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IMMIGRANT EARNINGS ASSIMILATION, 1981–2021

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Working Paper 35582
http://www.nber.org/papers/w35582

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2026

We thank Leah Boustan, Molly Dahl, Ira Gang, Rebecca Heller, Seth Sanders, Todd Sorensen, seminar participants at University of Chicago Harris School, and participants at the NBER Spring 2026 "Immigrants and the U.S. Economy" conference for comments. This paper has not been subject to CBO's regular review and editing process. The views expressed here should not be interpreted as CBO's. This analysis will improve the Congressional Budget Office's long-run projections of Social Security, as it improves the agency's ability to model the earnings of immigrants and, subsequently, the effects of immigrants on Social Security finances. Any conclusions expressed are our own and do not necessarily represent the views of the U.S. Census Bureau. All results were approved for release by the Disclose Review Board of the U.S. Census Bureau, authorization number CBDRB-FY21-301. Any errors are ours alone. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 35582
August 2026
JEL No. F22, J31, J61

ABSTRACT

In this paper, we characterize trends in the earnings assimilation of immigrant workers from 1981 to 2021. We use administrative longitudinal data that contain the earnings of workers beginning in their first year of residence in the United States and in each year thereafter, allowing us to identify immigrants who eventually leave the United States (referred to here as return migrants). We use those data to produce the first examination of trends in earnings assimilation over a 41-year period and to estimate earnings assimilation separately for return migrants versus those who stay in the United States. We document several new facts about immigrants who arrived between 1981 to 2010. First, roughly one-fifth to one-third of immigrants return migrate from the United States within 10 years after arrival. Second, return migrants have entry earnings similar to those of permanent migrants but experience slower rates of earnings growth. Third, earnings assimilation occurs relatively quickly for cohorts arriving since the mid-1990s: The earnings of permanent immigrants converge, or come close to converging, with those of native-born people within 10 years after arrival. Migrants from earlier arrival cohorts experience significant earnings growth but generally do not converge to that of the native born. We discuss how changes in the labor market quality of immigrant cohorts (measured by their relative earnings upon entry) and selective return migration play an important role in determining whether repeated cross-sectional data over- or underestimate earnings assimilation.

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1. Introduction

Immigration has profound impacts on the fiscal balance of the federal government. By participating in the labor force and paying income and payroll taxes, immigrants contribute directly to public revenues. They may also draw from various social insurance and public programs based on their earnings histories. Therefore, understanding how immigrants integrate into the labor market is critical for accurately evaluating the fiscal impact and overall role of immigration in the economy (NASEM 2017; Storesletten 2000).

In this paper, we estimate how the earnings of immigrants to the United States evolve with duration of residence and the extent to which immigrants emigrate from the country. To do this, we use four decades of administrative earnings data spanning 1981 to 2021. Our panel data is derived from Social Security records and includes information on country of birth and earnings for workers with a Social Security number (SSN). We are the first to analyze this dataset to study immigrant earnings dynamics. To our knowledge, our data are the longest panel of administrative records suitable for studying immigrant earnings during the modern period. We note that the estimates in this paper do not represent undocumented immigrants who do not work in the formal labor market or do not have earnings recorded under an SSN.[1]

Our analysis consists of two parts. In the first part, we study patterns in return migration. Across arrival cohorts and by sex, we describe trends in return migration by inferring emigration from prolonged absences from the labor market. About 20–30 percent of immigrants to the United States across all arrival cohorts return migrate within the first 10 years after arrival.[2] We also find that, after a period of higher emigration in the first few years after arrival, emigration occurs at a relatively constant rate over time spent in the United States. In the second part, we describe the assimilation of immigrants into the labor market by estimating the earnings trajectories of permanent and return migrants. Upon arrival, immigrants earn less than native-born people, with return migrants earning slightly less than permanent migrants. Earnings of return migrants (before out-migration) tend to stay flat or decline with time spent in the United States, whereas permanent migrants realize sustained earnings growth. Panel estimates only slightly exceed estimates obtained from treating our data as repeated cross-sections, potentially because the proportion of return migrants (15–20 percent of the total arrival cohort) is smaller than the number of permanent migrants from the same arrival cohort. In addition, rates of assimilation

[1] Some immigrants without legal status may have earnings recorded in the data if they have work authorization (for example, under Temporary Protected Status), work in the United States using a fraudulent SSN, or accrue unauthorized earnings after overstaying their visa.

[2] We use "return migrate," "emigrate," and "out-migrate" interchangeably, even though migrants do not necessarily return to their country of origin, and we do not observe destination countries for people who leave.

and return migration vary by country of origin, as well as across cohorts within sending countries.

In describing the assimilation of immigrants into the labor market, we also investigate differences by arrival cohort, sex, and country of origin. We find that the earnings of permanent migrants from all cohorts grow at a faster rate than the earnings of native-born people, illustrating a catch-up process. Male permanent migrants from more recent arrival cohorts are more likely to reach earnings convergence with native-born people than earlier arrival cohorts. That trend is driven by an increase in the initial earnings of successive arrival cohorts (offsetting a slight decline in the rate of earnings assimilation over time). By contrast, although the earnings of immigrant women do converge toward those of native-born women, they remain below the earnings of native-born women for most arrival cohorts within the first 10 years.

Our work builds on a large body of work on the labor market integration of immigrants. In economics, much of that literature is concerned with the methodological issues that arise in estimating profiles of immigrant earnings. We follow recent work using complete longitudinal data to track immigrants and their labor market outcomes with time spent in the United States, beginning at the time of arrival (Akee and Jones 2024; Rho and Sanders 2021). Our approach avoids the estimation issues inherent in stock-sampled data (Lubotsky 2007; Duleep and Dowhan 2002, 2008; Hu 2000; Duleep and Regets 1997) and in single and repeated cross-sectional data (Chiswick 1978; Borjas 1985, 1995, 2015). Duleep (2015) summarizes that large body of work; Dustmann and Görlach (2015) overview the issues that arise in estimating immigrant earnings profiles with those types of data. In general, previous work reports that the negative selection of return migrants drives an upward bias in cross-sectional estimation of assimilation rates (Rho and Sanders 2021 and Akee and Jones 2024 are notable exceptions). We use complete longitudinal data to avoid such biases.[3]

2. Description of Data Set

We characterize immigrant earnings and migration histories by using longitudinal records obtained from the Social Security Administration (SSA) for 1981–2021. That period covers much of the "modern" age of mass migration that began with the Immigration and Nationality Act of 1965. That legislation brought about a period of mass migration by repealing immigration quotas that had been in place since the 1920s. In recent years, the percentage of foreign-born people in the U.S. population is comparable to that in the first age of mass migration from 1850 to 1920 (Abramitzky and Boustan 2017).

[3] We released a preliminary version of our results as a Congressional Budget Office working paper (Akee, Chin, and Crown, 2026).

Unlike data used in previous analyses, our data set includes information about individual immigrants beginning at their estimated time of arrival and during their years in the United States. Our longitudinal data are therefore "complete" in the sense of Dustmann and Görlach (2015); that is, we can construct representative earnings histories for immigrants by arrival cohort. Those data avoid the estimation issues involved with repeated cross-sectional data, as well as with stock-sampled panel data from which researchers retrospectively construct histories for immigrants observed at a single point in time. The approach also allows us to study the earnings dynamics for permanent and return migrants separately. Another advantage is that the panel is relatively long, which allows us to examine how immigrant assimilation has changed. Previous research using longitudinal data relied on relatively short panels; other studies cover a longer period but employ unrepresentative cross-sectional or stock-sampled data. Finally, our data avoid selective matching issues that arise in linking survey and administrative data, a common approach in previous work.

Our analysis uses SSA's Continuous Work History Sample (CWHS), a research extract consisting of several datasets, collectively comprising a 1 percent representative sample of everyone who has an SSN.[4] Key variables include longitudinal earnings drawn from W-2 tax records from the Internal Revenue Service (IRS), as well as basic demographic information such as date of birth, sex, and country of birth. We use a 44-year panel (1978–2021) to study return migration and a 41-year panel (1981–2021) to study earnings assimilation.[5]

Our data are arranged as follows. We study immigrants ages 25–45 upon arrival for arrival cohorts from 1981 to 2010. We track these individuals longitudinally for up to 20 years, so the panel includes individuals as they age past 45. Immigrants are defined as those who are foreign-born, excluding people born in U.S. territories. The earnings of foreign-born people in our data are available from the time that a person arrives in the United States until they return migrate or die. Using those data, we construct histories of earnings of immigrants for up to 20 years after their arrival.[6] That leaves about 500,000 immigrant individuals in our sample over all years in the data. We apply similar restrictions for native-born workers with respect to age and source of earnings. As a result, the sample consists of about 4 million native-born individuals over all years in the data.

Our measure of annual earnings is drawn from box 1 of IRS form W-2. Earnings include wages, tips, bonuses, exercised stock options, and other sources of remuneration that the IRS deems labor compensation. Those earnings are uncapped and capture all industries, regardless of Social

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[4] For more on SSA's administrative files, see Panis and colleagues (2000).

[5] Earnings data from 1978 to 1980 are less accurate because of inconsistent compliance in the first years after the change from quarterly to annual wage reporting, as mandated by SSA (Leonesio and Del Bene 2011).

[6] We restrict our analysis to working-age years to minimize the inclusion of workers who leave the labor force by retiring.

Security coverage. We exclude self-employment income from our analysis but do use the presence of self-employment income in our definition of emigration. We sum annual earnings across jobs at the person-year level and express income in 2021 dollars by using the consumer price index for all urban consumers. Our data do not cover informal labor earnings not reported to the SSA.

Although the CWHS captures a small amount of earnings belonging to undocumented immigrants, we interpret and refer to our results as those from documented immigrants. Undocumented immigrants may have earnings recorded in the CWHS if they have work authorization (such as under Temporary Protected Status), work in the United States by using a fraudulent SSN, or accrue unauthorized earnings after overstaying their visa. SSA estimates that the number of such immigrants present in its administrative files is small (Goss and colleagues 2013).[7]

We follow previous work in inferring return migration by using prolonged absences from the labor market because our data do not record emigration directly (Schwabish 2011). A validation exercise in Akee and Jones (2024) suggests that that approach accurately identifies most return migrants.[8] We proxy for year of arrival with the year in which immigrants obtain their SSN.[9] Although some immigrants are not required to obtain an SSN upon arrival, they have an incentive to do so for employment purposes. That category includes immigrants with employment authorization under a temporary visa and those who have permanent residency. The definition of the year in which someone obtains an SSN thus has a clear interpretation as the year in which immigrants enter the formal labor market. The definition also has the virtue of avoiding

[7] Immigrants without legal status may use an individual taxpayer identification number (ITIN) to file an individual income tax return. ITINs are granted to those who do not have and are not eligible for an SSN. The CWHS does not include such people.

[8] Akee and Jones (2024) link return migrants from the 2005 arrival cohort as identified in their data to the 2010 census data and find that less than 5 percent stay in the United States if they have no reported earnings. The authors conclude that nearly all return migrants have indeed left the United States and that prolonged absence from the formal labor market in administrative data is a useful proxy for residence in the United States for that population.

[9] Using the Current Population Survey's Annual Social and Economic Supplements (CPS ASEC) data linked to the Numerical Identification System (Numident), we examined the relationship between year of SSN issuance from the Numident and the reported year of arrival in the CPS ASEC. The two measures were generally consistent. For arrival cohorts between 1980 and 1986, about two to three years passed on average between arrival and SSN issuance. That finding probably reflects the effects of the Immigration Reform and Control Act of 1986, which allowed people already in the country as of 1982, or those who had performed at least 90 days of qualifying agricultural work from May 1985 to May 1986, to get an SSN. People who arrived in 1990 or later got an SSN in less than a year, on average.

ambiguities present in the Census Bureau's year-of-arrival measures (Redstone and Massey 2004).[10]

Table 1 shows descriptive statistics for workers in selected years (cross sections) of our sample. Both the immigrant population sample and native-born workers are restricted to be between ages 25 and 65. We have restricted age at arrival to the United States to be between ages 25 and 45, but we track those individuals for up to 20 additional years. Across selected years in our sample, the average age of immigrants ranges from 40 to 43 years, and women constitute 45–50 percent of the immigrant sample. Average annual earnings range from $23,000 to $40,000 (in 2021 dollars). Native-born people are slightly older and have a larger share of women. Native-born workers also earn slightly more than immigrants: $8,000 more in 1981 and $5,000 in 2021.

Panel A also shows shares of the total number of immigrants for the top five sending countries in our sample by year. We show the overall proportion of immigrants by their birth country in all the CWHS data—not only new arrivals in a particular year. Mexican immigrants make up the largest share of the total number of foreign-born people, staying relatively constant throughout the sample period except for the aftermath of the Great Recession. For most other top sending countries, there have been large changes in the shares over time. Both India and China have an immigrant share that increases significantly. The share of immigrants from El Salvador increases modestly over our period, whereas shares from the Philippines have stayed roughly constant.

We report trends in immigrant flows in Figure 1. Panel A shows rising immigration flows from all countries with a large spike in SSN issuances beginning in 1987, after the Immigration Reform and Control Act of 1986 (IRCA). Panel B suggests that the IRCA-driven surge in SSN issuances was driven largely by Mexican immigrants. Panel C shows no corresponding surges in immigration for other immigrant groups after IRCA, except for a smaller increase in immigrants from El Salvador. Indian and Chinese inflows have steadily increased, whereas the number of Filipino immigrants stays relatively constant.

3. Return Migration

We begin our analysis by studying trends in return migration by year of arrival and sex. Identifying return migrants is challenging because we cannot directly observe people leaving the United States. Instead, we infer return migration if someone has consecutive years of missing income through the last year of our sample (2021). For defining emigrants, our measure of

[10] In results available upon request, we define cohorts by entry into the labor market by using their first year of earnings and find that doing so makes little difference. The SSN classification is less accurate at proxying for immigrants' true year of arrival for those who obtained legal status through the Immigration Reform and Control Act of 1986 because they immigrated before getting their SSN.

income includes W-2 earnings as well as self-employment income from Schedule SE.[11] That classification method implies an absorbing state, in which migrants who leave the United States never return. The year of emigration is the first year in which an individual begins to have missing earnings. Our sample selection focuses on individuals ages 25–45 for immigrants at the time of arrival (as well as native-born individuals ages 25–65); because we examine earnings for 10 years after arrival in our main analyses, that approach reduces the chances that anyone is missing future earnings data because of retirement. We further exclude people whose place of death is recorded in the United States.[12]

Akee and Jones (2024) used a similar method to identify return migrants in their analysis for a 2005 immigrant arrival cohort to the United States. In addition, the authors linked return migrants to the 2010 U.S. decennial census and found that less than 5 percent stayed in the United States. That is evidence that using consecutive years of missing earnings is a useful proxy for return migration for immigrants in our age range and who had previously had nonzero earnings in our data. Other researchers (Rho and Sanders 2021) using a related measure of return migrants linked Longitudinal Employer Household Dynamics data to the 2010 U.S. census and found a similarly small figure, about 5 percent.

