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Wealth in Middle and Old Age in Mexico: The Role of International Migration¹

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Abstract

This article examines the impact that past migration to the U.S. has on the current economic well-being of individuals in middle or old age who have returned to Mexico. *A priori*, the net effect of U.S. migration on wealth among return migrants is difficult to predict; there are counteracting factors that can affect wealth positively or negatively. Using data from the Mexican Health and Aging Study 2001 and correcting for selection factors, the long-term effect of U.S. migration for return migrants was found consistently positive in terms of their accumulated personal wealth at middle and old age. This article speculates about the possible mechanisms that can explain this apparent advantage.

INTRODUCTION

While well-being in old age has myriad dimensions, economic circumstances are among the most important. Financial resources cushion shocks that are common in old age such as declining health or loss of a spouse. Financial security also enables the purchase of hands-on care or the adoption of technological devices for disabled individuals in old age, improving the quality of life even with poor health or decreased functionality. The literature has documented socioeconomic differentials in old age by sex and educational attainment, for example, but the impact of international migration as a long-term strategy potentially affecting economic well-being in old age has received little attention.

The literature on the determinants of international migration treats a migratory movement as a rational choice motivated by an investment in human capital. The argument involves an individual or a family deciding to migrate because they hope to improve their *well-being in the long run* (Todaro, 1980; Massey *et al.*, 1993). In most prior studies, *long-run* consequences have been defined in terms of the conditions of the descendants of migrants

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(Portes, 1996). The studies focus on (1) the conditions or behaviors of the population after the move, for example, wages, income, employment, or remittances (Hoddinott, 1994), or on (2) fertility and the conditions of the children of migrants in the destination or origin countries (Oropesa and Landale, 2000; Landale and Oropesa, 2001; Frank and Hummer, 2002). There is little evidence, however, on how migration affects the migrants' own economic conditions, in particular their old-age well-being. Old-age financial status can be worsened by international migration over the lifetime, for example, if there was a major disruption in human capital investment or an increase in exposure to environmental risks, diminishing the long-term capacity to gain income or accumulate assets. On the other hand, positive effects of migration may take the form of an increase in income, better health care, and higher rates of savings in the destination country. In addition, remittances to the origin area could secure a network of family assistance upon return and/or during old age (Hoddinott, 1994; Durand, Parrado, and Massey, 1996; Massey and Parrado, 1998; Phillips and Massey, 2000). Thus, even if remittances sent by migrants during their working years may be used for a variety of purposes (*e.g.*, to form businesses, purchase land, acquire human capital, or for daily living expenses), the long-run impact may be to secure economic support for the return migrants in old age, which was procured by their participation in networks of family support.

In this article we focus on the long-term consequences of international migration, by observing individuals in middle or old age who *have returned to their country of origin*. We do this by studying previous Mexico-U.S. migrants who are observed back in Mexico at ages 50 and over, and contrast their conditions with those also residing in Mexico without any migration experience.

According to the World Bank classification, Mexico can be considered a middle-income country, but the health profile for the population reflects extreme polarities. The main causes of death in rural areas are infectious diseases and malnutrition, while chronic and degenerative diseases and injuries are the major causes of death in the urban areas (Cutler *et al.*, 2000). Mexico has experienced an epidemiological transition characterized by the fact that communicable diseases are still a predominant cause of death, and by having health status that differs vastly across population subgroups due to existing social and economic inequality, including unequal and limited access to health care services and old-age pensions. Social sector coverage among people of old age is associated with current or past employment in the formal labor market, either by the worker or a relative on whom the elderly can depend. According to figures of the late 1990s, only about half of the population aged 60 or older have health care coverage by a public or private institution, and about 40% have no access to any health care. Only about 30% of men and 15% of women aged 60 or older receive a retirement pension in Mexico (Gomes, 2001; Parker and Wong, 2001).

Thus there are reasons for concern over the economic conditions of the elderly in countries such as Mexico. In such countries, social security or health coverage for the elderly or the poor is not publicly available. Also, credit markets are not widely used in particular by the older cohorts of the population who in the past may have lacked the information or trust to use the credit markets to finance future or uncertain consumption. In order to increase old-age security, these cohorts in Mexico may have adopted alternative strategies, for example,

through relatively higher accumulation of assets in forms that are not financial, such as property. In addition for Mexicans, because of the geographical proximity to the U.S., international migration may have represented an important survival strategy; this may have been not only a short-term solution but also a long-term investment for securing old-age support or for the well-being of future generations.

Partly because Mexico is the origin of most immigrants to the U.S. (Massey, Durand, and Malone, 2002), there is extensive literature on the economic conditions of those in the U.S., but we know little about the well-being of those who have returned to Mexico by middle or old age. Does earlier migration to the U.S. imprint into the well-being of the individuals who have returned in a positive or negative way toward the end of the life cycle? This article makes a contribution *first*, because the data used for the analyses represent a first attempt to measure personal wealth in Mexico in a national sample, enabling the study of wealth among return migrants in middle and old age. *Second*, by focusing on the impact of migration, this study contributes to the literature on possible explanations of socioeconomic differentials among older persons. *Third*, by focusing on the end of the life cycle of the returning migrants, this article addresses another form of examining the consequences of international migration.

The overarching hypothesis is that, on average, among individuals of middle and old age currently residing in Mexico, those with past migratory experience to the U.S. will exhibit higher levels of wealth than those who have no such experience. We hypothesize the effect of migration to be positive on wealth, although there are counteracting effects in both directions. Some influences may be a reflection of the “positive” attributes that select economic migrants, for example, as migrants may be more likely to have more initiative, greater ability to get employment, and be more motivated to work hard and seek forms to accumulate assets than non-U.S. migrants. This is counteracted, however, by having U.S. migrants more likely to be of low socioeconomic status among the Mexican population, at least in the cohorts who are currently ages 50 or older in Mexico. In addition to these factors that affect initial migration to the United States, there are factors related to the return move. Former U.S. migrants who have returned to Mexico may be negatively selected on wealth because those who suffered negative shocks in the U.S. may be more likely to return. On the other hand, Borjas and Bratsberg (1994) argue that the direction of the selection in return migration runs inversely to the direction of the selection for the original move. That is, if there were initial negative wealth selection (i.e., the poor tend to migrate), there would be positive wealth selection for returning. Constant and Massey (2003) argue that the return migration seems harder to model than the initial move. The initial migration can be modeled mostly in terms of perceived net economic gains, whereas the return migration decision is a complicated socioeconomic process depending on the original motives for migrating, but perhaps more importantly, on family and cultural considerations. Thus *a priori*, the net effect of U.S. migration on wealth among return migrants is difficult to predict. In a study of return migrants from Albania who have migratory experience to Europe, De Coulon and Piracha (2005) find that there was likely negative selection with respect to wages. That is, compared to those who never left, return migrants have lower earnings. For our purposes, the question is whether after adjusting for possible initial and return selectivity factors among Mexicans, the impact of migration on wealth remains positive or negative.

