RECENT TRENDS IN THE EARNINGS OF
NEW IMMIGRANTS TO THE UNITED STATES

George J. Borjas
Harvard University and NBER

Rachel M. Friedberg
Brown University and NBER

September 29, 2009

Abstract

This paper studies long-term trends in the labor market performance of immigrants in the United States, using the 1960-2000 PUMS and 1994-2009 CPS. While there was a continuous decline in the earnings of new immigrants 1960-1990, the trend reversed in the 1990s, with newcomers doing as well in 2000, relative to natives, as they had 20 years earlier. This improvement in immigrant performance is not explained by changes in origin-country composition, educational attainment or state of residence. Changes in labor market conditions, including changes in the wage structure which could differentially impact recent arrivals, can account for only a small portion of it. The upturn appears to have been caused in part by a shift in immigration policy toward high-skill workers matched with jobs, an increase in the earnings of immigrants from Mexico, and a decline in the earnings of native high school dropouts. However, most of the increase remains a puzzle. Results from the CPS suggest that, while average entry wages fell again after 2000, correcting for simple changes in the composition of new immigrants, the unexplained rise in entry wages has persisted.

I. INTRODUCTION

Immigration is an important force of demographic and economic change in the United States, and increasingly so in recent decades. In the 1950s, approximately 250 thousand legal immigrants were admitted to the United States each year, and there was relatively little illegal immigration. By the 1990s, nearly one million legal immigrants were admitted to the country each year, with another half a million entering illegally (Passel, 2006). As a result of these trends, nearly half of population growth in the United States is now due to immigration, and the foreign-born share of the U.S. population has reached one in eight, having more than doubled since 1970.

The resurgence of large-scale immigration has sparked the development of an extensive literature that examines the performance of immigrant workers in the labor market, including their earnings upon entry and their subsequent assimilation toward the earnings of native-born workers (see Borjas, 1999; and LaLonde and Topel, 1997, for surveys). An important finding of this literature is that, over the period 1960-1990, there was a continuous decline in the relative entry wage of new immigrants. This is true in terms of both unadjusted earnings and earnings conditional upon characteristics such as education and experience.

A relative decline in immigrant labor market performance presents potentially troubling prospects. The skill composition of the immigrant population—and, particularly, how the skills of immigrant workers compare to those of native workers—is the key determinant of the economic impact of immigration on the United States. First, it determines which native workers are more likely to feel an adverse impact of immigration on their labor market opportunities. As closer substitutes in the labor market, low-skill native workers are more vulnerable to low-skill immigration. Second, skilled immigrants may assimilate more quickly. They may be more adept

at acquiring the country-specific human capital necessary for economic success, with consequences for their fiscal as well as labor market impact. Finally, the relative skills of immigrants determine the economic benefits from immigration. The United States benefits from international trade because it can import goods that are not available or are too expensive to produce in the domestic market. Similarly, the country benefits from immigration because it can import workers with scarce qualifications and abilities.

In this paper, we use the microdata of the 1960-2000 U.S. Censuses and the 1994-2009 Current Population Surveys to study trends in the entry wages of new immigrants.[1] Our key finding is that the downward trend in the relative earnings of successive immigrant cohorts observed since the 1960s was reversed during the 1990s. The immigrant wave that arrived between 1995 and 2000 earned as much in 2000, relative to natives, as new entrants did twenty years earlier. This significant upturn in immigrant earnings is present in raw wages, as well as in wages that have been adjusted for differences across arrival cohorts in observed characteristics. Although average entry wages fell again after 2000, correcting for simple changes in the composition of new immigrants, the unexplained rise in entry wages has persisted through the 2000s.

In addition to documenting this reversal of the long-run trend in the relative entry wage, we explore the reasons for the recent improvement in immigrant labor market performance. We test whether the forces that have been used to explain the previous decline in relative immigrant earnings—such as changes in origin-country composition, changes in educational attainment,

---

[1] See Borjas (1985, 1995), Funkhouser and Trejo (1995), and Duleep and Regets (2002) for earlier trends. Jasso, Rosenzweig, and Smith (2000) analyze INS data on new legal permanent residents over the period 1972-95 (with comparisons to the PUMS and CPS), finding an upturn in the occupational earnings of immigrants beginning in the late 1980s. Smith (2006) examines data from the PUMS and CPS to document trends in immigrant earnings across selected years 1970-2002.

and changes in labor market conditions which may differentially impact recent arrivals—can also account for the subsequent reversal. Surprisingly, we find that these previous explanations do not help us understand the reversal that occurred in the 1990s.

Interestingly, the data reveal that the turnaround in the relative earnings of new arrivals in 2000 occurred primarily at the top and the bottom ends of the skill distribution. We find that the increase among college-graduate immigrants can be largely attributed to a specific change in U.S. immigration policy, namely the expansion of the H-1B temporary visa program for high-skill workers, who earn more, relative to natives, than did earlier cohorts of high-skill foreign-born workers. By contrast, the relative improvement among high school dropouts was driven by a decline in the earnings of native high school dropouts, rather than by an increase in the average earnings of new immigrant dropouts. Immigrant dropout wages held constant over the decade, due to the offsetting effects of a rise in the share of Mexicans and an increase in their earnings. Still, when we correct for changes in observed characteristics, most of the improvement in the relative earnings of new immigrants in the 1990s remains a puzzle.

We conclude by considering the implications of our findings for future patterns of foreign-born labor market performance. Is this improvement in the earnings of new immigrants a transient anomaly, or is it likely to extend into a full reversal of the previous decline?

II. DATA AND EARNINGS PATTERNS

Our study uses data drawn from the Public Use Microdata of the 1960-2000 U.S. Censuses. Non-citizens and naturalized citizens are defined to be "immigrants." All others are classified as "natives." We use the 1% sample in 1960, the (pooled) three independent Form 1 1% samples in 1970, and the 5% sample in 1980-2000. The analysis is restricted to men aged 25-

64.[2] "New immigrants" are defined as those who arrived in the five years prior to the respective Census. Hourly earnings are calculated from annual wage and salary income, divided by weeks worked per year, divided by hours worked per week. All hourly earnings figures are deflated to 1989 dollars using the CPI-U price index.

Figure 1 plots the (unadjusted) difference in mean log wages between newly arrived immigrants and natives in each Census year. The vertical axis approximately measures the percentage wage gap between newly arrived immigrants and natives. For example, in 1960, immigrants who had come to the U.S. in 1955-59 earned 0.117 log points less than natives—an 11% wage gap. In 1970, newly arrived immigrants (i.e., 1965-1969 arrivals) earned 18% less than natives. By 1990, the entry wage gap between new immigrants and natives had grown to -0.368 log points, or 31%. In sum, there was a continuous downward trend in the relative earnings of new arrivals between 1960 and 1990.

The key point on which this paper centers is the fact that for the most recent arrival cohort—the one which migrated in 1995-99—the trend was reversed. This increase in the relative earnings of new arrivals marks a return to the level last seen twenty years earlier, in 1980. Not correcting for differences in other factors, such as age or education, new immigrants in 2000 earned 27% less than natives upon arrival.

A key reason to focus on the *relative* earnings of immigrants is to capture the earnings fluctuations that arise to due to changes in general labor market conditions in the United States. However, the relative earnings of new immigrants can rise either because the absolute earnings of immigrants rise, or because the absolute earnings of natives falls, and these two scenarios have very different interpretations. Figure 2 plots the raw earnings of recent arrivals and natives

---

[2] The sample also excludes those with zero reported weeks of work, no wage income, the self-employed, those enrolled in school, those in the military, and those living in group quarters.

separately. This figure clearly indicates that the change in the earnings gap between the two groups was caused by a rise in the earnings of the new arrivals themselves, rather than to a shifting native benchmark.[3]

So what has caused the entry wages of immigrants to the United States to rise? The following sections consider some possible explanations.

III. OLD EXPLANATIONS

A. COMPOSITION EFFECTS

An obvious explanation for the rise in the relative earnings of new arrivals in the late 1990s could be that they were more skilled, or had more of other socioeconomic attributes associated with higher earnings. Since changes in the origin-country mix of immigration can explain most of the downward trend through 1990, perhaps changes in measurable characteristics can account for the subsequent reversal as well.

Table 1 examines changes over time in the characteristics of new arrivals. The first column describes the cohort that came to the U.S. in 1985-89 as observed in the 1990 Census, and the second column describes the cohort that arrived in 1995-99 as observed in the 2000 Census. Both cohorts are therefore measured during their first five years in the country. Over the course of the decade, there was an increase in the proportion of immigrants coming from

---

[3] There has been a substantial increase over time in the extent of data imputation in the PUMS. In 1990, 11% of natives and 20% of new immigrants had allocated wage and salary income data. In 2000, these figures were 24% and 31%, respectively. The Census Bureau does not include information on nativity in the formula used to impute wages. Since there are far more natives than immigrants in the population, this results in immigrants with missing wage data essentially being assigned the wages that natives with similar characteristics would earn. When income is imputed without respect to nativity, the estimated coefficient on nativity in a wage regression will suffer from attenuation bias (i.e., be biased toward zero). Hirsch and Schumacher (2004) study the effect of increasing earnings imputation in the CPS-ORG 1996-2001 on wage gap estimates, and find substantial attenuation bias. The estimated coefficient on an immigrant dummy goes from -.063 to -.081 when allocated earners are excluded from the sample. An increase over time in the share of observations with imputed wages should result in a reduction over time in the measured immigrant wage disadvantage. However, comparing results for imputed and unimputed samples in the PUMS yields the surprising result that the estimated uptick is actually higher in the unimputed sample.

