremendous heterogeneity across occupations. We estimate an extra return to a year of relevant experience of about 2.9% in Agriculture, and an extra return of about 2.6% in Skilled Manufacturing. For those in unskilled manufacturing occupations, one year of relevant experience is associated with a very large 9.3% total increase in earnings.

The estimation results presented in Table 6 provide evidence that the correlation between migration experience and earnings appears to be driven by occupation-specific skill acquisition in the United States. When relevant experience is added as a regressor, the estimated coefficient on total or generic U.S. experience is always small and insignificant. This is noteworthy because if correlation between migration experience and unobserved components of skill were driving the relationship between migration experience and earnings, we would still expect generic experience to matter. These findings might certainly be driven by endogeneity or selection bias. Occupational choice is surely endogenous, and it could be the case that more skilled individuals are more likely to get occupations in Mexico that match the occupation they held in Mexico. However, the selection and endogeneity story required to explain away the results is much more complicated and fragile than a standard pattern of selection on unobservables.

4.4 Urban Experience

Next, we explore the extent to which the return to migration experience can be explained by exposure to urban labor markets in the United States. As argued in Glaeser and Mare (2001) and elsewhere, experience in a large urban labor market may increase human capital more quickly than comparable work experience in a less populous market because of knowledge spillovers and other agglomeration effects. To test whether this plays a role in explaining the return to migration experience, we create a new variable, $USUrbanExp$, which measures the number of years that an individual spent in the United States in a large urban area. We define a large urban area in two ways. First we consider a large urban area to be any city with a population of greater than 500,000. This is consistent with the approach taken in Glaeser and Mare (2001). Secondly, we also create a more strict definition in which we consider a large urban area to be any city with a population of 1 million or more. The MMP data indicates the Metropolitan Statistical Area that a migrant visited in a given year, and we match these MSAs with cities in the Census Bureau's County and City Data Book for the year 2000.[6]

[6]This is available online at http://www.census.gov/statab/ccdb/cit1020r.txt

Table 7 presents the results of adding urban migration experience as an extra regressor in our basic specifications. In Column 1, we add the urban migration experience variable ($USUrbanExp$), where an urban area is considered to be any city with a population greater than 500,000. Since we also include the standard U.S. migration experience variable, the coefficient on $USUrbanExp$ should be interpreted as the difference in the return to a year of urban migration experience relative to a year of non-urban migration experience. Somewhat surprisingly, the results in Column 1 suggest that there is actually a smaller return to urban experience than to non-urban experience. Whereas a year of non-urban experience is associated with an increase in log-earnings of about 0.04, a year of urban experience is associated with a smaller increase of about 0.018. In Column 2, we use the stricter definition of an urban area, and we get very similar results.

To explore these patterns a bit more, we re-estimate the specification in Column 1 using different sub-samples. In Column 3 of Table 7, we restrict the sample to those individuals employed in agricultural occupations in Mexico. Here, the difference between urban and non-urban experience is even more pronounced. The estimated coefficients on generic U.S. experience and urban experience nearly cancel out, suggesting a very small return to a year of urban experience, but over a 4% return to a year of non-urban experience. This contrasts sharply with the patterns that we observe for non-agricultural workers in Mexico. In Column 4, we restrict the sample to those working in non-agricultural occupations. Here the estimates indicate the return to a year of U.S. experience to be about 3.2%, with no statistical difference between a year of urban and non-urban experience. Thus, the negative correlation between urban migration experience and earnings seems to be driven by the agricultural workers in our sample. We interpret this as being consistent with our hypothesis that skill acquisition and the accumulation of occupation-relevant experience is what explains the correlation between earnings and migration experience. Since urban experience work experience is less likely to be job-relevant for agricultural workers, it is unsurprising that there is a negative correlation between urban migration experience and earnings for agricultural workers.

4.5 English Skills

Next, we investigate the role that English language ability may play in explaining the relationship between migration experience and earnings in Mexico. We might think of at least two channels by which English ability may be related to the relationship between migration experience and earnings back in Mexico. First, it could be the case that individuals actively improve their English language ability while in the United States, and these improved language skills might be rewarded in the Mexican labor market (for example, in service sector

or hospitality jobs that require interacting with English-speaking foreigners). In this case, English language ability is precisely the skill that is being acquired while in the United States. A second channel involves English ability as an input into the skill acquisition process. It could be the case that English is not rewarded at all in the Mexican labor market. However, English skills might be valuable because they allow individuals to more efficiently learn skills in the United States that can be transferred to jobs back in Mexico. For example, better English skills allow individuals to more effectively communicate with others on the job and absorb information disseminated in English. Thus, individuals who already have good English skills might be expected to gain more from a year of migration experience than someone who is less fluent in English. These stories are distinct, and may be operating at the same time.