DATA AND METHODS

We use data from the first wave of the Mexican Health and Aging Study (MHAS).² This is a nationally representative, prospective panel study of Mexicans aged 50 and over as of 2000. Interviews were also sought with spouses/partners of sampled persons regardless of age. Data were collected on multiple domains of health; demographic history, including the migration history of respondents, their parents, and offspring; family support networks and transfers exchanged; aspects of work history; income by sources; assets in various forms; and aspects of the built environment. The core interview is about 80 minutes in length. Six Mexican states with high rates of out-migration to the U.S. were oversampled (with a ratio of 1.7 to 1).

The first wave of MHAS was fielded during June–September 2001 in Mexico by the INEGI (*Instituto Nacional de Estadística, Geografía e Informática*), the equivalent of the U.S. Census Bureau. The sampling frame for MHAS was the household listing of about 136,000 dwelling units from the 4th Quarter of the ENE-2000 (National Employment Survey), also fielded by INEGI. Hence, the weighted first wave MHAS data are both a baseline for the MHAS panel and a representative cross-section of older Mexicans. Baseline interviews were completed in 9,845 households with about 15,000 respondents. By U.S. standards, the individual nonresponse rate of 10.5% for a population-based survey is very low. The MHAS data are particularly useful for the purpose of this article, because the survey gathers information on old-age income and wealth and past migration, a combination that has been difficult to obtain for a country such as Mexico, in which migration to the U.S. can be an important strategy for survival. In addition, the MHAS population of study are individuals of middle and old age, thus the *long-term* effects of migration can be examined.

We know little about the wealth of individuals in general in Mexico, since there is no national data on household assets in the country. Previous research on this topic provides assessments of poverty, for example, using information on household income or expenditures (Parker and Wong, 2001; Cortés, 2002). The MHAS represents the first attempt to measure assets for the Mexican population aged 50 or older. The survey instrument was designed to measure types of assets owned and sources of income, in an attempt to generate information that allows the study of economic well-being, but also as data that can feed into other analyses such as health, retirement, and migration of the Mexican population of middle and old age. The survey instrument was designed to ask information on each of the spouse's labor income, pension income, and other public transfers. For couples, questions on assets were asked about the couple's net worth of assets in the form of homes, businesses, rental properties, capital, vehicles, other debts, and other assets. For the purposes of this study, we use an *individual-level assets variable*, constructed by taking the total value for single-person households, and taking the total joint value divided by two for couple-households (Wong and Espinoza, 2003). We use the sample of men aged 50 or older ($n = 5,119$), because most return migrants are men, and the phenomenon of migration and its relation to assets

²The data and documentation for the MHAS data can be obtained from the study Web site, <<http://www.mhas.pop.upenn.edu>>. The study also can be found by typing MHAS in a standard search engine.

accumulation for women is vastly different than for men.³ In our national sample of people aged 50 or older, 80% of respondents with past U.S. migration experience were men.⁴

We use descriptive and multivariate statistical models to examine the outcome variable of current wealth or net worth. To assess the long-term effects of migration on current wealth, the issue of self-selection of return migrants arises in the multivariate analyses. Many of the factors that determined migration and return could determine the level of wealth in old age. Ideally, we would like to observe the wealth in old age of the same individuals who migrated and returned, and compare this with their wealth under a scheme without the migratory experience. Then we would be able to isolate the effect of migration on wealth. Such data are not available, however, as we obviously cannot observe the counter-factual conditions of the return migrants had they not migrated and returned. Instead, we use two approaches that attempt to deal with the selection issue: regression analysis and propensity matching techniques.⁵ We present the results of the two methods, both attempting to address the selection problem that emerges from the nonrandom assignment of the “treatment” of having been a U.S. return migrant. Both methods use the same basic assumption, namely that the outcome (current wealth) in the absence of treatment (past U.S. migration and return) is independent of the treatment conditional on observed covariates. In other words, current wealth among those who are *not* former U.S. migrants can be assumed to be a function of observed attributes and not dependent directly on migration once we control for other observable factors. Propensity matching and regression differ in that propensity matching techniques condition on the covariates nonparametrically, whereas the regression assumes a linear functional form of the outcome on the covariates.

The Outcome Variable: Current Wealth

We model a discrete outcome variable representing the current wealth of men aged 50 or older residing in Mexico. Since the distribution of wealth is quite skewed, we construct two dichotomous dependent variable measures as follows:⁶

$Y_1 = 1$ if the individual has *Low wealth*, below the 30th percentile of the wealth distribution, and 0 otherwise.

$Y_2 = 1$ if the individual has *High wealth*, at the 70th percentile or above, and 0 otherwise.

³In addition to having a small sample for migrant women, many women may migrate for family reasons instead of economic reasons, and we have no way of distinguishing between the two. Many women may not have work experience in the U.S. even if they report migration experience. Among men, migration can be assumed to be for economic reasons, allowing us to treat the migration as a possible form of accumulating savings and earning social capital by sending remittances to the network left behind, or as a way of gaining entrepreneurial experience in the U.S.

⁴Past migration to the U.S. is defined as answering “yes” to the question “Not counting vacations or short visits, have you ever worked or lived in the U.S.?”

⁵We considered also the use of regression analysis with instrumental variables to take into account the selectivity of migrants. We were unwilling to assume that we had an adequate instrument for past migration, however. In addition, we were unwilling to assume a functional form for the selection variable. In contrast, the regression and propensity matching methods seem more appealing for the purposes of this paper and the data at hand.