Mexico and India, and a decrease in the proportion coming from Southeast and East Asia. The level of education rose, with a reduction in the share with less than a 5th grade education and a rise in the share holding Bachelors and Masters degrees. This rise in education was accompanied by an increase in the share working in professional/technical occupations. Far fewer settled in California and New York, and more in Texas, as well as new destinations such as North Carolina and Georgia.

Borjas (1992) shows that most of the decline in cohort quality between 1960 and 1980 can be explained by a shift in the origin-country composition of immigration to the United States. Following the 1965 Amendments to the Immigration and Nationality Act, fewer immigrants originated in Europe, with the majority coming instead from developing countries, particularly Latin American and Asia. Immigrants from these countries tend to be less skilled and to do worse in the U.S. labor market than other immigrants. The emphasis on family ties in the extension of new entry visas magnified this shift in origin-country mix over time.

Given the importance of country composition in explaining the previous decline in the relative earnings of new immigrants, it is natural to ask whether the increase in the late 1990s can be similarly attributed to a shifting origin mix. However, as Table 1 shows, the biggest change in origin composition from the 1980s to the 1990s was a sizable rise in the share of immigrants coming from Mexico. A change in the national origin composition of new immigrants, therefore, cannot be the explanation for the uptick: Mexicans earn less than other immigrants on average, so the increase in the number of Mexicans only makes the upturn even more puzzling.

Table 2 explores whether the rise in immigrants' entry wage can be explained by other compositional changes. The sample is comprised of the natives and *new* immigrants observed in the pooled 1990 and 2000 PUMS. The dependent variable is the log hourly wage. The first

specification regresses log earnings on a dummy variable for immigrant status (1 for immigrants who arrived in the previous 5 years, 0 for natives), a dummy variable for the later period (1 for 2000, 0 for 1990), and the interaction of those two, "immigrant*2000." The coefficient on this last variable measures the increase in the relative (to natives) earnings of new arrivals in 2000, compared to that of new arrivals in 1990. The coefficient of 0.054 in column (1) means that the 1995-99 cohort had an entry wage 5.5% higher than the entry wage of the 1985-89 cohort. This is what we will refer to as the "upturn" in the earnings of recent arrivals in the 1990s.

The rest of the specifications in Table 2 analyze whether the upturn goes away when we correct for other factors that influence earnings. For example, since the level of education of new arrivals rose in the 1990s, we might expect the earnings gain to be smaller once this is taken into account. However, since natives' educational attainment also rose over this period, this is not clear. The long-run trend in the educational attainment of new immigrants, relative to natives, is shown in Figure 4.[4] Indeed, there was a modest upturn in immigrants' relative educational attainment in the 1990s.

The second and third regressions in Table 2 correct for education using dummy variables for: high school graduate, some college, and college graduate (the omitted group is high school dropouts). The coefficient on the uptick variable goes from 0.054 to 0.053,[5] and to 0.050 when the return to education is allowed to vary over time and with nativity.

---

[4] The 1960-1980 Census data report years of schooling as a continuous variable. However, years of schooling is bracketed in 1990 and 2000. In order to compute a continuous variable for 1990 and 2000, we computed the average years of schooling of natives and of new immigrants in each bracketed educational category in 1980, and calculated weighted averages for each group in 1990 and 2000, using the bracketed educational distributions for each group in those years.

[5] The uptick coefficient falls by more if more educational categories are included as controls. In other words, four educational categories are not fine enough to capture the small rise in relative educational attainment shown in Figure 4.

Correcting for age (columns 4 and 5) raises the measured uptick to 0.076.[6] The estimated

uptick is also larger when we correct for country of origin, as in column 6 (coefficient of 0.084).

This is not surprising, given the increase in immigration from Mexico. Correcting for changes in

the pattern of settlement of new immigrants, using state fixed effects in column 7, also raises the

coefficient, to 0.074.

Correcting for all of these factors together, seen in the final column of Table 2, raises the

size of the estimated uptick from the 0.054 (5.5%) found for raw earnings to 0.100 for residual

earnings (10.5%). Clearly, the increase in the relative earnings of new arrivals cannot be

attributed to straightforward changes in their composition, in terms of the observable

characteristics of origin country, education, age, or state of residence.

B. ECONOMIC ENVIRONMENT

When immigrants and natives occupy different positions in the labor market, changes in

general labor market conditions can have an effect on the outcomes of immigrants, compared to

natives, even when there have been no changes in the productive characteristics of either group.

Having found that the rise in the relative earnings of new immigrants cannot be explained by the

broad changes in their observed characteristics, we now explore a second possibility, namely,

that it was brought about by changes in U.S. labor market conditions which might differentially

affect immigrants and natives.

---

[6] There was no change in the age distribution of new arrivals between 1990 and 2000 (the average age in this sample was 36), but the native population aged. Another characteristic which did not change across these arrival cohorts was English fluency. The share reporting speaking English "very well" held steady at 38%.

Labor Market Conditions

Figure 5 shows the time series of the rate of real wage growth and the unemployment rate since 1980. Real wages were falling in the late 1980s. By contrast, real wages grew rapidly in the late 1990s. Similarly, though the unemployment rate was falling both periods, the average level in the late 1980s was 6.1%, while the average in the late 1990s was 4.8%. In 2000, the unemployment rate fell to 4%, the lowest level in 30 years.

One potential explanation for the rise in the relative earnings of recent immigrants in 2000 is that the tight U.S. labor market of the late 1990s somehow benefited immigrants relative to natives. If this were the case, we might expect earlier cohorts to also have done particularly well in 2000.

Table 3 presents the relative earnings of each arrival-cohort in each Census year, 1970-2000. This table can be used to compare the earnings of different cohorts at the same point in time (by reading down columns), of the same cohort over time (by reading across rows), or of different cohorts at the same stage of years since arrival (by reading diagonally). The top panel of Table 4 shows that, although the earnings of the most recent cohort (0-5 years since migration) rose between 1990 and 2000, there was not a similar increase in earnings for the second most recent cohort (5-10 years since migration), and earlier cohorts (10-15 and 15-20 years since migration) actually experienced a substantial decline in relative earnings of about 9%.

Figure 6 shows the longer-term pattern of cohort effects 1960-2000. The figure shows a uniform decline in immigrants' relative earnings, across cohorts and across years through 1990. Seen in this larger context, the turnaround in 2000 for the most recent arrivals (0-5 years) is even

more striking, and the disappearance of the decline for the next most recent arrivals (5-10 years) is also noteworthy.

The bottom panel of Table 4 asks whether assimilation rates, i.e., immigrants' rates of relative earnings growth over time, were faster in the 1990s than in previous decades. The earnings path of a given arrival cohort can be seen by reading across a row in Table 3. These earnings paths are also plotted in Figure 7. We can compare the earnings growth of the cohort that arrived in 1975-79 during its first decade in the U.S. (1980-1990) to that of the cohort that arrived in 1985-89 during its first decade here (1990-2000). In fact, the first-decade assimilation rate was higher in the 1980s than in the 1990s (13.9% and 9.0%, respectively). Though the second-decade assimilation rate was slightly higher— 12.4% in the 1980s and 13.0% in the 1990s— this difference is within one standard error of the estimated coefficients, and in any case, is not of the same magnitude as the uptick for new arrivals.

In sum, based on comparisons with earlier arrival cohorts, it does not seem that the tight labor market conditions of the late 1990s benefited all immigrants relative to natives, and that this can explain the upturn in the earnings of new immigrants.

Recent work (Bratsberg, et al, 2006) has suggested that immigrants are more sensitive to labor market conditions than natives. In Table 5, conditioning on the state unemployment rate in each year, and allowing its effect to vary with nativity, lowers the estimated upturn from 0.054 to 0.043. Adding state fixed effects to the regression raises the coefficient to 0.064. Without assigning a causal interpretation to the coefficient on the unemployment rate, and putting aside the issue of endogenous location choice, it does not appear that sensitivity to improved local labor market conditions can explain the rise in the relative wages of new immigrants.

Changes in the U.S. Wage Structure

Previous work has shown that the wage gap between immigrants and natives is influenced by general changes in the structure of wages (see LaLonde and Topel, 1991; Lubotsky, 2001; and Butcher and DiNardo, 2002). Since the average immigrant falls in the lower tail of the native wage distribution, increases in the dispersion of the distribution will result in a drop in the earnings of the average immigrant, relative to the average native, and therefore a rise in the absolute size of the immigrant-native wage gap. This previous work argues that increased wage inequality in the United States since 1970 has been largely responsible for the observed decline in the relative wages of (new) immigrants.

Wage inequality in the United States continued to increase in the 1990s, this time in an asymmetric way. The upper end of the wage distribution (as measured by the 90%-50% differential) widened as rapidly as it had in the 1980s, while the lower end (the 50%-10% differential) remained fairly stable or even narrowed somewhat (Autor, Katz, Kearney, 2005, 2006).