Exploring these questions with the MMP is possible, but significantly constrained by data limitations. Ideally, one would like to have panel data on English proficiency. Then one could observe how English skills evolve, how they are impacted by migration, and how earnings back in Mexico change for those individuals that migrate, learn English, and then return to Mexico. Unfortunately, the MMP does not have such data. The MMP does ask individuals who have migrated some questions about English use the last time they were in the United States. The MMP asks individuals those who migrated to rate their English proficiency on a five point scale (ascending from the lowest value of "Neither speak nor understand" to the highest value of "Speak and understand much"). The MMP also asks questions on English use at home and at work, but these questions are only asked of some communities, and we do not use them here.

To investigate the role of English, we create the an *English* dummy variable that takes a value of 1 if individuals reported having some English skills on their last trip to the United States (Anything more proficient than "Neither speak nor understand"). The *English* variable is also set to zero for all non-migrants, since this variable is unobserved for those that never leave. A little under 50% of migrants report having some English skills by this measure.

The columns of Table 8 report estimation results when the *English* variable is entered into the basic earnings regressions. Since the *English* dummy is missing for some migrants, Column 1 of Table 8 replicates our basic specification for the sample that has a non-missing value for this variable. The results are very similar to those obtained in Column 4 of Table 2. In Column 2, we add the *English* dummy to our basic specification. The estimated coefficient on the *English* variable is significant at the 10% level and suggests that return migrants with some English skills earn about 6.6% more than return migrants without good English skills. This could reflect the return to English ability in the Mexican labor market, or the correlation between English ability and other skills that are rewarded in

the labor market. Alternately, we could get this result if migrants with good English skills are better able to learn usable job skills on the market. Notice that relative to Column 1, the coefficient estimate for $USExp$ drops from 0.028 to 0.025 in Column 2. This is a modest decline, which suggests that the relationship between migration experience and earnings is not simply capturing a relationship between English language ability and Mexican earnings.

In Column 3 of Table 8, we include an interaction between the *English* dummy and migration experience, in addition to the main effect of *English*. The coefficient on the interaction between *English* and $USExp$ is estimated to be 0.009, but it is imprecisely estimated. When this interaction is added, the main effect on $USExp$ drops to 0.018, while the coefficient on the *English* dummy variable declines substantially to 0.045. This pattern is quite consistent with the hypothesis that English language ability increases the rate of skill acquisition of individuals in the United States. A year of migration experience is associated with 2.7% increase in earnings for those with some English skills, but only a 1.8% increase in earnings otherwise. However, the shortcomings of the English language measures in the MMP limit our ability to learn about this mechanism. Nevertheless, these results are suggestive and point out some avenues for further research.

4.6 Legal Status

Finally, we consider the role that legal status might play in shaping the relationship between years of migration experience and earnings back in Mexico. As noted above, the majority of migratory trips observed in our data are undertaken without legal documentation. About 21% of the migrants in our sample are observed accumulating at least some documented migration experience. It is quite reasonable to expect that migrants with legal documentation are subject to substantially different experiences than those without documents. Migrants with legal documentation do not live under the threat of exposure and deportation. Thus, they face less costs to interacting with people and institutions beyond their immediate social network. If these kinds of interactions are important for skill-upgrading, then a year of documented migration experience might be associated with a greater degree of human capital accumulation than a year of undocumented migration experience. Furthermore, since not all firms are willing to hire undocumented migrants, those with legal documents face a larger set of possible employers. This might increase the chance that documented migrants find and enter into good employer-employee matches. Kossoudji and Cobb-Clark (2002) find evidence of a substantial wage premium in the United States for legalized migrants, and they attribute much of this to increased job mobility. However, to our knowledge, no research has addressed the consequences of legal status for the outcomes of return migrants.