⁶We considered the model for a continuous outcome variable, but the distribution of wealth was quite skewed to provide stable results with acceptable goodness of fit. We tried quantile regression and log-transformations of the dependent variable and obtained nonstable results. We also considered the possibility of an ordered probit for low-medium-high wealth, but propensity matching methods were not available for ordered probit. In contrast, the discrete-outcome methodology was easily implemented using STATA and provided robust results.

By choosing this definition of the outcome variable, we are essentially able to assess the role that past U.S. migration plays on the placement of an individual in the low end (the third poorest) and in the high end (the third richest) of the distribution of current wealth. Is international migration and subsequent return associated with low propensity to be in the poorest part of the wealth distribution in middle and old age? Is this type of migration also likely to have a role in the propensity to be in the richest part?

Regression Analysis: Selection on Observables

We use the basic regression approach used by Heckman and Robb (1985) and we assume that the selection can be largely captured by observable factors. This is a reasonable assumption in that we argue that the migration-and-return behavior can be captured largely by factors that we can measure and include in the models. Under this assumption, the bias resulting from the nonrandom selection of men more able and motivated to migrate to the U.S., and later motivated to return, can be accounted for by including characteristics that are strong determinants of both migration initiation and return in a linear model of wealth. Thus in the regression model, we include a set of covariates representing factors that affect both the treatment (migration-and-return) but also the outcome (current wealth) in the absence of the migratory experience.

We include factors that determine migration and return as follows:

age cohort (categories < 60, 60+),

age at first marriage (dummy variable for first marriage after age 23),

educational attainment (categories of years of formal education),

socioeconomic status in childhood (dummy variable for whether the respondent's household had a toilet facility before age 10),⁷

serious illness in childhood (dummy variable for whether the respondent had tuberculosis, rheumatic fever, polio, typhoid fever, or suffered a serious stroke to the head before age 10),⁸

parental education (dummy variable for whether at least one parent completed primary education), and

political environment regarding migration to the U.S. (years exposed to the Bracero program, constructed by calculating the number of years between the ages 18 and 40 that the individual was exposed to the Bracero Program⁹). The political environment could increase both the likelihood of initial migration and the chances of return since this was a formal temporary migrant program.

⁷The measure of availability of a toilet during childhood provides a rough measure of socioeconomic status, in that it reflects both urban/rural residence as well as possible exposure to hygienic practices. This measure and parental education roughly capture the relative past socioeconomic status of these cohorts in Mexico.

⁸The measure for childhood health is meant to roughly capture the possibility that healthier young men would be more likely to self-select into migration to the U.S. compared to their less-healthy counterparts.

⁹Migration from Mexico to the U.S. from 1942 to 1964 took place under the "Bracero Program," which favored and consolidated a circular and recurrent flow of documented temporary migrants. The majority of these migrants were young men coming from rural areas of western Mexico, who would work temporarily as agricultural, construction, or railroad workers (Driscoll, 1999). We acknowledge Kalena Cortes for suggesting the construction of this variable.

The assumption that the selection can largely be captured by the observed factors is reasonable to the extent that we can argue that the perceived benefits and costs, and the attributes that make a person more likely to venture into an unknown journey, both initially and upon return, can be captured by these variables. The limitation we had was that we needed to include variables that captured these factors and were observed for individuals in Mexico who had U.S. migratory experience and for those who did not.

As additional covariates associated with the current level of wealth even in the absence of migration, we include the following:

- current area of residence* (urban or rural),
- number of children ever born* (in three categories: 0–3, 4–10, 11+),
- number of total years in the labor force* (in three categories: 0–35, 36–45, > 45), and
- type of job performed for most of the time during their life* (in four categories: agriculture, lower blue collar, lower white and upper blue collar, and upper white collar).

Our explanatory variable of main interest is the *past U.S. migration* variable. Within the group of individuals in Mexico that report no U.S. migration, we further differentiate between those who are domestic migrants and those who never migrated anywhere. Consequently, in practice we have three groups according to migration experience: a) past U.S. migrant, b) domestic migrant, and c) never-migrant. The categories are mutually exclusive and exhaustive, in the sense that every individual is classified in one (and only one) of them. The overruling category is U.S. migrant, that is, if a person reports both domestic and U.S. migration, he is classified as U.S. migrant.

We include two variables capturing whether *the family network has U.S. migration experience* (whether a parent or sibling was ever a U.S. migrant, and whether the current residence is in a high-migration state).

Propensity Score Matching Methods

As the second approach to take into account selectivity in the multivariate analysis, we use propensity matching techniques to compare the current wealth outcome between two groups: those who ever-migrated to the U.S., with their “control” group, constructed by matching each observation in the migrant group with their best match according to a series of factors pre-migration-and-return (Heckman, Ichimura, and Todd, 1997, 1998).

Rosenbaum and Rubin (1983, 1985) proposed the use of propensity score methods to reduce the bias in the estimation of treatment effects in observational studies (that is, nonrandomized studies, as opposed to random trials). Since in observational studies the allocation of individuals to the treatment and control groups is not random, the estimation of the treatment effect with multivariate regression techniques can be biased. The method is based on the premise that the bias is reduced when the comparison of outcomes occurs between treatment and control group subjects that are as similar as possible, and the “only” difference is the treatment. Specifically for our case, the method matches subjects based on a one-dimension “score” (the propensity matching score), constructed with pre-migration-and-

return attributes of each individual. Once the matching is performed, basically on the estimated probability of being a past U.S. migrant (the score), the comparison of current wealth between past U.S. migrants and nonmigrants will determine our main interest, the effect of the past U.S. migration. Economists and other social scientists have used this method to evaluate the impact of training and social programs (*see* Heckman and Hotz, 1989; Friedlander and Robins, 1995; Heckman, 1997; Lechner, 2002).