For the average new immigrant, situated in the bottom half of the native wage distribution, compression in lower-tail inequality could potentially imply a rise in entry wages, relative to the average native. In 1990, the average log wage of new immigrants was 2.143 ($8.52). This fell at the 25th percentile of the 1990 native wage distribution. Between 1990 and 2000, the wage differential between natives at the 25th and 50th percentiles shrank by 1.0%. However, the differential between those at the 25th percentile and the mean actually grew by 1.4%, so that changes in the wage structure cannot explain the observed reduction in the earnings gap between the average new immigrant and the average native in the 1990s.[7]

---

[7] Changes in U.S. earnings inequality could also change the selection of immigrants who choose to migrate to the United States. Holding mean wages constant, more-skilled immigrants should be attracted to countries with higher

Correcting for Changes in the U.S. Wage Structure

A more precise way of adjusting for changes in the U.S. wage structure is to deflate the wage measure used as the dependent variable in the regression analysis. One aspect of the changing U.S. wage structure during the 1990s was changes in the returns to observable characteristics, such as age and education. How did the changes in these returns affect the immigrant-native earnings gap? One way of assessing this is to construct counterfactual wages for 2000, computing the wage an individual would have earned, had the joint returns to age and education remain unchanged. We consider four age groups (25-34, 35-44, 45-54, and 55-64) and four education groups (high school dropouts, high school graduates, those with some college, and college graduates). We calculate native wage growth in each of 16 age-education cells. We then deflate the 2000 wages of immigrants and natives by this factor.

A second type of deflation takes into account immigrants' position in the native wage distribution. First, we divide the 1990 and 2000 native wage distributions into percentiles, and calculate wage growth at each percentile. We then assign all natives and immigrants in 2000 to a percentile of the 2000 native wage distribution, and then deflate their wages by native wage growth at that percentile.

Table 6 presents estimates of the improvement in immigrants' relative entry wages, comparing results using three different wage measures. The first column shows the unadjusted uptick coefficient of 0.054. As in Table 2, correcting for education and age (in this case, using dummy variables for the 16 age-education groups described above) raises the measured uptick,

---

returns to skill, while less-skilled immigrants should be attracted to countries with lower returns to skill (Borjas, 1987). By this logic, changes in the U.S. wage structure would have provided an increased incentive for highly skilled immigrants to come to the U.S., as well as a stable or increased incentive for less skilled immigrants. Though there was an increase in immigration from India, whose immigrants are more educated than either the Indian or native U.S. populations, the dominant change was the substantial increase in immigration from Mexico, whose immigrants are on average less-skilled than U.S. natives. Improved selectivity *across* origin countries therefore cannot account for the uptick. The possibility of improved selectivity *within* origin countries will be considered below.

to 0.080. Deflating wages by native wage growth in each age-education cell, in columns (2) and (3), reduces the coefficient somewhat. In the regressions that correct for changes in age-education composition, it reduces the coefficient by 0.016. The final two columns of the table show that using wages deflated by wage growth at each percentile of the native wage distribution has a similar small negative effect. Comparing the final regression, which uses percentile-deflated wages and corrects for changes in age and education, to the same regression using undeflated wages, the measured coefficient is reduced by one-eighth.

In sum, changes over the 1990s in the joint returns to age and education and in wage growth at different points of the native wage distribution can account for only a small portion of the observed rise in the relative earnings of new immigrants to the United States.

IV. DIFFERENTIATING BY SKILL

Since the factors that could explain the previous decline in the entry wages of new immigrants before 1990-- changes in the educational attainment and origin-country composition of new immigrants and changes in the wage structure-- cannot account for most of the recent upturn, and since changes in geographic distribution and general labor market conditions also do not appear to have caused it, we turn in this section to other potential explanations. Since the growth in entry wages cannot be explained by *across* group changes (i.e., favorable changes in composition), it must be something that occurred *within* groups. We therefore begin by looking across the earnings and schooling distributions to pinpoint the location of the rise in immigrant earnings.

Earnings Quantiles

Figures 8A and 8B show the wage distributions of natives and new immigrants in 1990 and 2000 respectively. New immigrants earn less than natives on average, and the shapes of their wage distributions are rather different. The average new immigrant went from earning at the 25th percentile of the 1990 native distribution to the 30th percentile of the 2000 native distribution.

Figure 8C shows how the wage distribution of new immigrants changed over the 1990s. Wage growth appears to have been greater at the upper end of the distribution. This is confirmed in Figure 9, which graphs wage growth over the 1990s for natives and new immigrants by percentiles of their respective wage distributions.

Because a given percentile of the native and immigrant wage distributions represent very different levels of earnings, it is hard to see how relative wages changed by visually inspecting Figure 9. To explore whether the rise in relative earnings occurred in some parts of the wage distribution and not others, Table 7 shows relative wage growth at different quantiles of the immigrant wage distribution. The first and second columns of the table list the average log wages of new immigrants at the 10th, 25th, 50th, 75th, and 90th percentiles in 1990. Column (3) then reports the corresponding percentile of the 1990 native wage distribution. For example, the median new immigrant earned $e^{2.050}$ or $7.77 per hour in 1990. Natives who earned that much were at the 21.4th percentile of the 1990 native wage distribution. The fourth column shows how much natives at each of those quantiles earned in 2000, and the resulting wage growth 1990-2000 is shown in column (5). The corresponding amount of wage growth for immigrants who started out at the same level of earnings as those natives is shown Column (6). Finally, the last column of the table shows immigrant wage growth, relative to that of natives.

At the bottom end of the distribution, new immigrants actually lost ground to natives. The gains become larger as we move up the distribution, with the median immigrant experiencing relative log earnings growth of 0.045. The uptick is strongest at the 75th percentile, with immigrants' wages growing an impressive 20% more than natives'. The uptick declines somewhat by the 90th percentile, though it is still sizeable at 0.119. These results suggest that whatever was the driving force behind the rise in the relative earnings of new immigrants in the 1990s was something going on toward the upper end of the immigrant wage distribution.

Education Groups

Figure 10 breaks the sample into four education groups-- high school dropouts, high school graduates, those with some college, and college graduates. The figure charts a time-series of the earnings of new immigrants belonging to each education group, relative to natives with the same level of education. The earnings of new immigrants with less than a college degree all follow a similar pattern of decline 1960-1990, while college-graduates follows a completely different trend, increasing in the 1960s and 1970s, falling somewhat in the 1980s, and rising sharply in the 1990s.

Table 8 shows the change in new immigrants' relative earnings in the 1990s for each education group. There was a 5% increase in the relative entry wages of high school dropouts. There was no change for high-school graduates, and a relatively small rise for those with some college. The increase in relative earnings among college graduates was 0.099, or 10.4%.

Since there was not a dramatic change in the relative educational attainment of new immigrants and natives in the 1990s, changes in relative supplies are probably not the story behind the observed changes in relative wages, particularly the dramatic rise in the relative

earnings of new immigrant college graduates. The large increase for the most-educated is consistent with the findings of the previous section, suggesting a focus on the upper end of the immigrant earnings distribution in trying to understand the reasons behind the upturn for immigrants as a whole.

V. HIGH-SKILL IMMIGRATION

What factors might account for the dramatic rise in the relative entry wages of highly-educated immigrants in the 1990s? The decade witnessed important changes in U.S. immigration policy, with specific implications for immigrants at the high end of the skill distribution. First, the Immigration Act of 1990 raised the share of visas allocated on the basis of skill. Though correcting for education does not explain the uptick, perhaps there is some effect of the rise in these high-skilled visas not fully captured by the increase in education. For example, arriving with a job in hand means there is less of an initial earnings gap due to search frictions or imperfect skill transferability (Friedberg 2000), a better selection of immigrants in terms of English ability, a better match between their skills and U.S. labor market opportunities, and so on. This would be consistent with the finding of a large upturn in the relative entry wages of college graduates and those at the upper quantiles of the immigrant wage distribution.

If the 1990 Act raised the average skill level of immigrants, we would expect not only the immigrants who arrived in the late 1990s, but also those who arrived in the early 1990s to have high earnings in 2000. However, as previously shown in Table 4, this was not the case. We conclude, therefore, that this particular policy change did not play a key role in the upturn.

Another important policy change that took place during the 1990s was the expansion, most notably in the late 1990s, of the H-1B visa program. H-1Bs are temporary, employer-

sponsored visas for college graduates who work in "specialty" occupations. In 2001, 58% of H-1B visa holders were in computer-related occupations, with another 12% in engineering and architecture. Over 40% had at least a Masters degree, and half of them were from India. An H-1B visa can be renewed for up to six years, and people on H-1Bs can apply to remain in the U.S. permanently. Figure 11 shows the number of H-1B visa admissions for selected years, 1989-2004.[8] In 1985, there were 47,322 high-skill temporary employment visas granted. The number increased to around 100,000 in the early 1990s, after the cap on such visas was raised by the Immigration Act of 1990. In 1996, the number increased to 144,548. The cap was raised again with the American Competitiveness and Workforce Improvement Act of 1998, when the number rose to 240,947. By 2000, the number of H-1B visas was over 355,000.

A natural question to ask is what share of new arrivals in the late 1990s were H-1Bs? The INS Statistical Yearbook lists just over 800,000 H-1B visa applications accepted for the period 1995-99.[9] This number includes both new visas and renewals, so individuals who renew are double-counted. If we make the conservative assumption that half of these represent new visas granted, about 400,000 people entered the U.S. on H1-B visas in the late 1990s. This can be compared to the roughly 5 million people who obtained legal permanent residence in the U.S. over the same period, or the 7.6 million people in the 2000 Census who report having arrived in the U.S. in the previous five years. H-1Bs therefore made up around 5-8% of the overall flow of new "immigrants" in this period.[10]

---

[8] The H-1B visa category as such was formally established by the 1990 Act. The number of new H-1Bs was capped at 65,000 starting in 1992, 67,000 in 1997, rising to 115,000 in 1999, and to 195,000 in 2001. In 2004, the cap was brought back down to 65,000 (plus 20,000 in 2005 for foreigners holding U.S. graduate degrees).