In Table 9, we present estimation results for various specifications to address the role of legal status in shaping the relationship between migration experience and earnings. In Column 1, we start with our basic specification. Instead of having a single dummy for any U.S. experience and a measure of years of migration experience, we now have two separate dummy variables indicating if an individual has any undocumented or undocumented migration experience, and two separate experience variables measuring years of undocumented and documented migration experience, respectively. The coefficients on the dummies are consistent with more positive sorting into documented migration experience, since the coefficient on the documented dummy is positive (0.078), while the coefficient on the undocumented dummy is negative and statistically significant (-0.069). From this specification, there appears to be a greater return to documented migration experience. Whereas we estimate a return to undocumented migration experience of about 1.9% per year, we estimate a return to documented migration experience of about 4.0%. This is an economically substantial difference, but cannot reject the null hypothesis that the coefficients are equal at reasonable levels of significance.

If there is a greater return to documented migration experience, can we shed any light on the mechanisms that might be driving this? One hypothesis related to the existing literature on legality is that documented migrants face a larger set of employers, and thus are more likely to access better matches. Perhaps this allows documented migrants to more easily find jobs that provide them with job experience that will be relevant back in Mexico. To look at this, we create two separate variables. Just as we defined Relevant Experience above as migration experience in a job whose occupation matches one's current occupation, we can similarly define Relevant Documented Experience and Relevant Undocumented Experience. Simple summary statistics reveal some suggestive features of the data. On average, among migrants with some undocumented migration experience, 41% of undocumented migration experience was relevant for their current occupation in Mexico. By contrast for the average migrant with some documented migration experience, about 63% of their documented migration experience was job relevant. This suggests that we might see a greater return to documented migration experience because documented experience is more likely to be relevant. In Column 2, we explore this by simply adding Relevant Experience as an additional regressor to our basic legal status specification. We again find a large and significant return to relevant experience of just over 3.2%. When Relevant Experience is added, the coefficient on documented migration experience falls from 0.040 to 0.020 and becomes statistically insignificant, whereas the coefficient on undocumented migration experience drops by a much more modest amount - from 0.019 to 0.013. In Column 3, instead of a single Relevant Experience regressor, we add Relevant Documented Experience and Relevant Undocumented

Experience as separate regressors. What is noteworthy here is that our estimates now suggest the coefficients on generic (non-relevant) undocumented migration experience and generic documented migration experiences are very similar: 0.014 and 0.011, respectively. However, the coefficient on relevant documented experience is now estimated to be 0.046, while the coefficient on relevant undocumented experience is now 0.027, although as before we cannot reject the null hypothesis that these coefficients are equal.

Taken together, the results in Table 9 suggest that the relationship between documented migration experience and earnings back in Mexico is stronger than the relationship between undocumented migration experience and earnings, but the imprecision of our estimates prevents us from drawing firm conclusions. The data also suggest that this disparity may be related to the importance of relevant job experience. Individuals undertaking a documented migration are more likely to accumulate relevant job experience, and there appears to be a greater return to a year of relevant documented experience than to a year of relevant undocumented experience. It could be the case that more complicated patterns of selection into documented and undocumented migration are driving these results. A full exploration of such issues is beyond the scope of this paper, but the patterns documented here are suggestive of the importance of legal status in shaping the kind of work experience that migrants accumulate in receiving countries.

5 Policy Implications and Conclusion

This study explores several new patterns in the relationship between U.S. migration experience and the earnings of return migrants in Mexico. Our baseline results using Mexican Migrant Project data suggest that a year of migration experience is associated with a 2.7% increase in earnings. This estimate is insensitive to the inclusion of a control for unobserved skill (the residual from a regression explaining U.S. wage rates). We interpret this as supporting the claim that the observed patterns are not substantially driven by selection or endogeneity bias, and that the average causal effect of migration experience on earnings is probably close to our benchmark estimate. We obtain nearly identical estimates of the return to a year of migration experience using MMP and Mexican Census data with a comparable sample and common regressors. This gives us confidence that the MMP results are not driven by the over-representation of high-migration states or communities in the MMP, or by idiosyncracies in the MMP's earnings measures.

