Investment and Interruption: Effects of the US Experience on the Earnings of Return Migrants in Mexico

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Abstract

Migration is widely viewed as an investment in human capital. However, due to the imperfect transferability of skills and knowledge across countries, migration trips are also career interruptions, especially for return migrants who may meanwhile experience depreciation of home country-specific skills. This paper demonstrates that migration experience increases return migrants' earnings in the home country on the condition that the migration stay is sufficiently long and mostly uninterrupted. Employing the revised human capital earnings function, the empirical study shows that only a barely interrupted US experience longer than five years, regardless of the legal status of the migration trips, predicts higher earnings of male return migrants in Mexico than comparable non-migrants. Robust findings emerge controlling for unobserved individual characteristics or using instrumental variables to deal with the self-selection and endogeneity. Short migration stays in the US and frequent traveling provide return migrants no wage premium in Mexico.

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1 Introduction

Many migrants decide to migrate temporarily and return to their home country because of higher purchasing power of the host country currency, good investment opportunities in the home country, unfulfilled income expectations of the trip, realization of financial goals, and deportation (Borjas and Bratsberg 1994; Dustmann and Weiss 2007; Lindstrom 1996). Also, a high return in the home country to the migration experience gained in the host country, usually a more developed one, may drive return migration. This paper analyzes how the migration experience affects return migrants' earnings in the home country, exploring the conditions for a wage premium in the origin to the experience abroad.

A growing body of literature shows that migrants accumulate human capital and upgrade their skills in the host country, then receive a wage premium after returning to the home country (Barrett and O' Connell 2001; Co, Gang, and Yun 2000; Reinhold and Thom 2013). However, prior work assesses the average effects of migration duration without considering the time required for skill upgrading or wealth accumulation and the return migrants' career interruptions caused by staying abroad. Migration stay implies inactivity in the home country labor market and some atrophy of home country-specific skills. In addition, Mincer and Ofek (1982) note that the "interrupted work career" model of married women can be applied to international migration where new immigrants initially face a great loss in human capital upon arrival in the host country. Their skills learned prior to migration are not fully rewarded in the host country due to the imperfect transferability of skills across frontiers. Return migrants may experience additional losses in human capital upon returning to the home country compared to permanent migrants, thinking of the return as another migration trip while skills gained abroad are not perfectly transferable. Learning highly transferable skills takes time. The effects of skill improvement from short migration stays could be outweighed by those of job market interruptions, in which case the return to migration experience may be negative, and only a sufficiently long stay has a chance of raising return migrants' earnings in the home country.

This paper presents the experience-earnings profile of return migrants and revises the Human Capital Earnings Function (HCEF), indicating the importance of the length, timing, and frequency of migration trips to the earnings of return migrants in the home country. Different estimates of wage premium can be obtained depending on the characteristics of migration experience and the period of observation.

The fact that Mexico and the US are neighboring countries with different prevailing languages suggests that human capital is not highly transferable across the border. However, compared to migrants from other non-English speaking countries, Mexicans may experience a relatively short adaptation period upon arrival in the US and less atrophy of home country-specific skills, benefiting from the large immigrant population and geographic proximity. Under plausible assumptions, the empirical study of the effects of US experience on the return migrants' earnings in Mexico may provide a reference for migrants who are not native speakers of English.

To examine the role of the US experience in affecting return migrants' earnings in Mexico, I primarily employ data from the Mexican Migration Project (MMP) to test my hypotheses. Findings from the Ordinary Least Squares (OLS) analysis show that only long stays with few trips bring return migrants higher earnings in Mexico than comparable non-migrants, and short stays have no significant effects or even a negative effect. Due to the lack of information on migrants' earnings prior to migration, the OLS estimations are challenged by self-selection. However, the literature gives conflicting selection patterns regarding Mexican migration flows to the US (Reinhold and Thom 2013; McKenzie and Rapoport 2010; Chiquiar and Hanson 2005; Kaestner and Malamud 2014). The selection pattern is beyond the scope of this paper. I construct Instrumental Variable (IV) estimations to deal with the endogeneity. Also, though restricted by a small actual number of return migrants, the Mexican Family Life Survey (MxFLS) offers panel data for earnings and allows me to control for unobserved individual characteristics by using the Fixed Effects (FE). The robustness checks indicate that interrupted short migration experiences hurt return migrants' earnings in Mexico.

The paper proceeds as follows: Section 2 presents the experience-earnings profile of return migrants and revises the HCEF. Section 3 discusses the data, the statistical approach, and the descriptive statistics. Section 4 provides the main empirical results and robustness checks. Section 5 is a conclusion and discussion.

2 Conceptual Framework

As an investment in human capital and an interruption of home country labor market activities, migration experience may simultaneously upgrade return migrants' skills and cause the depreciation of home country-specific human capital. How the migration experience shapes the experience-earnings profile of return migrants mainly depends on the transferability of skills across countries and the depreciation rates of their home country human capital stock.

2.1 Experience-Earnings Profile

Following the age-earnings profile for intermittent workers provided by Mincer and Ofek (1982), experience-earnings profiles for a non-migrant and a return migrant are given in Figure 1 by the straight line and kinked lines, respectively. For simplicity it is assumed that the return migrant only makes one migration trip, $BCDE_i$ ($i = l$ *or* h). "Migration trip" here refers to a trip during which migrants participate in the host country labor market, rather than a purely tourism or family trip. AB and E_iF_i represent the pre-migration period and post-migration period, respectively.

The pre-migration period of return migrants may show a relatively flatter wage profile than non-migrants for two reasons. First, if migrants' human capital accumulated before migration is home country specific and not highly transferable to the host country, migrants may invest less in them. Second, investments in host country-specific skills may happen during the preparation period for an expected or planned migration trip, while those skills may not be rewarded in the home country labor market. Given different investment strategies,

the selection on earnings of migrants may not reflect migrants' unobserved abilities.

The decline of earnings (BC) upon arrival in the host country captures the migration costs, imperfect transferability of home country human capital, initial investment in host country-specific skills, and the job search. Home country human capital may not be fully rewarded in the host country labor market; migrants would invest largely in new skills, leading to a subsequent rise in earnings (Chiswick 1978). In an ideal situation that home country human capital is perfectly transferable to the host country and the job search is finished immediately, the flatness of pre-migration profile and the initial earnings deficiency of a migration trip may disappear if migration costs and new investment were negligible.

When migrants reenter the home country labor market after a migration trip without human capital accumulation abroad, kj would measure the depreciation of human capital due to lost home country work experience and updated information, and jg would measure the depreciation due to atrophy or nonuse of the home country human capital stock at point B (low level of this depreciation is assumed in Figure 1). The restoration of this depreciated human capital displays a rapid initial growth in earnings at return (E_i) on the assumption that reconstruction of human capital is more efficient than new construction (Mincer and Ofek 1982). Unlike pure interruptions without labor market activities, work experience abroad produces human capital. If the transferability of host country skills is low (l) and migrants arrive at skill level E_l upon returning, their post-migration earnings may be lower than non-migrants even after a home country human capital restoration and construction period. High transferability reaches a high skill level E_h, which may provide return migrants a wage premium in the long run, if not in the short run. Once the deterioration of human capital jg is severe, only highly transferable human capital gained in the host country could provide return migrants higher earnings (not shown in Figure 1).

Furthermore, in a short migration stay, human capital accumulated by migrants as priority, such as another language, is usually host country specific and hardly transferable to the home country labor market. Also, job mismatches are common among new migrants

(Chiswick and Miller 2007). The "overeducated" phenomenon suggests that new immigrants usually possess more years of schooling than the jobs require. Additional human capital may not be accumulated, and financial goals for future investment opportunities in the home country may not be achieved in a short migration stay with mismatched jobs. Therefore, even without counting the time required for learning high technical skills which are more transferable, migrants face an adaptation period, which may not be short. As shown in Figure 2, when return migrants do not have enough time to learn transferable skills abroad, they may not earn more back home than non-migrants who experience neither interruption nor skills-atrophy. Only a sufficiently long trip has the chance of increasing return migrants' earnings when there is no substantial depreciation of home country-specific skills.

Multiple migration trips give a more interrupted profile. Holding the total migration duration constant, more trips imply a shorter duration on average per trip, an adaptation period each time, a smaller amount of transferable human capital, and thus lower earnings for return migrants in the home country. More trips also lead to lower levels of wealth accumulation abroad; return migrants may not be able to start their own businesses, viewing migration as a strategy to overcome financial constraints in the origin. Furthermore, if migrants stay in the home country for a long time period between migration trips, their host country human capital may depreciate. This may lengthen migrants' adaptation period in the next migration trip. In addition, return migrants with more previous trips may intend to travel abroad more frequently in the future. Their different current human capital investment strategy preparing for the new trip, as described for the pre-migration period (AB), would lead to lower earnings.

The length of the adaptation period and the deprecation rate of human capital may be determined by culture difference, networks in the host country, the degree of skill transferability, and personal characteristics.

2.2 Human Capital Earnings Function

I use the Human Capital Earnings Function (HCEF) to study how the migration experience affects return migrants' earnings in the home country. Separating the investment in human capital into its components (Chiswick, 1967), the earnings in year j of person i with S years of schooling, T years of total work experience (on-the-job training), and M years of labor market experience abroad satisfy the following equation:

$$\ln(E_{i,j}) = \ln(E_{i,0}) + r_s k_s S_i + r_h k_h T_i + (r_m k_m - r_h k_h) M_i \tag{1}$$

where the home country post-migration log earnings, $\ln(E_{i,j})$, are related to log earnings without investment, $\ln(E_{i,0})$; the rate of return from the investment, r; the investment ratio, k; and the investments in human capital: S_i, T_i, and M_i. r_h and r_m are rates of return from investments on the on-the-job training in the home country and host country, respectively.