[9] not including missing data for 1997.

[10] Calculating this share precisely involves grappling with some definitional issues. The Census asks foreign-born respondents "When did you first come to the U.S. to live/stay?" The answer to this question is used to gauge the number of arrivals in a given year. By contrast, the INS counts as immigrants the number of people who became

Since the Census does not include information on visa status, we approximate the set of H-1Bs recipients by looking at newly arrived computer scientists and engineers. The first four columns of Table 9 show the share of new immigrants and natives in each year and at each level of education who were in these "high-tech" fields. New immigrants and natives were equally likely to be employed in high-tech in 1990, with slightly over 4% of each working in those occupations. In the 1990s, there was a slight rise in that share among natives, but the share of new immigrants working in high-tech more than doubled, to 11.7%. Among college-graduate immigrants, the share of high-tech workers rose to over 31%.

The last two columns of Table 9 show the rise in the relative earnings of new immigrants by level of education, first for all occupations[11] and then excluding high-tech workers. In these regressions, which do not control for other factors, the coefficient for all education groups taken together, seen in the bottom row, goes from 0.054 to -0.008 when engineers and computer scientists are excluded from the sample. Thus, in the raw data, the H-1B visa program appears to fully explain the improvement in immigrants' relative earnings in the 1990s.

On the other hand, if we control for other factors, such as age, education, country of origin, and state of residence, as in Table 10, the H-1B visa program would appear to account for less than one-third of the overall rise in immigrants' entry wages.[12] This can be seen by

---

legal permanent residents in a given year. The Census measures when people first arrived, whether it was on a temporary visa, like the H-1B, or even illegally. The INS measures when those people got green cards (and includes special cases like the IRCA legalization). Strictly speaking, the Census measures the number of foreign-born arrivals, while the INS measures the number of permanent legal immigrations. H-1B visa holders are foreign-born arrivals on temporary work permits. Many, though not all, of these H-1Bs are likely to be sponsored by their employers for green cards.

[11] This replicates column (1) of Table 8.

[12] Since one of the effects of the H-1B program was to raise the education level of new arrivals, we also ran these regressions excluding education as a control variable, in order to fully attribute the rise in relative educational attainment to the H-1B program. The estimates are largely unchanged. Using undeflated wages as the dependent variable, the coefficients with and without the H-1Bs are .103 and .074 using all the controls, and .116 and .074 excluding the controls for education.

comparing the coefficients with and without high-tech workers for each dependent variable in the bottom row of the table. If we limit the set of controls to just a dummy variable to adjust for the increased share of Mexicans in the 1990s, removing high-tech workers from the sample still leaves roughly half of the improvement in entry wages unexplained. Among college graduates, seen in the second-to-last row of the table, about 60% of the increase in relative earnings can be explained by the high-tech sector.

In regressions not reported here, simply correcting for whether an individual is a high-tech worker reduces the 0.054 uptick observed in the unadjusted data by about one-third. In other words, one-third of the high-tech effect is due to the fact that there were relatively more high-tech workers among the immigrants who arrived in the late 1990s. The remaining two-thirds reflects the fact that immigrant high-tech workers in the late 1990s earned more, relative to native high-tech workers, than did those that arrived in the late 1980s. This is consistent with the idea that H-1B visa holders arrive with an earnings advantage, even relative to other high-skill immigrants. Arriving with a job in hand eliminates some of the initial labor market disadvantage of new immigrants. The higher earnings of new high-tech workers could also be due to an increase in the supply of well-trained foreign science and technology workers, and the development of networks connecting places like the Indian Institute of Technology to the U.S. high-tech industry.

A final possibility is that the quality of new high-tech immigrants was higher in the 1990s because the U.S. high-tech boom attracted the best of the international pool of high-tech workers. In fact, running the uptick regression separately by five-digit country of origin shows that just

20

seven countries had had statistically significant increases in relative entry wages,[13] six of which

are Asian countries which send many high-tech workers to the United States: India, China,

Taiwan, Hong Kong, Korea, the Philippines.[14] Half of the immigrants from this group of

countries are Indian, and another quarter are Chinese. At least until recently, India and China (as

well as Korea and Taiwan) had income distributions more equal than that of the United States.

Theory predicts that immigrants from such countries will be positively selected from the

population of the home country. Indeed, among new immigrants from these six Asian countries,

in 1990, 47% were college graduates, which is much higher than the share in their home

countries (or, for that matter, the United States). Consistent with an increasing degree of positive

selection motivated by rising U.S. skill prices and, in particular, the rise in the return to a college

degree, that share grew to 72% in 2000. However, over the 1990s, the relative earnings of

immigrants from this group of six countries grew by an enormous 47%, only one-half of which

can be explained by the rise in their relative educational attainment and in the return to college in

this period. This finding is consistent with increased positive selectivity in unobserved skills in

response to the rise in U.S. residual upper-tail inequality. With the share of high-tech workers

among this group increasing from 8.2% to 38.5%, it is also consistent with the H-1B visa story.[15]

In sum, the improvement in the relative earnings of new immigrants seen in raw data can

be completely eliminated by excluding high-tech workers from the sample. On the other hand, if

---

[13] Care should be taken in treating statistical significance as the metric of the importance of the uptick, since countries with more immigrants have larger sample sizes in the PUMS, providing greater power to reject the null of no change in entry wages.

[14] The seventh country is Mexico, which will be discussed below. The uptick coefficients for the individual countries are: India .434 (s.e. .041), China .319 (.051), Taiwan .219 (.107), Hong Kong .407 (.138), Korea .276 (.063), Philippines .168 (.048), and Mexico .062 (.019). The share of new immigrants working in high tech in 2000 was: India 51.1%, China 23.2%, Taiwan 28.0%, Hong Kong 22.9%, Korea 10.6%, and Philippines 13.2%. The share among native-born U.S. workers was 5.7%.

[15] Despite their high education, the earnings of the average immigrant from each of these countries falls in the lower half of the native wage distribution in all cases, except India and Taiwan in 2000, so a mechanical effect of rising upper-tail inequality boosting immigrant earnings (as in section IIIB) cannot explain the uptick for this group.

we control for country of origin, age, education, and state of residence—or even just the increase in the proportion coming from Mexico-- it returns as a puzzle. In the adjusted data, the H-1B visa program appears to explain about 30% of the increase in the relative earnings of new immigrants in the 1990s.

VI. LOW-SKILL IMMIGRATION

Interestingly, a rebound in the relative earnings of new immigrants also occurred at the opposite end of the skill distribution. High school dropout immigrants earned 5% more, relative to native dropouts, in 2000 than in 1990. However, examining wage growth for these two groups separately in columns (2) and (3) of the top row of Table 8, it becomes apparent that the change in their relative earnings was driven by the 4.3% fall in the wages of native dropouts, rather than an increase in the wages of immigrant dropouts. Native dropout wages may have fallen as a result of immigration, as well as other factors, such as increased adverse selection in the pool of dropout natives, whose share of the native workforce fell from 12.5% to just 7.9% during this period. It is interesting that the rise in the proportion of dropouts who are immigrants was not associated with a decline in their relative earnings.

Closer examination of the earnings data for immigrant dropouts reveals that the unchanged average over the 1990s masks two effects working in opposite directions. On the one hand, the share of Mexicans rose, such that fully two-thirds of new immigrant high school dropouts in the late 1990s came from Mexico. As discussed above, Mexicans tend to earn less than immigrants from most other countries. On the other hand, new Mexican immigrants with less than a high school education earned 5.9% more in 2000 than in 1990, and 10.5% more, relative to native dropouts.

What was behind the rise in the wages of new Mexican immigrants? There were three major changes in their characteristics in the 1990s.[16] First, the share of new Mexican dropouts who had completed eight or fewer years of schooling fell from 80% to 73%. Education levels increased more generally among Mexican immigrants over this period, with an eight percentage point rise in the share having completed high school. Most of this can be attributed to rising educational attainment in Mexico, where the high school graduation rate rose by six percentage points.[17] Still, the rise in the education level of Mexican immigrants to the United States was even greater than the rise in Mexico, leaving room for the possibility of increased positive selection.

Second, new Mexicans were less likely to work in agriculture, and more likely to work in construction, with 9% shifting from the former to the latter. On average, construction workers earn 50% more per hour than agricultural workers, and the premium among new Mexican immigrants in 2000 was 23%. Whether this was purely a demand-side change, with recruiters pulling Mexicans into these new jobs, or whether it was linked to the increasingly skilled supply of immigrants from Mexico remains for future work to determine.

Third, there was a major shift in the geographic distribution of new Mexican immigrants. The fraction living in California fell from 58% in the late 1980s to only 24% in the late 1990s. Mexicans were more likely to settle in Texas, as well as new destinations like North Carolina and Georgia, with a 15 percentage point increase in the share settling in these three states.[18] One possible explanation is the collapse of wages at the lower end of the California wage distribution

---

[16] There was no significant change in their age or degree of English language fluency.

[17] The share of men over the age of 25 who had completed high school rose from 5.9% in 1985 to 11.8% in 1995 (Barro and Lee, 2000).