Panels A and B of Figure 2 show rates of return migration, defined as above, by arrival cohort and sex for up to 10 years after arrival.[13] Each series begins at 1 on the vertical axis (meaning that the entire cohort is remaining in the arrival year). For later years we report the share of immigrants in each cohort that stays in the country. In all cohorts, a large share of immigrants out-migrate by 10 years after arrival. That pattern is similar to the high rates of return migration found in other developed economies (OECD 2008). Rates of return migration appear higher for men than for women. Return rates in our data are, on average, about 15 percent for women and about 20 percent for men.

Although those panels exhibit a striking trend in the rates of return migration across cohorts, the trend may be a mechanical result arising from how we classify return migrants. Specifically, it appears that there are higher rates of return (25–30 percent) for the more recent arrival cohorts in the figures. However, immigrants from earlier arrival cohorts are less likely to be defined as emigrants because their earnings need to be missing for a longer period than immigrants from later cohorts.[14] As a result, our absorbing state method is more likely to misclassify immigrants

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[11] We focus solely on W-2 earnings in our assimilation analysis.

[12] This information is included in the CWHS (in the Numident file).

[13] For ease of presentation, we report rates for every third arrival cohort.

[14] For example, an immigrant we tag as having emigrated in 1990 must have 31 years of missing data; for those emigrating after 1990, we cannot require 31 years of missing data because our sample period is truncated at 2021. As a result, the stringency of the return migrant definition must change across cohorts.

as return migrants for more recent cohorts (either from back-and-forth migration or temporary spells of unemployment or nonemployment). To address that concern, panels C and D of Figure 2 present trends that alternatively define return migrants as immigrants who have 10 consecutive years of missing income. That method ensures consistency across cohorts, allowing for a clearer interpretation of trends (though it misclassifies immigrants who return to the labor market after a 10-year absence as return migrants). In those panels, the trends in return migration are more constant but remain broadly consistent with our main definition. Even though the trend in return migration is hard to identify, our takeaway from Figure 2 is that that a significant share of immigrants return migrate within 10 years.

In our analysis to follow, we rely on missing earnings that persist until the end of the sample period to define return migrants, as used in panels A and B, unless otherwise indicated. We report results that use an alternative definition of return migration in Figures A1, A2, and A3.[15]

4. Earnings Assimilation

4.1. Estimating Equation

In our analysis, we compare the earnings of native-born people and immigrants over the course of immigrants' time spent in the United States. Our regression specification is

$$y_{it} = \gamma_{t-c(i)} + \lambda_{g(i)} + \theta_{it} + \tau_t + \varepsilon_{it}, \quad (1)$$

where i indexes individuals, t indexes calendar year, $c(i)$ denotes a single-year arrival cohort, and $g(i)$ denotes a three-year arrival cohort group. The outcome y_{it} is the natural log of earnings, $\gamma_{t-c(i)}$ are indicators for years since migration, $\lambda_{g(i)}$ are arrival cohort indicators, θ_{it} are age fixed effects, τ_t are year fixed effects, and ε_{it} is a regression error term. Arrival cohorts $g(i)$ are binned into three-year groups (e.g., 1981-1983, 1984-1986, and so on). Years since migration is defined relative to the exact year of arrival. Our parameter of interest is $\gamma_{t-c(i)}$, which is interpretable as the immigrant-native earnings gap in each year after arrival, conditional on the fixed effects. Cohort dummies allow initial earnings to vary but restrict the rate of earnings growth to be the same across cohorts. We begin by estimating the model in a sample that pools all arrival cohorts. That restriction is relaxed in section 4.3 by dropping the arrival cohort dummies and estimating equation (1) separately by three year arrival cohorts to let earnings dynamics vary flexibly. Standard errors are clustered by individual.

We estimate the model separately for three samples: permanent migrants, return migrants, and a sample that pools all migrants by treating the data as repeated cross-sections. Permanent and

[15] Consistent with results found using our preferred definition of return migration, male immigrants achieve parity with native-born workers sooner after arrival than female immigrants. Assimilation also has generally occurred faster with more recent arrival cohorts.

return migrants are mutually exclusive. Therefore, estimates from the repeated cross-section sample, which pools all immigrants, are a weighted average of the estimates for the permanent and return migrant samples.

4.2. Pooled Results Across Arrival Cohorts

Figure 3 shows the estimates for earnings assimilation from the model over a 20-year horizon, pooling arrival cohorts from 1981 to 2010. We limit our sample to immigrants ages 25–45 upon arrival, along with native-born people of comparable ages, to reduce the probability that the data include immigrants who leave the labor force by retiring.

On average, across all entry cohorts, permanent migrants reach earnings parity with native-born people about 8 years after arrival for men and 19 years after arrival for women. Return migrants have lower initial earnings that persist over their time in the United States. Individuals who will out-migrate, as a group, tend to have little to no earnings growth in relation to native-born people while in the United States. That pattern could be driven by downward earnings mobility for eventual return migrants, where those migrants earn relatively less with each successive year in the country. It also could be driven by positive selection from within the population of return migrants, whereby higher-earning eventual return migrants would tend to out-migrate sooner than those with lower earnings, lowering the average relative earnings of the population of return migrants who remain. Overall, however, return migrants in total are negatively selected with respect to their original arrival cohort, as shown in Figure 3. The former explanation is consistent with models of "behavioral selection" in which migrants intending to stay have a greater incentive to invest in human capital in order to reap the returns to investment over a longer horizon (Adda, Dustmann, and Görlach 2022).[16] Return migrants, in contrast, may not make those investments, resulting in persistently lower relative earnings.

In practical terms, little difference exists between the estimates using panel and repeated cross-sectional data (compare the red and blue series in Figure 3). That outcome differs from prior work, notably Lubotsky (2007). The difference could be explained partly by improved measurement. In particular, we make panel and cross-sectional comparisons consistently within the same data. Lubotsky compares panel and cross-sectional estimates in separate datasets, which may confound sample differences with estimation biases. We also note that estimation bias in Lubotsky's sample appears to be concentrated in the 1970–1979 arrival cohorts (see his Figure 6), which our data do not cover. Lubotsky's analysis of 1980–1984 cohorts reveals much less evidence of a divergence between panel and repeated cross-section estimates. That finding

[16] We investigate these potential explanations in Figure 6.

suggests that changes in emigrant selection for more recent cohorts also are a plausible explanation for the divergence between our findings and those from previous work.[17]

4.3. Trends by Arrival Cohort

We estimate equation (1) separately by arrival cohort and sex, which allows for earnings growth rates to vary flexibly by cohort.[18] Tables 2 and 3 show the estimates for men and women, respectively. Figures 4 and 5 plot the corresponding estimates. As in Figure 3, we estimate our model separately for permanent and return migrants and for a sample that treats our panel as repeated cross-sections.

Disaggregation yields several insights that are masked in our pooled analysis. First, for men, there is an upward trend in initial earnings across cohorts. For permanent migrants in earlier cohorts, the immigrant-native earnings gap is about 70 log points; for the 1998 cohort and thereafter, the gap is only about 30 log points.[19] Among female immigrants, relative entry earnings stay about the same across cohorts. For men, the upward trend in entry earnings holds for both permanent and return migrants.

The earnings of male immigrants are more likely to converge with those of native-born men in more recent arrival cohorts. Panel B of Table 2 shows that after 10 years in the United States, 1983 male permanent migrant arrivals still exhibit a 30–log point earnings gap with native-born men. That gap shrinks to 20 log points for the 1995 arrival cohort, with male immigrants from the 1998, 2001, 2007, and 2010 cohorts achieving earnings parity with native-born men by the 10th year. The trend is driven by the increase in entry earnings rather than an increase in the rate of relative earnings growth, which declines slightly across arrival cohorts. Rising relative entry earnings indicates that increasing labor market quality of male immigrants accounts for observed earnings convergence to the native born.

Trends in assimilation are more muted for women. Panel B of Table 3 shows that, across cohorts, female permanent migrants still exhibit about a 10–log point earnings gap with native-born women by their 10th year in the United States (except for arrivals from 1987 to 1989, the IRCA cohort, which shows a larger earnings gap). That result arises from both relatively stable entry earnings and a generally unchanged rate of earnings growth.

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[17] Abramitzky, Boustan, and Eriksson (2014) also find divergence between panel and cross-sectional estimates (making comparisons using the same data) for immigrants arriving during the first age of mass migration (1850 to 1913). The difference between our study and theirs also might be driven by differences in the arrival cohorts studied.

[18] Cohorts are pooled into three-year buckets for precision. The 1983 cohort includes arrivals from 1981 to 1983, the 1986 cohort includes arrivals from 1984 to 1986, and so on.

[19] Villarreal and Tamborini (2018) find similar results for immigrants by using the Survey of Income and Program Participation linked to IRS data.

The findings for men contrast with those of Borjas (2015), who finds a slowdown in the rates of wage growth across arrival cohorts by using repeated census cross-sections. In his analysis, substantial wage gaps remain after 10 years in the country. Although we find some slowdown in earnings growth across cohorts (with a nonmonotonic trend), the decline is compensated for by an increase in entry earnings so that later cohorts come much closer to closing the earnings gap. Our findings differ from those of Borjas for two potential reasons: differences in cross-sectional and panel data estimation, and differences in the study population and earnings coverage (our data cover only earnings from the formal labor market, which are largely from documented immigrants). We find little evidence of the former in our data, suggesting that bias from repeated cross-sectional estimates plays a minimal role for the population of documented immigrants. Thus, the differences in the study population and earnings coverage are the leading factor for why our results differ from those of Borjas.[20] In addition, Duleep, Liu, and Regets (2022) emphasize the importance of tracking individuals from their time of arrival and caution against excluding individuals without earnings in one year while including them in later years. The differential composition of immigrant growth can overestimate or underestimate growth in immigrant earnings. Our analysis, using panel data, does not suffer from those same issues as with repeated cross-section analysis.

Using the CWHS, we estimate that, for men, more recent arrival cohorts have both smaller earnings differentials upon entry and faster earnings assimilation than past cohorts. Both results indicate that more recent arrival cohorts would probably have higher lifetime earnings, and thus higher payroll tax contributions and benefits received, than past arrival cohorts.

For out-migrants in all arrival cohorts, constant or negative earnings growth is evident in their first 10 years after arrival. For arrival cohorts from 1981 to 1995, the earnings of return migrants are lower than those of permanent immigrants by a roughly constant magnitude over the first 10 years after arrival. However, beginning in 1998, a slight downward trend emerges in the relative earnings of return migrants that increases in magnitude in later years of the sample.[21]

That pattern for later cohorts could be driven by downward earnings mobility among return migrants or could be the result of positive earnings selection from within the pool of return migrants. To investigate, we plot the earnings of return migrants for the 1983 and 2010 arrival cohorts by length of stay in the United States in Figure 6. Panel A shows male return migrant earnings for the 1983 cohort. Trajectories are mostly flat, suggesting that negative earnings shocks play a limited role for out-migration.[22] Panel B shows the earnings trajectories for female

[20] Appendix Figure A4 confirms that earnings assimilation estimates in repeated cross-sections using the CWHS are similar to those obtained in the American Community Survey.

[21] This trend is robust to using our alternative classification for return migrants, which is consistent across cohorts.

[22] The exception is the drop in earnings in the final year before emigration, reflecting partial-year earnings.

return migrants who arrived in 1983, though the estimates are much less precise. Those plots show, for the 1983 cohort, that return migrants had roughly flat earnings trajectories regardless of when they return migrated. Panels C and D plot the same trajectories for male and female return migrants from the 2010 arrival cohort. Those trajectories decline in the last few years before emigration, especially for women. That finding suggests that negative earnings shocks might play a role in return migration for immigrants in this period during the Great Recession.

4.4. Differences by Country of Birth

Country of origin is strongly correlated with categories of admission to the United States. For example, in 2019, people from India made up 13 percent of admissions under employment-based preference categories. By contrast, immigrants from India made up only 7 percent of all admissions under family-based preference categories. Similarly, in 2019, immigrants from Mexico made up 15 percent of all family-based preference categories but only 5 percent of employment-based preference categories (see DHS 2019). By estimating earnings assimilation separately for the top countries of origin, we hope to improve the agency's ability to model the long-run effects of future immigration flows on Social Security's finances.

We first examine differences for return migration (defined as the absence of consecutive earnings through 2021) and then turn to assimilation. Figure 7 shows return migration rates for five source countries. We show return migration by arrival cohort and country of origin for 1983–1998 for both men and women. Rates of return migration for males vary by source country, with an apparent increase in return migration over time, especially for immigrants from China. Similar differences occur for women, who generally have lower rates of return migration than men and have a smaller increase in return migration over time.

Next, we examine differences in earnings upon entry and earnings growth. Figure 8 shows variation in relative entry earnings (first full year of earnings after arrival) for permanent migrants both across countries and within countries over time. For men, evidence shows that entry earnings generally increase over time for arrivals from Mexico and India. The entry earnings for men from the Philippines, China, and El Salvador have stayed constant over those arrival cohort years. For women, the entry earnings do not change as dramatically over time as they did for men, except for some instances in which entry earnings appeared to decline over time; however, the confidence intervals are always large.

To show earnings growth, Figure 9 plots the 10-year relative rate of earnings growth for the same sending countries and arrival cohorts. Few strong trends are apparent for either men or women over time or across countries. However, earnings growth is lower for immigrants (both men and women) from Mexico than for immigrants from other countries.

5. Implications for Estimates of Earnings Assimilation in Panel and Cross-Sectional Data

Our findings show an increase in average initial earnings for successive immigrant arrival cohorts from 1981 to 2010. That trend has been steadily increasing for men and slightly less so for women. A smaller earnings differential upon arrival would be consistent with more recent arrival cohorts including a larger share of people with characteristics that readily translate into the domestic labor market—for example, a larger share of people with higher education or those otherwise qualified to work in high-paying occupations. Such people would generally contribute more to Social Security through payroll taxes and be eligible for higher benefits upon retirement (so long as they meet other eligibility requirements to claim benefits, such as their age at claiming and covered earnings history). Consistent with the literature, in the next sections we interpret changes in the earnings differential upon arrival as changes in that cohort's labor market quality.