Holding total years of work experience T constant, if $r_m k_m = r_h k_h$, living abroad does not bring extra increases in the earnings in the home country. If the positive effect of highly transferable human capital gained abroad on the earnings outweighs the negative effects of labor market interruptions, the migration experience may have a higher return than the domestic work experience, and $r_m > r_h$ when $k_h = k_m$. This is the most common case of migration from a less developed country to a more developed country. On the other hand, when skill upgrading may not happen if migrants travel to a less developed country, then $r_m < r_h$.

2.2.1 The Timing of Migration

Break the home-country work experience into the work experience before migration, B, and the work experience since migrants return to the home country, A, and the equation becomes:

$$\ln(E_{i,j}) = \ln(E_{i,0}) + r_s k_s S_i + r_b k_b B_i + r_m k_m M_i + r_a k_a A_i \tag{2}$$

where $T_i = B_i + M_i + A_i$.

Having constant M years of migration duration earlier may result in higher earnings. Due to the restoration of eroded home country-specific skills, the initial rapid growth of post-migration earnings upon returning predicts lower earnings for newly returned migrants. Also, the migration experience may boost the effect of post migration experience by signaling return migrants' ability or by increasing the efficiency of human capital accumulation in the home country if skills are complementary. Furthermore, rk may change as the allocation of time changes.

Holding the home country experience $(A + B)$ constant, migrants have more years of work experience than non-migrants because of the migration trip. If $r_m k_m < r_b k_b$,[1] migrants would earn less than non-migrants with same years of total work experience.

2.2.2 The Length of Migration Duration

To show that only a sufficiently long migration stay brings an increase in earnings while short stays may have no effects or a negative effect, I distinguish two principle phases in one long migration trip: an adaptation period (D), which happens early, and a prosperity period (P). The post-migration earnings of return migrants in their home country, $\ln(E_{i,j})$, satisfies

$$\ln(E_{i,j}) = \ln(E_{i,0}) + r_s k_s S_i + r_b k_b B_i + r_d k_d D_i + r_p k_p P_i + r_a k_a A_i \tag{3}$$

where $M_i = D_i + P_i$.

Human capital accumulated in the adaptation period would usually be host country specific, improving migrants' labor market performance in the host country, rather than the home country. Also, job mismatches upon arrival impede the human capital acquisition, while learning high technical skills take time. This period may give a smaller return than work experience accumulated in the home country: $r_d \leq r_h$ (or $r_d \leq r_b$). When the depreciation of home country human capital is severe, the return may be zero or even negative:

[1] There is no work experience after returning to the home country for non-migrants.

$r_d \leq 0$. In the prosperity period, migrants may learn more transferable skills efficiently and enjoy the expected high earnings with a matching job. If those skills are useful and needed in the home country, this period may generate a higher return than home country experience, $r_p > r_h$.

Some migrants stay abroad briefly and only experience the adaptation period. They earn less when they return to the home country than non-migrants. Only a sufficiently long stay which reaches the prosperity period has a chance to receive a wage premium. Finding out the length of the adaptation period is an empirical question.

2.2.3 The Frequency of Migration Trips

Assume that individual i travels F_i times, and divide each trip to an adaptation period and a prosperity period, then i's earnings in the home country:

$$\ln(E_{i,j}) = \ln(E_{i,0}) + r_s k_s S_i + r_b k_b B_i + \sum_{f=1}^{F_i} (r_{d,f} k_{d,f} D_{i,f} + r_{p,f} k_{p,f} P_{i,f}) + r_a k_a A_i \qquad (4)$$

where $M_i = \sum_{f=1}^{F_i} (D_{i,f} + P_{i,f})$.

For simplicity, assume $D_{i,f} = D$ which is constant, though the length of the adaptation period may shrink with more trips. When $r_{d,f} k_{d,f} = r_d k_d$ and $r_{p,f} k_{p,f} = r_p k_p$,

$$\ln(E_{i,j}) = \ln(E_{i,0}) + r_s k_s S_i + r_b k_b B_i + (r_d k_d - r_p k_p) D \times F_i + r_p k_p M_i + r_a k_a A_i \qquad (5)$$

The adaptation period may not bring extra home country labor market benefits ($r_d \leq r_h$), while the prosperity period has a high return ($r_p > r_h$), therefore, $(r_d k_d - r_p k_p) < 0$ captures a negative influence of total number of interruptions. The estimated return to the migration duration (M), $r_p k_p$, is the estimated return to the prosperity period. When human capital is perfectly transferable and $D = 0$, such as in domestic migration trips, then interruptions' negative effects are negligible. With multiple short trips, $D \times F$ could be greater than M: migration experience may not bring any economically significant increases in earnings, or

even decrease return migrants' earnings in the home country.

In empirical analysis, F also partially captures the change in the investment strategy before migration, atrophy of home country-specific skills or information, and inevitable restoration periods upon returning to the home country, which are ignored in equations (4) and (5).

In sum, if the migration experience can bring an increase in earnings of return migrants, only a long total duration can make this happen; short trips bring no net home country labor market benefits. Also, more trips decrease earnings, holding the total duration constant. To test the hypotheses empirically, I study the US experience of return migrants in Mexico.

3 Data and Statistics Approach

If no wage premium to migration experience is found empirically, the main reasons could be (1) the adaptation period is long, while only short durations were observed, or (2) return migrants don't accumulate adequate transferable skills or wealth during migration. Then the study on the length, timing, and frequency of migration experience cannot be realized. Fortunately, Rainhold and Thom (2013) find an average return to US experience of about 2.2% per year for return migrants in Mexico. In the meantime, skills are not perfectly transferable across the Mexico-US border. For example, Mexican migrants in the US improve their host country-specific skills, English, with migration duration (Espinosa and Massey 1997), while English skills may not be highly rewarded in Mexico when they return. Furthermore, due to the relatively stronger network in the US compared to other migrants, Mexicans may have shorter adaptation periods and experience less atrophy of home country labor market information. Analysis on Mexicans' US experience provides references for studies on migration flows from other non-English speaking countries to the US.

3.1 Data and Sample Size

The data used in this study are from the Mexican Migration Project (MMP) and the Mexican Family Life Survey (MxFLS).

3.1.1 MMP

Created in 1982, the MMP attempts to garner social as well as economic information on Mexican-US migration.[2] It is specially designed to capture the experiences of those who transit back and force between Mexico and the US. Employing comprehensive intensive studies of Mexican communities, data are gathered for migrants and non-migrants. The collected data have been compiled in a comprehensive database that has formed the foundation of numerous studies (Durand and Massey 2004). Although the MMP is not strictly representative of migrants in Mexico, it is advantageous for my purposes, because it has a relatively large number of return migrants and presents an average effect of migration experience on return migrants' earnings in Reinhold and Thom (2013).

My sample is from data for communities numbered 53 - 143, which were surveyed from 1997 to 2013.[3] Historically, males dominate the migration flows from Mexico to the US. To include more females and compare the results by gender, my sample consists of household heads and their spouses aged 18-64 who were in the Mexico labor force at the time of the survey. The small sample of individuals who were born in the US has been dropped. All individuals had a paid job in Mexico, and 17.14% of them had US experience.[4]

[2]The MMP is a bi-national project co-directed by Jorge Durand (University of Guadalajara) and Douglas Massey (Princeton University).

[3]The MMP143 has information for 143 communities in Mexico from 1982 to 2013, but I only choose communities numbered 53-143 to do the analysis. Because before 1997, the MMP asked only communities 1-52 about "Household Head Income or Wages." After 1997, MMP interviewed only communities 53-143, and changed their question to "Salary during last job in Mexico," from then on, spouses of household heads started to answer that question. Literally, "Household Head Income or Wages" may include all the wages, salaries, profits, interests payments, rents, and other forms of earnings received. It is a broader concept compared with "Salary duration last job in Mexico." Therefore, to keep the consistency among the entire sample, communities 1-52 have been dropped.

[4]Canadian experience may matter as much as US experience, but I do not analyze Canadian experience in this paper because of the small number of migrants who had ever been to Canada (0.27%).

Since the MMP only provides cross-sectional data on recent earnings, I employ the longitudinal data on earnings from the Mexican Family Life Survey (MxFLS) to control for unobserved individual characteristics for a robustness check.

3.1.2 MxFLS

The MxFLS is a national representative longitudinal survey in Mexico that follows individuals across rounds (2002 (MxFLS-1), 2005-2006 (MxFLS-2) and 2009-2012 (MxFLS-3)), including those who migrate to the US. The actual number of return migrants in the MxFLS is small (about 350 each round), and the proportion of them among the dataset for each round is about 3%. To increase the number of return migrants in my sample and the variation of their migration experience between rounds, I only combine the first round (MxFLS-1) and the third round (MxFLS-3) to conduct main empirical estimations. My sample includes 9,098 Mexican people aged 18-64 who were surveyed in both rounds. With the exception of a robustness check, I only refer to the MMP data throughout the paper.

3.2 Basic Regressions

The estimations are conducted by gender for three reasons. First, put in terms of the Polachek (1981) occupational choice model, females may be self-selected into jobs with less atrophy if they leave the labor market. Second, the depreciation rates of home country human capital and levels of transferability of accumulated skills would differ by occupation and gender. Third, females are more likely to be the less ambitious tied migrants, rather than economic migrants, since males in Mexico are more economically active.[5]

To assess the impact of migration experience on earnings by gender in Mexico, the most

[5]About 80% of the male population above 15 years old is economically active, while the proportion decreases to 40% for females, according to the data from The World Bank.

basic approach is to follow the revised HCEF in Section 2:

$$\ln(E_i) = \beta_0 + \beta_1 School_i + \beta_2 Expe_i + \beta_3 Expe_i^2 + \beta_4 Expe\ US_i + \beta_5 Expe\ US_i^2 \quad (6)$$
$$+ \beta_6 US\ Trips_i + \beta_7 Marital_i + \beta_8 Child_i + \epsilon_i$$

where E_i is individuals' monthly salary earnings in Mexico, which have been adjusted for inflation using CPI index for Mexico offered by OECD Statistics (2005 is the base year). The MMP does not provide precise information about self-employment; however, it asks about history of business, companies or other activities that require economic investment from the head or spouse. In the sample, 29% of males and 44% of females invest in or own a business. Using the salary earnings, rather than the total income, simplifies the analysis.