The advantage of this method is that, unlike the regression approach, it does not impose a functional form in estimating the impact of the treatment on the outcome. Similar to the regression approach, this method requires the assumption that the factors that determine the migration-and-return treatment can be observed, or largely captured by observable characteristics. The extent to which the selectivity bias can be eliminated through the method depends on the control variables used to calculate the propensity score and the matching performed. The existing bias is eliminated to the extent that the exposure to the treatment can be considered to be purely random among individuals with the same value of the propensity score.¹⁰

In our case, the estimated effect of past U.S. migration on current wealth is given by the mean of the differences in the wealth outcome variable among pairs of past U.S. migrant observations and the matched nonmigrant observation(s). Since our wealth outcome variable is dichotomous, this is really the mean difference in the probability that the outcome = 1 among pairs of migrant and nonmigrant observations. A t-statistic is used to test the significance of this difference.

DESCRIPTIVE RESULTS

Table 1 shows the distribution of men aged 50 or older residing in Mexico, according to their status as never-migrant, domestic migrant, or return U.S. migrant. We find that 37% are never-migrants, 49% are domestic migrants, and 14% are return U.S. migrants.

The univariate descriptive statistics reveal that return U.S. migrants are similar to domestic migrants in some aspects and to never-migrants in others. All three groups of men look similar with respect to marital status, with the majority being currently married or in consensual union. Return U.S. migrants tend to be older than the other two groups, but are more similar to *never-migrants* in their low level of education, low socioeconomic level during childhood, high number of children ever-born, rural residence, and work predominantly in agriculture. Past U.S. migrants look more similar to *domestic* migrants in that they have a higher age at first marriage and household structures with fewer adults. Those that experienced U.S. migration stand out from the other two groups in that they

¹⁰This underlying assumption can be tested partially with the “balancing hypothesis,” which essentially assumes that the difference in the propensity score is the same for treated and controls in each set of values of the conditioning variables (those in the propensity matching equation). This implicitly requires that for any given set of values of the conditioning variables, there are individuals of each type – treated and control, in order to calculate the comparison statistics. The literature also debates the type of algorithm used for matching among several options that are feasible or available (*see* Black and Smith, 2004). We performed the analysis using several algorithms for matching and present the results of only the kernel algorithm. The point estimates for the migration effect were particularly similar across the kernel and nearest neighbor algorithms for matching; the comparative results (not shown) are available from authors upon written request. We use STATA software to construct the propensity score and the matching, as well as the tests for the assumptions of balancing of the pre-treatment variables (the balancing hypothesis).

report a longer working career, are more likely to have a parent or sibling with similar U.S. experience, have a higher propensity to live in one of the high-U.S.-migration states in Mexico, and were exposed longer to the Bracero Program than the other two groups. These results indicate that return U.S. migrants in mid and old age have long, hard-working careers, are part of a vast migration social network, and lived through temporary working programs. In contrast, those who are never-migrants in Mexico (neither domestic nor international) seem to be the poorest, in that they report the lowest education, have the worst socioeconomic parental background, are more likely to be from rural areas and lack institutional health care coverage.¹¹

Table 1 reports also the distribution of the three groups of migration experience by wealth attributes. For descriptive purposes, we include also the distribution of conditions of the current residence dwelling. U.S. return migrants are the most likely to have high wealth (defined as net value of assets greater than 70th percentile). Domestic and U.S. return migrants show similar propensities to have high income and good dwelling conditions, and both are more likely to have high income and good dwelling conditions than never-migrants. However, domestic migrants report the highest health care coverage, followed by return U.S. migrants and never-migrants. In summary these results show that there is heterogeneity across the three groups of migration experience with respect to their demographic and socioeconomic conditions, and the relative standing of the three groups is not uniform. Depending on the indicator examined, unadjusted statistics show that previous U.S. migration seems to be associated with relatively low socioeconomic conditions such as education, poor background, large family size, and low health care coverage, but at the same time with current high levels of wealth, income, and good dwelling conditions.

Table 2 shows a summary of the composition of accumulated wealth by migration group. The total net worth distribution (in Mexican pesos) is provided at the top of the table, followed by the percent distribution by type of assets. On average, U.S. return migrants have the highest average net worth followed by domestic migrants and never-migrants. The percentile distribution reveals that the largest gap between past U.S. migrants and the other two groups occurs at the low end of the wealth distribution. The 25th percentile is 95% larger, whereas the median is only 20% larger and the 75th percentile is 24% larger for U.S. migrants compared to domestic migrants. The relative difference in net worth between domestic and never-migrants is smaller, indicating that the former U.S. migrants have a clear wealth advantage with respect to the other two groups.

The structure of wealth is similar across the three groups, in that most of the wealth (about 60%) is in the form of their home, and there is relatively little capital accumulation,¹² on average lower than 3% in all groups. Domestic migrants report a higher proportion of real

¹¹This result is consistent with what others have reported (Massey *et al.*, 1987; Chiquiar and Hanson, 2005) regarding recent U.S. migrants, who are likely to be selected among the middle-low of the educational distribution in Mexico, and not among the lowest. The poorest cannot afford the relatively high out-of-pocket cost, and lack the social capital needed to migrate to the U.S.

¹²Capital wealth accumulation is defined in the form of bank accounts or other financial assets (certificates of deposit, loans to others, bonds, and stocks). By comparison, the accumulation of financial assets is relatively more prevalent in developed countries. For the U.S., using the Health and Retirement Study 1992 for population 51 to 61 years old, Smith (1995) reports that about 27% of total assets are in financial form, while 30% are in the form of housing. For Mexico, using MHAS 2001, all age groups (50–59, 60–69, or 70 and older) show that housing represents over 60% of reported net worth (Wong and Espinoza, 2003).

estate assets than the other groups, and never-migrants show the highest fraction of their wealth in business form. Table 3 shows the distribution of wealth and the share that the three groups of migration represent, to provide a gross summary of the unequal distribution of wealth across the three groups. Previous U.S. migrants own a higher share of their wealth than the share of the population they represent, while domestic migrants command about the equivalent share of the total assets, and never-migrants own a disproportionately low share. In summary, these descriptive results seem to indicate that past U.S. migration is associated with higher accumulated wealth relative to domestic migration and no-migration among men aged 50 or older residing in Mexico.