Return migration is negatively selected for both men and women across all arrival cohorts in the sample. The population that return migrates has consistently lower earnings in all years after arrival than permanent migrants from the same arrival cohort. In addition, in recent years, return migrants' earnings decrease with years in the United States after their earnings are disaggregated by duration of stay. That finding indicates that return migration may be related, for more recent immigrant cohorts, to poor earnings outcomes (in contrast to earlier arrival cohorts in our study).

5.1. Contributions of Return Migration and Changing Labor Market Quality of Arriving Cohorts

The economics literature thoroughly describes the earnings assimilation of newly arrived immigrant cohorts to the United States and other developed countries. However, a lack of complete longitudinal data has limited researchers. Early research relied on repeated cross-sectional data that did not allow researchers to control for selective return migration or differences in the labor market quality of arrival cohorts over time. As a result, that research was criticized as being biased toward finding higher earnings assimilation for immigrants than would be found with a complete panel data set. Those studies, which do not account for selective return migration, indicated that immigrants required fewer years to reach parity with the native born than panel data would suggest.

Theoretically, factors unrelated to actual assimilation in the labor market can affect estimates of average growth in immigrants' earnings over time. First, when only cross-sectional data are available, changes in the average cohort quality of immigrants (with respect to labor market characteristics) may affect estimates of earnings assimilation. For example, immigrants in one arrival cohort may have skills that are more positively valued in the labor market than another arrival cohort. In that situation, cross-sectional data may lead to incorrect inferences on trends in earnings assimilation over time. Borjas (1985) made that case most clearly, showing that declining labor market quality among cohorts of arriving immigrants over multiple decades can

result in overly optimistic rates of earnings assimilation for immigrants when cross-sectional data are used instead of panel data. For example, if immigrants who arrived in the 1960s had higher relative earnings upon entry than those who arrived in the 1970s, a single cross-section would make it appear that immigrants' earnings rise substantially with tenure in the United States. However, much of that difference reflects the higher starting points across cohorts rather than within-cohort earnings growth. The opposite may occur when the labor market quality of cohorts of arriving immigrants is increasing over time, indicating an overly pessimistic earnings assimilation. The second factor is self-section of return migrants. If nonrandom emigration out of the United States occurs, that selection may affect the estimate of immigrant earnings assimilation over time when cross-sectional data are used. For instance, return migrants could be negatively selected (as shown in the United States in the early 20th century by Abramitzky, Boustan, and Eriksson 2014). In such a case, the remaining immigrant cohort includes proportionately more economically successful immigrants and thus any cross-sectional estimates also will tend to overestimate average immigrant earnings in relation to those estimated with panel data. However, if return migration is positively selected, the remaining immigrant cohort contains proportionately less economically successful immigrants. As a result, cross-sectional estimates of average immigrant earnings assimilation would be lower than that estimated with panel data.

Table 4 shows both factors along with their effect on earnings assimilation—specifically, the number of years it takes to reach parity with the native-born population—when using either panel or cross-sectional data. Existing research has shown different estimates of earnings assimilation of immigrants at different periods depending on whether cross-sectional or panel data were used. For example, Abramitzky, Boustan, and Eriksson (2014) found negative selection of return immigrants and declining labor market quality of cohorts of arriving immigrants. The researchers conclude that estimates from cross-sectional data yield faster rates of earnings growth than panel data in historical U.S. census data. Negative selection of return migrants and declining labor market quality among arriving immigrant cohorts indicate an unambiguous result that estimates from cross-sectional data will overestimate the growth rate of immigrant earnings in comparison with estimates from panel data. That outcome is shown in the table's top right quadrant.

Alternatively, Rho and Sanders (2021), who studied more recent arrivals than Abramitzky, Boustan, and Eriksson (2014), found that return migrants in their sample were positively selected as their estimates from cross-sectional data yield lower earnings assimilation than estimates from panel data. Moreover, the average labor market quality of immigrant cohorts is increasing during this time. In such a setting, the two factors indicate unambiguously that cross-sectional estimates of immigrant earnings assimilation are slower than panel data estimates would indicate. That outcome is shown in the table's bottom-left quadrant.

Two other cases, however, are possible when estimating immigrant earnings assimilation. The labor market quality of immigrant cohorts could decrease over time while there is positive selection of return migrants. That possibility is shown in the table's top left quadrant. In that situation, the difference in estimates of immigrants' earnings assimilation between panel and cross-sectional data will depend on the relative magnitude of the effect of decreasing quality of arriving immigrant cohorts (which tends to lead to overestimates of earnings growth in cross-sectional data) and the effect of positively selected return migrants (which tends to lead to underestimates of earnings growth in cross-sectional data). The reverse case is shown in the table's bottom right quadrant; in fact, that is the situation for most years in our analysis. We find a negative selection of return migrants and increasing quality of arriving immigrant cohorts over time. In that situation, the difference in estimates of immigrants' earnings assimilation between panel and cross-sectional data is ambiguous.

6. Conclusions

This paper describes the economic assimilation of immigrants to the United States in the late 20th and early 21st centuries. Our sample period covers much of the modern age of mass migration that began with the Immigration and Nationality Act of 1965. Previous work studying that period relied on cross-sectional or stock-sampled panel data. By observing and tracking immigrants from their year of arrival, we construct for this period the first estimates that are representative and longitudinal (in the complete sense). Our work complements previous studies in that vein (Abramitzky, Boustan and Eriksson 2014; Akee and Jones 2024; Rho and Sanders 2021).

We paint a new picture of trends in assimilation during the 1981–2021 period. Male immigrants tend to have lower earnings upon entry than their native-born counterparts, though that gap is shrinking across arrival cohorts. The speed with which the earnings of immigrant males approached that of their native-born counterparts increased slightly, though not monotonically. Taken together, male immigrants, across cohorts, are increasingly likely to close the earnings gap with native-born people within 10 years of arrival. Our work contrasts with that of Borjas (2015), whose estimates were based on census data. We argue that the difference is driven by differences in the population studied. Our findings present credible estimates of immigrant assimilation for documented immigrants participating in the formal labor market only; informal earnings and undocumented immigrants might be driving different results in census data.

We present several other findings on the assimilation process. First, panel estimates of assimilation are remarkably similar to those obtained from repeated cross-sections (only slightly larger). Those results are most likely driven by the relatively small size of the return migrant population—ranging between 15 and 20 percent of the total arrival cohort size. Second, the large sample size in our data allows, for the first time, exploring differences by sex and sending country. Trends in entry earnings and assimilation are generally unchanged for women, though

permanent migrants from most cohorts close the earnings gap with native-born women. Third, significant differences by country are evident, as well as within country across cohorts. Fourth, while in the United States, return migrants have lower earnings than permanent migrants, on average, and evidence suggests that recent out-migrants experience downward earnings mobility before emigration.

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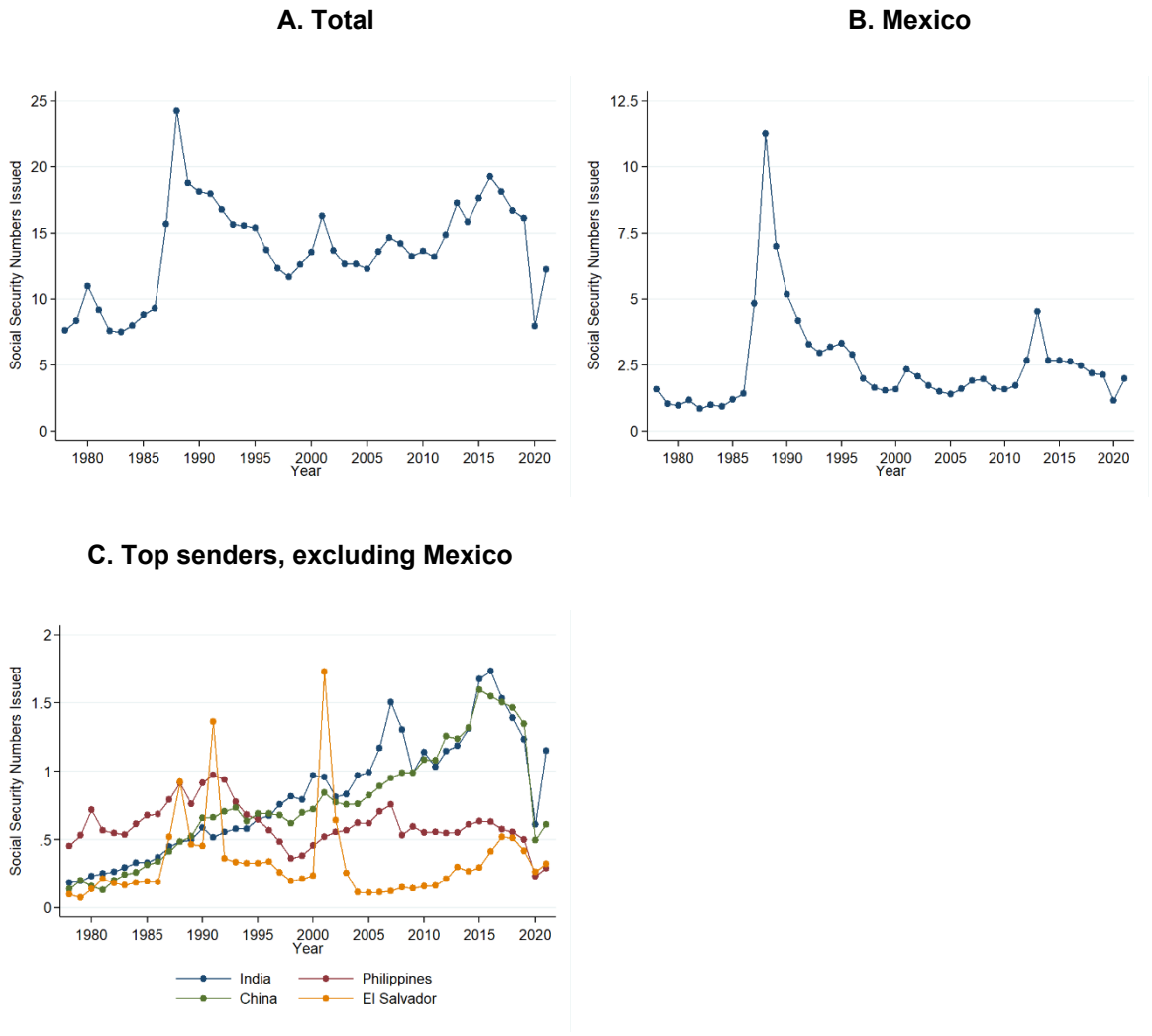
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Figures

Figure 1. [Return to Text]

Immigrant Flows Based on Issuance of Social Security Numbers by Country of Birth and Year, 1978–2021

Social Security numbers issued (thousands)



Data source: Social Security Administration's Continuous Work History Sample.

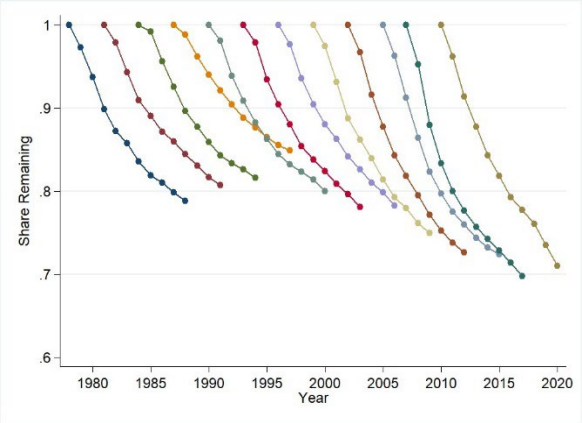
We proxy for year of arrival with the year in which immigrants obtain their Social Security number.

Figure 2. [Return to Text 1 | 2 | 3]

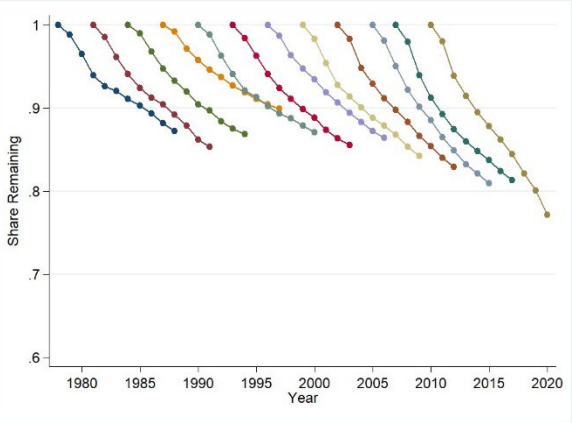
Return Migration by Arrival Cohort, 10-Year Horizon

Share of arrival cohort remaining

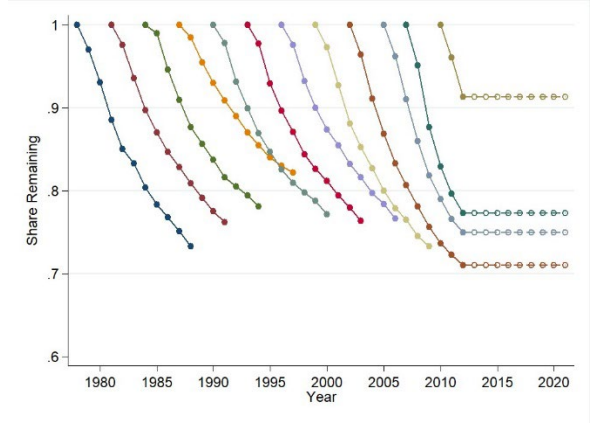
A. Missing earnings through 2021 (men)



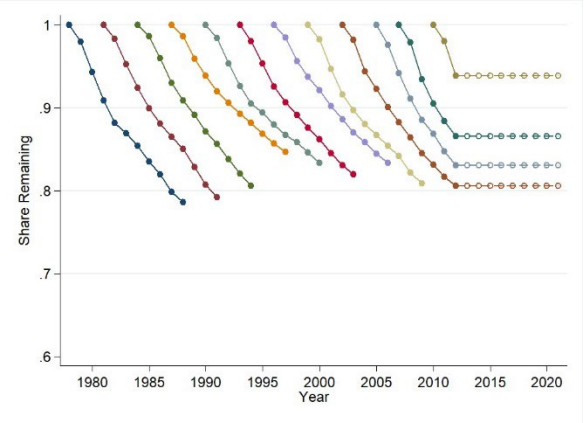
B. Missing earnings through 2021 (women)



C. 10 consecutive years of missing earnings (men)



D. 10 consecutive years of missing earnings (women)



Data source: Social Security Administration's Continuous Work History Sample.