School is the years of schooling. If the investment in school equals the full-year potential earnings and there is no further investment, the coefficient on *School* can be interpreted as rate of return from schooling.

Expe is the total years of labor market experience. Following the literature, the potential work experience is measured as: *Expe* = Age - *School* - 6 if *School* $\geq$ 9; *Expe*= Age - 15 if *School* $<$ 9. For individuals who have less than 9 years of schooling, only the experience gained above age 15 is regarded as relevant work experience, because the work experience gained under age 15 might not affect earnings as adults. In this specification, age is implicitly controlled for. I expect β_2 to be positive. If β_3 is negative, earnings increase at a decreasing rate with experience (Mincer 1974).

Expe US denotes the migration experience gained in the US. In my sample from the MMP, less than 0.5% of migrants were students (full-time or part-time) in the US,[6] so most of them gained work experience in the US, rather than general education. *US Trips* indicates

[6]In the original data, among household heads who migrated, 0.6% of them were students in the first trip to the US, and 0.2% of them were students in the last trip to the US. (41% of them have only one US trip: their first trip is also their last trip). Among spouses who migrated, 2% of them in the first trip and 1% of them in the last US trip were student (71% of them have only one US trip). In my sample, 0.3% migrants were students in the first trip, and 0.1% were students in the last US trip (55% of migrants have only one US trip, and 79% have one or two US trips).

the total number of US trips, which captures the negative influence caused by interruptions.

Marital represents the marital status. I have three dichotomous variables, "Never Married," "Once Married but Not Now,"[7] and "Consensual Union," with "Currently Married" as the benchmark. *Child* is a dichotomous variable with unity for individuals who are parents – otherwise, it is zero.

ϵ_i is a random error term.

Occupation can be added as a set of dichotomous variables in the equation to indicate the current occupation in Mexico.[8] However, occupational change may be one of the channels through which migration experience affects earnings; the estimation results would be biased with the inclusion of them.

3.3 Separation of Experience

Among the return migrants, the total years of work experience can be separated into the experience acquired before migration, *Expe Before*; the US migration experience, *Expe US*; and the experience gained in Mexico since return, *Expe After*. Then, dropping the squared term on experience for simplicity, the earnings function can be written as:

$$\ln(E_i) = \alpha_0 + \alpha_1 School_i + \alpha_2 Expe\ Before_i + \alpha_3 Expe\ US_i + \alpha_4 Expe\ After_i + \alpha_5 US\ Trips_i + \alpha_6 Marital_i + \alpha_7 Child_i + \epsilon_i \quad (7)$$

where *Expe After* is the experience gained in Mexico since the migrant returned from the last US trip. For migrants with multiple trips, the Mexico experience between US trips is

[7] In the MMP, categories of marital status are (1) Never married, (2) Currently married (civil or religious), (3) Consensual union, (4) Widowed, (5) Divorced, and (6) Separated. Husbands and wives reported their marital status consistently (In my sample, there are 1,356 couples, among which only 3 couples reported their marital status differently). I group (4), (5), and (6) into one category named "Once Married but Not Now" (7%).

[8] Occupation varies a lot among the dataset; I grouped them into seven main categories, and they are (1) Professionals, Technical workers, and Administrators (I will use Professionals for short in this paper); (2) Agriculture; (3) Manufacturing/Skilled workers; (4) Manufacturing/Unskilled workers; (5) Service; (6) Sales; and (7) Transportation workers.

regarded as experience before migration.

If only a long duration has a chance of bringing an increase to the earnings, then the relationship between the earnings and the US duration is not linear. To define a "long duration", I regress $\ln(E_i)$ on *Expe US* non-parametrically. As shown in Figure 3, the fifth year of migration is a turning year: migration duration periods shorter than five years give insignificant negative coefficients, while migration duration periods longer than five years have positive coefficients. In the meantime, the proportion of migrants with total migration duration longer than five years among return migrants is 20.80%. I divide all individuals into 7 groups based on their total duration in the US to compare the effects of different lengths of stays, shown in the following equation:

$$\ln(E_i) = \gamma_0 + \gamma_1 School_i + \gamma_2 Expe\ Before_i + \gamma_3 Expe\ After_i + \gamma_4 US\ Trips_i + \gamma_5 Y1_i \quad (8)$$
$$+ \gamma_6 Y2_i + \gamma_7 Y3_i + \gamma_8 Y4_i + \gamma_9 Y5_i + \gamma_{10} Y5up_i + \gamma_{11} Marital_i + \gamma_{12} Child_i + \epsilon_i$$

where YN (N varies from 1 to 5) indicates a dichotomous variable which is unity when individual i's total migration duration is more than *N-1* years and less than N years. For example, *Y2* is unity for migrants with 1-2 years' total US duration. *Y5up* is a dichotomous variable which is unity when individual i's total US duration is more than 5 years. The non-migrant group is the benchmark.

3.4 Documentation and Timing of Migration Experience

Legal visas or documentation may provide migrants more opportunities to seek advanced jobs freely in the host country (Rivera-Batiz 1999). However, many Mexican migrants cross the border illegally. To study whether the effects on return migrants' earnings of legal experience differ from those of illegal experience, I divide *Expe US* in equations (6) and (7) into legal US experience, *Legal US*, and illegal US experience, *Illegal US*; I also divide *US Trips* into number of legal trips, *Legal Trips*, and number of illegal trips, *Illegal Trips*. Then

the comparisons between coefficients can be conducted.

Alternatively, I add a dichotomous variable for illegal status, *Illegal*, into equations (6) and (7) for the return migrant sample to study the average difference in earnings between legal migrants and illegal migrants. It is unity when migrants' most recent trip is illegal. Also, its interaction term with *Expe US* is included because the effects of migration experience may differ by the legality of the trip.

To test the hypothesis that with the same years of work experience and migration experience migrants who return earlier earn more than migrants who return later, I add a dichotomous variable, *Recent*, to indicate whether migrants had their last US trip recently in equation (6) for the return migrant sample. Holding the total work experience and US duration constant, this new variable defines the timing of migration.[9] *Recent* is unity for return migrants whose last US trips are within a certain period. Once the length of the period has been defined, individuals with zero for *Recent* had their last US trips earlier than others. This period is initially set to be five years, since Mincer and Ofek (1982) find a rapid restoration of earning power during the first five years when women reenter the labor force, return migrants may show the same pattern.

In addition to using *Recent* to capture the relatively lower earnings upon returning, having a squared term of *Expe After* in equation (7) may reveal some characteristics of return migrants' post migration earnings profile. An interaction term between *Expe US* and *Expe After* added into equation (7) may also shed light on how the US experience affects human capital accumulation post migration.

3.5 Selection and Endogeneity

A potential problem with estimating these specifications via the Ordinary Least Squares (OLS) is endogeneity. If return migrants possess more unobserved abilities than non-migrants, the estimated wage premium to migration experience may only reflect the positive

[9] *Expe After* is highly correlated with *Recent*, so I do not use equation (7).

self-selection. Also, the selection among return migrants is unknown. Return migrants with different lengths or frequencies of migration trips may differ in unobservables. To deal with the selection and endogeneity issues, I apply the Instrumental Variable (IV) analysis to the MMP data, and the Fixed Effects (FE) analysis to the MxFLS data for a robustness check.

3.5.1 IV Analysis (MMP)

To meet the exclusion restriction of IV analysis, appropriate IVs should not affect individuals' earnings directly. The US immigration policy changes, which are exogenous, affect individuals' earnings in Mexico only via their migration experience.

I use the Immigration Reform and Control Act (IRCA) to instrument the US duration. The IRCA, enacted on November 6, 1986, also known as the Simpson-Mazzoli Act, reformed the US immigration law. It requires employers to attest to their employees' migration status, and makes it illegal to knowingly hire or recruit illegal migrants. Also, it conditionally legalized illegal immigrants who entered the US before 1982 and seasonal agricultural illegal immigrants. Given a large proportion of illegal migrants from Mexico to the US, migrants who traveled before IRCA may have an exogenously stronger social networks abroad if their friends in the US benefited from the IRCA, and they may have longer US stays and more trips. To avoid the direct relationship between individuals' unobserved characteristics and these enhanced networks, a dichotomous variable is generated using household members' migration history: *IRCA* is set equal to unity if any current or previous household member ever migrated before 1987. I also create different dichotomous variables to test the sensitivity of the results; they are dichotomous variables for any household (or community) member traveling to the US before 1982 (or 1987).

The IV for the endogenous variable *US Trips* is generated based on the US border enforcement, which reflects the US government's attitudes toward migration. The US border enforcement affects the costs of illegal migration; individuals may change their migration plans accordingly. It is natural to think that stricter enforcement migrants encountered in

previous migration trips leads to fewer future migration trips and shorter total duration. This relationship may cause a selection on migrants' ability, since more rational migrants would travel in years with loose border enforcement. However, if I use the enforcement after migrants finish their most recent trips, the possible self-selection on unobserved abilities caused by enforcement is partially avoided in the current dataset, since the selection (individuals' response to the enforcement) is in the future tense. In the meantime, more migrants' trips may trigger an increase in the enforcement, because most of Mexican migrants cross the border illegally. Instrumental variable, *Enforcement*, is generated based on the number of immigration and naturalization service line watch hours in migrants' travel year of their last trip.[10] For non-migrants, an average value at community level is calculated. Unlike many other enforcement indicators, such as US government's budget decisions on migration, this IV is less likely to be affected by the US economy.