We also propose and test several mechanisms that may be driving a causal relationship between migration experience and earnings in Mexico. First, we test the proposition that migrants are acquiring occupation-specific job skills while in the United States. Indeed, we

find a much larger effect of migration experience on earnings in Mexico if that experience is acquired in an occupation similar to an individual's current occupation. The estimated return to a year of relevant experience is a little more than 5% per year. Secondly, we do not find that exposure to large urban labor markets explains the relationship between migration experience and earnings. We also test the proposition that migration experience is related to earnings because of language ability. We find evidence that there is higher return to a year of migration experience if an individual has some English skills, but this relationship is imprecisely estimated. This is consistent with the proposition that English ability is important because it increases an individual's ability to pick up skills while working in the United States. However, we cannot rule out other endogeneity or selection stories. For example, it could be the case that individuals improve their English abilities by staying in the U.S. longer, and that it is really English ability that is rewarded in the Mexican labor market. We also find a greater return to years of documented migration experience, but this seems to be related to the accumulation of relevant job experience. Individuals on documented migratory trips are more likely to find jobs that end up matching their occupation back in Mexico, and there also appears to be a greater return to relevant migration experience if it is accumulated with legal documents.

The results documented here provide evidence on an understudied channel linking out-migration with the economic opportunities of individuals in migrant-sending countries. These results also have implications for the debate on U.S. migration policy. Policymakers interested in U.S. immigration reform have often clashed over the wisdom of expanding temporary guest worker programs as an alternative to undocumented migration. In the debates culminating in a 2007 Congressional showdown, competing reform packages offered different visions of an expanded role for temporary worker visas. Both the McCain-Kennedy Bill and the reform package known as the Compromise Bill included a temporary guestworker program. [7] Some of the key questions in these debates centered on whether these programs would encourage more undocumented migration through visa-overstaying (Schiff, 2007), and whether workers should be tied to one sponsoring employer, or whether they should be able to move freely from employer to employer. The results presented in our study suggest some new considerations in these debates. If job-relevant migration experience is highly rewarded in the Mexican labor market, policymakers interested in encouraging return migration and limiting visa overstaying might wish to design temporary worker programs with the skill-upgrading incentive in mind. For example, programs that allow workers to move between employers and otherwise place less restrictions on job search might allow workers to more

[7] See the Migration Policy Institute's side-by-side comparison of the various reform proposals at *www.migrationpolicy.org/ITFIAF/legislation_jan06.pdf*

easily find jobs similar to those available to them in Mexico. Additionally, programs might encourage more return migration if they allow workers to more easily access legal jobs in industries or occupations exhibiting high returns to relevant migration experience in Mexico (such as unskilled manufacturing). Of course, designing an optimal temporary visa program requires a more complete model that balances the interests of domestic workers and producers with those of the migrants. However, the results presented here point to some important considerations that tend to be overlooked in these debates.

The results presented here also point to some other promising areas for future research. It would be interesting to further explore the skill-acquisition mechanism proposed here. Why does there appear to be such heterogeneity in the return to migration experience across occupations? What does this reveal about the kinds of skills that individuals learn while in the United States? The question of how these relationships are related to English language ability could also be answered with more precise data on English skills.

Table 1: Summary statistics

	Entire Sample		Non-Migrants		Return Migrants	
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Age	40.85	11.43	40.82	11.49	40.91	11.24
Educ.	6.56	4.62	6.93	4.79	5.55	3.99
Married	0.88	0.32	0.87	0.34	0.92	0.27
Log Earnings	7.90	0.61	7.91	0.60	7.86	0.63
Ever Mig.	0.27	0.44				
Ever Undoc.					0.91	0.29
Ever Doc.					0.21	0.41
USExp.					2.76	3.28
Undoc. Exp.					2.22	2.65
Doc. Exp.					0.54	1.89
Observations	6210		4543		1676	

Table 2: Basic Regressions (Monthly Earnings)

	(1)	(2)	(3)	(4)	(5)
USExp	0.023***	0.025***	0.025***	0.027***	0.043***
	(0.008)	(0.007)	(0.007)	(0.007)	(0.013)
US	-0.138***	-0.075***	-0.077***	-0.060**	-0.083**
	(0.028)	(0.026)	(0.026)	(0.025)	(0.039)
Age	0.045***	0.040***	0.039***	0.032***	0.032***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Age2/100	-0.059***	-0.043***	-0.042***	-0.036***	-0.036***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Educ		0.057***	0.057***	0.034***	0.035***
		(0.002)	(0.002)	(0.003)	(0.003)
Married			0.041*	0.044*	0.042*
			(0.025)	(0.024)	(0.024)
EducXUS					0.005
					(0.005)
EducXUSExp					-0.003*
					(0.002)
Occupation Dummies	N	N	N	Y	Y
Observations	6210	6210	6210	6210	6210
R^2	0.179	0.342	0.342	0.415	0.416