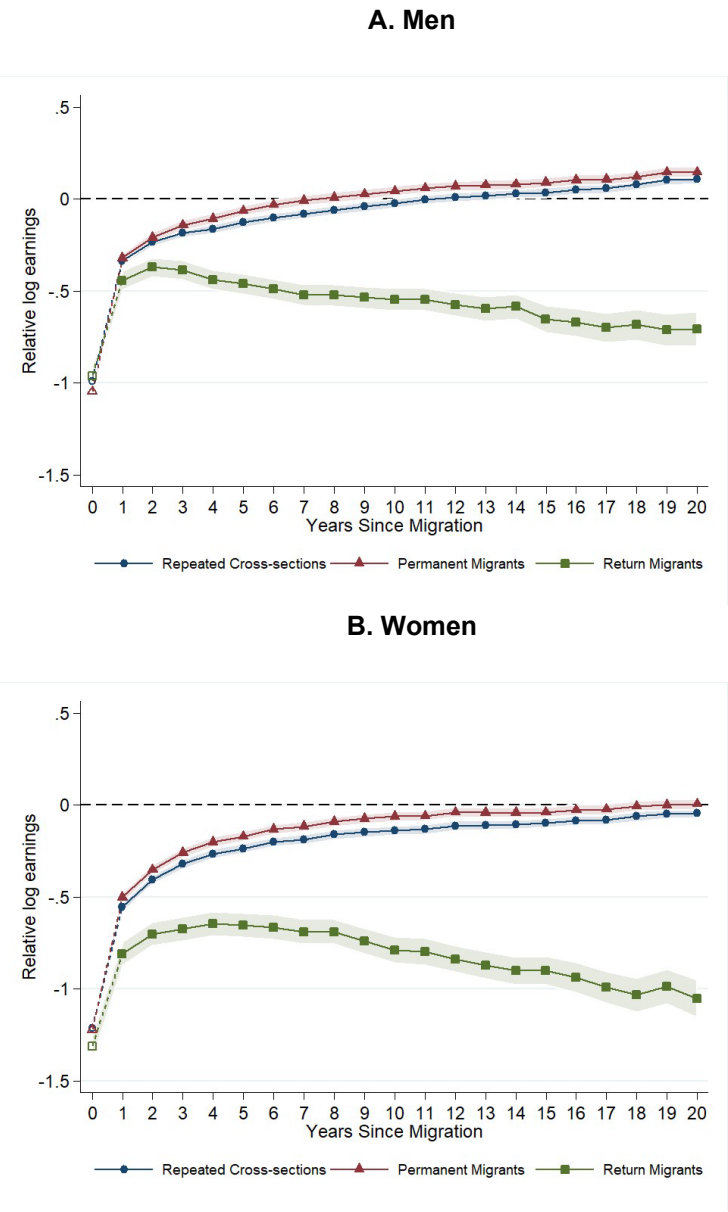
Arrival cohorts are shown for 1978, 1981, 1984, 1987, 1990, 1993, 1996, 1999, 2002, 2005, 2007, and 2010. Outmigrants in **(A)** and **(B)** have missing earnings in at least one year and for all later years. Outmigrants in **(C)** and **(D)** have 10 years of consecutive missing earnings.

Open circles in the plots indicate the years in which we cannot identify return migrants owing to truncation of the sample at 2021. For example, we could not identify those who out-migrate in 2012 or later years from the 2010 arrival cohort because we cannot observe 10 consecutive years of missing income.

Figure 3. [Return to Text 1 | 2 | 3 | 4]

Long-Run Earnings Assimilation

Relative log earnings



Data source: Social Security Administration's Continuous Work History Sample.

Assimilation estimates, using data from 1981 to 2021, are obtained from a regression of log earnings on years since arrival indicators for years 1–20, with native workers as the omitted group, cohort, year, and age fixed effects, pooling all arrival cohorts for the 1981–2010 period. Return migrants have at least one year of missing earnings and in all later years in the data set. Permanent migrants have arrived in the United States and do not have missing earnings permanently in the data. Closed circles in the plot correspond to estimates $\{\hat{\gamma}_{t-c(i)}\},\ t-c(i) \in \{1, 20\}$. The open circle corresponds to $\hat{\gamma}_0$, the year in which immigrants arrive and are likely to have a partial year of earnings that would not be comparable to the full-year earnings of the native born. The dotted line indicates that the large increase in earnings given by $\hat{\gamma}_1 - \hat{\gamma}_0$, is mechanical owing to the potential for only a partial year of earnings reported for new migrants and a full year of earnings for the native born. Immigrant earnings converge with the earnings of native-born people when their relative earnings cross the zero-horizontal line. Shaded regions show 95 percent confidence intervals.

Figure 4. [Return to Text]

Earnings Assimilation of Men by Cohort

Relative log earnings

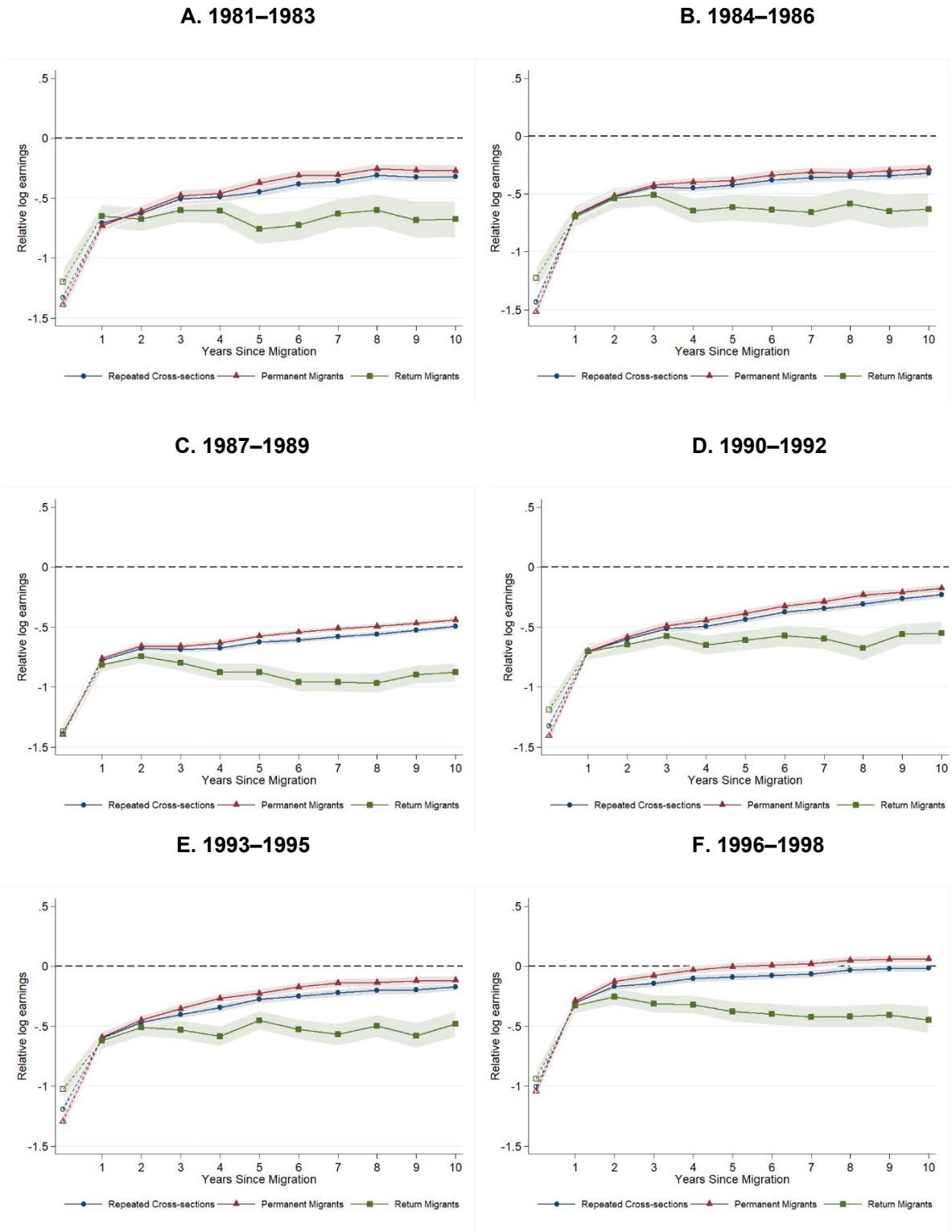
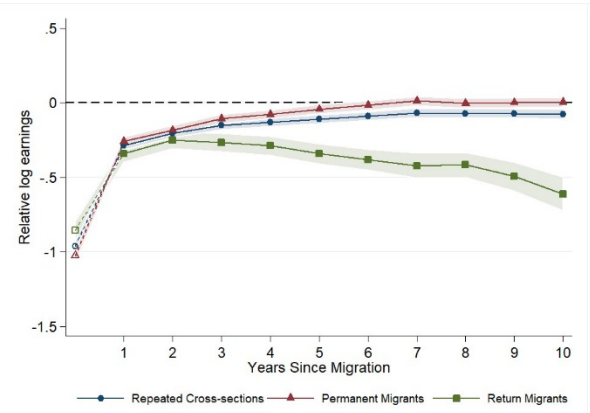


Figure 4, continued [Return to Text]

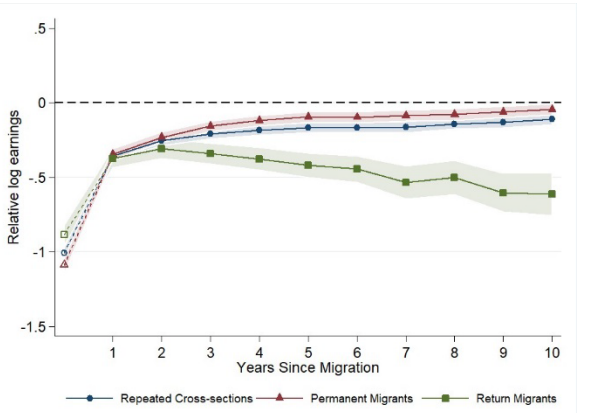
Earnings Assimilation of Men by Cohort

Relative log earnings

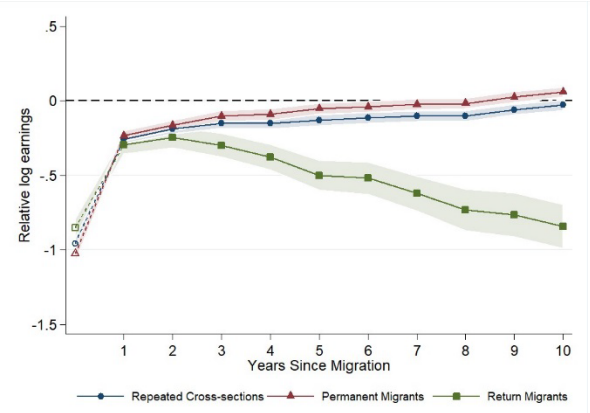
G. 1999–2001



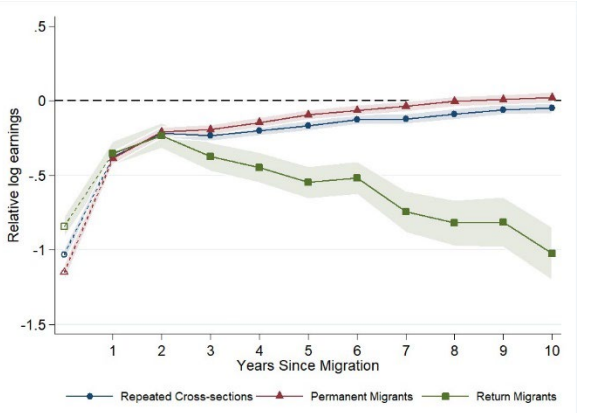
H. 2002–2004



I. 2005–2007



J. 2008–2010



Data source: Social Security Administration's Continuous Work History Sample.

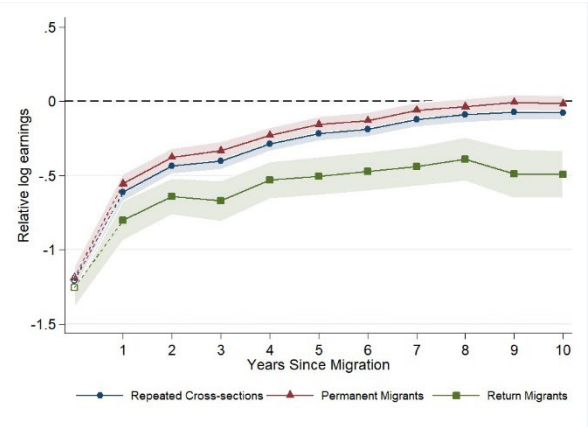
Return migrants have at least one year of missing earnings and in all later years in the data set. Permanent migrants have arrived in the United States and do not have missing earnings permanently in the data. Cross-sectional estimates treat the panel as a sample of repeated cross-sections. Each arrival cohort has pooled three years of data; for the 1983 arrival cohort, that includes 1981, 1982, 1983, and so on for all succeeding three-year pooled cohorts. Shaded areas show 95 percent confidence intervals.