Equations (6) and (7) can be estimated using IV, while an IV estimation for equation (8) is much more difficult, because it requires more IVs to define "long trips." Fortunately, as long as the total number of US trips gives significantly negative coefficients in other specifications, the conclusion that interruptions matter and short stays bring no increases in earnings in the home country is solid, and the range of the "long trips" can be discussed.

3.5.2 Individual Fixed Effects (MxFLS)

Individual Fixed Effects (FE) applied to a longitudinal dataset absorb the time-invariant unobserved characteristics of individuals. I estimate the following specification using data from the MxFLS:

$$\ln(E_{it}) = \varphi_0 + \varphi_1 School_{it} + \varphi_2 Expe_{it} + \varphi_3 Expe_{it}^2 + \varphi_4 Expe\ US_{it} + \varphi_5 US\ Trips_{it} \quad (9)$$
$$+ \varphi_6 Self-Employed_{it} + \varphi_7 Unpaid\ Fraction_{it} + \varphi_8 Unpaid\ Worker_{it} + \gamma_i + \lambda_t + \epsilon_{it}$$

[10] Unfortunately, data on the borderline watch hours for the Mexico-US border are not available.

where γ_i and λ_t represent the individual FE and year FE, respectively. E_{it} is the monthly earnings of individual i in year t in Mexico.

In the MxFLS, employees report their wage earnings while self-employed workers report their income/profits. Also, some people are unpaid family workers in household-owned businesses. Following Chiswick (1983) who presents a procedure to incorporate earnings of self-employed and unpaid family workers into the HCEF, I use the average income per household member in a household-owned business as E_{it} for self-employed or unpaid workers. Three extra variables are added: *Self-Employed* is a dichotomous variable equal to unity for self-employed or unpaid workers – otherwise, it is zero; *Unpaid Fraction* denotes the fraction of workers in the household enterprise classified as unpaid; *Unpaid Worker* is a dichotomous variable which equals to unity for unpaid workers – otherwise, it is zero.

School is calculated following Ambrosini and Peri (2012). *Expe* is the potential work experience as shown above. To include more migrants in my sample, I combine the permanent migration (one year or more) and temporal migration (more than a month but less than 12 months) in the MxFLS to calculate the total US duration and number of migration trips. φ_4 and φ_5 reflect how US experience affects return migrants' earnings in Mexico.

3.6 Summary Statistics

Table 1 presents descriptive statistics for Mexican household heads and their spouses by gender from 1997-2013 (MMP). The first two pairs of columns are for the full sample, which includes non-migrants and return migrants, but excludes migrants who were in the US at the time of the survey. On average, males earn 809 more pesos than females, even though females tended to have more years of schooling. Also, males were more likely to travel to the US ($22\% > 4\%$) and stayed longer ($0.79 > 0.13$). Males' average number of US trips was 0.46 and females' average number of US trips was 0.06, much smaller. In addition, the average years of experience accumulated since migrants' return to the home country, *Expe After*, is 9 years for males and 8 years for females. It allows for the timing analysis and the

estimation of a return to migration experience in the long run, considering migrants' initial low earning power upon returning.

Table 2 shows the descriptive statistics for males and females in Mexico from the MxFLS (rounds 1 (2002) and 3 (2009-2012)). A small proportion has ever traveled to the US. Though not shown in Table 2, the sample has 101 and 220 return migrants in the first and the third rounds, respectively.

4 Analysis of Earnings

Before providing the analysis of earnings in Mexico, I show in Table 3 the low transferability of Mexican human capital in the US labor market and frequent traveling interrupting migrants' human capital and wealth accumulation abroad. The MMP provides information on migrants' earnings in the US in their first and last US trips. In Table 3, the change in their US earnings (earnings in the last US trip-earnings in the first US trip) for migrants with multiple trips, including return migrants and migrants who have not returned at the time of the survey, increases as migrants travel fewer trips, spend more time in the US, and spend less time in Mexico.[11] In addition, using equation (7) to study migrants' earnings in the US in their last trips (*Expe After* is dropped), the OLS results also present a significantly positive coefficient on the total US experience while significantly negative coefficients on the total number of US trips and Mexico experience. Furthermore, exploring the determinants of migrants' English skills in the US, I find that young migrants with a longer US experience and fewer trips have higher English proficiency (results are not shown). The fact that Mexico experience is not well appreciated in the US suggests that the construction of new human capital in the US is necessary for a migration trip. In the meantime, more trips interrupt migrants' human capital and wealth accumulation in the US.

[11]The dependent variable in this estimation is the difference in the US earnings of migrants' first and last trips. The independent variables are the US duration and Mexico experience between trips, and the total number of migration trips. This first differencing strategy with two-period panel data is mathematically equivalent to individual FE estimation which controls for unobserved individual characteristics. Results with community FE, which subsume survey year FE, and migrants' travel year FE are consistent.

4.1 Migration Experience

Regarding the earnings of return migrants and non-migrants in Mexico, equations (6), (7), and (8) have been fitted to the MMP data, and the OLS results are reported in Table 4 with the first three columns for males and the remaining for females.

The effects of the US experience and total number of migration trips on males' earnings in Mexico are both statistically significant in the predicted direction. The longer US duration and fewer trips, the higher the earnings. Short trips may bring even a negative effect.

In Table 4 column (1), holding the education level, years of work experience, and total number of US trips constant, an extra year in the US is associated with an increase in males' earnings by 2.3 percent. While holding the US duration and other variables constant, one more trip to the US is associated with a decline in males' earnings by 2.5 percent. Think of a migrant with a one-year trip to the US: his post migration earnings in Mexico would be lower than non-migrants with same years of schooling and work experience by 0.2 percent.

According to the results in Table 4 column (2), a male return migrant with a two-year trip to the US has 0.1 ($2 \times 0.2 - 2.3$) percent higher earnings in Mexico than non-migrants with same years of Mexican work experience. In fact, this return migrant earns less than non-migrants with the same years of total work experience (or age). Therefore, at least on average, migration stays which are shorter than two years suggest no wage premium.

Furthermore, the return to the migration duration changes by its length. Column (3) confirms this by showing that short stays in the US have no positive effects or even negative effects, and only staying in the US for more than 5 years displays a significantly positive coefficient. A return migrant with a five-year trip earns more than non-migrants with same years of Mexico experience or total work experience.

Upon applying the Wald test, the coefficient on the US duration is significantly greater than that on *Expe Before* in column (2). However, there is no significant difference between the coefficients on *Expe US* and *Expe After*, though the magnitude of the former is greater than the latter. This may be partially explained by the statistically significant difference

between coefficients on *Expe Before* and *Expe After*, which suggests that more recent work experience may carry more weight. Among the different types of work experience, work experience gained in the US has the highest return, implying that transferable high-technique skills have been acquired by at least some migrants, and these skills are highly rewarded in Mexico.

The significant coefficient on *US Trips* provides evidence for interruptions' negative influence. In fact, the total number of domestic migration trips if added in the estimations does not display a significantly negative coefficient. A plausible explanation could be that domestic migration trips are not associated with a lengthy adaptation period or atrophy of home country-specific skills.

Table 4 columns (1) and (2) are consistent with results provided by Reinhold and Thom (2013) who report an average return to migration experience for males using the same dataset. They suggest that a dichotomous variable indicating migration status, additional to the migration duration variable, would absorb unobserved difference between migrants and non-migrants; actually, it also reflects the influence of home country labor market interruptions.

Table 4 columns (4), (5), and (6) present the OLS regression results for females. Column (4) suggests that an extra year in the US is associated with an increase in earnings of 4.4 percent for females, holding other variables constant. None of the coefficients on US duration variables in column (6) are significant, having non-migrants as the benchmark. The results may be restricted by the limitation of the data, since only 4% of females have ever migrated and returned, and only 16 out of 2,303 females lived in the US for a duration of more than 5 years. Furthermore, *US Trips* does not show significant coefficients in all three columns. This may suggest that Mexican women usually choose jobs with less atrophy if they leave, then interruptions do not hurt their earning power greatly. Also, they may choose jobs with highly transferable skills in the host country. In Table 1, 52% of females are in the service and sales sectors, while 50% of males hold agriculture and skilled manufacturing jobs.

At least the occupational segregation by gender is obvious, even if it is difficult to tell the transferability and depreciation rate of human capital by jobs. In fact, these different results by gender are in line with the findings in Co, Gang and Yun (2000), which report a premium to migration experience for women, rather than men, in Hungary. They conclude that the factors behind the difference could be women selecting into certain jobs and men's lower chance of building home country networks during migration.

Some other interesting results are found in Table 4. General human capital, *School*, has a higher coefficient than work experience. Also, coefficients on human capital, including schooling, work experience, and US migration experience, are higher for females compared with males. Possible explanations could be females' lower labor market participation and the larger market demand for female labor human capital due to their limited opportunities to receive secondary or higher education. In addition, married men earn more than men in *Consensual Union*, which suggests less commitment, probably because of married men's stronger incentives for division of labor and specialization. The migration experience may also affect return migrants' marital status and fertility plan. Dropping *Marital* and *Child*, regression results do not change greatly.