[18] See Borjas (2004) for more on the new immigration to the South, and Zuniga and Hernandez-Leon (2005) on the legal changes that paved the way for the geographic shift.

in the 1990s, both in absolute terms and in comparison to the rest of the United States. There is

other evidence to suggest that California "deflected" new immigrants. Research on Los Angeles

suggests that an intentional tightening of housing ordinances raised rents and reduced the

accessibility of Los Angeles to poorer immigrants, thus deflecting further inflows, while

maintaining its attractiveness to better-off immigrants (Light, 2006). However, while natives

earn substantially more in California than elsewhere, Mexicans do not.[19] So this geographic

redistribution did not have a substantial effect Mexicans' relative earnings at the national level.

Table 11 shows that correcting for these changes in education, industry, and geography

can account for 40% of the growth in the absolute wages of new Mexican immigrant dropouts in

the 1990s. For those living outside of California, it can account for just one-third of it.

Why might the entry wages of new Mexicans have risen over the 1990s? The dramatic

increase in their supply, which can be largely attributed to population growth and weak

economic conditions-- including a 20% drop in real wages-- in Mexico in the 1990s (Card and

Lewis, 2007), only makes the rise in their relative earnings more puzzling.[20]

Is there any reason to believe that a better selection of Mexicans is now coming to the

United States? According to the Borjas (1987) model, it is the relative degree of inequality in the

sending and receiving country that determines the degree of immigrant selectivity.[21]

---

[19] Mexican dropouts earned somewhat more in California than elsewhere in 1990, and less in 2000, resulting from no wage growth for this group within California and significant wage growth elsewhere.

[20] One (purely speculative) possibility for a perverse effect is that increasing numbers of Mexicans in the U.S. labor market over a longer period of time has lead to the development of improved information and job networks, established recruiting channels, and more exposure on the part of U.S. employers, leading to better matches and higher earnings.

[21] With a more unequal income distribution than the United States, the theory predicts Mexican immigrants to the United States would be negatively selected. Chiquiar and Hanson (2005) provide evidence that Mexican immigrants to the United States are more educated than non-emigrant Mexicans, and are drawn from the middle of Mexico's wage distribution. Hanson (2007) finds emigration rates to be highest among Mexicans with earnings in the top half the Mexican wage distribution.

Compression in the lower tail of the U.S. wage distribution in the 1990s would have attracted a worse selection of Mexicans to the United States. And in Mexico, despite a macroeconomic crisis in 1994 which had a disproportionate impact on more-skilled workers and brought a halt to inequality growth, wage inequality was still higher in the late 1990s than it had been in the late 1980s (Airola and Juhn, 2005). Unless potential immigrants responded to the rate of change in inequality, rather than just the level, this would suggest a diminished incentive for skilled Mexicans to emigrate to the United States in the later period. Improved selectivity is therefore an unlikely candidate to explain the rise in Mexican immigrants' relative earnings in the 1990s, which remains a puzzle.

VII. HAS THE UPTURN CONTINUED?

To examine whether the upward trend in immigrant entry wages has continued since 2000, we replicate our analysis using the March CPS for 1994-2009. Figure 12 tracks the relative earnings of immigrants who arrived in the five years prior to each CPS survey, showing the 1990-2000 rate of growth found in the PUMS as a benchmark for comparison.[22] The raw earnings data in the upper panel show a great deal of variation over this period. This may be due, in part, to sampling variability in the CPS, with only about 800 observations on new immigrants per year. Though this suggests caution in relying on the CPS as an indicator of short-run trends, it appears that relative entry wages continued to increase through 2001, but then fell substantially beginning in 2002.

The lower panel of Figure 12 repeats the graph of the upper panel, conditioning on age, education, and share Mexican. Correcting for these straightforward changes in composition (and

---

[22] In even years, bracketing makes it impossible to isolate those who are within 5 years of arrival, so we use the average for those within 4 and 6 years. It is worth noting that the wage disadvantage of new arrivals appears larger in the CPS than the PUMS, a discrepancy which warrants further study.

in fact, the result is the same using just age and education), the decline observed in the raw data is replaced by a continuing upward trend through most of the 2000s. Between 2000 and 2008, the adjusted wage gap between natives and new arrivals narrowed by about one-fifth, widening back to its 2000 level during the deep recession of 2009.

The upward trend in the relative earnings of new arrivals from Mexico has also continued into the 2000s, and is not readily explained by changes in observable characteristics. This pattern is particularly interesting, in light of the growing volume of immigration from Mexico to the United States, and clearly warrants further analysis.

VIII. SUMMARY

Following a thirty-year decline in the earnings of new immigrants relative to natives, immigrants who came to the United States in the late 1990s earned more on arrival than the cohort that preceded them. This paper explores the factors behind this recent improvement in immigrant performance.

We find that, while new arrivals in the late 1990s were more educated than were new arrivals a decade earlier, this change alone can explain very little of the rise in entry wages. Taking into account other changes in the composition of new immigrants-- such as the rise in the share originating in Mexico and the decline in the share settling in California-- only makes the rise in entry wages more difficult to explain. Neither does the rise in entry wages appear to have been the result of an economic environment or wage structure generally favorable toward immigrants.

We find that the rise in the relative entry wages of new immigrants occurred primarily at the top and bottom ends of the skill distribution. At the top end, we find the upturn was due in

part to an improvement in the earnings of new immigrant computer scientists and engineers, relative to comparable natives, compared to earlier cohorts of immigrant high-tech workers. It should be emphasized that it is not just that there were more high-tech workers in this most recent wave of immigrants, but that these high-tech workers earned more, relative to native high-tech workers, than used to be the case. This improvement in immigrant earnings is consistent with a story in which arriving with a job in hand, as is the case with the H-1B visa program, eliminates some of the initial labor market disadvantage of new immigrants. It is also possible that the high-tech boom and rising upper-tail wage inequality attracted a better selection of workers to the United States.

At the bottom end of the skill distribution, we find that the reduction in the immigrant-native earnings gap was driven by the reduction in the wages of native high school dropouts, rather than an increase in the earnings of immigrant dropouts. A rising share of Mexicans was offset by an increase in their earnings.

In the raw data, the improvement in immigrant earnings 1990s was confined to the high-tech sector, a change likely attributable to the H-1B visa program. However, adjusting for changes over time in the observable characteristics of natives and new immigrants-- in particular, the dramatic increase in the share of new immigrants coming from Mexico-- most of the improvement in the relative earnings of new arrivals remains a puzzle.

Has some permanent change occurred to improve the quality of immigrants coming to the United States or their performance once here? First, it remains to be seen how the most recent arrival cohorts will perform in the future. This depends, first, on whether the most successful

members of these cohorts remain in the United States.[23] Second, if the high entry earnings of this cohort were due, not to positive selectivity, but simply to the advantage of arriving with a job in hand and thus bypassing the slow process of wage assimilation toward some long-run level, their earnings advantage may be only a short-run phenomenon.

At the lower end of the skill distribution, the flows and future performance of Mexican immigrants in the United States will depend on pull factors like demand growth in industries that employ less-skilled labor, push factors like economic conditions in Mexico, and changes in the U.S. and Mexican wage structures that affect both the composition of Mexicans emigrating to the United States, as well as their relative earnings once here.

The United States is currently considering a major overhaul of immigration policy. Understanding the forces which have led to the improved performance of new arrivals in recent years would provide valuable guidance in devising policies that, among other things, boost the labor market success of the foreign-born we admit.

.

---

[23] H-1B visas are temporary, expiring after a maximum of six years. It is likely that most H-1B visa holders will be sponsored for green cards by their employers. Yet, with the collapse of the U.S. high-tech sector, some may not be sponsored, and others may choose to leave for third countries, like Germany.

BIBLIOGRAPHY

Airola, Jim and Chinhui Juhn, "Wage Inequality in Post-Reform Mexico," University of Houston Working Paper, January 2005.

Angrist, Joshua, Victor Chernozhukov and Ivan Fernandez-Val, "Quantile Regression Under Misspecification, with an Application to the U.S. Wage Structure," *Econometrica,* 2006, vol.74, pp.539-563.

Autor, David H., Melissa S. Kearney, and Lawrence F. Katz, "The Polarization of the U.S. Labor Market," *American Economic Review*, May 2006, vol.96(2), pp.189-194

Autor, David H., Melissa S. Kearney, and Lawrence F. Katz, "Rising Wage Inequality: The Role of Composition and Prices," NBER Working Paper 11628, September 2005.

Autor, David H., Melissa S. Kearney, and Lawrence F. Katz, "Trends in U.S. Wage Inequality: Re-Assessing the Revisionists," *Review of Economics and Statistics,* 2008, vol.90(2), pp.300-323.

Barro, Robert, and Jong-Wha Lee, "International Data on Educational Attainment: Updates and Implications," Harvard University Center for International Development, Working Paper 42, April 2000.

Borjas, George J. "The Economic Analysis of Immigration," in *Handbook of Labor Economics*, Volume 3A, edited by Orley Ashenfelter and David Card, North-Holland, 1999, pp. 1697-1760.

Borjas, George J. "Self-Selection and the Earnings of Immigrants." *American Economic Review*, Sept. 1987, pp.531-553.

Borjas, George J. "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants." *Journal of Labor Economics*, Oct. 1985, pp.463-89.

Borjas, George J., "Assimilation and Changes in Cohort Quality Revisited: What Happened to Immigrant Earnings in the 1980s?" *Journal of Labor Economics*, vol.3 no.2, 1995.

Borjas, George J., "The Rise of Low-Skill Immigration in the South," unpublished manuscript, July 2004.