Table 4 provides an overview of the migration experience for these cohorts of return U.S. migrant men. On average, they were part of family networks with migration experience as well, had short stays in the U.S., and had been back in Mexico for quite a while. More than one-half had a first marriage or union prior to their first migration to the U.S., close to one-half had total stays of less than two years, and for two-thirds of them their last return to Mexico was 20 years ago or longer. Regarding their first migration, about 40% first went to the U.S. after age 25, also about 40% first migrated after 1964 (when the Bracero Program ended), and a similar fraction report that they received financial help and that they had people they knew to help them in the destination. Only 13% report that they currently hold a work permit for the U.S.

MULTIVARIATE RESULTS

Table 5 presents the results of the probit regression analysis for current wealth, where the explanatory variable of interest is the past U.S. migration variable. The columns present the results for the two dummy dependent variables (having low and high level of assets). For each, we present Model 1, containing only the variables assumed to determine the propensity to migrate in the past; and Model 2, adding the other covariates of current wealth.

We present the marginal effects of the probit regressions with a dummy variable for migration (prior U.S. migration = 1; all others, *i.e.*, domestic and never-migrants = 0).¹³ For all cases we find that the U.S. migration variable is significant on wealth if we include only the determinants of migration in the model (Model 1), and that this effect remains significant but declines in magnitude when we include additional covariates of wealth (Model 2).

We take Model 2 in Table 5 as the basis for discussing the regression results. We find that holding all other covariates at the mean value, and taking into account factors that determine self-selection into migration and return, a previous U.S. migration is associated with a higher probability of having *high wealth* by 0.04 (marginal effect of 0.037). Past U.S. migration is associated with a similarly lower probability of having current *low wealth* of 0.04 (marginal effect of 0.037).¹⁴ We summarize the results on other covariates as follows: older age is associated with higher likelihood of having high wealth. More years of education increase

¹³We also ran the model including two categorical variables for migration (U.S. migrant, domestic migrant, and never-migrants as reference group), and found no significant difference between domestic and never-migrants, and no change in the other coefficients. We chose to report only the results of the models with U.S. migration (versus all others) as explanatory variable, which is a more parsimonious model and highlights the significance of the U.S. migration experience.

the likelihood of having high assets and reduce the propensity of having low wealth, and the effect seems to be larger for those in the rich end of the wealth distribution. Parental education and previous experience in the U.S. by a parent or sibling also are associated with having high wealth. An interesting set of results is that having a larger family network (number of children ever-born or number of adults in the household) and living in urban areas reduce the likelihood of having low wealth, but do not affect the propensity of having high wealth. That is, these effects operate in the low end of the wealth distribution only, indicating perhaps that urban residence and a family network of assistance seem to operate only to reduce poverty.

Table 6 presents the results of the propensity score matching method. The key statistic in this method is the difference in the wealth outcome between treatment observations and the matched observation(s) in the control group.¹⁵ Since we have two dichotomous outcomes, this is the difference in the probability of being in the bottom, and then in the top end of the wealth distribution. The T-value is the test statistic for the hypothesis that the mean difference is zero, and the significant differences (T-values greater than 1.96) are marked with shaded text. The table shows the number of migrants for which an estimated control could be constructed. “# Treatment” is the number of observations treated and “# Control” is the number of observations among the control group that were matched.

The columns of the table show the comparison of each pair of migration groups at a time (never vs. U.S.; never vs. domestic; domestic vs. U.S., and in the last column of the table, *others, i.e., domestic and never-migrants vs. U.S.*).¹⁶ For each of these, we have the results of the two dummy outcome variables (having low, and having high wealth). A brief summary of these results is: U.S. return migrants are significantly different in wealth than domestic and never-migrants, but never- and domestic migrants are not significantly different from each other. Thus we concentrate our discussion in more detail on the difference between the U.S. migrants and others, *the last column of the table*. The contrast groups in this column correspond to the regression method results presented in Table 5 and discussed above.¹⁷ All matching estimates of the past migration effect are significantly different than zero, indicating that the probability of having low wealth is significantly *lower* for those who are return U.S. migrants. Similarly, compared to those who never migrated or

¹⁴Note that this symmetrical result is somewhat expected *a priori*, but not necessarily. The reference category for the dependent variable in each regression model is not strictly symmetrical for both groups. For low assets = 1, the reference category is having medium/high assets. For high assets = 1, the reference category is having medium/low assets. In general we would expect opposite signs in the effects of the explanatory variables, but not necessarily marginal effects of similar magnitudes.

¹⁵We also performed the analysis with the matching algorithms of nearest neighbor, stratification, and radius (not shown). The results were similar to the ones reported here with respect to the statistical *significance* of the U.S. migration effect. There were only slight differences in the *magnitude* of the effect. For example, the nearest neighbor estimates for the migration effects were -0.066 and 0.062 compared to -0.049 and 0.046 for kernel. We ruled the kernel estimates as more parsimonious and they also use more information in the sense that more observations are matched. The number of cases is shown in the table and may vary because the software drops observations for which the support condition does not hold.

¹⁶Lechner (2002) discusses the propensity matching methods case in which there is heterogeneity among individuals in the treatment group, for example when there are several possible training programs to take, and the goal is to compare the effect of having received training versus not attending any training. In our case, we have three migration groups, differentiating among domestic migrants, U.S. migrants, and never-migrants.

¹⁷Our tests of the assumption of the balancing property was performed with STATA, and as a result of some of these tests, the categories of the explanatory variables were modified (essentially grouped together) so that the balancing property would hold. In brief, STATA checks that for every value of each explanatory variable, there are both migrant and nonmigrant observations to make comparisons and the software signals with a message when the test does not pass. Without the control observations, the counter-factual for the treatment observation cannot be constructed.

migrated domestically only, the probability of having high wealth is *higher* among return U.S. migrants.

In summary, the matching estimates of the effect of past U.S. migration on wealth indicate that past U.S. migration is consistently associated with a wealth advantage. Compared to those who did not have a U.S. migratory experience, return migrants are *more likely to be in the top tercile of wealth* by 0.046. Similarly, they are *less likely to be in the bottom tercile of the wealth distribution* by 0.049. These estimates are consistent with the regression results from Table 5 discussed above, where we found a point estimate for the past U.S. migration effect of 0.04 as well.