4.2 Robustness & Heterogeneity

Because of the limitation of the female sample, the analysis focuses on males. The following robustness checks focusing on the males show consistent results (not shown in the paper) with Table 4. (1) Adding occupational dichotomous variables, the coefficients on human capital are estimated returns within occupations, and their magnitudes are slightly smaller compared to Table 4. (2) Using individuals' actual work experience above age 15 to replace potential work experience avoids estimation biases caused by labor market inactivity. *Expe US* still shows a higher coefficient than Mexico experience. (3) Excluding individuals who invest or own a business, the pure sample for employees shows an insignificant and positive coefficient on *Expe US* and a significantly negative coefficient on *US Trips*. The self-employment sample

gives a barely significant positive coefficient on *Expe US*, while the negative coefficient on *US Trips* is insignificant. (4) Limiting the sample to non-migrants and migrants with just one trip also shows that only a migration stay which is longer than five years predicts return migrants' higher earnings compared to non-migrants. (5) Farmers are more likely to be seasonal migrants who travel more frequently and earn less. However, the estimation results for the rural area (53% of males) show highly consistent results and support the analysis above. Also, a smaller sample with farmers displays insignificant coefficients, but their signs are in the predicted direction. The urban area shows an insignificant coefficient on *Expe US* and a significantly negative coefficient on *US Trips*.

In addition, restricting the sample to return migrants, the comparison in capabilities between return migrants and non-migrants can be ignored.[12] The experience gained in the US has a higher coefficient than the experience gained in Mexico among return migrants. Migrants whose US duration is longer than five years and barely interrupted earn significantly more, while there is no significant difference in earnings among migrants with short stays.[13] Also, adding community FE, which subsume survey year FE, to equations (7) and (8) for the return migrants indirectly controls for migrants' travel year FE and community-level networks abroad. The results about US experience are consistent with previous analysis.

4.3 Illegal Migrants and Visitors

Regarding the legal status of Mexican migrants in the US, Table 5 presents the OLS results for males.[14] In columns (1)-(4), the total US experience (*Expe US*) is divided into legal US experience (*Legal US*) and illegal US experience (*Illegal US*); the total number of US

[12] *Y1*, which has the value of 1 if the migrant's migration duration is less than 1 year, is the benchmark estimating equation (8).

[13] For return migrants, the information on English proficiency in their last US trip is also provided by the MMP. Adding English proficiency in the estimations, *US Trips* still presents a significantly negative coefficient, while the coefficient on *Expe US* became insignificant. (Return migrants' English proficiency in their last trip is recorded as 0 for "Neither speak nor understand", 1 for "Do not speak, but understand some", 2 for "Do not speak, but understand much", 3 for "Speak and understand some", and 4 for "Speak and understand much".)

[14] Female sample gives consistent results.

trips (*US Trips*) is divided into number of legal trips (*Legal Trips*) and number of illegal trips (*Illegal Trips*). The Wald test shows that the coefficients on *Legal US* and *Illegal US* are not significantly different, yet illegal experience's higher coefficient comparable to legal experience may be due to longer stays, since the male return migrants' average illegal experience is 2.95 years while their average legal experience is 0.67 years. The Wald test also shows that the coefficients on *Legal Trips* and *Illegal Trips* are not significantly different either. The difference in magnitudes may be explained if legal migrants face greater decreases in earning power caused by interruptions, because legal migrants can choose jobs freely in the US and they may suffer higher opportunity costs of traveling. Columns (5) and (6) present results with *Illegal* and its interaction term, which have no significant coefficients.

Furthermore, in the MMP data, *US Trips* includes trips in which migrants were on a tourist visa. However, we do not know if those who entered as visitors worked illegally in the US. In fact, about 7% of the migrants traveling to the US used a tourist visa for their first or last trips. 85% of them stayed in the US more than half a year, suggesting that many were probably working illegally. In Table 5, visitors who were in the US without a work permit are regarded as illegal migrants. The results suggest that whether or not the migrants were visitors does not matter. In fact, using a dichotomous variable for visitors and non-visitors to test this, the results are consistent. If migrants entered the US purely as visitors, they would not have stayed in the US very long, and the short duration would bring them no increase in earnings. If they stayed in the US for a long time, it is very likely that they worked illegally.

Overall, return migrants' legal status does not predict different earnings. However, it is difficult to draw a firm conclusion that legal duration and illegal duration receive the same return, since legal and illegal migrants may differ in unobserved characteristics.

4.4 The Timing of Migration

In Table 4 column (3), the coefficient on *Expe After* is significantly greater than the coefficient on *Expe Before* under the Wald test, suggesting that longer Mexico experience since return predicts higher earnings. This is verified in Table 6, which shows the regression results for males considering the timing of migration experience. In column (1), *Recent*, which indicates migrants' last US trips were within five years, has a negative and significant coefficient. More recent trips are associated with a decrease in the earnings, holding *Expe US* and *Expe* constant. If two migrants have the same trip number and duration, the one who traveled recently earns less than the other one. In column (2), an interaction term between *Expe US* and *Expe After* has a positive and significant coefficient. Column (3) shows the non-linear relationship between return migrants' earnings in Mexico and their post-migration work experience gained since return. This table provides evidence for the "restoration" phenomenon of home country-specific human capital and the initial rapid growth in earnings upon returning.

Recent has a negative but insignificant coefficient for the female sample (not shown in the paper). When women hold jobs with less atrophy if they leave, the depreciation of home country human capital is low, and the restoration period is relatively shorter. Thus, the timing of the trip does not have much of an effect on their post-migration earnings in Mexico. Another possible explanation is that the variation in *Recent* is very low for them given a much smaller size of female return migrants.

The conclusion that earlier migration experience leads to higher earnings back home is robust when *Recent* is set to equal unity for the most recent US trip within three, four, or six years.

4.5 Selection and Endogeneity

The OLS results are challenged by potential selection bias. Return migrants may be different from non-migrants in observables and unobservables. The last two pairs of columns in Table

1 display the summary statistics for return migrants by gender. Male return migrants are significantly less educated than male non-migrants, while no significant difference in years of schooling is found for females. If unobserved abilities are positively correlated with education level, then male return migrants are less capable than male non-migrants, while female return migrants are as capable as female non-migrants. Furthermore, the selection on unobservables among return migrants is still unknown. I apply the IV and FE methods to deal with the endogeneity.

4.5.1 Instrumental Variable

Table 7 shows the IV results with the immigration policy related variables, *IRCA* and *Enforcement*, instrumenting *Expe US* and *US Trips* (Community FE is included). With both return migrants and non-migrants in the male sample, in column (1) the first stage of applying the IV estimation in equation (6) indicates that the migration experience and total number of trips are positively correlated with any household member's migration experience before IRCA and the US borderline watch hours during migrants' most recent trip.[15] According to the average effects reflected by the positive coefficient on *Expe US* and negative coefficient on *US Trips* in the second stage, a male migrant with a two-year US trip earns 0.4% (4.4% $\times$2 - 8.4%) more than comparable non-migrants with the same years of total work experience. A trip shorter than two years may result in lower earnings. Since a short US duration has a lower return than a long stay, a two-year trip is the lower bound for the existence of a wage premium. Furthermore, more trips lead to lower earnings. Applying the IV estimation to equation (7), column (2) displays similar results. In column (3), I use *IRCA1982*, which is unity for any household member ever migrated before 1982, to replace *IRCA* in the IV estimation to test the sensitivity, the IV results are robust.

Though enforcement information in migrants' early trips may not be a good IV because it would direct sophisticated migrants to travel in easy years with less border patrol, to

[15]Restricting the sample to the females or return migrants, the first stage results indicate weak IVs.

explore this relationship I still use the US borderline watch hours in migrants' first trip, *First*, to replace *Enforcement* in the IV analysis. Column (4) shows that traveling in a tight year in the first US trip results in fewer trips in the future and a shorter total duration. The magnitudes of coefficients in the second stage increase greatly, meanwhile, the results still show that only a migration stay which is longer than about two years has a chance of bringing a premium, and more trips decrease return migrants' earnings in Mexico.

Compared to the OLS results in Table 4, IV estimation provides a greater estimated return to the US duration, suggesting that more capable migrants stay for shorter periods of time in the US. Then migrants are more likely to be negatively selected compared to non-migrants (Borjas and Bratsberg 1994),[16] as mentioned by Rainhold and Thom (2013). In the meantime, the coefficient on *US Trips* is greater in absolute value in the IV estimation, indicating that more capable migrants suffer a greater earnings loss caused by interruptions. This is consistent with Mincer and Polachek (1974)'s finding that the depreciation of human capital increases as education level increases. Furthermore, the OLS results suggest that migrants who had migration experience longer than five years earn more than non-migrants; if these migrants are negatively selected, controlling for selection, the adaptation period should be longer than two years but shorter than five years.

4.5.2 Individual FE (MxFLS)

Table 8, using the MxFLS data, presents the unweighted results of regressions with individual FE and year FE. The insignificant coefficients on *Expe US* are probably due to migrants' short migration trips between two rounds of the survey and the initial low earnings upon returning. The significantly negative coefficients on *US Trips* in columns (1) and (2) imply that more trips decrease male return migrants' earnings. The female sample generates no significant coefficient on either *Expe US* or *US Trips* in column (3); either their earnings

[16]Borjas and Bratsberg (1994) suggest that return migrants are people with skills at the margin: they are more skilled than non-migrants if the selection in the original migration is positive, and less skilled if it is negative.

are not significantly affected by interruptions, or the small size of female return migrants disturbs the analysis.

On average, return migrants in the MxFLS stay in the US for about three years, while their US experience does not bring a significant premium. Considering the IV analysis for the MMP data, it seems that the adaptation period in the US for an average Mexican would be longer than three years but shorter than five years. Controlling for self-selection, a continuous US experience which is longer than the adaptation period gives return migrants higher earnings.