Bratsberg, Bernt, Erling Barth, and Oddbjorn Raaum, "Local Unemployment and the Relative Wages of Immigrants: Evidence from the Current Population Surveys, *Review of Economics and Statistics*, vol. LXXXVIII, no.2, May 2006, pp.243-263.

Butcher, Kristin F., and John DiNardo, "The Immigrant and Native-Born Wage Distributions: Evidence from the United States Censuses" *Industrial and Labor Relations Review*, vol.56, no.1, October 2002, pp.97-121.

Card, David and Ethan G. Lewis, "The Diffusion of Mexican Immigrants During the 1990s: Explanations and Impacts," in *Mexican Immigration to the United States*, George J. Borjas, ed. Chicago: University of Chicago Press, 2007, pp.193-227.

Chiquiar, Daniel and Gordon H. Hanson, "International Migration, Self-Selection, and the Distribution of Wages: Evidence from Mexico and the United States," *Journal of Political Economy*, vol.113, no.2, April 2005, pp.239-281.

Duleep, Harriet, and Mark Regets, "The Elusive Concept of Immigrant Quality: Evidence from 1970-1990," IZA Discussion paper 631, November 2002.

Friedberg, Rachel M. "You Can't Take It With You? Immigrant Assimilation and the Portability of Human Capital," *Journal of Labor Economics*, vol.18, no.2, April 2000, pp.221-251.

Funkhouser, Edward and Stephen J. Trejo, "The Labor Market Skills of Recent Male Immigrants: Evidence from the Current Population Survey," *Industrial and Labor Relations Review*, vol. 48, no. 4, July 1995.

Hanson, Gordon H. "Emigration, Labor Supply, and Earnings in Mexico," in *Mexican Immigration to the United States*, George J. Borjas, ed. Chicago: University of Chicago Press, 2007, pp.289-328.

Hirsch, Barry T. and Edward J. Schumacher, "Match Bias in Wage Gap Estimates Due to Earnings Imputation," *Journal of Labor Economics*, vol. 22, no. 3, July 2004, pp.689-722.

Jasso, Guillermina, Mark R. Rosenzweig, and James P. Smith, "The Changing Skill of New Immigrants to the United States: Recent Trends and Their Determinants" in *Issues in the Economics of Immigration*, George J. Borjas, ed. Chicago: University of Chicago Press, 2000, pp.185-225.

Jasso, Guillermina, Mark R. Rosenzweig, and James P. Smith, "The Earnings of U.S. Immigrants: World Skill Prices, Skill Transferability and Selectivity," unpublished manuscript, March 2002.

King, Miriam, Steven Ruggles, Trent Alexander, Donna Leicach, and Matthew Sobek. *Integrated Public Use Microdata Series, Current Population Survey: Version 2.0.* Minneapolis, MN: Minnesota Population Center, 2009.

LaLonde, Robert J. and Robert H. Topel, "The Assimilation of Immigrants in the U.S. Labor Market." In *Immigration and the Work Force: Economic Consequences for the United States and Source Areas*, edited by George J. Borjas and Richard Freeman. Chicago: University of Chicago Press, 1992, pp.67-92.

LaLonde, Robert J. and Topel, Robert H. "Economic Impact of International Migration and the Economic Performance of Migrants," M. R. Rosenzweig and O. Stark, *Handbook of Population and Family Economics.* Handbooks in Economics, vol. 14. Amsterdam; New York and Oxford: Elsevier Science North-Holland, 1997, pp. 799-850.

Light, Ivan. *Deflecting Immigration: Networks, Markets, and Regulation in Los Angeles.* New York: Russell Sage Foundation, 2006.

Lubotsky, Darren, "The Effect of Changes in the U.S. Wage Structure on Recent Immigrants' Earnings," Princeton University IR Section Working Paper #458, Sept. 2001.

Munshi, Kaivan, "Networks in the Modern Economy: Mexican Migrants in the U.S. Labor Market," *Quarterly Journal of Economics*, May 2003, pp.549-599.

Passel, Jeffrey S. "The Size and Characteristics of the Unauthorized Migrant Population in the United States: Estimates Based on the March 2005 Current Population Survey." Pew Hispanic Center Report, March 2006.

Ruggles, Steven, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. *Integrated Public Use Microdata Series: Version 4.0*. Minneapolis, MN: Minnesota Population Center, 2009.

Smith, James P. and Barry Edmonston. *The New Americans: Economic, Demographic, and Fiscal Effects of Immigration.* Washington, D.C.: National Academy Press, 1997.

Smith, James P. "Immigrants and the Labor Market," *Journal of Labor Economics*, vol. 24, no. 2, April 2006, pp.203-233.

U.S. Department of Homeland Security, Office of Immigration Statistics, *Characteristics of Specialty Occupation Workers (H-1B): Fiscal Year 2003*, Nov. 2004.

U.S. Immigration and Naturalization Service (later, Citizenship and Immigration Service). *Statistical Yearbook of the Immigration and Naturalization Service*. Washington, D.C.: Government Printing Office, various years.

Zuniga, Victor, and Ruben Hernandez-Leon. *New Destinations: Mexican Immigrants in the United States.* New York: Russell Sage Foundation, 2005.

Table 1
Composition of New Arrivals

Continent of Birth		1990	2000	Change
Mexico		22.2	31.1	8.9
Central America		7.9	5.7	-2.2
Caribbean		7.2	6.5	-.7
South America		7.5	6.8	-.6
Northwest Europe		6.2	5.1	-1.2
Southeast Europe		7.1	7.3	.2
Former Soviet Union		1.4	3.1	1.7
East Asia		12.2	7.8	-4.4
Southeast Asia		8.5	5.6	-2.9
Southwest Asia		7.2	10.6	3.4
Other		12.6	10.4	-2.2
Total		*100.0*	*100.0*	*0*

Education		1990	2000	Change
High School Dropout	**0**	6.7	4.6	-2.2
	1-4th	4.8	2.5	-2.4
	5-8th	12.4	13.4	1.0
	9th	3.9	4.9	1.0
	10th	2.9	2.4	-.4
	11th	2.0	2.0	-.0
High School	**12th**	5.6	5.8	.2
	High School	17.9	17.9	-.1
Some College	**Some College**	10.1	9.1	-.9
	Associate	4.7	3.3	-1.4
College Graduate	**Bachelors**	14.9	17.4	2.5
	Masters	7.5	9.9	2.4
	Professional	3.3	3.5	.2
	Ph.D.	3.3	3.4	.1
Total		*100.0*	*100.0*	*0*

Note: The data for 1990 are for immigrants who arrived in 1985-89, and the data for 2000 are for immigrants who arrived in 1995-99. The sample is restricted to men aged 25-64.

Table 1 continued
Composition of New Arrivals

Occupation	1990	2000	Change
Professional, Technical	17.0	22.6	5.5
Farmer	.2	.1	-.1
Manager	10.6	10.5	-.1
Clerical	7.3	5.9	-1.4
Sales	3.3	2.7	-.5
Crafts	14.2	14.4	.2
Operatives	17.5	17.2	-.4
Service	16.6	13.5	-3.1
Farm Labor	3.6	2.5	-1.1
Laborers	9.7	10.6	1.0
Total	*100.0*	*100.0*	*0*

Industry			
Agriculture	6.5	5.1	-1.4
Construction	12.0	14.4	2.4
Durables Manufacturing	12.9	13.4	.5
Nondurables Manufacturing	9.3	7.8	-1.5
Transportation, Communication	4.6	5.8	1.1
Trade	24.1	21.0	-3.1
Finance, Insurance, Real Estate	4.3	3.5	-.9
Services	24.3	27.5	3.2
Public Sector	2.0	1.7	-.4
Total	*100.0*	*100.0*	*0*

State of Residence			
California	32.3	19.0	-13.3
New York	16.3	10.3	-6.0
Florida	7.4	8.4	1.0
Texas	6.7	10.6	3.9
New Jersey	6.2	5.3	-1.0
Illinois	4.8	5.5	.7
Massachusetts	3.2	2.7	-.5
Washington	1.5	2.2	.7
Arizona	1.4	2.4	1.0
Georgia	1.3	3.6	2.3
North Carolina	.8	3.1	2.3

Note: The data for 1990 are for immigrants who arrived in 1985-89, and the data for 2000 are for immigrants who arrived in 1995-99. The sample is restricted to men aged 25-64.