We turn briefly to the issue of how to explain this wealth advantage. We explore several possibilities but we cannot isolate their relative importance. The nature of our data does not allow us to order temporally the events related to these possibilities and incorporate them in a formal model of old-age wealth. Thus we conclude instead that there could be a score of mechanisms that look consistent with the wealth advantage. *First*, we compared the attributes of the return migrants according to the total U.S. length of stay. Table 7 shows that, compared to those with short total stays, those who stayed *longer* report better economic status in mid and old age (in total assets, conditions of the current dwelling, and consumer durables in the household). This result is consistent with the hypothesis that accumulated wealth at old age resulted directly from the U.S. migratory experience; longer stays procured higher savings and accumulated wealth. *Second*, we find also that compared to those who stayed a shorter time, those with *longer* stays in the U.S. migrated at younger ages, are more likely to have a parent or sibling who was also a migrant to the U.S., and to currently have at least one child living in the U.S. Thus these findings are consistent with the hypothesis that a past migration to the U.S. is associated with a strong migrant network in the past and in the present, in particular if the stay was longer. The activities and remittances from this network (during the migrants' stays in the U.S. and after their return) could result in higher old-age wealth. And *third*, the wealth advantage for those who stayed *longer* supports also the hypothesis that these stays provided the migrants with enhanced entrepreneurial and labor market experience that yielded advantages to return migrants in the labor market in Mexico. In other words, past migration could have positive impacts on the subsequent accumulation of wealth from a variety of mechanisms, apart from the direct accumulation of savings in the U.S.

We explore also the possibility that U.S. migrants who returned to Mexico were more likely than those who stayed to have owned homes (and be wealthier) *prior* to leaving for the U.S. In other words, that among those who left for the U.S., the ones who owned homes were more likely to return after relatively short stays.¹⁸ While we have no way of measuring directly if older adults in Mexico owned homes in younger years, or when the current residence was acquired, we looked for indirect evidence of this possibility. We conclude that this possibility is unlikely. First, the evidence above with respect to length of stay is not consistent with this idea, since those with higher wealth (and more likely to own homes) stayed *longer*. Second, Parrado (2004) explores home ownership in Mexico and migration to

¹⁸We acknowledge that this possibility was raised by an anonymous reviewer.

the United States using retrospective data from the Mexican Migration Project. Although his findings refer to recent migrants and not to our cohorts of mid and old age, the evidence suggests that there is a close relationship between migration to the United States and purchase of a home in Mexico, and the purchase takes place *after* the U.S. migration.

CONCLUSIONS

We have examined the hypothesis that a past Mexico-to-U.S. migration would have a significant impact on the current wealth of men in middle and old age who are found residing back in Mexico. The comparison groups were similar men who also reside in Mexico and never migrated anywhere or migrated only domestically. *A priori*, the direction of the overall effect of migration to the United States was not easy to predict. Even though the initial selectivity into migration could have a negative effect on wealth, since individuals with low socioeconomic status would tend to migrate to the U.S., the positive effects of the gains from migration could overwhelm the overall impact. In addition, it was difficult to predict the wealth attributes of those who, having been to the U.S. to work or live, decided to *return* to Mexico by mid and old age.

Our results indicate that the long-term effect of U.S. migration for return migrants was consistently positive in terms of their accumulated personal wealth. A previous migration to the United States is associated not only with a reduced likelihood of being in the bottom (poorest) of the wealth distribution, but also with an increased likelihood of being in the top (richest) part. We used two methods that aim to account for the selectivity of migration, regression and propensity matching, and obtained the same results. Even the point estimates of the effect of migration on the propensity to have low and high wealth were quite consistent across the two methods. If our results are approximately correct, they imply that the impact of U.S. migration for the economic well-being of the Mexican population in middle and old age is substantial. If 30 percent of the individuals are likely to have high wealth (that is, to be above the 70th percentile), and the propensity to be in this group increases on average by about 4 percent with past U.S. migration, then this effect is numerically as well as statistically significant.

This result has a more substantive consequence, in that apparently the long-term investment of international migration paid off, at least in economic terms. In addition to affording higher levels of well-being for the return migrants in old age, this result implies that international migration may serve as a mechanism to break the cycle of reproduction of poverty that seems to be generalized in certain societies with limited opportunities for the population in the low end of the socioeconomic scale. Although we suspected that migration to the U.S. was beneficial for Mexicans, we know of no other evidence that indicates that the economic payoff of migration to the U.S. is evident in old age. Once we found this consistent result, we speculated some avenues but we cannot say much with certainty about the *mechanisms* through which this wealth advantage was achieved. This benefit is particularly remarkable because our cohorts report that they were migrants, on average, a long time ago (more than two-thirds of the migrants have been back in Mexico for more than 20 years), and stayed in the U.S. a relatively short time (a median of 2 years). It appears that U.S. migration leaves a “permanent” or at least “long-run” positive imprint on the economic

well-being of Mexicans who returned to Mexico, and this could be due to an array of mechanisms. First, it is possible that income personally earned in the United States was used to acquire capital in Mexico, in particular the purchase of a home, which represents a major part of the personal wealth of older Mexicans. Second, the U.S. migration may have provided individuals with a set of skills that independently from the U.S. savings could have resulted in higher accumulated wealth at old age. Third, it is possible that an active network of family and social support facilitated the wealth advantage. Thus, upon their return, migrants may have benefited from the payoff to their direct financial and human capital investments but also from the support of other migrants in the United States. All of these explanations are consistent with the findings we have, and it is possible that all three, plus other mechanisms, help explain the wealth advantage of former U.S. migrants in Mexico.

There are other important limitations to our work that need further discussion. Our results are generalized only to men, and only to those who returned to Mexico. Women have become an important share of the recent migration movements, thus work on future elderly cohorts could consider the consequences of migration for women. Also, it would be important for further work on this topic to document if the younger generations of Mexicans, the adult children of the older return U.S. migrants, exhibit a significant positive impact from the parents' past U.S. migration as well, and this could be in the form of economic status or human capital such as education. Furthermore, regarding the long-term consequences of international migration, it would be useful to document if there is evidence of a trade-off between wealth and other aspects of old-age well-being, such as health, where in return U.S. migrants have higher wealth but *worse* health than comparable mid- and old-age residents in Mexico.