5 Conclusion and Discussion

To summarize, migration trips are not only investments but also interruptions due to the imperfect transferability of skills across countries. Only a sufficiently long migration experience which allows migrants to accumulate highly transferable skills and wealth in the host country may provide them higher earnings in the home country compared to non-migrants, while short stays have no effects or even a negative effect on their earnings back home. More trips, suggesting more interruptions, decrease return migrants' earnings back home. In addition, the earlier migrants make their migration trips, the higher their earnings in the home country.

Empirical estimation of the effect of migration experience on return migrants' earnings is difficult. Long panel data on earnings would be required to include lengthy durations and long post-migration periods, since the length and timing of migration trips are important. In addition, some return migrants may not participate in the home country labor market, then the estimation of the wage premium to migration experience would be overestimated. With limited data, study on Mexican migrants' US experience shows that long US trips increase return migrants' earnings in Mexico, while short stays do not bring many labor market benefits. More trips hurt return migrants' earning power, especially for males. Between

illegal and legal migrants, there is no significant difference in their post-migration earnings. Migrants who returned earlier earn more than migrants who returned recently, holding their work experience and migration experience the same.

Furthermore, the conceptual framework about the investment and interruption perspectives applies to migration study broadly. The migration flow from Mexico to the US demonstrates an example of people migrating to more developed countries. Regarding the migration flows from a developed country to another developed country, short migration experience may still not bring return migrants higher earnings in the home country if skills are not transferable. Staying abroad does not guarantee acquisition of transferable human capital or efficient accumulation of wealth, while the interruptions caused by migration trips hurt return migrants' earning power in the home country. If the migration trip is to a less developed country, it is possible that the negative effects of the human capital depreciations and labor market interruptions on return migrants' earnings back home outweigh the positive effects of learning new skills in the host country, when these skills are not highly rewarded in the home country.

Future work could discuss the relationships between adaptation period, occupational change, and earnings in the home country. First, traveling to different destinations abroad in multiple trips may lengthen migrants' average adaptation period per trip, resulting in a greater negative effect of interruptions on return migrants' earning in the home country. Also, holding different jobs in different migration trips or return trips may create losses in human capital due to the imperfect transferability of skills across occupations. In addition, migrants who speak the host country languages, have stronger social connections, or experience smaller cultural differences may adapt to the host country more easily, while migrants whose mother tongue is different or who are from a culturally distant country may experience a longer adaptation period.

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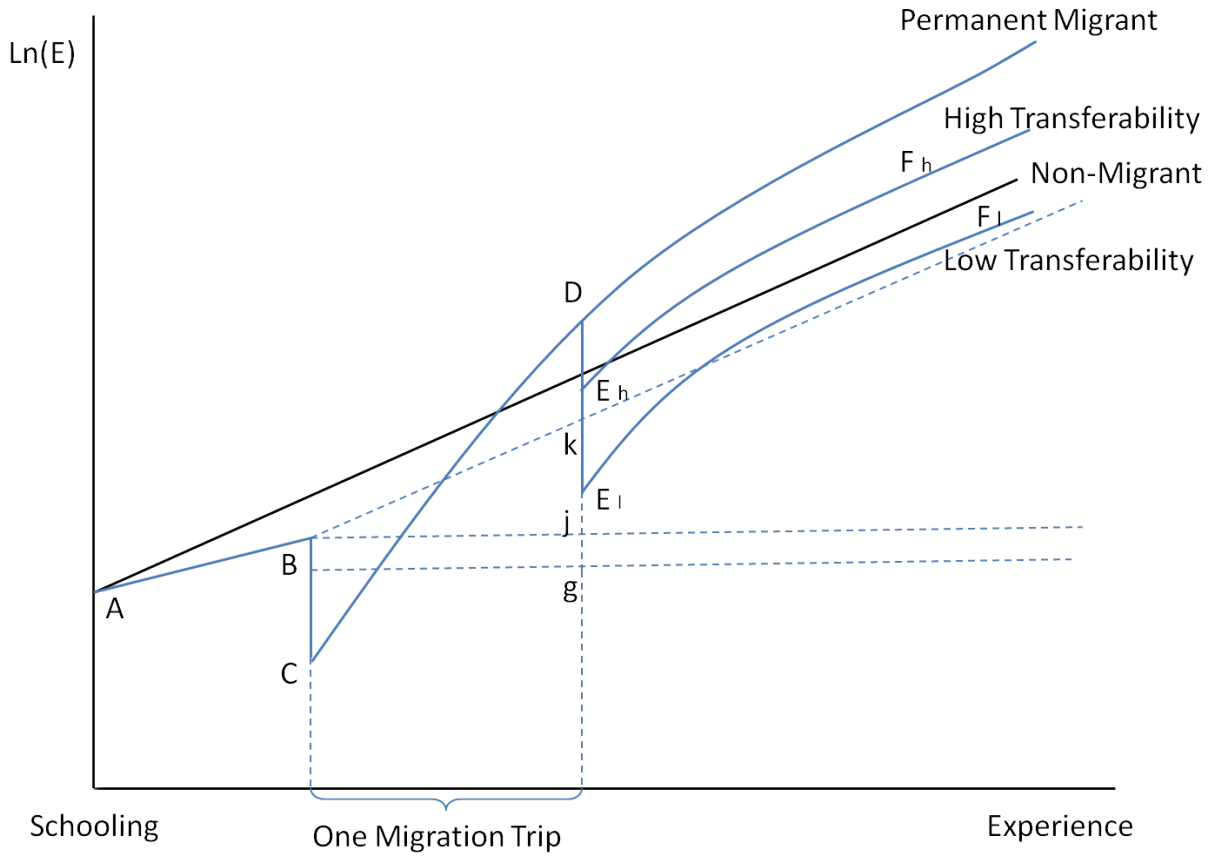


Figure 1: Return Migrant's Experience-Earnings Profile. Return migrants' pre-migration period may show a relatively flatter wage profile than non-migrants due to the less investment in home country-specific human capital and more investment in host country-specific skills. Upon arrival in the host country, the decline of earnings (BC) captures the migration costs, imperfect transferability of home country human capital, initial investment in host country-specific skills, and the job search. With highly transferable skills learned in the host country, return migrants may earn more in the home country than non-migrants in the long run, if not in the short run. When the transferability of human capital acquired in the host country is low, return migrants may earn less in the home country than non-migrants due to the depreciation of home country human capital.

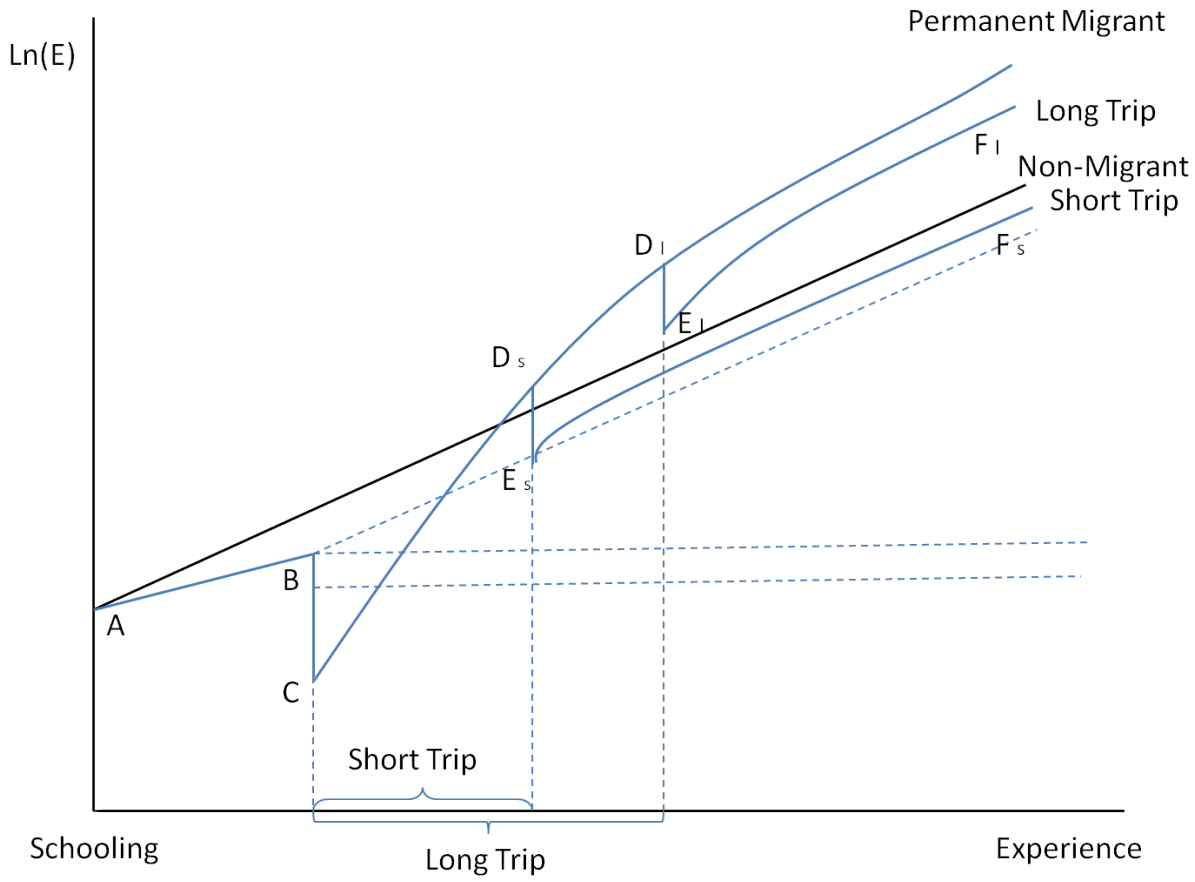
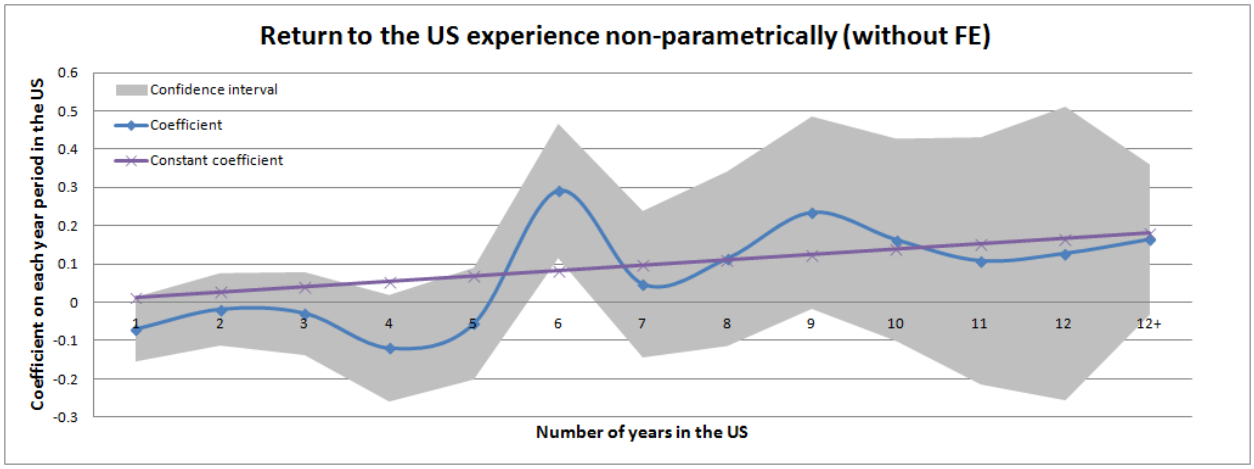


