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A Historical Note on the Assimilation Rates of Foreign-Born Women in the U.S.*

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ABSTRACT

Using historical, longitudinal data on individuals, we track the earnings of immigrant and U.S.-born women. Following individuals, instead of synthetic cohorts, avoids biases in earnings-growth estimates caused by compositional changes in the cohorts that are followed. The historical data contradict key predictions of the Family Investment Hypothesis, shed light on its genesis, and inform its further testing. Challenging the perception that the quality of U.S. immigrants fell after the 1965 Immigration and Nationality Act, immigrant women, as previously found for immigrant men, have high earnings growth.

JEL Classification : J15, J16, J24, J31, C1

Keywords: Immigrant earning growth, human capital investment, skill transferability, immigrant quality, sample restrictions, family investment model

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I. Introduction

A decline in the education- and age-adjusted initial earnings of U.S. immigrant men occurred after the 1965 Immigration and Nationality Act. One hypothesis suggests it stemmed from a decline in immigrant quality, fueled by a post-1965 increase in the income inequality of countries contributing to U.S. immigration (Borjas, 1987). If so, the earnings growth of immigrant men should have decreased or stayed constant as the entry earnings of immigrant men declined.¹ Another hypothesis suggests that lower skill transferability of immigration from economically developing countries caused the decline (Duleep et al; 2018, 2021). If so, the earnings growth of immigrant men should have increased as immigrant entry earnings declined.² Using Current Population Survey (CPS) data matched to Social Security earnings data, we explore whether these hypotheses, as well as another hypothesis—the Family Investment Hypothesis (FIH)—elucidate the earnings of immigrant women.

As first proposed by Long (1980) and Duleep and Sanders (1993), the Family Investment Hypothesis (FIH) suggests that immigrant women, married to immigrant men lacking transferable skills to their new country, finance their husbands' human-capital investment. In the initial years following immigration (when their husbands' human capital investments are most intense) immigrant women will be more likely to work, work more hours, and be less likely to

¹ It is theoretically ambiguous whether low ability leads to low initial earnings: *ceteris paribus*, higher ability should increase human capital investment thus lowering initial earnings. Under any human capital model, however, declines in immigrant ability would not be associated with increases in earnings growth.

²Chiswick (1978, 1979) theorized that immigrants face a higher return to human capital investment than natives as it restores the value of source-country skills. Duleep and Regets (1999, 2002) add: (1) Immigrants whose source-country skills poorly transfer to the host country will have a lower opportunity cost of human capital investment than natives or high-skill transferability immigrants; (2) Source-country human capital that does not transfer to the host country's labor market is useful for learning new skills. These features suggest that low-skill-transferability immigrants will be more likely to invest in human capital, *in general*, versus (or in addition to) restorative human capital. Green (1999) finds a propensity to change occupations beyond an assimilation effect.

undertake human capital investment. As their husbands' reservoir of host-country human capital grows, their propensity to work decreases. Their initial earnings (relative to U.S. natives of similar age and education) are higher than would otherwise be the case; their earnings growth (by foregoing human capital investment and eventually working less), is lower.

Since the FIH seeks to explain the earnings of immigrant women married to men pursuing new lives in their adopted countries, we sought information on whether the couples we study were married at the time of their immigration. The Current Population Survey, used in this study, asks when immigrants migrated to the U.S. and whether they are married at the time of the survey, but not when they first married. By analyzing census data, we determined that for the women we study, who migrated to the U.S. from 1960 to 1990, most were married by the year we first measure their earnings.³ If the FIH is relevant, the earnings patterns of immigrant men and women should diverge: immigrant women should have low earnings growth (relative to U.S.-born women) when immigrant men are investing in human capital and have high earnings growth. We would not expect for immigrant women to have high earnings growth when immigrant men have high earnings growth.