Figure 5. [Return to Text]

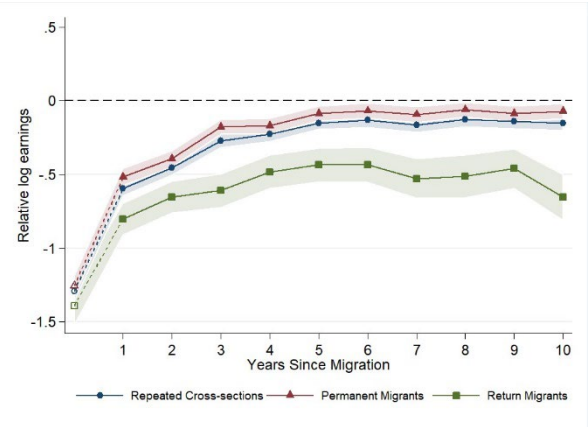
Earnings Assimilation of Women by Cohort

Relative log earnings

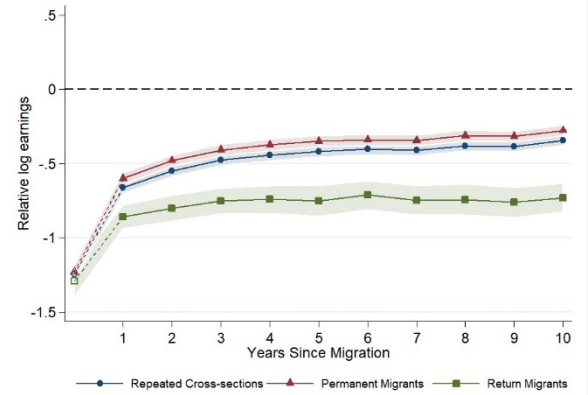
A. 1981–1983



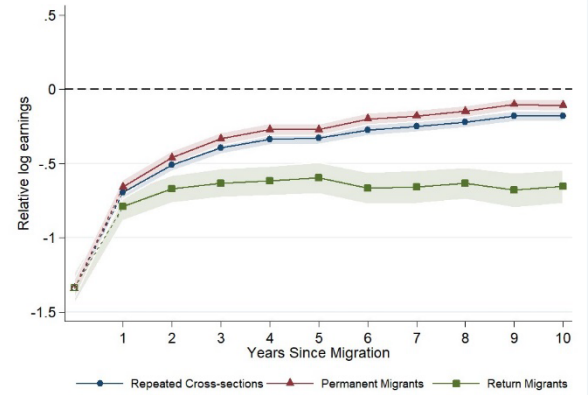
B. 1984–1986



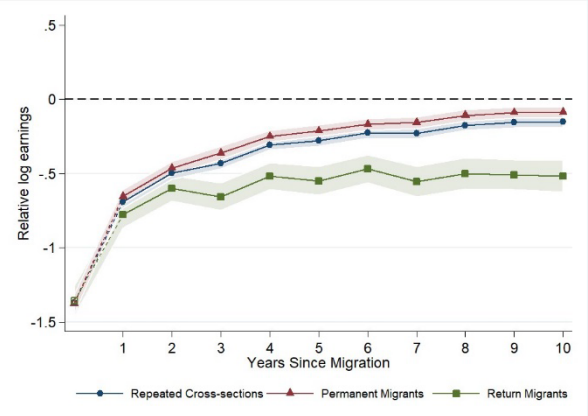
C. 1987–1989



D. 1990–1992



E. 1993–1995



F. 1996–1998

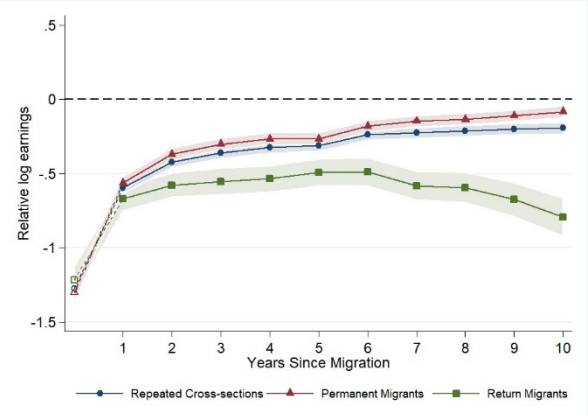
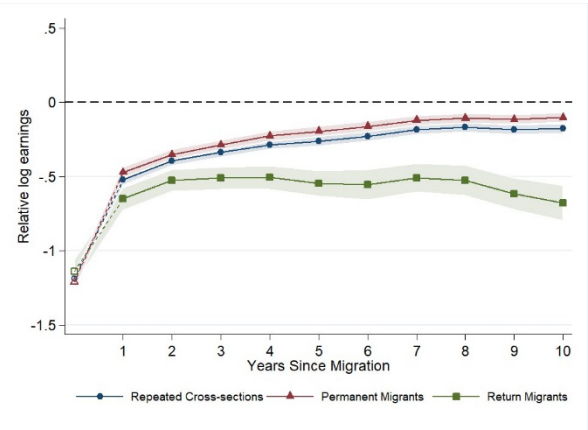


Figure 5, continued [Return to Text]

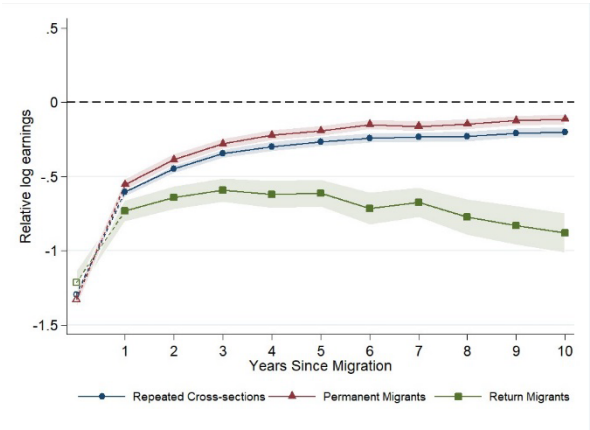
Earnings Assimilation of Women by Cohort

Relative log earnings

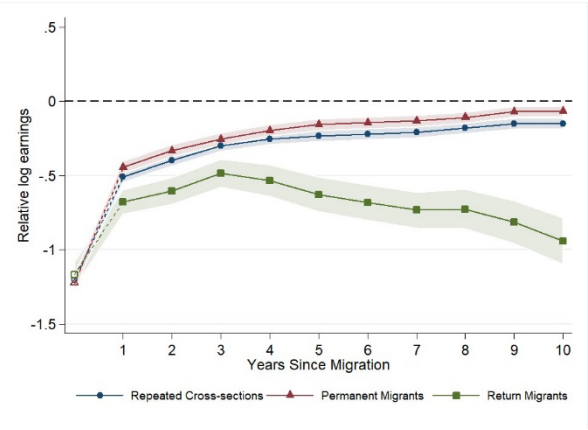
G. 1999–2001



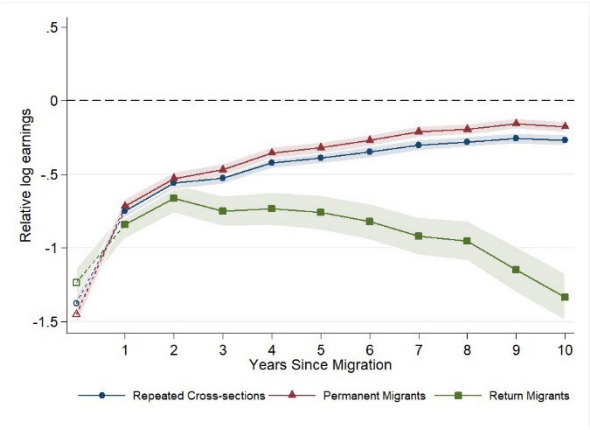
H. 2002–2004



I. 2005–2007



J. 2008–2010



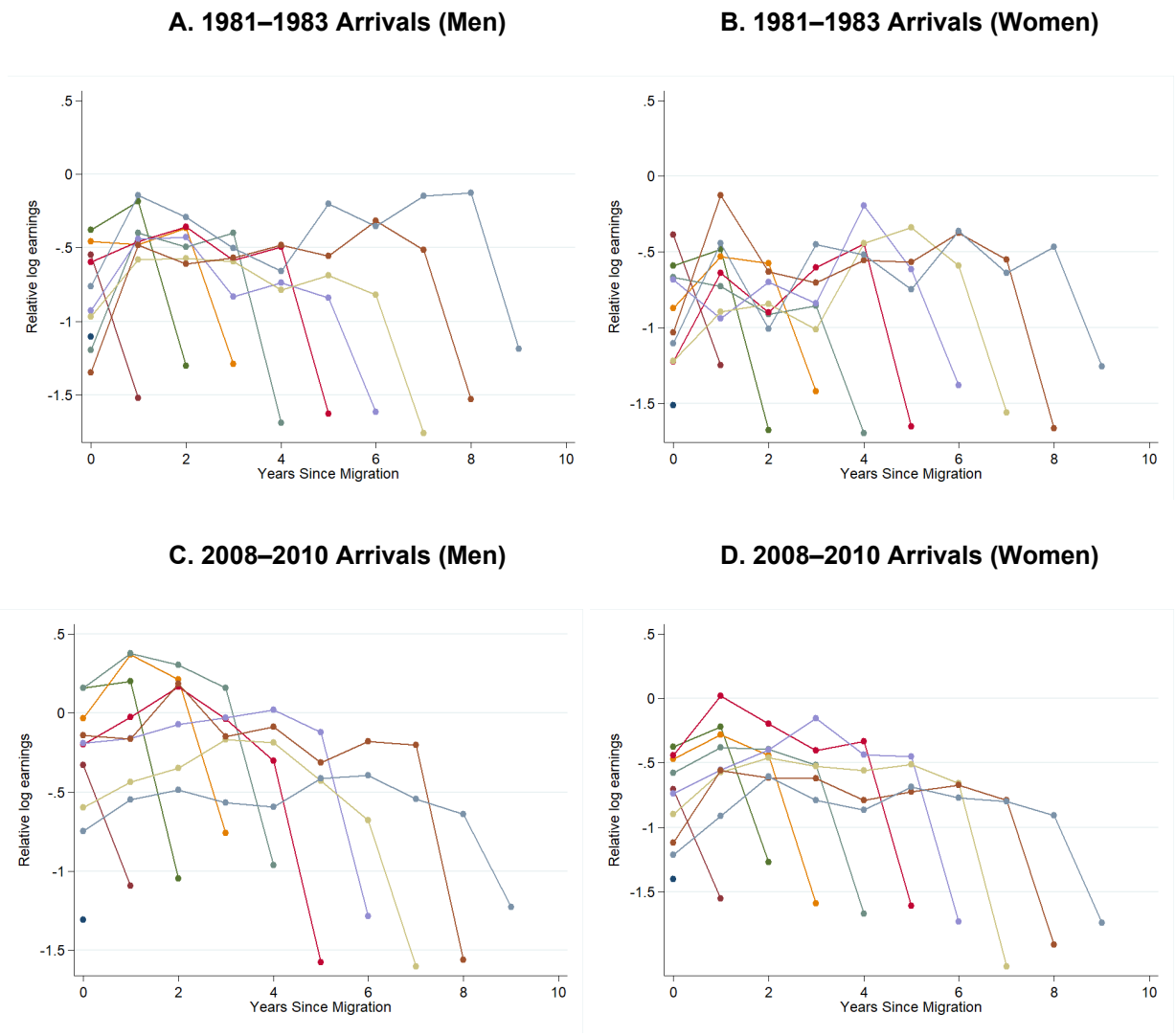
Data source: Social Security Administration's Continuous Work History Sample.

Return migrants have at least one year of missing earnings and in all later years in the data set. Permanent migrants have arrived in the United States and do not have missing earnings permanently in the data. Cross-section estimates treat the panel as a sample of repeated cross-sections. Each arrival cohort has pooled three years of data; for the 1983 arrival cohort, that includes 1981, 1982, 1983, and so on for all succeeding three-year pooled cohorts. Shaded areas show 95 percent confidence intervals.

Figure 6. [Return to Text]

Earnings Assimilation of Return Migrants by Duration of Stay

Relative log earnings



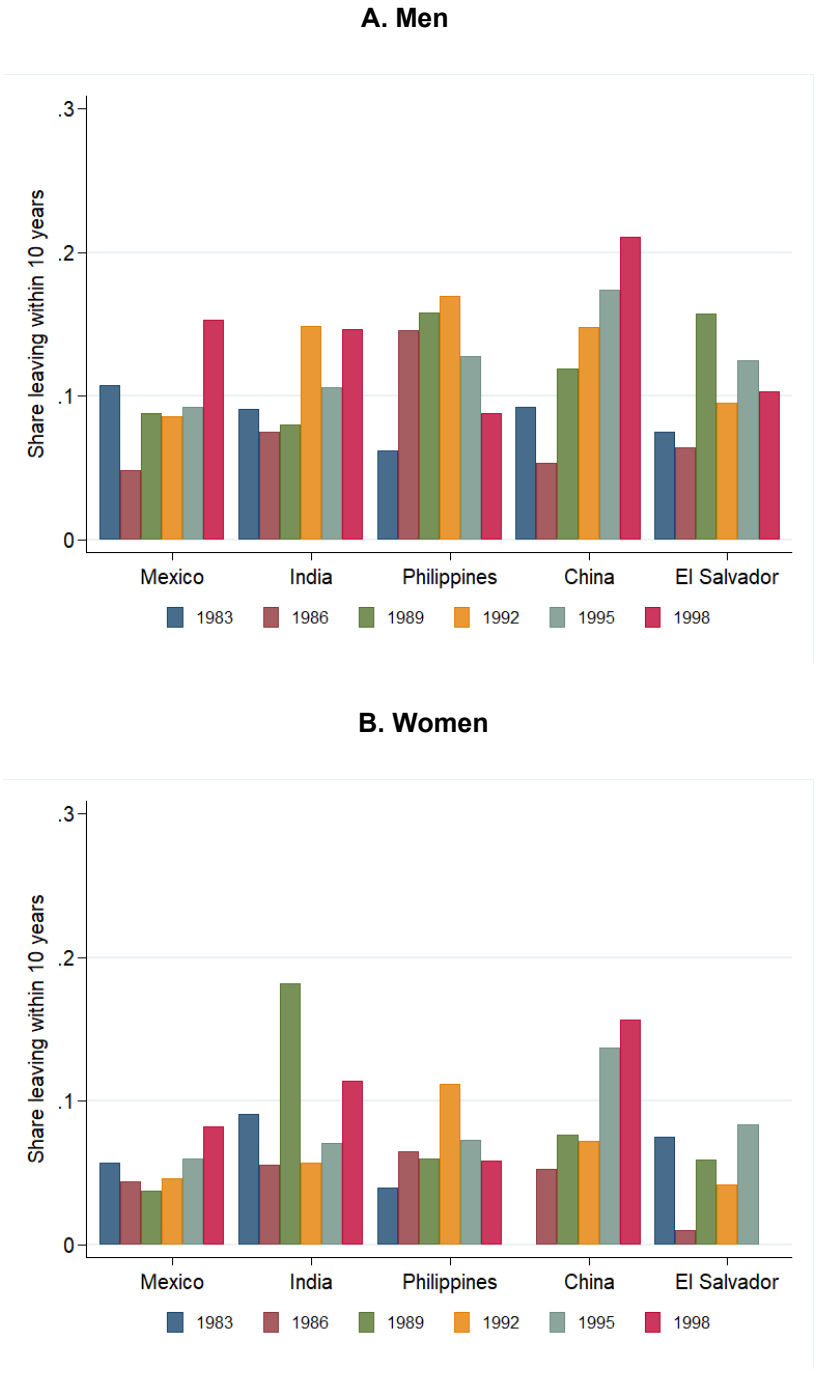
Data source: Social Security Administration's Continuous Work History Sample.