Figure 2: Return Migrant's Experience-Earnings Profile & the Length of Migration Trip. In a short migration stay, human capital accumulated by migrants as priority is usually host country specific and hardly transferable to the home country labor market. Also, additional human capital may not be accumulated, and financial goals for future investment opportunities in the home country may not be achieved in a short migration stay with mismatched jobs. Learning highly transferable skills may be time-consuming; when return migrants do not have enough time to learn transferable skills abroad, they may not earn more back home than non-migrants who experience neither interruption nor skills-atrophy. Only a sufficiently long trip has the chance of increasing return migrants' earnings when there is no substantial depreciation of home country-specific skills.



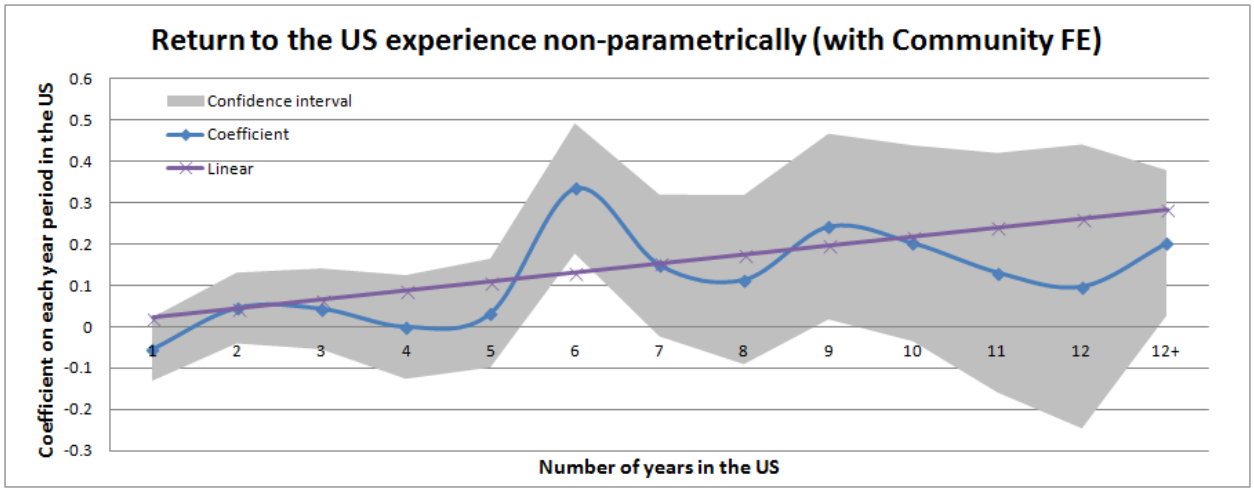


Figure 3: The nonparametric regression of *Log(Earnings)* on the *Expe US* for the male sample gives a coefficient on each time period. The first graph shows the coefficients and their confidence intervals for the regression without any FE. If migrants stay in the US less than five years, the coefficients are negative. The first coefficient suggests that a total US duration which is shorter than one year is associated with lower earnings compared to non-migrants. Staying in the US longer than five years but less than six years is special. After the fifth year, staying in the US is associated with an increase in earnings. The linear line has the slope of the upper confidence bound of the first coefficient. All of the coefficients after five years are above or around that line, suggesting only when the duration is long enough, migrants may earn more than non-migrants. The second graph displays consistent results having community FE in the nonparametric regression.

Table 1: Summary Statistics of Characteristics of MMP Individuals Who are Household Heads and Spouses

	Return Migrants & Non-Migrants				Return Migrants			
	Male		Female		Male		Female	
	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Earnings (Pesos)	4560.81	5578.61	3752.11	5093.75	4301.36*	6284.80	4322.10	6258.86
Age (Years)	42.17	10.93	40.93	10.14	41.16*	10.29	39.13	9.76
School^{+}	7.53	4.31	8.44	4.69	6.52*	3.50	8.38	4.03
Expe	26.11	11.34	24.30	10.77	25.71	10.48	22.83	10.11
Ever Migrate (%)	22	41	4	20				
Expe Before	23.30	12.31	23.84	10.99	12.76	8.59	11.93	8.13
Expe US	0.79	2.39	0.13	0.91	3.63	4.01	3.02	3.31
Expe After	2.03	5.89	0.34	2.13	9.32	9.56	7.88	6.91
Y1 (%)	7	25	1.7	12	30	46	40	49
Y2 (%)	4	21	0.7	9	20	40	17	38
Y3 (%)	3	17	0.6	75	14	34	13	34
Y4 (%)	2	13	0.4	6	8	27	8	28
Y5 (%)	2	12	0.2	5	7	25	5	22
Y5up (%)	5	21	0.7	8	21	41	16	37
Illegal Migrants (%)	19	39	4	19	85	36	86	35
Recent (within 5 Years) (%)	10	30	2	14	47	49	49	50
US Trips	0.46	1.38	0.06	0.31	2.12	2.28	1.37	0.69
Married (%)	86	35	65	48	90*	30	51*	50
Consensual Union (%)	11	32	10	29	8*	28	15*	36
Once Married but Not Now (%)	2	13	20	40	1*	10	22	42
Never Married (%)	1	10	5	23	1	10	11*	32
Child (%)	96	19	96	19	97	18	88*	33
Professionals (%)	14	34	23	42	8*	28	15*	36
Agriculture (%)	29	45	4	20	33*	47	5	22
Skilled Manufacturing (%)	21	41	16	37	22	42	15	36
Unskilled Manufacturing (%)	8	27	5	23	10*	30	10*	30
Service (%)	10	30	29	45	8*	27	24	43
Sales (%)	11	32	23	42	11	31	30	46
Transportation (%)	7	25	0	30	7	26	0	0
Observations	6,446 (73.68%)		2,303 (26.32%)		1,402		98	

Source: Data are from the MMP, they cover 91 communities surveyed from 1997 - 2013. STD stands for Standard Deviation.

* suggests that the difference between means (migrants and non-migrants) is significant at the .05 level.

+: 0.3% of the migrants were students in the first trip, and 0.1% were students in the last US trip.

Table 2: Summary Statistics of Characteristics of MxFLS Individual - Year

	Entire Sample		Male		Female	
	Mean	STD	Mean	STD	Mean	STD
	Non-Migrants and Return Migrants					
Earnings (Pesos)	4725.90	23300.68	4912.00	12821.97	4412.95	34295.23
Age	37.95	11.72	38.43	12.14	37.15	10.95
School	8.49	3.98	8.27	3.94	8.87	4.01
Expe (Total)	21.65	12.15	22.24	12.46	20.66	11.56
Ever Migrate (%)	4	19	5	21	2	13
Expe US	0.11	12.15	0.15	1.08	0.04	0.42
US Trips	0.05	0.26	0.06	0.31	0.02	0.15
Self Employed (%)	34	47	33	47	36	48
Unpaid Fraction in HH (%)	3	11	2	10	3	13
Unpaid Worker (%)	2	15	1	11	4	19
Observations	9,098		5,694 (62.59%)		3,404 (37.41%)	
	Return Migrants					
Earnings (Pesos)	4443.86	8884.62	4166.87	4797.90	5783.50	18777.61
Age	37.74	11.66	37.22	11.78	40.24	10.82
School	8.40	3.39	8.09	3.26	9.89	3.64
Expe (Total)	21.79	11.83	21.44	11.90	23.50	11.46
Expe US	2.98	3.76	3.14	3.95	2.20	2.50
US Trips	1.25	0.59	1.28	0.63	1.11	0.31
Self Employed (%)	39	49	41	49	29	46
Unpaid Fraction in HH (%)	3	12	3	12	2	9
Unpaid Worker (%)	2	16	2	15	4	19
Observations	321		266 (83.87%)		55 (17.13%)	

Source: Data are from the MxFLS, they cover individuals in both rounds 1 and 3.
STD stands for Standard Deviation.