*Note: Stars signify the following: *** significant at the 0.01 level, * significant at the 0.1 level. Standard Errors are reported in parentheses. All specifications include dummies for Mexican State and Year.*

Table 3: Regressions with U.S. Wage Residual

	(1)	(2)	(3)
Dep. Variable	Wage (U.S.)	Month. Earnings (Mex)	Month. Earnings (Mex)
USExp	0.018***	0.027***	0.026***
	(0.005)	(0.008)	(0.008)
Age	-0.020*	0.033***	0.034***
	(0.011)	(0.013)	(0.012)
Age2	0.027*	-0.038***	-0.039***
	(0.015)	(0.014)	(0.014)
Educ	0.013***	0.031***	0.031***
	(0.004)	(0.008)	(0.008)
Married		0.165**	0.164**
		(0.077)	(0.077)
U.S. Wage Residual			0.032
			(0.020)
Observations	1185	1185	1185
R^2	0.292	0.396	0.398

*Note: Stars signify the following: *** significant at the 0.01 level, * significant at the 0.1 level. Standard Errors are reported in parentheses. All specifications include dummies for Occupations, Mexican or U.S. State, and Year.*

Table 4: Comparison with the Mexican Census

	(1)	(2)	(3)	(4)	(5)
Dep. Variable	Earnings	Earnings	Earnings	Hourly Wage	Earnings
Data Source	Census	MMP	MMP	Census	Census
States	MMP States	MMP States	MMP States	MMP States	All
USExp (Last)	0.014**		0.013	0.014**	0.021***
	(0.007)		(0.008)	(0.007)	(0.007)
USExp		0.027***			
		(0.007)			
US	0.013	-0.060**	-0.006	0.042	0.009
	(0.036)	(0.025)	(0.023)	(0.037)	(0.033)
Age	0.024***	0.032***	0.033***	0.026***	0.023***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.003)
Age2	-0.026***	-0.036***	-0.037***	-0.025***	-0.024***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.004)
Educ	0.048***	0.034***	0.034***	0.052***	0.053***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)
married	0.036**	0.044*	0.042*	0.044**	0.047***
	(0.016)	(0.024)	(0.024)	(0.018)	(0.013)
Observations	14609	6210	6210	14506	23192
R^2	0.497	0.415	0.410	0.499	0.502

*Note: Stars signify the following: *** significant at the 0.01 level, * significant at the 0.1 level. Standard Errors are reported in parentheses. All specifications include dummies for Mexican State, Year, and Occupation.*

Table 5: Summary statistics - Occupations and Relevant Experience

	Mean	**Std. Dev.**	**N**
Current Occ: Agriculture	0.31	0.46	6210
Current Occ: Manufacturing (Supervisors)	0.02	0.13	6210
Current Occ: Manufacturing (Skilled)	0.20	0.4	6210
Current Occ: Manufacturing (Operatives)	0.02	0.13	6210
Current Occ: Manufacturing (Unskilled)	0.12	0.32	6210
Current Occ: Transportation	0.07	0.25	6210
Current Occ: Sales Workers	0.05	0.21	6210
Current Occ: Service Workers	0.03	0.18	6210
Current Occ: Other	0.19	0.4	6210
RelevantExp (Migs. Only)	1.10	2.52	1481
USExp-RelevantExp (Migs. Only)	1.75	2.66	1481
(USExp-RelevantExp)$>$ 0 (Migs. Only)	0.72	0.45	1481

Table 6: Regressions with Relevant Experience (Monthly Earnings)

	(1)	(2)	(3)	(4)	(5)
Occupations:	All	All	Agriculture	Skilled Manuf.	Unskilled Manuf.
USExp	0.030***	0.014**	0.008	-0.001	0.016
	(0.007)	(0.007)	(0.013)	(0.011)	(0.013)
RelevantExp		0.038***	0.029*	0.026	0.077***
		(0.012)	(0.016)	(0.026)	(0.029)
US	-0.067**	-0.061**	0.002	-0.019	-0.093
	(0.027)	(0.027)	(0.041)	(0.052)	(0.070)
Age	0.027***	0.027***	0.021**	0.047***	0.029**
	(0.005)	(0.005)	(0.008)	(0.011)	(0.013)
Age2	-0.031***	-0.031***	-0.024***	-0.054***	-0.031*
	(0.006)	(0.006)	(0.009)	(0.013)	(0.016)
Educ	0.027***	0.026***	0.029***	0.022***	0.037***
	(0.003)	(0.003)	(0.005)	(0.006)	(0.008)
married	0.048*	0.046*	0.097**	0.063	-0.003
	(0.027)	(0.027)	(0.040)	(0.061)	(0.062)
Observations	5007	5007	1942	1211	732
R^2	0.343	0.348	0.391	0.246	0.356