II. Data and Methodology

We examine year-of-entry cohorts of foreign-born and U.S.-born women with longitudinal data on individual earnings, matched to the 1994 CPS. The earnings data come from the Summary Earnings Record (SER), a file of individual earnings maintained by the U.S. Social Security Administration. The earnings data in this file are very accurate. Yet, because zero

³ We used age of marriage and year of immigration on the 1980 5% Census sample to estimate the percent of immigrant women married by or in the first year we measured each cohort's earnings. For women 25-51 years old 79% in 1965, who immigrated in 1960-64 were married before 1966; 82% of the 1965-69 sample, were married before 1971; 82% of the 1970-74 sample were married before 1976; and 79% of the 1975-79 sample were married before 1981. A similar analysis is not possible for the 1980-81, 1982-83, 1984-85, 1986-87, and 1988-89 cohorts because the 1990 census does not ask age of marriage.

earnings are recorded for employment uncovered by Social Security and for not working, we limit our sample to individuals with positive reported earnings in whatever years we analyze. Moreover, as earnings are capped at Social Security's taxable maximum, we measure earnings at the median. The median is a less volatile measure of central tendency than the mean—an advantage when separately analyzing each year-of-entry immigrant cohort. Median earnings of women are below the Social Security taxable maximum in each year of our analysis.

Efforts to measure immigrant earnings trajectories commonly combine all available year-of-entry cohorts, either in pooled cross-sections or in longitudinal data. Differences in earnings among year-of-entry cohorts are captured by including in an earnings regression a 0-1 variable for each year-of-entry cohort. This methodology, pioneered by Borjas (1985), lets the initial earnings of each cohort change but does not allow earnings growth to change. It assumes that immigrant entry earnings and earnings growth (controlling for age and education) are not systematically related. Yet multiple studies of immigrant men document a systematic inverse relationship between entry earnings and earnings growth.⁴ When entry earnings change, the fixed-cohort-effect methodology averages earnings growth rates across year-of-entry cohorts.⁵ We therefore examine each year-of-entry cohort separately.

Following the same individuals eliminates bias caused by emigration because the same individuals are in the sample each period.⁶ It also eliminates a bias that occurs when analysts

⁴ Conditional on initial education and age, Chiswick (1978, 1979) and Duleep and Regets (1999, 2002) predict an inverse relationship between immigrant entry earnings and earnings growth. Empirical evidence includes Akresh (2007), Demombynes (2002), DeSilva (1997), Duleep and Dowhan (2002), Duleep, Liu, and Regets (2018), Duleep and Regets (1994, 1996a, b; 1997; 1999; 2002), Green and Worswick (2012), Hall and Farkas (2008), Jasso and Rosenzweig (1995), Lalonde and Topel (1991, 1997), Schoeni (1997), and Villarreal and Tamborini (2018). Lin (2013) and Duleep, Regets, Sanders, and Wunnava (2021) show this for immigrants from specific countries.

⁵ Duleep, Liu, and Regets (2021) illustrate this for multiple all-immigrant cohorts; Duleep, Regets, Sanders, and Wunnava (2021) show this for country-specific groups.

⁶ See Duleep and Regets (1997) and Duleep and Dowhan (2002). Although longitudinal data on individuals allows one to follow the same individuals, this is not always practiced in studies that use longitudinal data on individuals.

follow synthetic cohorts but impose sample restrictions, such as excluding zero earners and students.⁷ Synthetic cohorts—even though they are observations on different people—must represent people sampled from the same universe. Imposing restrictions based upon characteristics known only during one period creates different sample universes across the synthetic cohort. This issue is particularly troublesome when immigrants and natives are compared since sample restrictions differentially affect immigrants and natives. Excluding zero earners, U.S. natives become an increasingly select group as the cohort ages and lower wage individuals leave the labor force. This is not true for immigrants. The selection bias has led analysts to conclude that, relative to natives, post-1970 immigrant men have low earnings growth, when they have high earnings growth (Duleep, Liu, and Regets, 2021).⁸

Another methodological issue is how best to control for immigrant-native differences in age and education. Our goal is to control as precisely as possible age-education differences between immigrants and natives, not to measure the earning effects of education and age. We thus impose the age-education distribution of immigrants on natives by weighting individual observations.⁹ Specifically, we describe the age-education distribution of each immigrant and native cohort sample, labeling the percent in each age-education cell $f(i,j)$ for the foreign born and $n(i,j)$ for the native born. We then weight each native-born observation in cell i,j by $f(i,j)/n(i,j)$. This approach estimates the median earnings of immigrants at their own age-education distributions, while exploiting the plenitude of native-born observations to estimate

⁷ Economists and sociologists commonly exclude zero earners from their samples, either directly or indirectly by using \ln earnings as the dependent variable.