Return migrants have at least one year of missing earnings and in all later years in the data set. Duration of stay is the number of years that an immigrant is in the country before their spell of missing earnings.

Figure 7. [Return to Text]

Return Migration by Country of Origin, Arrival Cohort, and Sex

Share leaving within 10 years



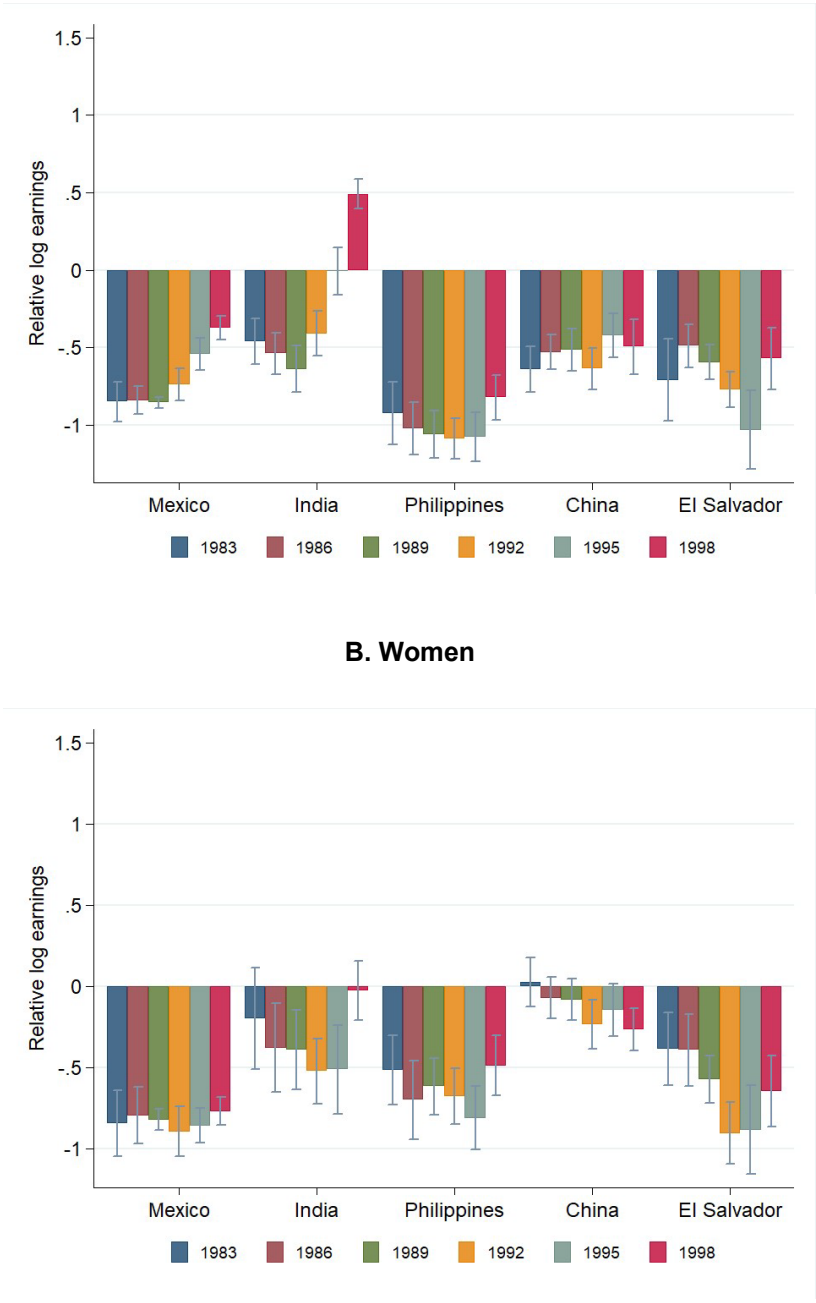
Data source: Social Security Administration's Continuous Work History Sample.

Return migrants have at least one year of missing earnings and in all later years in the data set.

Figure 8. [Return to Text]

Entry Earnings Differential of Permanent Migrants by Country of Origin, Arrival Cohort, and Sex

Relative log earnings



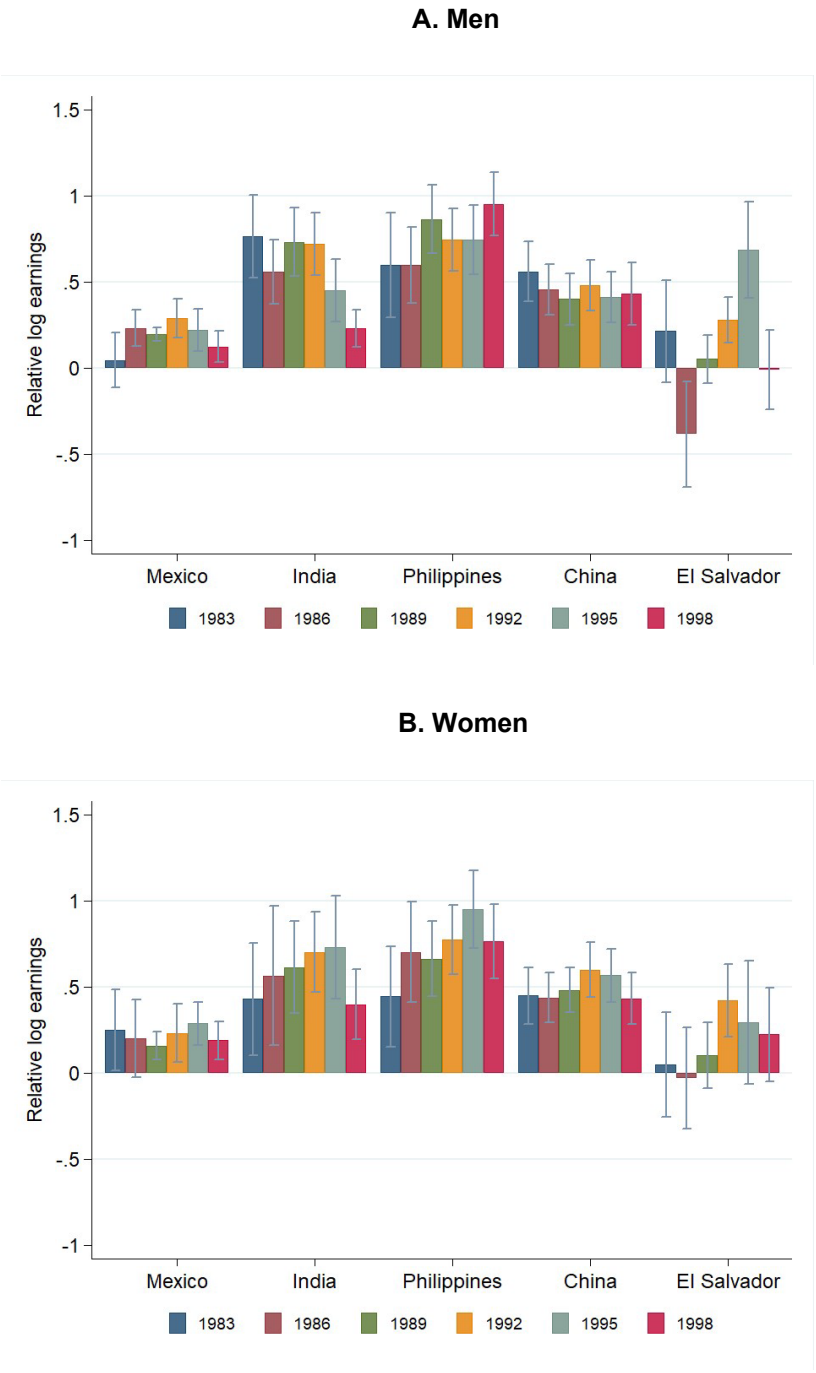
Data source: Social Security Administration's Continuous Work History Sample.

Entry earnings are measured in the first year after arrival to avoid partial-year earnings. Whiskers show 95 percent confidence intervals.

Figure 9. [Return to Text]

Earnings Growth of Permanent Migrants by Country of Origin, Arrival Cohort, and Sex

Relative log earnings



Data source: Social Security Administration's Continuous Work History Sample.

Earnings growth of permanent migrants is the relative log earnings growth over 10 years for immigrants who do not return migrate. Whiskers show 95 percent confidence intervals.

Tables

Table 1. [Return to Text]

Descriptive Statistics

Variable	1981	1990	2000	2010	2021
			A. Immigrants		
Age	41.1	40.0	41.3	42.7	42.6
Average annual earnings	22,500	23,000	29,800	29,200	40,100
Female (percent)	46.2	44.7	45.7	48.8	49.6
Country shares (percent):					
Mexico	17.2	21.9	17.6	13.6	15.2
India	2.9	3.5	4.6	7.8	11.3
China	1.8	3.0	4.7	6.2	7.2
Philippines	5.2	5.8	5.0	4.4	3.6
El Salvador	1.0	2.6	3.1	2.9	2.4
N	45,100	67,400	91,900	101,100	107,300
			B. Native-born people		
Age	43.3	42.5	43.8	45.3	45.1
Average annual earnings	30,600	34,600	41,400	37,800	44,800
Female (percent)	48.9	48.9	48.9	48.9	49.0
N	1,153,900	1,286,100	1,382,500	1,480,600	1,507,600

Data source: Social Security Administration's Continuous Work History Sample.

Shown is a 1 percent sample of the cross-sectional summary statistics for the Continuous Work History Sample. Country shares show the percentage of immigrants born in each of the top five sending countries in the sample. Annual earnings are individual Box 1 W-2 earnings reported in 2021 dollars, deflated using the consumer price index for all urban consumers. Annual earnings and observations rounded to nearest hundred.

Table 2. [Return to Text 1 | 2]

Estimates of Earnings Assimilation by Arrival Cohort (Men)

Variable	1981–1983	1984–1986	1987–1989	1990–1992	1993–1995	1996–1998	1999–2001	2002–2004	2005–2007	2008–2010
A. Relative log entry earnings										
Repeated cross-sections	−0.706	−0.683	−0.774	−0.701	−0.600	−0.302	−0.288	−0.355	−0.256	−0.375
	(0.0223)	(0.0203)	(0.0128)	(0.0176)	(0.0191)	(0.0170)	(0.0144)	(0.0163)	(0.0163)	(0.0188)
Permanent migrants	−0.727	−0.679	−0.760	−0.700	−0.590	−0.289	−0.259	−0.345	−0.235	−0.385
	(0.0246)	(0.0216)	(0.0137)	(0.0193)	(0.0216)	(0.0189)	(0.0158)	(0.0182)	(0.0184)	(0.0200)
Return migrants	−0.649	−0.694	−0.811	−0.703	−0.619	−0.328	−0.340	−0.372	−0.296	−0.351
	(0.0488)	(0.0466)	(0.0299)	(0.0353)	(0.0370)	(0.0338)	(0.0288)	(0.0318)	(0.0317)	(0.0408)
B. Relative 10th-year earnings										
Repeated cross-sections	−0.319	−0.320	−0.494	−0.230	−0.170	−0.0153	−0.0769	−0.111	−0.0288	−0.0482
	(0.0241)	(0.0208)	(0.0120)	(0.0165)	(0.0181)	(0.0175)	(0.0171)	(0.0187)	(0.0178)	(0.0188)
Permanent migrants	−0.272	−0.283	−0.439	−0.174	−0.116	0.0608	0.00468	−0.0443	0.0595	0.0216
	(0.0251)	(0.0213)	(0.0122)	(0.0172)	(0.0188)	(0.0176)	(0.0172)	(0.0185)	(0.0173)	(0.0185)
Return migrants	−0.673	−0.633	−0.875	−0.550	−0.481	−0.446	−0.610	−0.611	−0.841	−1.023
	(0.0771)	(0.0747)	(0.0402)	(0.0501)	(0.0552)	(0.0574)	(0.0583)	(0.0738)	(0.0759)	(0.0916)
C. Relative log earnings growth over 10 years										
Repeated cross-sections	0.387	0.363	0.279	0.471	0.43	0.287	0.211	0.244	0.228	0.327
	(0.0297)	(0.0264)	(0.0155)	(0.0216)	(0.0233)	(0.0209)	(0.0193)	(0.0217)	(0.0204)	(0.0228)
Permanent migrants	0.455	0.396	0.322	0.525	0.473	0.35	0.264	0.301	0.295	0.407
	(0.0311)	(0.0271)	(0.0159)	(0.0223)	(0.0244)	(0.0207)	(0.0189)	(0.0213)	(0.0196)	(0.0219)
Return migrants	−0.024	0.061	−0.064	0.153	0.138	−0.118	−0.27	−0.24	−0.544	−0.672
	(0.0863)	(0.0839)	(0.0463)	(0.0582)	(0.0633)	(0.0634)	(0.0618)	(0.0772)	(0.0799)	(0.0976)
Observations:										
Repeated cross-sections	21,439,300	21,447,500	21,544,400	21,476,400	21,468,000	21,473,200	21,499,800	21,464,800	21,455,000	21,440,600
Permanent migrants	21,431,100	21,438,800	21,521,800	21,460,300	21,452,700	21,457,400	21,479,900	21,450,400	21,442,900	21,431,100
Return migrants	21,392,000	21,392,500	21,406,500	21,399,900	21,399,100	21,399,600	21,403,700	21,398,200	21,395,900	21,393,400

Data source: Social Security Administration's Continuous Work History Sample.

(A), immigrant earnings in relation to native-born people upon arrival; **(B)**, earnings in relation to native-born people in their 10th year after arrival; **(C)**, relative earnings growth between arrival and the 10th year (difference between panels **A** and **B**). Entry earnings are measured in first year after arrival to avoid partial-year earnings. Return migrants have at least one year of missing earnings and in all later years in the data set. Permanent migrants have arrived in the United States and do not have missing earnings permanently in the data. Cross-section estimates treat the panel as a sample of repeated cross-sections. Robust standard errors for the cross-section and standard errors clustered at the individual level for the panel estimates are in parentheses. Observations rounded to nearest hundred.