Table 3: Regression Analysis of the Change in Household Heads' Earnings in the US

	Migrants	Return Migrants
Δ Mexico Experience	-0.003*	-0.006
	(0.002)	(0.005)
Δ Expe US	0.037***	0.053***
	(0.002)	(0.004)
US Trips	-0.026***	-0.036***
	(0.003)	(0.006)
R-squared	.1	.31
Num. of obs	2,331	502

Dependent Variable: Δln(Earnings in the US).
Δln(Earnings in the US)=ln(Earnings in the last US trip)-ln(Earnings in the first US trip).
Source: Data are from the MMP, the sample covers 143 communities surveyed from 1982 -2013.
Stars signify the following: *** significant at 0.01, ** significant at 0.05 level, * significant at 0.1 level. Standard Errors are reported in parentheses.

Table 4: Regression Analysis of Earnings for Return Migrants and Non-Migrants by Gender

	Males			Females		
	(1)	(2)	(3)	(4)	(5)	(6)
School	0.072***	0.073***	0.072***	0.102***	0.102***	0.102***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)
Expe	0.009***			0.012**		
	(0.003)			(0.006)		
$Expe^2$	-0.0001**			-0.0001		
	(0.0001)			(0.0001)		
Expe Before		0.002***	0.002**		0.007***	0.007***
		(0.001)	(0.001)		(0.002)	(0.002)
Expe US	0.023***	0.012***		-0.083	0.044**	
	(0.008)	(0.005)		(0.052)	(0.021)	
$Expe\ US^2$	-0.001*			0.010**		
	(0.0004)			(0.004)		
Expe After		0.005***	0.008***		0.013	0.016
		(0.002)	(0.002)		(0.009)	(0.011)
US Trips	-0.025***	-0.023***	-0.020**	0.065	-0.055	0.006
	(0.008)	(0.008)	(0.009)	(0.073)	(0.071)	(0.120)
Y1			-0.071*			-0.014
			(0.043)			(0.221)
Y2			-0.019			-0.067
			(0.048)			(0.312)
Y3			-0.030			0.163
			(0.055)			(0.268)
Y4			-0.121*			-0.277
			(0.071)			(0.328)
Y5			-0.057			-0.044
			(0.074)			(0.379)
Y5up			0.166***			0.211
			(0.055)			(0.277)
Consensual Union	-0.080***	-0.082***	-0.086***	-0.042	-0.051	-0.050
	(0.026)	(0.026)	(0.026)	(0.053)	(0.053)	(0.054)
Once Married but Not Now	-0.092	-0.087	-0.088	0.049	0.048	0.051
	(0.064)	(0.065)	(0.064)	(0.040)	(0.040)	(0.040)
Never Married	-0.005	0.001	-0.001	0.090	0.087	0.086
	(0.091)	(0.091)	(0.090)	(0.070)	(0.070)	(0.071)
Child	-0.028	-0.012	-0.012	-0.151*	-0.141*	-0.136
	(0.050)	(0.049)	(0.049)	(0.086)	(0.085)	(0.085)
R-squared	.18	.18	.18	.28	.27	.27
Num. of obs	6,446	6,446	6,446	2,303	2,303	2,303

Dependent Variable: ln(Earnings in Mexico).

Stars signify the following: *** significant at 0.01, ** significant at 0.05 level, * significant at 0.1 level.

Standard Errors are reported in parentheses.

Source: Data are from the MMP, they cover 91 communities surveyed from 1997 - 2013.

Table 5: Regression Analysis of Earnings Considering Legal Status (Selected Coefficients)

	Males		Male Return Migrants			
	(1)	(2)	(3)	(4)	(5)	(6)
Expe	0.009***		0.022**		0.023**	
	(0.003)		(0.009)		(0.009)	
Expe Before		0.002***		-0.004		-0.004*
		(0.001)		(0.003)		(0.003)
Expe US					0.007	0.012**
					(0.008)	(0.005)
Expe After		0.005***		0.003		0.003
		(0.002)		(0.002)		(0.002)
US Trips					-0.023**	-0.017*
					(0.009)	(0.009)
Legal US	-0.001	0.002	0.002	0.003		
	(0.009)	(0.009)	(0.010)	(0.010)		
Illegal US	0.012**	0.014**	0.012*	0.012*		
	(0.006)	(0.006)	(0.006)	(0.007)		
Legal Trips	-0.027*	-0.029**	-0.024	-0.022		
	(0.014)	(0.014)	(0.015)	(0.015)		
Illegal Trips	-0.009	-0.011	-0.017	-0.007		
	(0.012)	(0.012)	(0.014)	(0.014)		
Illegal					0.024	0.069
					(0.072)	(0.056)
Expe US × Illegal					0.006	
					(0.010)	
R-squared	.18	.18	.054	.055	.055	.056
Num. of obs	6,438^{+}	6,438^{+}	1,394^{+}	1,394^{+}	1,402	1,402

Dependent Variable: ln(Earnings in Mexico).

Stars signify the following: *** significant at 0.01, ** significant at 0.05 level, * significant at 0.1 level. Standard Errors are reported in parentheses.

Source: Data are from the MMP, they cover 91 communities surveyed from 1997 - 2013.

+: missing values for documents that migrants used to cross the border in some trips.

Wald tests show that the coefficients on *Legal US* and *Illegal US* are not significantly different.

Wald tests show that the coefficients on *Illegal US* and *Legal Trips* are not significantly different.

Table 6: Regression Analysis of Male Return Migrants' Earnings Considering Timing of Migration (Selected Coefficients)

	(1)	(2)	(3)
Expe	0.017*	0.022**	0.015
	(0.009)	(0.009)	(0.010)
$Expe^2$	-0.0003**	-0.0005***	-0.0003*
	(0.0001)	(0.0002)	(0.0002)
Expe US	0.029***	0.005	0.030***
	(0.011)	(0.006)	(0.011)
$Expe\ US^2$	-0.001*		-0.001*
	(0.001)		(0.001)
Expe After		0.005	0.019***
		(0.003)	(0.006)
$Expe\ After^2$			-0.0003*
			(0.0002)
Recent	-0.113***		
	(0.043)		
US Trips	-0.023**	-0.017*	-0.020**
	(0.009)	(0.009)	(0.009)
Expe US × Expe After		0.002**	
		(0.001)	
R-squared	.062	.066	.066
Num. of obs	1,402	1,402	1,402

Dependent Variable: ln(Earnings in Mexico).

Stars signify the following: *** significant at 0.01, ** significant at 0.05 level, * significant at 0.1 level. Standard Errors are reported in parentheses.

Source: Data are from the MMP, they cover 91 communities surveyed from 1997 - 2013.

Table 7: IV Analysis of Earnings for Males, Using Policy Change (IRCA) and Enforcement to Instrument US Experience and Total Number of US Trips (Selected Coefficients)

	(1)	(2)	(3)		(4)	
	Equation (6)	Equation (7)	Equation (6)		Equation (6)	
First Stage						
Dependent Variable		Expe US				
IRCA	3.989***	3.930***	IRCA(1982)	4.060***	IRCA	3.456***
Enforcement	0.221***	0.182***	Enforcement	0.168***	First	-0.150***
F Value	26.05	33.25		20.16		24.55
Dependent Variable		US Trips				
IRCA	2.348***	1.815***	IRCA(1982)	2.397***	IRCA	1.917***
Enforcement	0.273***	0.313***	Enforcement	0.243***	First	-0.027**
F Value	43.11	48.21		34.76		33.77
Second Stage						
Expe US	0.044**	0.038**		0.043*		0.197**
	(0.022)	(0.018)		(0.023)		(0.078)
US Trips	-0.084**	-0.072***		-0.084**		-0.372**
	(0.035)	(0.026)		(0.035)		(0.148)
Community FE	Yes	Yes		Yes		Yes
Num. of obs	6,340^{+}	6,340		6,340		6,340

Dependent Variable: First Stage: *Expe US & US Trips*; Second Stage: ln(Earnings in Mexico).

IRCA=1 if any household member ever migrated before 1987; 0 - otherwise.

IRCA (1982)=1 if any household member ever migrated before 1982; 0 - otherwise.

Enforcement: US borderline watch hours (million) in migrants' last US trips.

First: US borderline watch hours (million) in migrants' first US trips.

Stars signify the following: *** significant at 0.01, ** significant at 0.05 level, * significant at 0.1 level.

Standard Errors are reported in parentheses.

Source: Data are from the MMP, they cover 91 communities surveyed from 1997 - 2013.

+: smaller sample size due to the exclusion of 4 communities without migrants. No values for the enforcement.

Table 8: Regression Analysis of Earnings with Individual FE & Year FE (MxFLS)

	Entire Sample	Male	Female
	(1)	(2)	(3)
School	-0.008	-0.035	0.025
	(0.025)	(0.031)	(0.048)
Expe	0.019	0.013	0.022
	(0.024)	(0.027)	(0.048)
$Expe^2$	-0.001***	-0.001***	-0.001
	(0.0002)	(0.0002)	(0.0004)
Expe US	0.060	0.062	0.700
	(0.090)	(0.089)	(0.558)
US Trips	-0.459**	-0.489**	-0.687
	(0.213)	(0.219)	(0.773)
Self-Employed	-0.653***	-0.564***	-0.865***
	(0.061)	(0.069)	(0.125)
Unpaid Fraction in HH	-1.079***	-1.017***	-1.244***
	(0.235)	(0.275)	(0.446)
Unpaid Worker	-0.078	-0.5487**	0.511
	(0.196)	(0.256)	(0.328)
R-squared	.92	.90	.93
Num. of obs	9,098	5,694	3,404

Dependent Variable: ln(Earnings in Mexico).

Stars signify the following: *** significant at 0.01, ** significant at 0.05 level,

* significant at 0.1 level. Standard Errors are reported in parentheses.

Source: Data are from the MxFLS, they cover individuals in both rounds 1 & 3.