⁸ When sample restrictions are applied to individuals in two different periods, individuals included in one period will be excluded in the other. Longitudinal data allow excluding an individual from both periods thus maintaining a consistent sample universe. When comparing a cohort of individuals across two censuses, there is no way to know if a person would have qualified for the universe being analyzed in both periods.

⁹ There are early examples of sociologists weighting observations to compare groups. Some economists have recently embraced this approach. See DiNardo et al. (1996) for an elegant extension, and Duleep (1988), Duleep and Regets (1997), Duleep and Dowhan (2002), and Duleep, Regets, Sanders, and Wunnava (2021) for applications.

their median earnings at alternative age-education distributions.¹⁰ It controls for immigrant/native age and education differences without imposing functional-form assumptions about how education and age affect immigrant and native earnings. Or, as DiNardo and Tobias (2001, p. 11) quip “... without the straitjacket of a specific functional form.”

Using this approach, we track the annual earnings of nine year-of-entry cohorts of immigrant women who report (on the CPS) coming to the U.S. in 1960-64, 1965-69, 1970-74, 1975-79, 1980-81, 1982-83, 1984-85, 1986-87, and 1988-89,¹¹ and compare their earnings with those of U.S. natives. In each cohort, women (whether U.S. or foreign-born) must be at least 25 years old in the initial year of earnings measurement, and no more than 60 years old in the final year of earnings measurement.

III. Results for Immigrant Men

Our analysis of immigrant women parallels the Duleep and Dowhan (2002) analysis of immigrant men. That study found the earnings profiles of men coming to the U.S. in 1960-64 (right before the 1965 Immigration and Nationality Act) and in 1965-69 (right after the 1965 Act) resembled the earnings profiles of U.S. natives of similar age and education. Then, starting with the 1970-74 cohort, the entry earnings of immigrant men fell relative to their U.S.-born statistical twins and their earnings growth exceeded that for U.S. natives.

The end of the 1965 U.S. immigration system based on national origin and its replacement with a policy emphasizing family reunification opened the gates to a large and increasing flow of immigrants from economically developing countries. A plausible explanation for the drop in U.S. immigrants’ education- and age-adjusted entry earnings is a decline in the

¹⁰ Prediction error increases the smaller the sample size and the farther away the forecast is from the sampling experience. Since the sample size for natives is so much larger than that for immigrants, it makes sense to predict the U.S. native values at the foreign-born schooling and age distribution.

¹¹ We identify immigrants as persons born abroad of non-U.S. parents.

proportion of immigrants with skills that easily transfer to the U.S. labor market: the less source-country skills transfer, the lower the initial earnings of immigrants (Chiswick, 1978a, 1979). Duleep et al. (2018 and 2021) suggest U.S. immigrants from less-developed countries have lower skill transferability than their statistical twins from economically developed countries because constraints and limited opportunities in less-developed countries make it worthwhile for individuals to migrate, even when immigration entails substantial post-migration human-capital investments.¹² Their statistical twins in economically-developed countries are unlikely to migrate without U.S. positions that immediately value their source-country skills.¹³

But given that U.S. immigration policy changed in 1965, why did the drop in initial earnings for immigrant men not occur until the 1970-74 cohort? In addition to eliminating restrictions on immigration from economically developing countries and promoting a family-based policy, the 1965 Immigration and Nationality Act allowed 20 percent of the numerically restricted visas to be allocated to applicants based on their occupational skills.¹⁴ Employers hiring immigrants with specific occupational skills for specific jobs ensures that these immigrants will have higher skill transferability, hence higher initial U.S. earnings, than family-based immigrants—a prediction confirmed by several analyses.¹⁵ Because the national-origins legislation had been in place some 40 years when the 1965 Immigration and Nationality Act was enacted, potential migrants from previously excluded countries did not, in 1965, have family

¹² This hypothesis accommodates findings (e.g., Rivera-Batiz, 1996) that the quality of schooling in several less economically developed countries exceeds that of the United States.

¹³ In countries with opportunities resembling those in the U.S., a minority of individuals will face constraints, and choose to migrate, even when this entails substantial investment in new human capital. As the level of economic development decreases, the proportion of persons facing constraints would likely increase.

¹⁴ The occupational skills classification embraced two components: workers, skilled and unskilled, in occupations where labor is deemed scarce, and professionals, scientists, and artists of exceptional ability.