Table 3. [Return to Text 1 | 2]

Estimates of Earnings Assimilation by Arrival Cohort (Women)

Variable	1981–1983	1984–1986	1987–1989	1990–1992	1993–1995	1996–1998	1999–2001	2002–2004	2005–2007	2008–2010
A. Relative log entry earnings										
Repeated cross-sections	−0.613	−0.594	−0.662	−0.692	−0.688	−0.594	−0.522	−0.602	−0.508	−0.750
	(0.0298)	(0.0265)	(0.0180)	(0.0227)	(0.0220)	(0.0197)	(0.0174)	(0.0181)	(0.0192)	(0.0225)
Permanent migrants	−0.554	−0.518	−0.601	−0.658	−0.654	−0.563	−0.471	−0.553	−0.444	−0.715
	(0.0326)	(0.0298)	(0.0200)	(0.0255)	(0.0246)	(0.0219)	(0.0188)	(0.0206)	(0.0210)	(0.0245)
Return migrants	−0.802	−0.801	−0.857	−0.788	−0.776	−0.671	−0.650	−0.731	−0.676	−0.839
	(0.0685)	(0.0552)	(0.0400)	(0.0478)	(0.0462)	(0.0415)	(0.0387)	(0.0370)	(0.0419)	(0.0496)
B. Relative 10th-year earnings										
Repeated cross-sections	−0.0754	−0.153	−0.344	−0.179	−0.150	−0.193	−0.175	−0.200	−0.151	−0.267
	(0.0258)	(0.0253)	(0.0167)	(0.0186)	(0.0187)	(0.0196)	(0.0172)	(0.0184)	(0.0184)	(0.0192)
Permanent migrants	−0.0151	−0.0708	−0.277	−0.108	−0.0851	−0.0833	−0.102	−0.113	−0.0668	−0.176
	(0.0267)	(0.0259)	(0.0174)	(0.0192)	(0.0195)	(0.0192)	(0.0173)	(0.0183)	(0.0180)	(0.0189)
Return migrants	−0.492	−0.653	−0.729	−0.654	−0.518	−0.793	−0.676	−0.880	−0.940	−1.333
	(0.0820)	(0.0793)	(0.0498)	(0.0574)	(0.0547)	(0.0656)	(0.0611)	(0.0694)	(0.0792)	(0.0823)
C. Relative log earnings growth over 10 years										
Repeated cross-sections	0.538	0.441	0.318	0.512	0.539	0.401	0.346	0.402	0.356	0.482
	(0.0362)	(0.0336)	(0.0224)	(0.0269)	(0.0264)	(0.0251)	(0.0219)	(0.0229)	(0.0232)	(0.0269)
Permanent migrants	0.539	0.447	0.323	0.55	0.569	0.48	0.369	0.44	0.377	0.539
	(0.0388)	(0.0362)	(0.0239)	(0.029)	(0.0284)	(0.0258)	(0.0222)	(0.0238)	(0.0233)	(0.0274)
Return migrants	0.31	0.147	0.128	0.133	0.258	−0.122	−0.026	−0.149	−0.263	−0.494
	(0.0973)	(0.09)	(0.0608)	(0.0721)	(0.0682)	(0.0738)	(0.0693)	(0.0765)	(0.0858)	(0.0945)
Observations:										
Repeated cross-sections	19,608,600	19,614,200	19,668,100	19,645,400	19,646,700	19,647,200	19,667,000	19,653,200	19,634,500	19,617,600
Permanent migrants	19,602,700	19,607,200	19,653,300	19,634,500	19,634,200	19,634,500	19,652,800	19,641,600	19,625,300	19,610,000
Return migrants	19,572,400	19,573,400	19,581,300	19,577,400	19,579,000	19,579,200	19,580,600	19,578,000	19,575,800	19,574,100

Data source: Social Security Administration's Continuous Work History Sample.

(A), immigrant earnings in relation to native-born people upon arrival; **(B)**, earnings in relation to native-born people in the 10th year after arrival; **(C)**, relative earnings growth between arrival and the 10th year (difference between panels **A** and **B**). Entry earnings are measured in first year after arrival to avoid partial-year earnings. Cross-section estimates treat the panel as a sample of repeated cross-sections. Return migrants have at least one year of missing earnings and in all later years in the data set. Permanent migrants have arrived in the United States and do not have missing earnings permanently in the data. Robust standard errors for the cross-section and standard errors clustered at the individual level for the panel estimates are in parentheses. Observations rounded to nearest hundred.

Table 4. [Return to Text 1 | 2]

Differences in Estimates of Earnings Assimilation of Immigrants

Average entry earnings of immigrant arrival cohort	Positive selection of return migrants	Negative selection of return migrants
Decreasing	Ambiguous	Cross > panel Abramitzky and colleagues (2014)
Increasing	Cross < panel Rho and Sanders (2021)	Ambiguous Present study

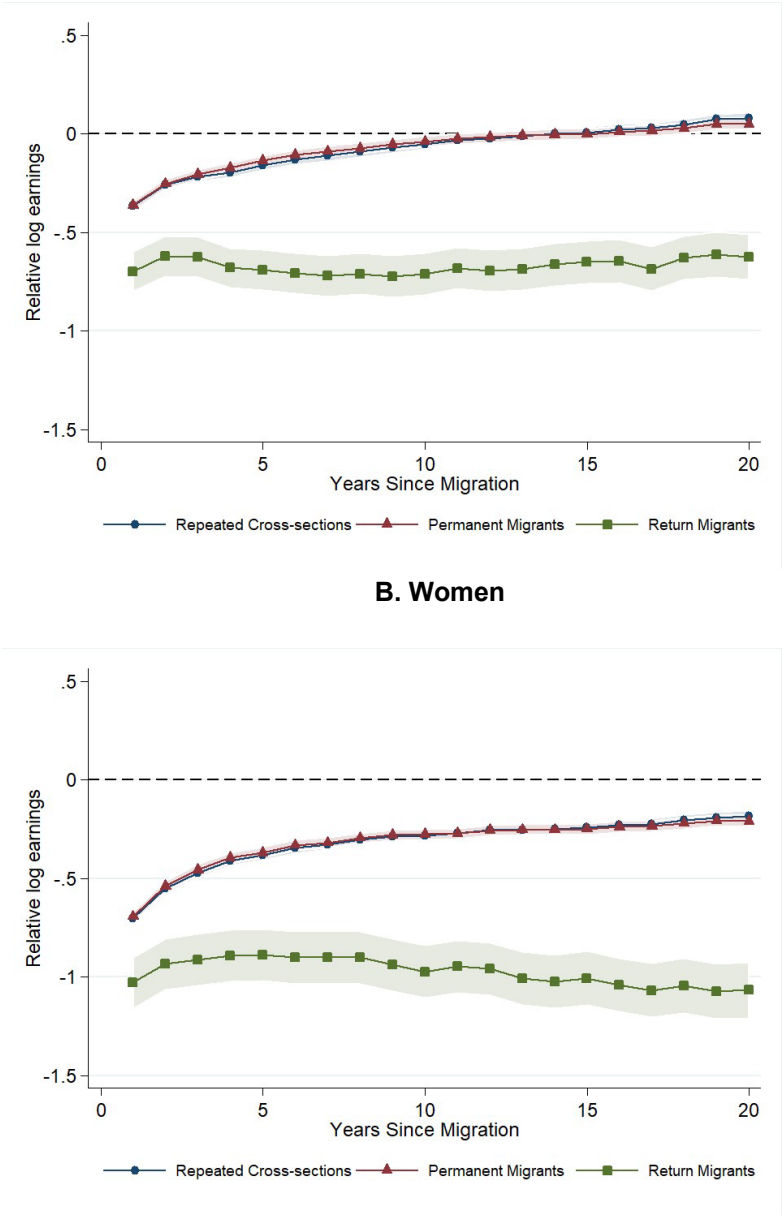
Changing average entry earnings of immigrant arrival cohorts and selection of return migrants drive differences between the number of years until immigrants assimilate to native-born people's earnings. Differences are evaluated using cross-sectional versus panel data.

Appendix

Figure A1. [Return to Text]

Long-Run Earnings Assimilation (Alternative Definition of Return Migration)

Relative log earnings



Data source: Social Security Administration's Continuous Work History Sample.

Under an alternative definition, return migrants have 10 consecutive years of missing earnings. Assimilation estimates, using data from 1981 to 2021, are obtained from a regression of log earnings on years since arrival indicators for years 1–20, with native-born workers as the omitted group, and age fixed effects, pooling all arrival cohorts. Shaded regions show 95 percent confidence intervals.

Figure A2. [Return to Text]

Earnings Assimilation of Men by Cohort (Alternative Definition of Return Migration)

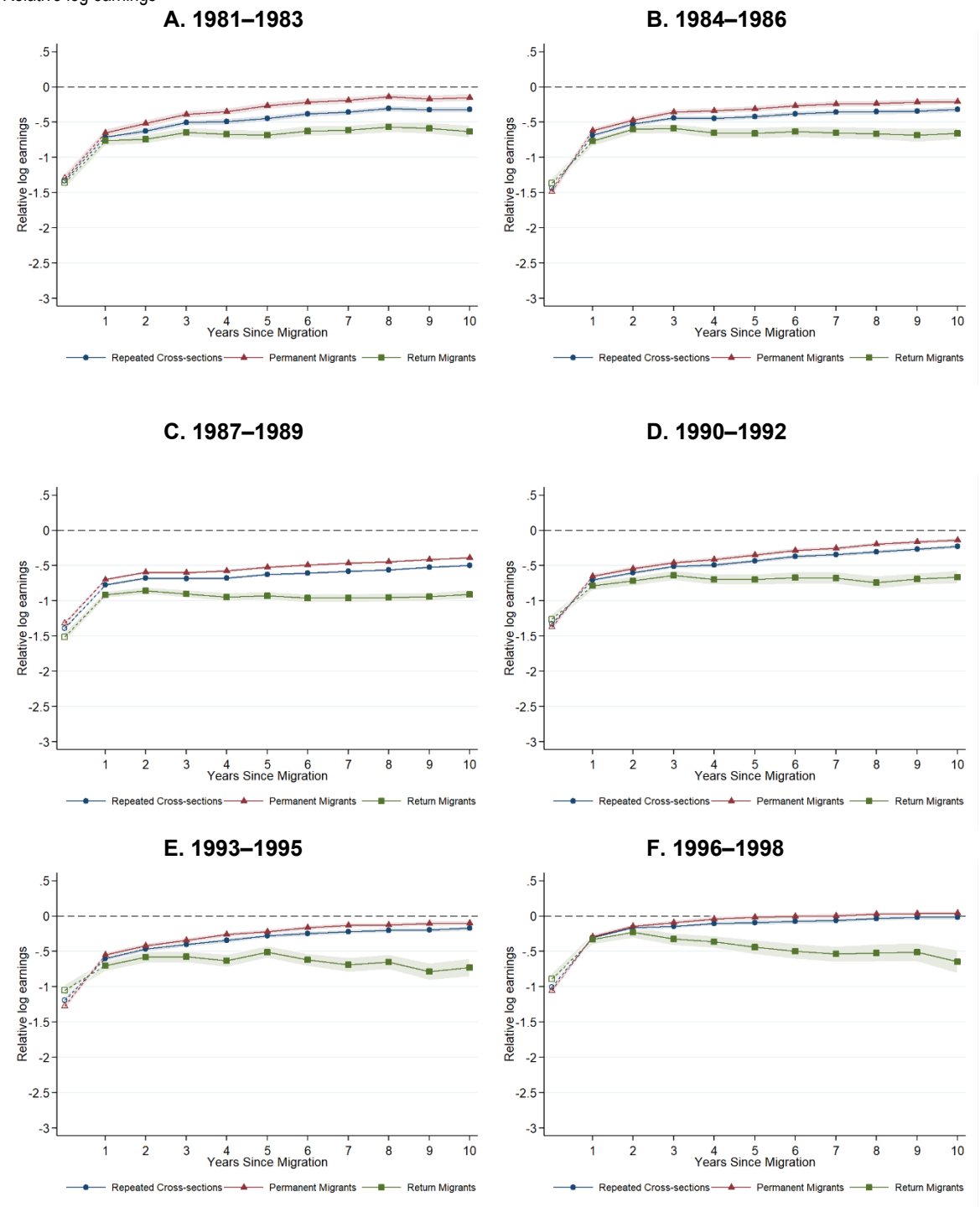
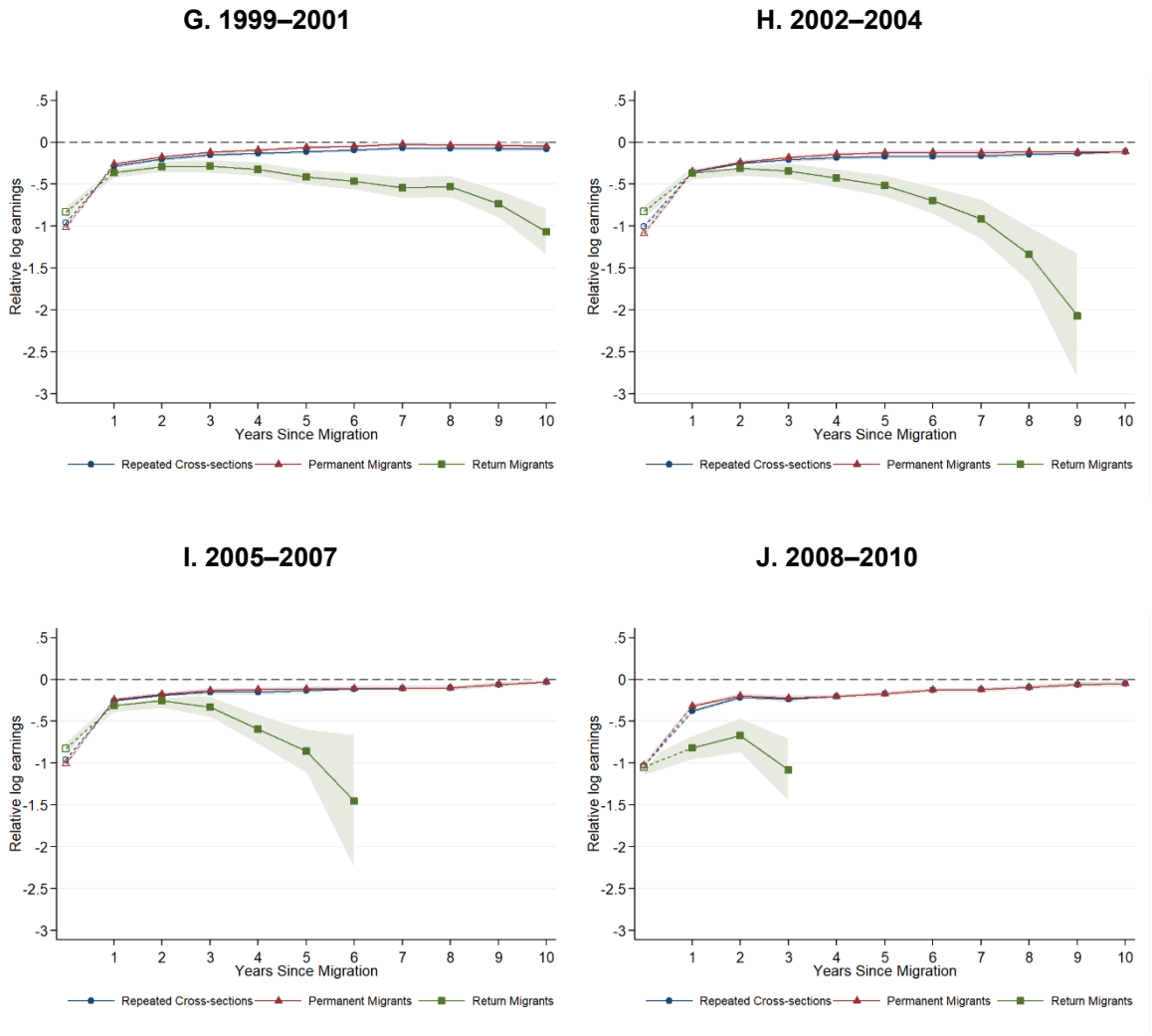


Figure A2, continued [Return to Text]

Earnings Assimilation of Men by Cohort (Alternative Definition of Return Migration)

Relative log earnings



Data source: Social Security Administration's Continuous Work History Sample.