*Note: Stars signify the following: *** significant at the 0.01 level, * significant at the 0.1 level. Standard Errors are reported in parentheses. All specifications include State, Year, and Occupation dummies.*

Table 7: Regressions with Urban Migration Experience (Monthly Earnings)

	(1)	(2)	(3)	(4)
Occupations:	All	All	Agriculture	Non-Agricultural
USExp	0.040***	0.038***	0.042***	0.032**
	(0.010)	(0.009)	(0.014)	(0.014)
USUrbanExp (500k+)	-0.022**		-0.037**	-0.005
	(0.011)		(0.015)	(0.015)
USUrbanExp (1 mill+)		-0.022**		
		(0.011)		
US	-0.061**	-0.061**	-0.008	-0.081**
	(0.025)	(0.025)	(0.040)	(0.032)
Educ	0.034***	0.034***	0.028***	0.035***
	(0.003)	(0.003)	(0.005)	(0.003)
married	0.046*	0.045*	0.097**	0.027
	(0.024)	(0.024)	(0.041)	(0.029)
Observations	6210	6210	1942	4268
R^2	0.416	0.416	0.393	0.333

*Note: Stars signify the following: *** significant at the 0.01 level, * significant at the 0.1 level. Standard Errors are reported in parentheses. All specifications include State, Year, and Occupation dummies.*

Table 8: Regressions with English (Monthly Earnings)

	(1)	(2)	(3)
USExp	0.028***	0.025***	0.018**
	(0.007)	(0.007)	(0.008)
ExpXEnglish			0.009
			(0.013)
US	-0.062**	-0.089***	-0.077**
	(0.025)	(0.029)	(0.030)
USEnglish		0.066*	0.045
		(0.037)	(0.048)
Age	0.032***	0.032***	0.032***
	(0.005)	(0.005)	(0.005)
Age2	-0.036***	-0.036***	-0.035***
	(0.006)	(0.006)	(0.006)
Educ	0.033***	0.033***	0.033***
	(0.003)	(0.003)	(0.003)
married	0.044*	0.044*	0.044*
	(0.024)	(0.024)	(0.024)
Observations	6159	6159	6159
R^2	0.416	0.417	0.417

*Note: Stars signify the following: *** significant at the 0.01 level, * significant at the 0.1 level. Standard Errors are reported in parentheses. All specifications include State, Year, and Occupation dummies.*

Table 9: Regressions Considering Legal Status (Monthly Earnings)

	(1)	(2)	(3)
Occupations:	All	All	All
Undoc. Exp	0.019***	0.013*	0.014*
	(0.007)	(0.007)	(0.007)
RelevantUndocExp			0.027*
			(0.015)
Doc. Exp	0.040**	0.020	0.011
	(0.018)	(0.020)	(0.027)
RelevantDocExp			0.046
			(0.030)
RelevantExp		0.032**	
		(0.012)	
Any Undoc.	-0.071***	-0.079***	-0.078***
	(0.026)	(0.028)	(0.028)
Any Doc.	0.075	0.078	0.083
	(0.057)	(0.060)	(0.061)
Educ	0.034***	0.026***	0.026***
	(0.003)	(0.003)	(0.003)
Married	0.045*	0.047*	0.047*
	(0.024)	(0.027)	(0.027)
hline Observations	6210	5007	5007
R^2	0.418	0.350	0.351

*Note: Stars signify the following: *** significant at the 0.01 level, * significant at the 0.1 level. Standard Errors are reported in parentheses. All specifications include State, Year, and Occupation dummies.*