¹⁵ Using different data sets, Jasso and Rosenzweig (1995), Duleep and Regets (1996a, b) and DeSilva (1996) find that family-based immigrants start their host-country lives with lower earnings than their employment-based statistical twins but have higher earnings growth; with time, the earnings of the two groups converge.

members in the United States. Unable to migrate via family ties, qualified migrants gained U.S. entry via the employment-based admission categories. Once established, their relatives—with less transferable skills—immigrated via family-based categories. In this way, the proportion of U.S. immigrants lacking skills that immediately transfer to the U.S. labor market, grew in the years following 1965. This explains why Duleep and Dowhan (2002) found that the earnings of immigrants in the 1965-1970 entry cohort resemble the earnings of natives and the earnings of the 1960-65 cohort of immigrants, and why starting with the 1970-1975 cohort, immigrant entry earnings fell relative to native earnings, and earnings growth increased. Similar results emerge from Duleep and Regets (2002).

IV. Results for Immigrant Women

The three panels of Figure 1 show, for each year-of-entry cohort, the median annual earnings of immigrant women in a specific year, divided by the median annual earnings of U.S.-born women. The native-born observations are weighted to match the age and schooling distribution of the corresponding immigrant cohort.

Earnings are first measured in the year following a CPS defined year-of-immigration period. For instance, earnings are measured in 1965 for those who came to the U.S. in 1960-64. Earnings are last measured nine years later for cohorts followed 10 years, and in 1992, for cohorts followed for less than ten years. We require positive earnings in the year following the last-year earnings to guard against partial-year earnings due to emigration or individuals leaving covered employment.

Besides the final-year-plus-one requirement, earnings are only required in the first and last years in the top panel of Figure 1: these two points determine the top panel's lines. In contrast, the middle panel is based on samples that require positive earnings each year and

measures earnings each year. To facilitate comparing the top and middle panels, the bottom panel uses the points of the middle panel to estimate, for each cohort, $Y_{Ft}/Y_{Nt} = \alpha + \beta \text{Year}_t$, where Y_{Ft} is the median earnings of immigrant women for year t and Y_{Nt} is the median earnings of the corresponding weighted native sample.¹⁶ Evaluating at first and last years, these estimates, determine the lines of the bottom panel.

The top panel suggests that immigrant women went from having earnings profiles resembling those of U.S. natives (of similar age and education) to earning profiles with low initial earnings and high earnings growth, relative to their U.S.-born statistical twins. The transformation parallels that for immigrant men except that the shift from high-entry-earnings/low-earnings-growth to low-entry-earnings/high-earnings-growth begins, for men, with the 1970-74 cohort (Duleep and Dowhan, 2002). For women, it begins with the 1980-81 cohort.

Perhaps the male/female divergent patterns for the 1970-74 and 1975-79 cohorts reflect a family investment strategy? We find, however, that women who work every year (middle and bottom panels) show the same transition as men: flat (or negative) earnings profiles, relative to natives, to low initial earnings/high earnings growth starting with the 1970-74 cohort. Figure 2 highlights this similarity with cohort-specific ratios of immigrant to native ten-year growth rates for women and men.¹⁷

Perhaps the high earnings growth of recent cohorts reflects high earnings growth of unmarried immigrant women, while married women—particularly those married to immigrants—have relatively low earnings growth in keeping with the FIH; decreasing marriage

¹⁶ The estimated coefficients and t-statistics (in parentheses) for $Y_{Ft}/Y_{Nt} = \alpha + \beta \text{YEAR}_t$, for each cohort are: 1960-64 -0.017 (-2.26); 1965-69 -0.020 (-2.35); 1970-74 0.010 (2.07); 1975-79 0.006 (0.64); 1975-79 0.006 (0.64); 1980-81 0.021 (4.02); 1982-83 0.026 (2.28); 1984-85 0.058 (6.10); 1986-87 0.040 (3.79); 1988-89 0.149 (2.00).

¹⁷ The earnings growth rates shown in Figure 2 are defined as $[(Y_{\text{END}} - Y_1)/Y_1]_F / [(Y_{\text{END}} - Y_1)/Y_1]_N$ where Y_1 and Y_{END} denote the beginning- and end-year earnings, and F and N denote foreign and native born.

rates among immigrants in recent years could yield the overall pattern we observe. If this is the case, restricting our sample for the most recent cohorts from “all immigrant women” to “married immigrant women” to “married immigrant women with immigrant husbands,” should decrease the earnings growth of immigrant women relative to natives.¹⁸ Figure 3 shows this not to be true.