Table 2: Correcting for Composition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Immigrant	-.368	-.334	-.378	-.296	-.150		-.546	
	(.003)	(.003)	(.004)	(.003)	(.034)		(.114)	
2000	.022	-.007	-.044	-.006	.438	.022	-.014	.212
	(.001)	(.001)	(.002)	(.001)	(.010)	(.001)	(.014)	(.016)
Immigrant*2000	**.054**	**.053**	**.050**	**.082**	**.076**	**.084**	**.074**	**.100**
	(.004)	**(.004)**	**(.004)**	**(.004)**	**(.004)**	**(.004)**	**(.004)**	**(.004)**
High School		.188	.183					.214
		(.001)	(.001)					(.001)
Some College		.353	.337					.350
		(.001)	(.001)					(.001)
College Graduate		.635	.588					.601
		(.001)	(.002)					(.002)
Graduate School		.840	.787					.726
		(.001)	(.002)					(.002)
High School * 2000			.011					-.019
			(.002)					(.002)
Some College * 2000			.033					.006
			(.002)					(.002)
College Graduate * 2000			.083					.058
			(.002)					(.002)
Graduate School * 2000			.098					.091
			(.003)					(.003)
High School * Immigrant			.013					-.097
			(.005)					(.005)
Some College * Immigrant			.041					-.109
			(.006)					(.007)
College Grad * Immigrant			.169					-.064
			(.006)					(.007)
Grad School * Immigrant			.063					-.134
			(.006)					(.007)
Age				.076	.088			.071
				(.000)	(.000)			(.000)
Age^2				-.074	-.088			-.067
				(.000)	(.000)			(.000)
Age*2000					-.022			-.013
					(.000)			(.000)
Age^2 *2000					.026			.013
					(.001)			(.001)
Age*Immigrant					.002			-.030
					(.002)			(.002)
Age^2*Immigrant					-.016			.021
					(.002)			(.002)
Origin-Country Fixed Effects							Yes	Yes
State Fixed Effects							Yes	Yes
Constant	2.511	2.168	2.187	.743	.499	2.502	2.424	.426
	(.000)	(.001)	(.001)	(.005)	(.007)	(.000)	(.010)	(.012)
R^2	.006	.146	.146	.058	.059	.013	.041	.215

Note: Dependent variable is the log of hourly earnings. Data are the pooled 1990 and 2000 IPUMS, natives and new immigrant men only (N = 4,129,816 and 89,221 respectively). Regressions are weighted by the IPUMS sample weights. State fixed effects vary with nativity and with year.

Table 3
Immigrants' Earnings Relative to Natives

Arrival Cohort	Census Year			
	1970	1980	1990	2000
1995-99				-.314
				(.003)
1990-94				-.320
				(.003)
1985-89			-.368	-.282
			(.003)	(.003)
1980-84			-.322	-.200
			(.003)	(.003)
1975-79		-.321	-.191	-.112
		(.004)	(.003)	(.003)
1970-74		-.216	-.098	-.061
		(.004)	(.004)	(.004)
1965-69	-.192	-.088	.015	.047
	(.006)	(.004)	(.004)	(.005)
1960-64	-.043	-.001	.088	.123
	(.007)	(.005)	(.005)	(.007)
1950-59	.051	.057	.178	.170
	(.005)	(.004)	(.005)	(.007)
Pre-1950	.091	.098	.229	.261
	(.005)	(.005)	(.009)	(.017)
N	904,660	1,856,705	2,165,789	2,487,274

Note: Dependent variable is the log of hourly earnings. Sample includes native and new immigrant men aged 25-65. Regressions are weighted by the IPUMS sample weights.

Table 4
Cross-Cohort Comparisons

A. Did the uptick occur for earlier cohorts as well? No.

Years Since Migration	Arrival Cohort	1990	2000	Change
0 – 5	1985-89 vs. 1995-99	-.368	-.314	.054
				(.004)
5 – 10	1980-84 vs. 1990-94	-.322	-.320	.001
				(.004)
10 - 15	1975-79 vs. 1985-89	-.191	-.282	-.091
				(.004)
25 - 20	1970-74 vs. 1980-84	-.098	-.200	-.101
				(.005)

B. Was assimilation particularly fast in the 1990s? No.

Decade	Arrival Cohort	From	To	Change
First Decade Assimilation Rate	1985-89 over the 1990s	-.368	-.282	.086
				(.004)
	1975-79 over the 1980s	-.321	-.191	.130
				(.005)
Second Decade Assimilation Rate	1980-84 over the 1990s	-.322	-.200	.122
				(.004)
	1970-74 over the 1980s	-.216	-.098	.117
				(.005)

Table 5
Relative Earnings and the State Unemployment Rate

	(1)	(2)	(3)	(4)
Immigrant	-.368	-.451	-.253	-.217
	(.003)	(.003)	(.013)	(.013)
2000	.022	.029	.008	.018
	(.001)	(.001)	(.001)	(.001)
Immigrant*2000	**.054**	**.093**	**.043**	**.064**
	(.004)	**(.004)**	**(.005)**	**(.005)**
Unemployment Rate			-.012	-.010
			(.000)	(.001)
Unemployment Rate * Immigrant			-.023	-.046
			(.003)	(.002)
State Fixed Effects		Yes		Yes
Constant	2.511	2.509	2.576	2.562
	(.000)	(.000)	(.002)	(.003)
R^2	.006	.040	.007	.040

Note: Dependent variable is the log of hourly earnings. Data are the pooled 1990 and 2000 PUMS, native and new immigrant men aged 25-64. Regressions are weighted by the IPUMS sample weights. State unemployment rates are measured as of 1989 and 1999. There are 4,129,816 natives and 89,221 new immigrants in the sample.

Table 6
Relative Wages Deflated by Native Wage Growth

	Undeflated Wages	Undeflated Wages	Skill-Group Deflated Wages	Skill-Group Deflated Wages	Percentile Deflated Wages	Percentile Deflated Wages
	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant	-.368	-.262	-.368	-.255	-.368	-.262
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
2000	.022	-.032	.056	.000	-.004	-.057
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Immigrant*2000	**.054**	**.080**	**.035**	**.064**	**.045**	**.070**
	(.004)	**(.004)**	**(.004)**	**(.004)**	**(.004)**	**(.004)**
Age-Education Group Dummies		Yes		Yes		Yes
Constant	2.511	2.263	2.511	2.281	2.511	2.266
	(.000)	(.002)	(.001)	(.002)	(.000)	(.002)
R^2	.006	.181	.008	.177	.007	.180

Note: Dependent variable is the log of hourly earnings. Data are the pooled 1990 and 2000 PUMS, native and new immigrant men aged 25-64. Regressions are weighted by the IPUMS sample weights. There are 16 age-education groups, where the four age groups are 25-34, 35-44, 45-54, and 55-64, and the education groups are high-school dropout, high-school graduate, some college, and college graduate. Deflated wages are equal to the actual log wage for observations in 1990, and to the log wage minus the 1990-2000 growth in native wages in that age-education cell or wage-distribution percentile for observations (both native and immigrant) in 2000. There are 4,129,816 natives and 89,221 new immigrants in the sample.

Table 7
Quantile Comparisons

	1990		2000	1990-2000		
Quantile of the Immigrant Wage Distribution	Immigrant Log Wage at that Quantile	Corresponding Quantile of the Native Wage Distribution	Native Log Wage at Quantile in Column (3)	Native Wage Growth (4)-(2)	Immigrant Wage Growth	Immigrant Wage Growth Relative to Natives (6) - (5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
10%	1.322	3.4%	1.355	.033	-.008	-.041
25%	1.635	8.1%	1.680	.045	.036	-.009
50%	2.050	21.4%	2.063	.013	.058	.045
75%	2.574	52.6%	2.556	-.018	.165	.183
90%	3.108	85.9%	3.148	.040	.159	.119

Note: Data are pooled 1990 and 2000 PUMS, native and new immigrant men aged 25-64. There are 4,129,816 natives and 89,221 new immigrants in the sample.

Table 8

Wage Growth by Level of Education

	Immigrants Relative to Natives	Immigrants	Natives
	(1)	(2)	(3)
High School Dropout	.050 (.007)	.006 (.007)	-.044 (.002)
High School Graduate	.003 (.008)	-.029 (.009)	-.032 (.001)
Some College	.029 (.010)	.018 (.013)	-.011 (.001)
College Graduate	.099 (.008)	.140 (.010)	.041 (.001)
All	.054 (.004)	.076 (.005)	.022 (.001)

Note: Each coefficient comes from a separate regression without additional controls. Data are the pooled 1990 and 2000 IPUMS, native and new immigrant men aged 25-64. Regressions are weighted by the IPUMS sample weights. There are 4,129,816 natives and 89,221 new immigrants in the sample.

Table 9

Computer Scientists and Engineers

	Share Employed in High-Tech				Immigrants' Relative Wage Growth	
	Immigrants		Natives			
	1990	2000	1990	2000	All	Excluding High-Tech
	(1)	(2)	(3)	(4)	(5)	(6)
High School Dropout	.2	.2	.1	.2	.050 (.007)	.050 (.007)
High School Graduate	.7	.8	.8	1.1	.003 (.008)	.003 (.007)
Some College	2.6	6.0	3.9	5.6	.029 (.010)	.010 (.011)
College Graduate	13.9	31.4	10.6	12.7	.099 (.008)	.015 (.009)
All	4.6	11.7	4.1	5.7	.054 (.004)	-.008 (.004)

Note: Each coefficient in columns (5) and (6) comes from a separate regression, without additional controls. The dependent variable is log hourly earnings. Data are the pooled 1990 and 2000 IPUMS, natives and new immigrant men aged 25-64. Regressions are weighted by the IPUMS sample weights. There are 4,129,816 natives and 89,221 new immigrants in the full sample.

41

Table 10

Computer Scientists and Engineers

	Undeflated Wages		Skill-Group Deflated Wages		Percentile Deflated Wages	
	All	Excluding High-Tech	All	Excluding High-Tech	All	Excluding High-Tech
	(1)	(2)	(3)	(4)	(5)	(6)
High School Dropout	.094	.095	.095	.096	.083	.084
	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)
High School Graduate	.079	.078	.081	.080	.067	.067
	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)
Some College	.079	.070	.080	.071	.069	.061
	(.011)	(.011)	(.011)	(.011)	(.010)	(.011)
College Graduate	.132	.051	.130	.048	.126	.049
	(.008)	(.009)	(.008)	(.009)	(.008)	(.009)
All	.103	.074	.102	.072	.093	.065
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Note: Each coefficient in the table comes from a separate regression. The dependent variable is log hourly earnings. Controls include country of origin, state, age, and the interactions of the state and age variables with nativity and with year. Regressions in the bottom row also control for education, interacted with nativity and with year. Data are the pooled 1990 and 2000 IPUMS, native and new immigrant men aged 25-64. Regressions are weighted by the IPUMS sample weights. There are 4,129,816 natives and 89,221 new immigrants in the full sample.