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6 Appendix

6.1 Interpreting the OLS Estimates

Suppose that we estimate the following equation using OLS on a sub-sample of migrants and return migrants at some time t:

$$y_i = \delta_0 + \delta_1 1(\tau_i > 0) + \delta_2 \tau_i \tag{10}$$

Where $y_i = \log(w_h)$, and τ_i is the optimal migration duration chosen by individual i (we suppress the star notation here). Let X represent the matrix of regressors in this equation, so $X = [\mathbf{e}\ \ \mathbf{1}(\tau_\mathbf{i} > \mathbf{0})\ \ \tau]$, where $\mathbf{e}$ is an $nx1$ vector of ones. Likewise, $\mathbf{1}(\tau_\mathbf{i} > \mathbf{0})$ and τ are also $nx1$ vectors. We know that the OLS estimator for the above equation is $\widehat{\delta} = (X'X)^{-1}X'y$. Here, the matrix $(X'X)^{-1}$ is given by:

$$(X'X)^{-1} = \begin{bmatrix} \frac{1}{n-M} & -\frac{1}{n-M} & 0 \\ -\frac{1}{n-M} & \frac{n[\sum_i \tau_i^2]-[\sum_i \tau_i]^2}{[n-M][M\sum_i(\tau_i^2)-(\sum_i \tau_i)^2]} & -\frac{\sum_i \tau_i}{[M\sum_i \tau_i^2-(\sum_i \tau_i)^2]} \\ 0 & -\frac{\sum_i \tau_i}{[M\sum_i \tau_i^2-(\sum_i \tau_i)^2]} & \frac{M}{M\sum_i \tau_i^2-(\sum_i \tau_i)^2} \end{bmatrix} \tag{11}$$

Where M is the number of return migrants in the sample. Additionally, we have $X'y$ given by:

$$X'y = \begin{bmatrix} \sum_i y_i \\ \sum_{i\in\mathcal{M}} y_i \\ \sum_{i\in\mathcal{M}} y_i\tau_i \end{bmatrix} \tag{12}$$

Where $\mathcal{M}$ refers to the set of return migrants in the sample. Thus, the OLS estimator $\widehat{\delta} = (X'X)^{-1}X'y$ is given by:

$$\begin{bmatrix} \widehat{\delta}_0 \\ \widehat{\delta}_1 \\ \widehat{\delta}_2 \end{bmatrix} = \begin{bmatrix} \frac{1}{n-M} & -\frac{1}{n-M} & 0 \\ -\frac{1}{n-M} & \frac{n[\sum_i \tau_i^2]-[\sum_i \tau_i]^2}{[n-M][M\sum_i(\tau_i^2)-(\sum_i \tau_i)^2]} & -\frac{\sum_i \tau_i}{[M\sum_i \tau_i^2-(\sum_i \tau_i)^2]} \\ 0 & -\frac{\sum_i \tau_i}{[M\sum_i \tau_i^2-(\sum_i \tau_i)^2]} & \frac{M}{M\sum_i \tau_i^2-(\sum_i \tau_i)^2} \end{bmatrix} \begin{bmatrix} \sum_i y_i \\ \sum_{i\in\mathcal{M}} y_i \\ \sum_{i\in\mathcal{M}} y_i\tau_i \end{bmatrix} \quad (13)$$

$$= \begin{bmatrix} \frac{\sum_i y_i - \sum_{i\in\mathcal{M}} y_i}{n-M} \\ \frac{\sum_{i\in\mathcal{M}} y_i}{M} + \frac{\sum_{i\in\mathcal{M}} y_i - \sum_i y_i}{n-M} + \frac{\sum_{\tau_i}}{M}\left[\frac{\left(\frac{\sum_{i\in\mathcal{M}} y_i\tau_i^*}{M}\right)-\left(\frac{\sum_{i\in\mathcal{M}}\tau_i}{M}\right)\left(\frac{\sum_{i\in\mathcal{M}} y_i}{M}\right)}{\left(\frac{\sum_{i\in\mathcal{M}}\tau_i^2}{M}\right)-\left(\frac{\sum_{i\in\mathcal{M}}\tau_i}{M}\right)^2}\right] \\ \frac{\left(\frac{\sum_{i\in\mathcal{M}} y_i\tau_i^*}{M}\right)-\left(\frac{\sum_{i\in\mathcal{M}}\tau_i}{M}\right)\left(\frac{\sum_{i\in\mathcal{M}} y_i}{M}\right)}{\left(\frac{\sum_{i\in\mathcal{M}}\tau_i^2}{M}\right)-\left(\frac{\sum_{i\in\mathcal{M}}\tau_i}{M}\right)^2} \end{bmatrix} \quad (14)$$

$$= \begin{bmatrix} (\overline{y_i} \mid_{i\notin\mathcal{M}}) \\ (\overline{y_i} \mid_{i\in\mathcal{M}}) - (\overline{y_i} \mid_{i\notin\mathcal{M}}) - (\overline{\tau^*} \mid_{i\in\mathcal{M}})\,\widehat{\delta}_2 \\ \frac{\widehat{Cov}(y_i,\tau_i^* \mid i\in\mathcal{M})}{\widehat{Var}(\tau^* \mid i\in\mathcal{M})} \end{bmatrix} \quad (15)$$