V. Discussion

An evolving picture of the role women play in the economic adjustment of immigrants continues to unfurl. Earlier evidence, mostly based on cross-sectional data, found evidence for a Family Investment Hypothesis affirming Duleep and Sanders (1993); more recent evidence does not.¹⁹ Following the same individuals, our study avoids biases due to immigrant emigration and sample restrictions in synthetic cohort analyses (Duleep, Liu, and Regets, 2021). The historical data permit separately analyzing multiple year-of-entry cohorts. Two realities emerge, neither of which supports the FIH. When compared with similar U.S.-born women, the early cohorts of immigrant women have relatively flat earnings growth when immigrant men have relatively flat earnings growth. For more recent cohorts, immigrant women have relatively high earnings growth when immigrant men have relatively high earnings growth. These analyses support Blau et al (2003) who conclude that the earnings behavior of U.S. immigrant women resembles that of U.S. immigrant men. Our findings also resonate with the Cobb-Clark et al (2005) conclusion that human capital investment behaviors in the family reinforce each other.²⁰ Our historical study illuminates why scholars using earlier U.S. data, as in Duleep and Sanders (1993), found support for diverging earnings patterns for immigrant men and women, consistent with the FIH. A period

¹⁸ For our most recent cohorts, we assume that women who report to the CPS ever having been married in 1994 were married by the year we first measure each cohort’s earnings.

¹⁹ See, for instance, Adserà and Ferrer (2014, 2016), Blau et al. (2003), Cohen-Goldner et al., (2009), Cortes (2004), Duleep (1998), Rashid (2004), and Worswick (1996). A more complete review including studies that find evidence of the FIH can be found in Duleep, Regets, Sanders, and Wunnava (2021).

²⁰ Also refer to Cobb-Clark and Crossley (2004).

exists when low-initial-earnings/high-earnings-growth for men coincides with high-initial-earnings/low-earnings-growth for women. This disappears, however, when we examine women who work every year.

To further understand the economic assimilation of immigrant women, Blau et al. (2003) encourage inter-country comparisons. Analysts should consider employing this study's guidelines: follow entry cohorts from their beginning years, follow each year-of-entry cohort separately, and allow both entry earnings and earnings growth to vary across year-of-entry cohorts. Such studies would ideally follow the same individuals. Studies that do not follow individuals should consider the sensitivity of their results to immigrant emigration and the differential effects of sample restrictions on immigrants and natives.²¹ Using weights to control for variables such as education and age frees the data from the "straitjacket of specific functional forms." To compare countries, analysts could apply a uniform set of weights.²²

Following a methodology that imposes no relationship between entry earnings and earnings growth, increases in earnings growth accompany decreases in entry earnings for immigrant women. This resonates with a story of post-1965 changes in immigrant skill transferability versus immigrant quality.

²¹ Duleep, Liu, and Regets (2018) suggest a test for emigration bias. Duleep, Liu, and Regets (2021) show how sample restrictions distort measures of immigrant earnings growth for men in synthetic cohort analyses.

²² Although we fail to find evidence of FIH causal mechanisms, other work underscores the role that women play in immigrant family earnings via their labor force participation decisions e.g. Reimers (1984, 1985), Blau et al. (2011), and Duleep, Regets, Sanders, and Wunnava (2021).