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TABLE 1

Descriptive Statistics of Demographic and Socioeconomic Characteristics by Migration Group. Men Aged 50 and Older Residing in Mexico 2001

Variables	Never Migrated n = 1,679 (37%)	Domestic Migration n = 2,590 (49%)	U.S. Migration n = 850 (14%)	Total n = 5,119 (100%)
Age				
Mean	62.69	62.40	65.17	62.89
Median	60.00	61.00	65.00	61.00
Current Marital Status				
Married or union	79.3%	82.0%	80.2%	80.8%
Divorced, separated, or never married	9.0%	9.8%	9.1%	9.4%
Widowed	11.7%	8.2%	10.7%	9.8%
Married after Age 23	46.7%	53.6%	54.2%	51.1%
Years of Formal Education				
0 year	30.3%	22.5%	26.9%	26.0%
1–5 years	38.5%	30.9%	42.8%	35.4%
6 years	15.1%	19.0%	16.0%	17.1%
7 or more years	16.1%	27.7%	14.3%	21.6%
Number of Children Ever Born				
Mean	6.13	5.51	6.67	5.90
Median	6.00	5.00	6.00	5.00
Number of Adults in Current Household				
Mean	3.52	3.36	3.16	3.39
Median	3.00	3.00	3.00	3.00
Years in the Labor Force				
0–35 years	23.3%	23.5%	16.2%	22.4%
36–45 years	37.8%	38.0%	34.7%	37.5%
More than 45 years	38.9%	38.6%	49.0%	40.1%
Type of Job (Main Job over Lifetime)				
Upper white collar	7.3%	14.6%	8.8%	11.3%
Lower white and upper blue collar	14.6%	24.8%	19.6%	20.3%
Lower blue collar	26.3%	41.3%	24.5%	33.4%
Agriculture, fishing, etc	51.8%	19.3%	47.2%	35.1%
Parents' Education				
At least one parent completed primary education	10.1%	16.8%	14.4%	14.0%
Missing Parents' Education	2.1%	4.2%	6.5%	3.8%
Good Household SES before Age 10 ^a	23.8%	34.4%	20.0%	28.5%
Current Urban Residence	28.7%	61.1%	39.5%	46.2%
Parent or Sibling Ever U.S. migrant	23.2%	35.5%	58.8%	34.2%
Currently Lives in High-Migration State	15.1%	13.9%	42.4%	18.3%
Exposure to Bracero Program ^b				
0 year	21.3%	19.3%	13.6%	19.3%

Variables	Never Migrated n = 1,679 (37%)	Domestic Migration n = 2,590 (49%)	U.S. Migration n = 850 (14%)	Total n = 5,119 (100%)
1–10 years	39.4%	41.0%	34.3%	39.5%
11 years and more	39.3%	39.7%	52.2%	41.3%
Health Care Coverage ^c	39.3%	65.7%	50.5%	53.9%
Current Economic Well-Being				
Assets 70th percentile	25.4%	26.9%	35.9%	27.6%
Income 70th percentile	19.3%	30.6%	30.2%	26.4%
Dwelling conditions				
Piped water	84.4%	95.1%	95.5%	91.2%
Toilet	48.4%	70.4%	67.7%	61.9%
Cooking fuel is gas or electric	66.0%	88.1%	87.4%	79.9%
Durable Goods in the Household ^d	49.2%	71.0%	72.8%	63.2%

Notes:

^aRefers to whether respondent's household had a toilet facility before age 10.

^bBracero Program was a temporary worker program active from 1942 to 1964. Exposure to the program equals the number of years between the ages 18 and 40 lived from 1942 to 1964.

^cReceives health coverage from IMSS, ISSSTE, Defense or Navy plans, private plans, or other.

^dResidence dwelling has at least four durable goods from the following: radio, television, refrigerator, washing machine, telephone, and water heater.

Source: Authors' calculations using the Mexican Health and Aging Study 2001, weighted statistics.

TABLE 2

Distribution of Total Assets by Type and Migration Group. Men Aged 50 and Older, Mexico 2001

	Never Migrant (n = 1,679)	Domestic Migrant (n = 2,590)	U.S. Migrant (n = 850)	Total (n = 5,119)
Mean total assets	179,650.21	204,383.76	259,781.26	202,978.33
25th percentile	18,500	25,300	49,416	25,000
50th percentile	75,000	101,500	122,000	97,000
75th percentile	205,000	210,000	260,000	217,500
% Housing	61.2%	60.7%	64.1%	61.5%
% Business	17.5%	11.1%	11.8%	13.3%
% Real estate	5.3%	11.0%	4.4%	8.0%
% Capital	1.4%	2.8%	2.8%	2.3%
% Vehicles	3.1%	4.6%	5.5%	4.3%
% Debts	0.4%	0.3%	0.2%	0.3%
% Other	11.8%	10.2%	11.7%	11.0%

Notes: Mexican pesos 2001, approximate exchange rate US\$1 = 10 pesos.

Imputed assets are used for the analysis.

Excludes individuals with total assets equal or less than zero.

Source: Authors' calculations using the Mexican Health and Aging Study 2001, weighted statistics.

TABLE 3

Shares of Individual Assets by Migration Group. Men Aged 50 and Older, Mexico 2001

	Never Migrant (n = 1,679)	Domestic Migrant (n = 2,590)	U.S. Migrant (n = 850)	Total (n = 5,119)
% Assets	21.3	51.0	29.0	100
% Individuals	32.8	51.0	16.6	100

Note: Imputed assets are used for the analysis.

Excludes individuals with total assets equal or less than zero.

Source: Authors' calculations using the Mexican Health and Aging Study 2001, weighted statistics.

TABLE 4

Migration Characteristics of Return U.S. Migrants. Men Aged 50 and Older, Mexico 2001 (n = 850)

Migration Characteristics	Percent
Married before First Migrated to U.S.	52.0
Stayed in U.S. a Total of 2 Years or Longer	56.0
Has Lived in Mexico 20 Years or Longer since Last Return from U.S.	66.5
Experience of First Migration to U.S.	
Median Age at First Migration	24.0
Migrated after Age 25	43.9
Migrated after Year 1964	40.4
Had Financial Help for the First U.S. Migration	43.7
Had Support Network for the First U.S. Migration	42.2
Total Number of Years Spent in the U.S. (Median)	2.0
Has Work Permit for the U.S.	13.0

Note: Bracero Program was a temporary worker program active from 1942 to 1964.