6.2 Data

We use the Mexican Migrant Project data (MMP) as our primary data source in this study. Specifically, we use the MMP's pers128 and life128 files to construct our basic samples. Whereas the pers128 file contains the responses to survey questions for all members of a particular household, the life128 file contains panel data on certain variables for all of the heads of surveyed households. The MMP does not follow individuals over time, so this panel is constructed from the retrospective responses of individuals at the time of the MMP survey. For our purposes, the most important variables constructed in this fashion are migration experience (years spent in the United States in a given year), and occupation (principal occupation in a given year). Although the MMP does administer some surveys in the United States, we want our sample to reflect only individuals who are currently back in Mexico so that we can use their current income data. The MMP data indicate where the survey took place, and whether the household head is currently back in Mexico. These two variables do not contain identical information because in some households a spouse may be answering the the MMP survey while the household head is absent or temporarily away (either away in the United States or another location in Mexico). We only include individuals who are residing in Mexico at the time of the survey.

6.2.1 Construction of Migration Experience

To construct the migration experience variables, we use the panel data offered by the life128 file. The MMP data allow us to identify the age at which an individual entered the labor force. To construct total years of migration experience, we sum up the total number of months that an individual spent in the United States after labor force entry. Variables contained in the pers128 file record the amount of time that an individual spent in the United States on their first and last trips to the United States. However, for individuals that have made more than two migrations, these variables are insufficient to measure total migration experience. Thus, we rely on the measures reported in the life128 file. In less than 10% of our return migrant sample, the life128 and pers128 files suggest different values for the number of months that the individual spent on the last trip to the United States. We always use the response listed in the life128 files, since this is the only file that allows us to consistently construct total migration experience for every individual.

6.2.2 Mexican Income Data

The MMP asks questions about a household head's income for their last job in Mexico. The MMP also asks individuals about their current occupation. For the vast majority of cases, it is clear that the reported income information refers to the current occupation. However, contacts at the MMP suggest that this may not be true for a small group of individuals. Specifically, if a return migrant is back in Mexico, claims to be currently employed in an occupation, but also claim to have worked the entire year in the United States in that same occupation, then the individual could be referring to the U.S. job (which he or she may be returning to after a stay in Mexico). We drop a small number of these individuals from our sample.

The MMP asks about the labor market income for a household head, and allows the respondent to indicate different frequencies of payment (hourly, daily, weekly, biweekly, monthly, yearly). About 85% of our sample report their income as a weekly, biweekly, or monthly amount. Less than 1% report their incomes as annual salaries. For all of these respondents, we can convert their response to monthly income measures with confidence. About 15% of our sample provide daily income values. We convert their incomes to monthly amounts by multiplying by 24. A little less than 4% of all household heads report only hourly wage information for labor income. With no measure of hours worked per week, it is impossible to convert this into an income measure that is comparable with the rest of the sample. Hence, we drop these individuals.

6.2.3 U.S. Wage Sample

The pers128 file contains responses to some detailed questions about an individual's last trip to the United States. Specifically, questions are asked that allow the MMP to calculate an hourly wage on the last trip. In order to create a sub-sample that contains both a clean measurement of both income in Mexico and an hourly wage in the United States, we restrict ourselves to migrants in our main sample with non-missing data on their wage in the United States, and non-missing data about their education level at the start of their last trip to the United States. Individuals were asked for their primary occupation on their last migratory trip. We exclude individuals if they report that their primary occupation was either unemployment or activity associated with being out of the labor force. Previously accumulated migration experience is a regressor in the U.S. wage equation. This is constructed from the life128 file by adding up the total number of years spent in the United States before the start of the last trip. We exclude individuals from this U.S. wage sample if the life128 and the pers128 files indicate that their last trip to the United States started in a different year. We do this because we are constructing a regressor from one data set (life128), and using a dependent variable from another (pers128) that need to both be relevant for the last migratory trip. Hence, we wanted to exclude individuals if there was a large degree of inconsistency between these two files about the details of their last trip. After making these restrictions, we also trim the top and bottom 1% of the U.S. wage observations to create our final U.S. wage sample.