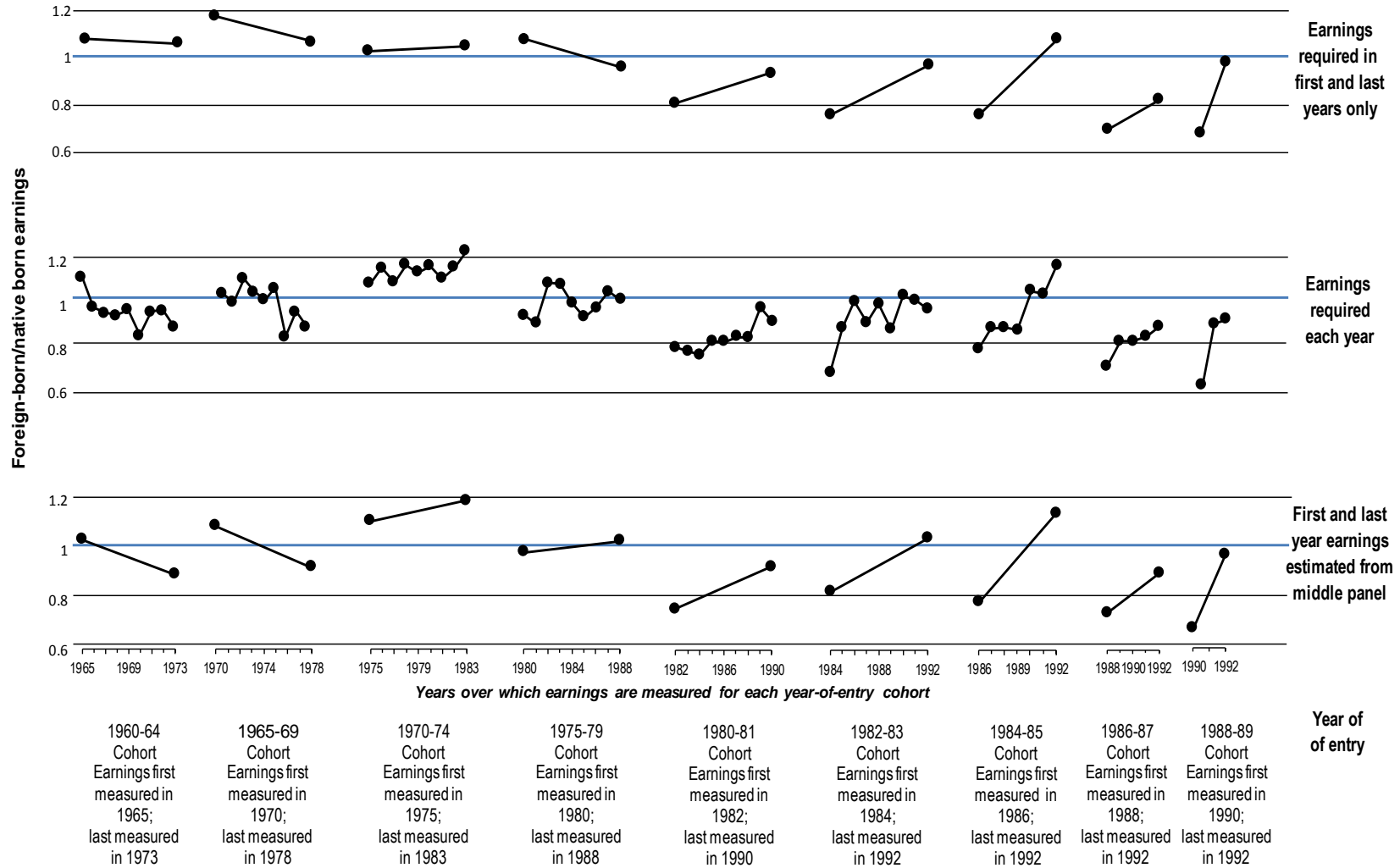
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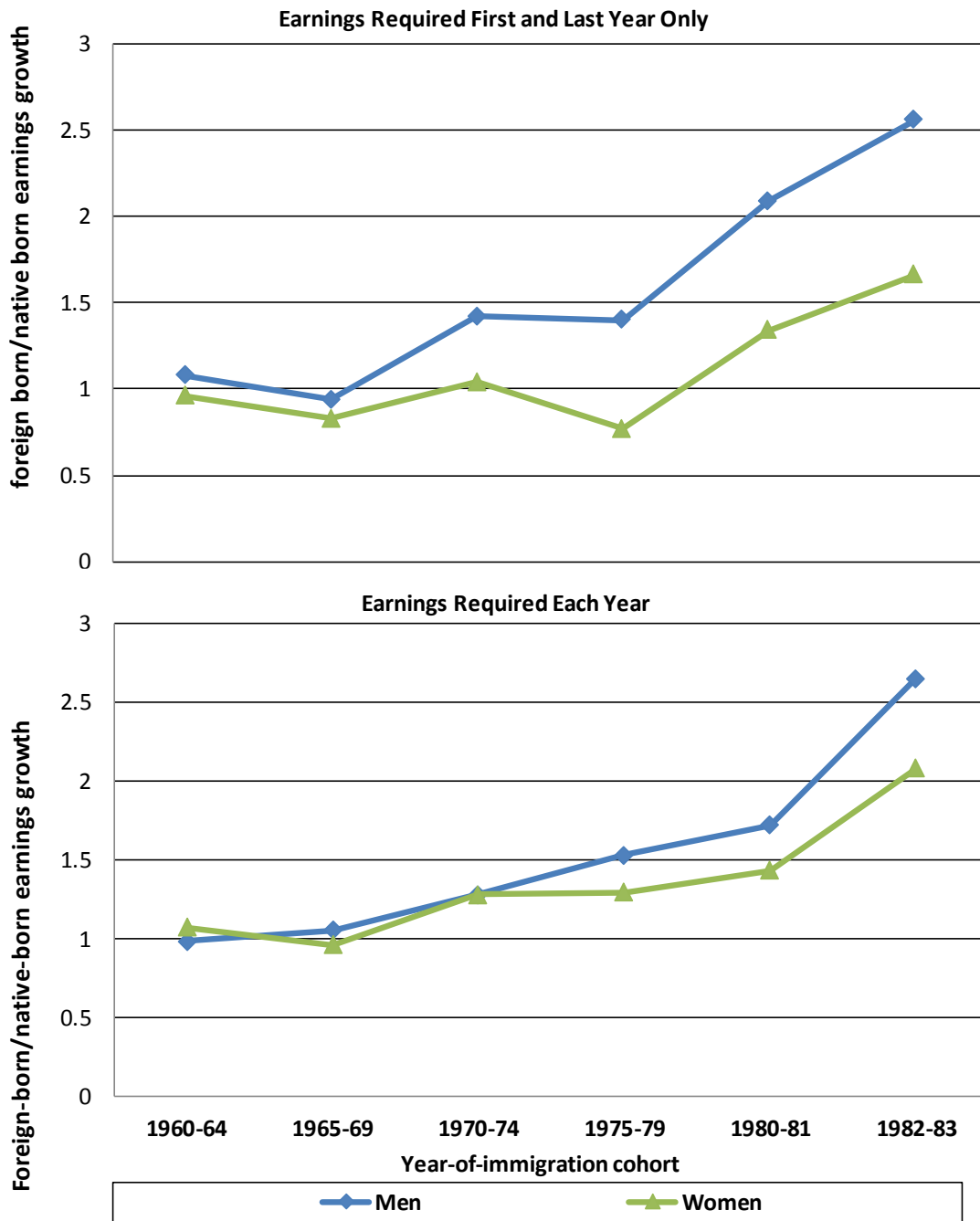
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Figure 1: The Annual Earnings of Foreign-Born Women Relative to U.S.-Born Women