Under an alternative definition, return migrants are foreign-born individuals with missing income that persists for 10 consecutive years (omitting individuals whose place of birth is recorded in the United States). Permanent migrants are those who are not defined as a return migrant. Cross-section estimates treat the panel as a sample of repeated cross-sections, pooling permanent and return migrant samples. The immigrant sample is restricted to those age 25–45 upon arrival. Estimates come from a regression of log earnings on years-since-migration indicators and age dummies, estimated separately by cohort and immigrant sample. Native-born people form the omitted group for the vector of years-since-migration indicators; the figure plots the estimated years-since-migration effects. Shaded areas show 95 percent confidence intervals.

Figure A3. [Return to Text]

Earnings Assimilation of Women by Cohort (Alternative Definition of Return Migration)

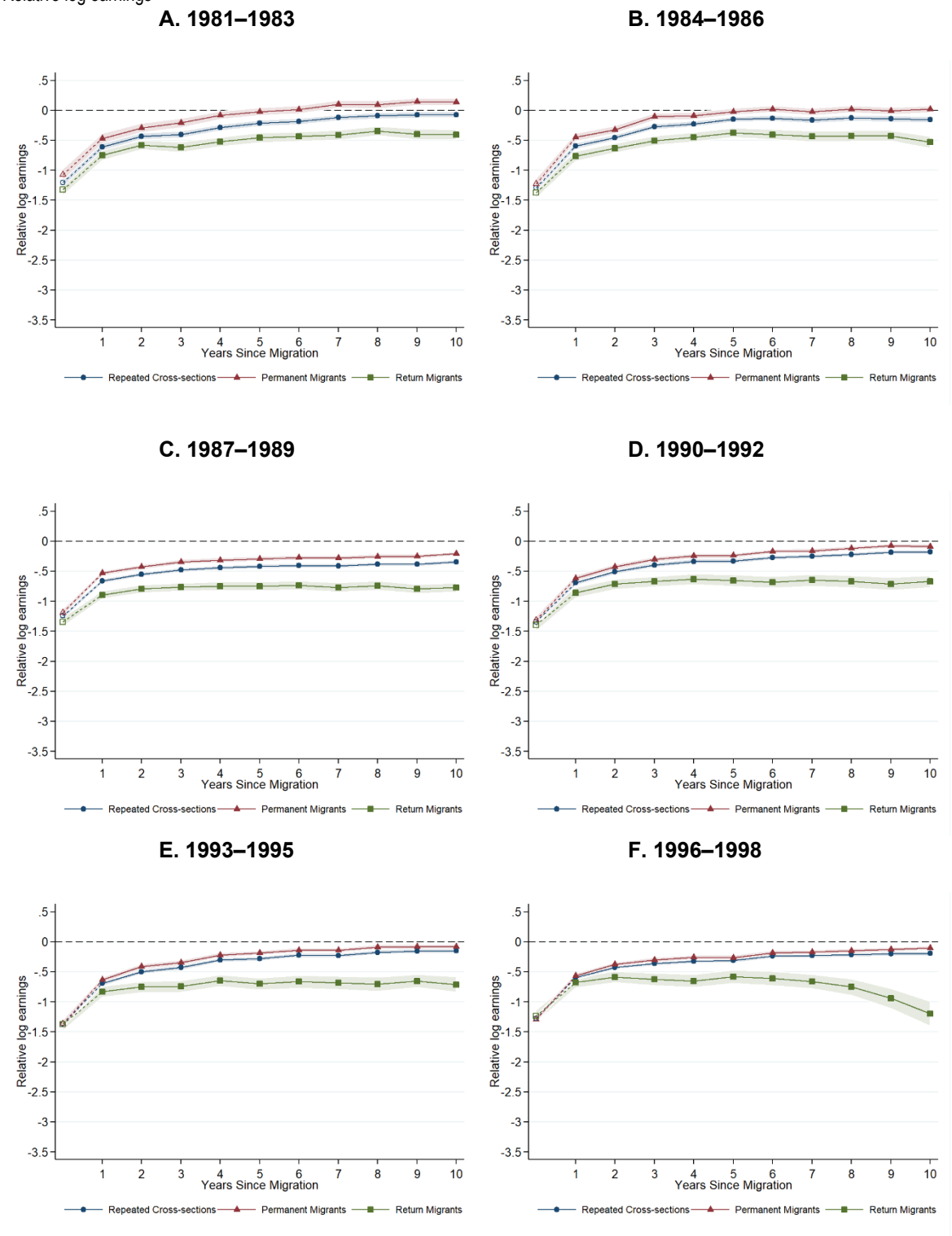
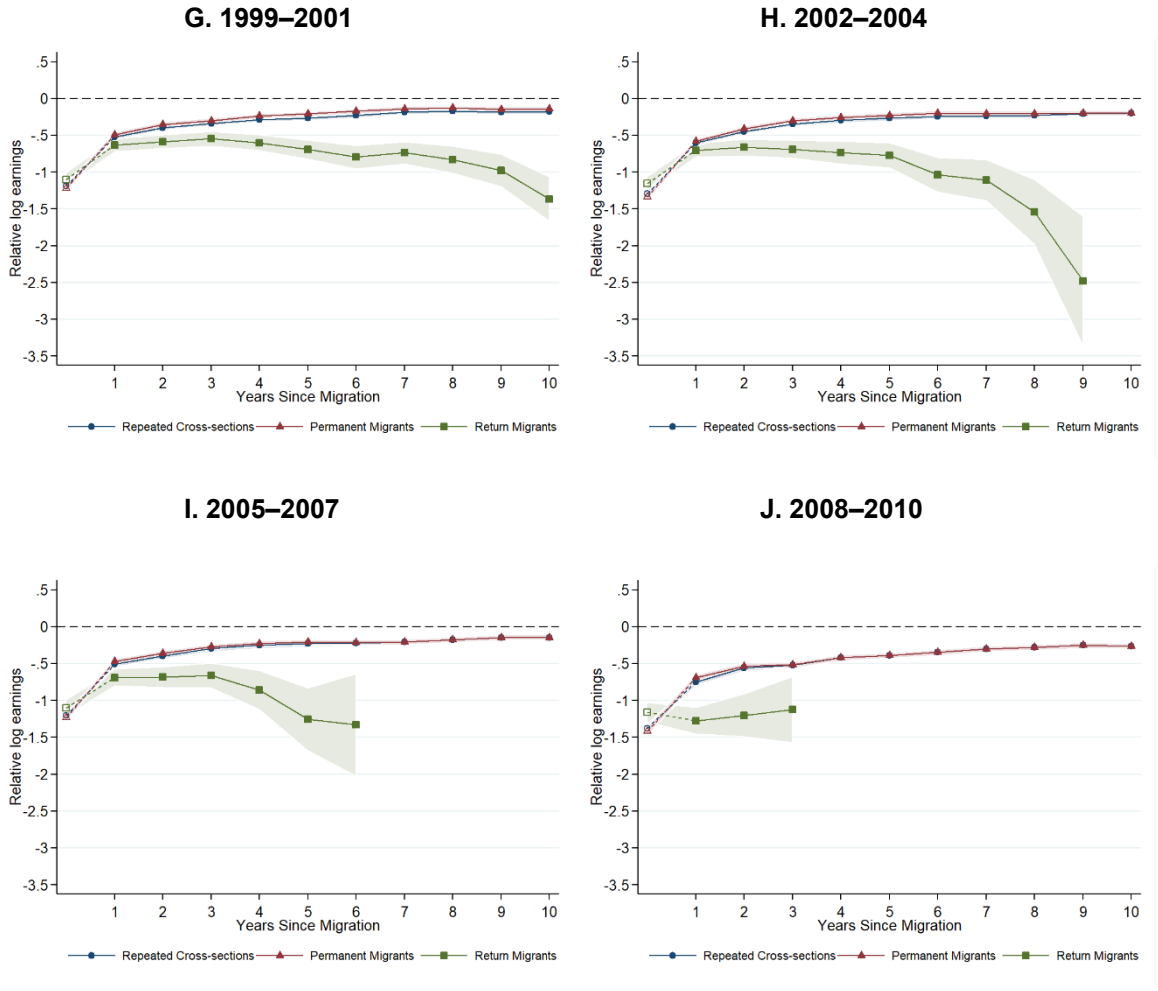


Figure A3, continued [Return to Text]

Earnings Assimilation of Women by Cohort (Alternative Definition of Return Migration)

Relative log earnings



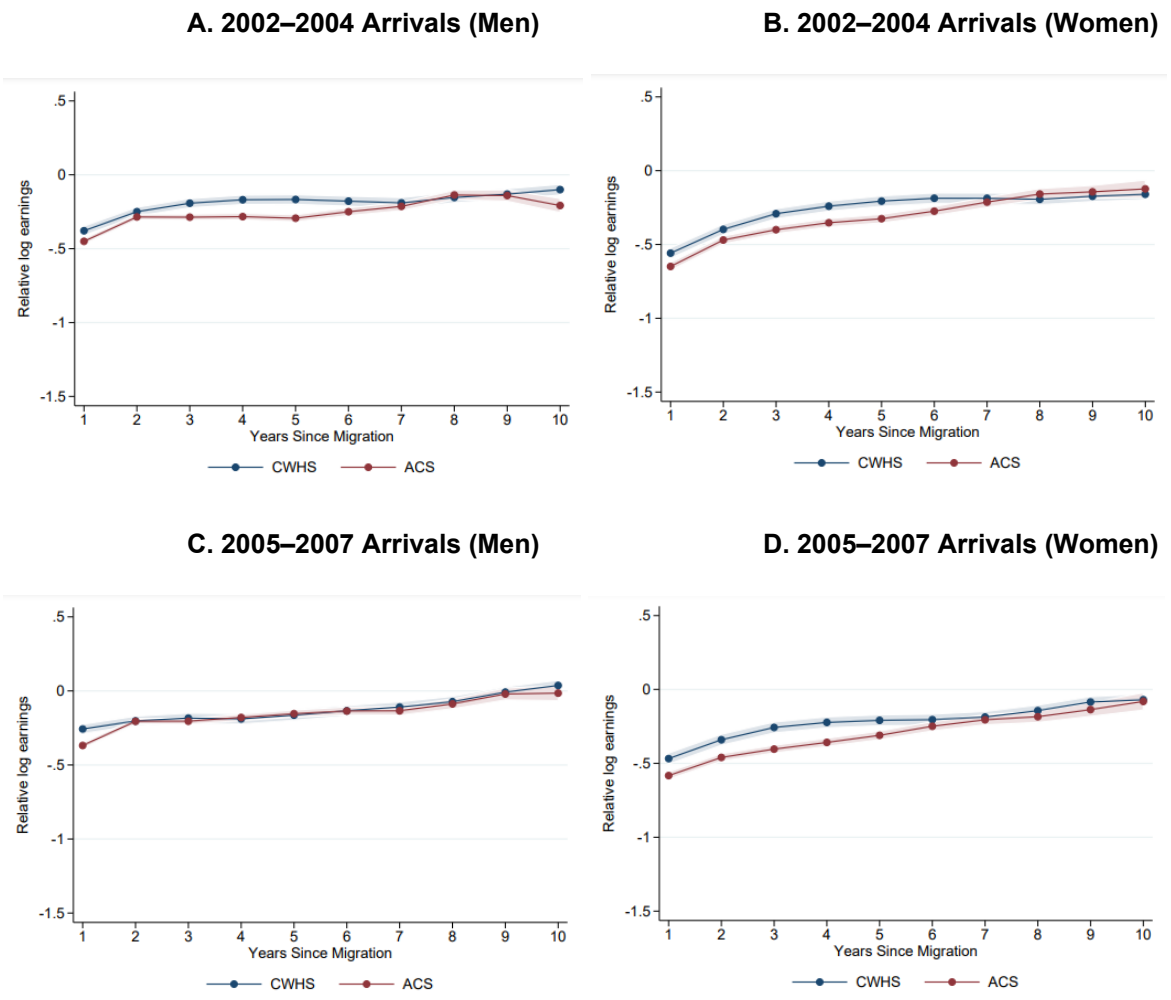
Data source: Social Security Administration's Continuous Work History Sample.

Under an alternative definition, return migrants are foreign-born individuals with missing income that persists for 10 consecutive years (omitting individuals whose place of birth is recorded in the United States). Permanent migrants are those who are not defined as a return migrant. Cross-section estimates treat the panel as a sample of repeated cross-sections, pooling permanent and return migrant samples. The immigrant sample is restricted to those age 25–45 upon arrival. Estimates come from a regression of log earnings on years-since-migration indicators and age dummies, estimated separately by cohort and immigrant sample. Native-born people form the omitted group for the vector of years-since-migration indicators; the figure plots the estimated years-since-migration effects. Shaded areas show 95 percent confidence intervals.

Figure A4. [Return to Text]

Earnings Assimilation in Repeated Cross-Sections

Relative log earnings



Data sources: American Community Survey (Ruggles and colleagues 2021); Social Security Administration's Continuous Work History Sample.

Assimilation estimates are obtained from a regression of log earnings on years-since-arrival indicators for years 1–10, with native workers as the omitted group, and age fixed effects. Shaded regions show 95 percent confidence intervals.