Exposure to the program equals to number of the years between age 18 and 40 lived from 1942 to 1964.

Source: Authors' calculations using the Mexican Health and Aging Study 2001, weighted statistics.

TABLE 5

Marginal Effects on the Probability of Having Low and High Wealth. Men Aged 50 and Older, Mexico 2001
(n = 5,119)

Variables	Low Wealth ^a		High Wealth ^b	
	Model 1	Model 2	Model 1	Model 2
Ever U.S. Migrant	-0.052 **	-0.037 *	0.057 **	0.037 *
Age 60 and Older (REF: Less Than 60)	0.019	0.014	0.046 *	0.042 +
Married after Age 23	-0.024 +	-0.014	0.037 **	0.02
Severely Sick at or before Age 10	-0.009	-0.007	0.041 +	0.039 +
Education (REF: No Education)				
1—5 years	-0.062 **	-0.056 **	0.074 **	0.077 **
6 years and more	-0.187 **	-0.145 **	0.201 **	0.161 **
Good Household SES before Age 10	-0.029 +	-0.007	0.095 **	0.070 **
At Least One Parent Completed Primary Education	-0.055 **	-0.03	0.104 **	0.068 **
Missing Parents' Education	-0.028	-0.016	0.034	0.026
Exposure to Bracero Program (REF: No Exposure)				
1—10 years	-0.034 +	-0.048 *	-0.031	-0.028
11 years and more	-0.046 +	-0.064 *	0.004	0.006
Parent or Sibling Ever U.S. Migrant		-0.045 **		0.031 *
Currently Resides in a High-Migration State		-0.035 *		0.055 **
Number of Children Ever Born (REF: 3 or Fewer)				
4—10		-0.046 **		-0.021
11 or more		-0.068 **		0.023
Has 3 or More Adults in the Household (REF: 1–2 Adults)		-0.029 *		0.001
Years in the Labor Force (REF: 0–35 Years)				
36–45 years		0.009		0.01
More than 45 years		0.036 +		0.005
Type of Job (REF: Agriculture)				
Upper white collar		-0.164 **		0.209 **
Lower white and upper blue collar		-0.072 **		0.038 +
Lower blue collar		-0.015		-0.034 +
Urban Residence		-0.040 *		0.027
Observed Proportion	0.279	0.279	0.304	0.304
Pseudo R-squared	0.039	0.059	0.061	0.084

Note:

^aLow wealth = 1 if net worth of assets is lower than 30th percentile; else = 0.

^bHigh wealth = 1 if net worth of assets is higher than 70th percentile; else = 0.

⁺ significant at 10%;

^{*} significant at 5%;

^{**} significant at 1%.

Source: Authors' calculations using the Mexican Health and Aging Study 2001.

Propensity Score Estimates of Migration Effect on the Probability of Having Low and High Wealth^{ab} Comparisons between Pairs of Migration Groups

TABLE 6

Control Group Treatment Group	Never vs. U.S. Never (n = 1,679) U.S. (n = 850)		Never vs. Domestic Never (n = 1,679) Domestic (n = 2,590)		Domestic vs. U.S. Domestic (n = 2,590) U.S. (n = 850)		Never, Domestic Never, Domestic (n = 4,269) U.S. (n = 850)	
	Low Wealth	High Wealth	Low Wealth	High Wealth	Low Wealth	High Wealth	Low Wealth	High Wealth
Migration Effect								
Mean difference ^c	-0.056	0.042	-0.017	0.003	-0.051	0.056	-0.049	0.046
T-value ^d	-2.980	2.023	-1.301	0.255	-3.077	3.167	-2.939	2.651
Std. Error	0.019	0.021	0.013	0.012	0.017	0.018	0.017	0.017
# Treatment	850	850	2,590	2,590	850	850	850	850
# Control	1,677	1,677	1,678	1,678	2,590	2,590	4,267	4,267

Notes:

^aWeighted propensity scores. Kernel matching uses Gaussian estimation, bandwidth = 0.06. Matching variables include categorical age (50–59, 60 and older), categorical years of education (no education, 1–5 years, 6 years, and greater), marriage timing (whether after age 23), parent's education (primary education and above), childhood household SES (high or low), severely ill at or before age 10 (yes, no), and years of Bracero Program exposure (0 year, 1–10 years, and longer than 10 years).

^bLow wealth = 1 if net worth of assets is less than the 30th percentile of the distribution; else = 0.
High wealth = 1 if net worth of assets is higher than the top 70 percentile of the distribution; else = 0.

^cRefers to the mean difference in P (outcome = 1) between pairs of treated and control observations.

^dT-value is the test statistic for the hypotheses that mean difference = 0. T-values greater than 1.96 are significant effects and are shown with shaded text.

Source: Authors' calculations using the Mexican Health and Aging Study 2001.

TABLE 7

Select Characteristics of Return Migrants by Length of Total Stay in the U.S. Men Aged 50 and Older Residing in Mexico 2001

Variables	Total Length of Stay in the U.S.		
	1–2 Years (n = 496)	3–9 Years (n = 235)	10 or more Years (n = 112)
Parent or Sibling Ever U.S. Migrant	51.6%	63.7%	73.0%
Married Prior to First Migration to U.S.	58.2%	52.8%	44.2%
Age at First Migration to U.S. (Median)	25.0	23.0	22.0
At Least One Child Currently in U.S.	39.4%	44.9%	57.3%
Current Economic Well-being			
Dwelling cooking fuel is gas or electric	83.5%	91.0%	94.4%
Dwelling with toilet	62.2%	69.7%	81.6%
Household with at least four durable goods ^a	67.1%	77.3%	83.0%
Assets greater than 70th percentile	31.5%	36.0%	53.2%
Net worth of assets (median) ^b	107,500	110,000	222,024

Notes:

^a Residence dwelling has at least four durable goods from the following: radio, television, refrigerator, washing machine, telephone, and water heater.

^b Mexican pesos 2001, approximate exchange rate US\$1 = 10 pesos.

Source: Authors' calculations using the Mexican Health and Aging Study 2001, weighted statistics.