Source: Authors' calculations using the 1994 March Current Population Survey matched to the Social Security Administration's administrative record system.
 Notes: Each dot is the median annual earnings of foreign-born women, in a specific year, divided by the median annual earnings of U.S.-born women, wherein the individual observations in each U.S.-born sample are weighted to match the age and schooling distribution of the corresponding foreign-born cohort.

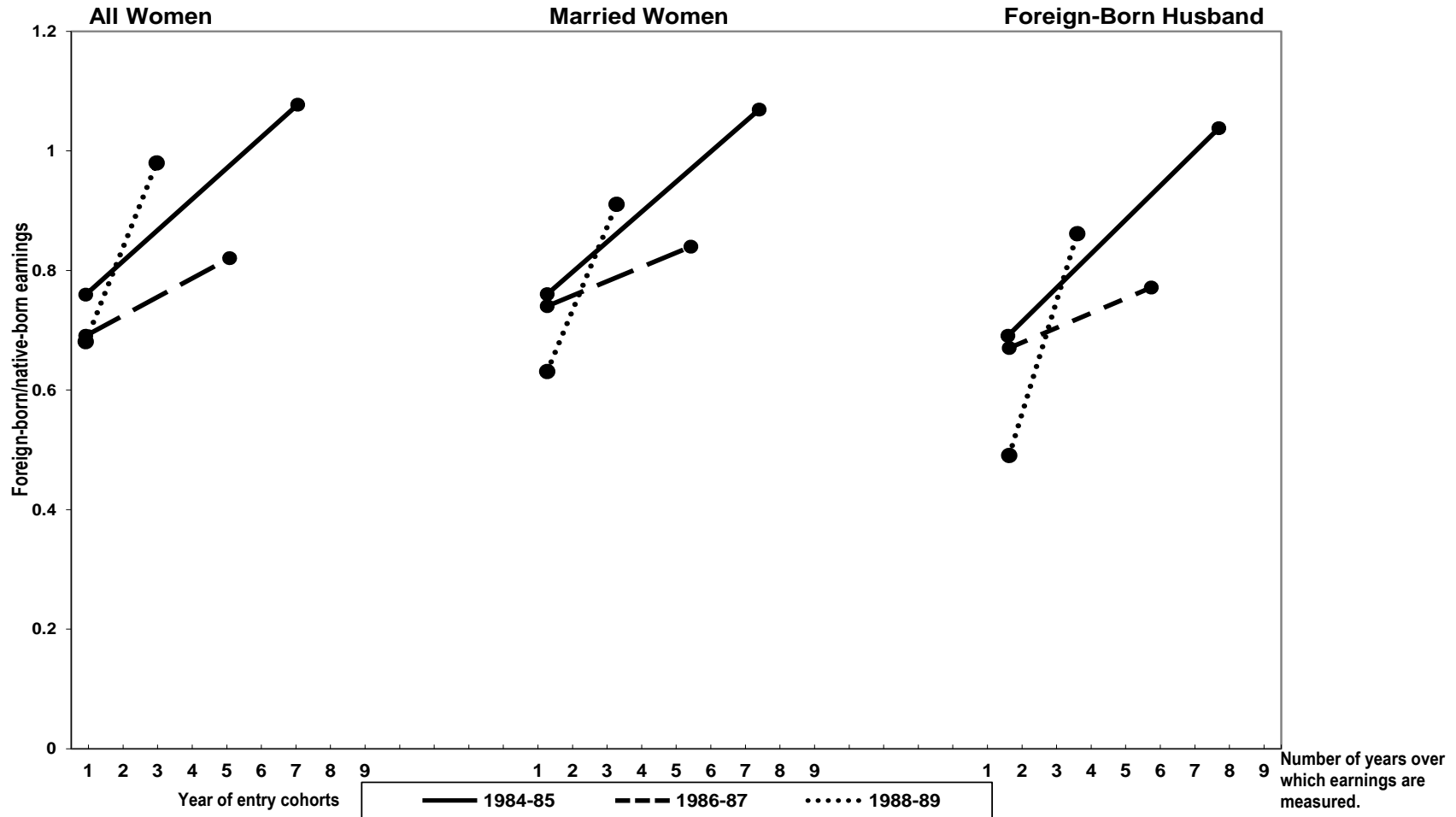
Figure 2: Cohort-specific Ratios of Foreign-Born to Native-Born Ten-Year Earnings Growth Rates: Women and Men



Source: Authors' calculations using the 1994 March Current Population Survey matched to the Social Security Administration's administrative record system.

Notes: Each marker is a cohort-specific ratio of foreign-born to native-born ten-year relative growth rates defined as $[(Y_{END} - Y_1)/Y_1]_F / [(Y_{END} - Y_1)/Y_1]_N$ where Y_1 and Y_{END} denote the beginning- and end-year median annual earnings, and F and N denote foreign and native born. Median annual earnings for the U.S. born are estimated on samples weighted to match the age and schooling distribution of the corresponding foreign-born cohort.

Figure 3: The Earnings of Foreign-Born Women Relative to U.S.-Born Women, by Marital Status



Source: Authors' calculations using the 1994 March Current Population Survey matched to the Social Security Administration's administrative record system. Notes: Each dot is the median annual earnings of foreign-born women, in a specific year, divided by the median annual earnings of U.S.-born women, wherein the individual observations in each U.S.-born sample are weighted to match the age and schooling distribution of the corresponding foreign-born cohort. The samples that underlie these graphs require earnings in the first and last years, only; the annual median earnings, measured at the first and last years, determine the lines. For the 1984-85 cohorts (solid lines), earnings are first measured in 1986 and last measured in 1992. For the 1986-87 cohorts (dashed lines), earnings are first measured in 1988 and last measured in 1992. For the 1988-89 cohorts (dotted lines), earnings are first measured in 1990 and last measured in 1992.