Table 11
Mexican High School Dropouts

	All	All	Excluding California	Excluding California
	(1)	(2)	(3)	(4)
2000	.050	.031	.096	.067
	(.010)	(.010)	(.014)	(.014)
<9th Grade		-.026		-.023
		(.010)		(.013)
Agriculture		-.112		-.125
		(.012)		(.015)
Construction		.085		.058
		(.011)		(.013)
California		-.021		
		(.011)		
Texas		-.090		-.085
		(.012)		(.013)
North Carolina		-.079		-.081
		(.023)		(.024)
Georgia		-.037		-.038
		(.024)		(.024)
R^2	.002	.016	.004	.017
Observations	17,182	17,182	11,105	11,105

Note: Dependent variable is the log of hourly earnings. Data are the pooled 1990 and 2000 PUMS. Sample includes Mexican-born men aged 25-64 who have not completed high school. Regressions are weighted by the PUMS sample weights.

Figure 1
Earnings of New Immigrants Relative to Natives
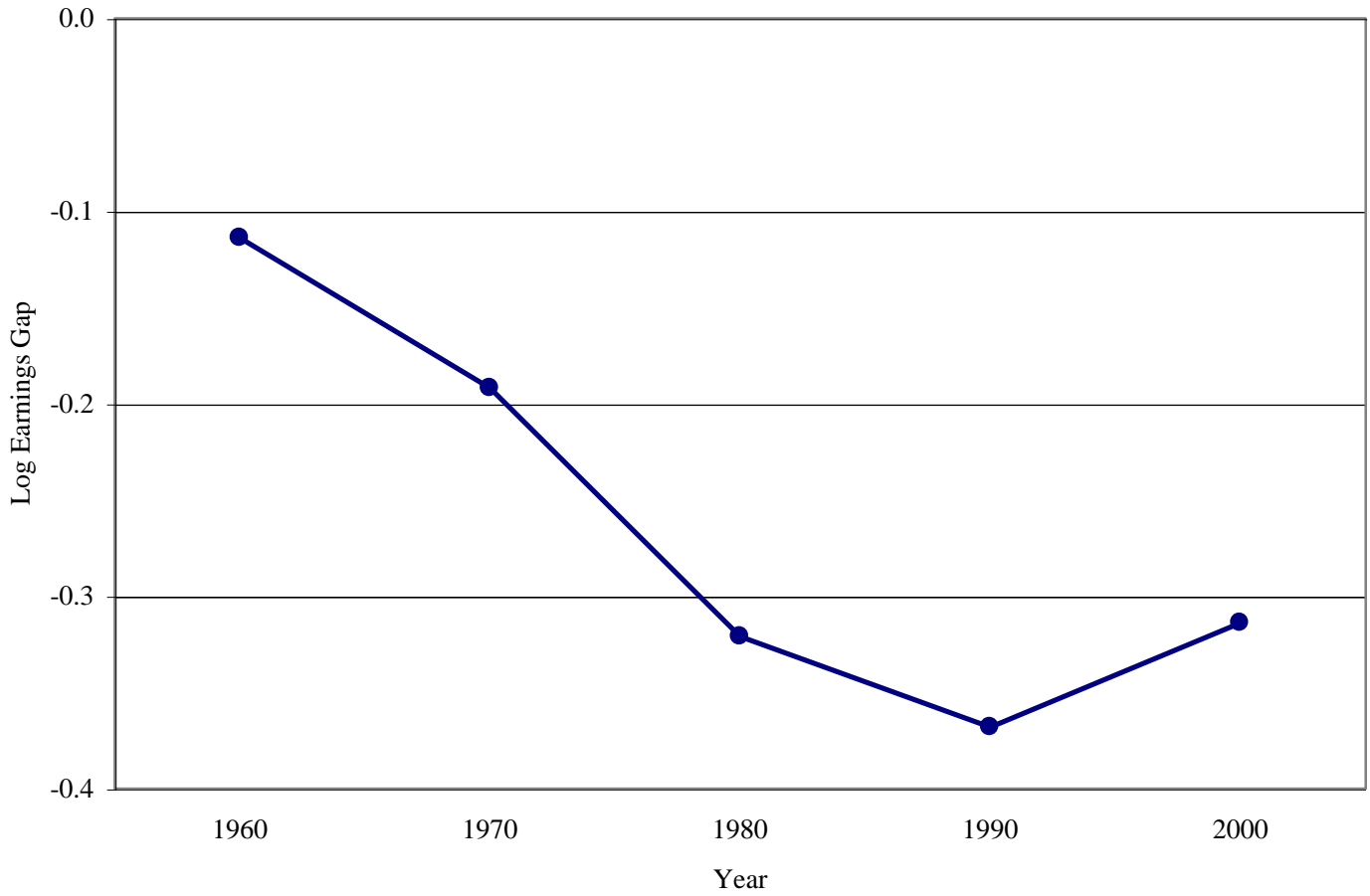
Note: Each point represents the average log earnings of immigrants who arrived in the five years prior to the specified Census year, relative to average native earnings in that year.

Figure 2
Earnings of Natives and New Immigrants
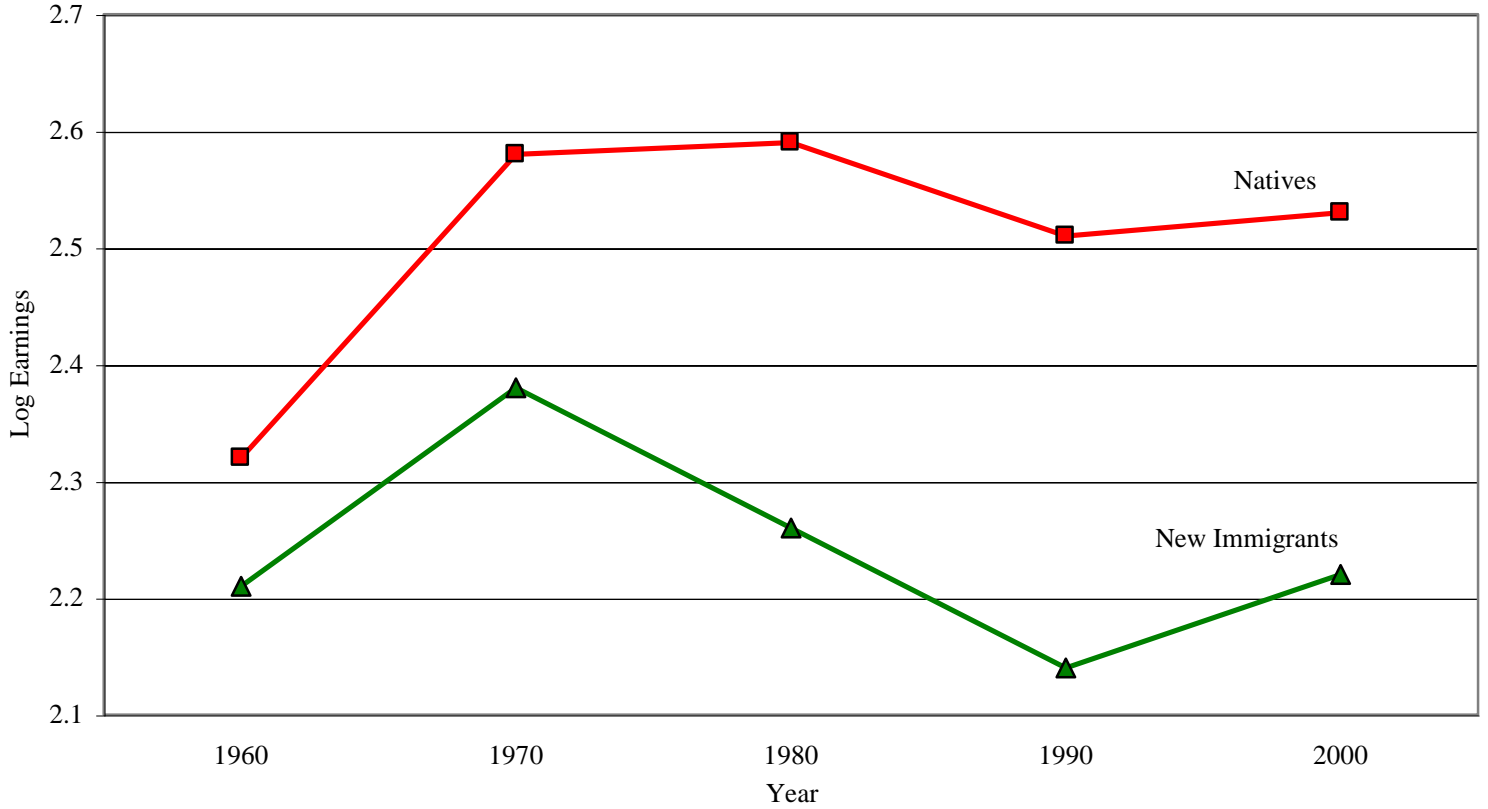
Note: Each point indicates average log earnings in the specified Census year. New immigrants are those who arrived in the five years prior to the specified year.

Figure 4
Ratio of New Immigrant to Native Years of Schooling
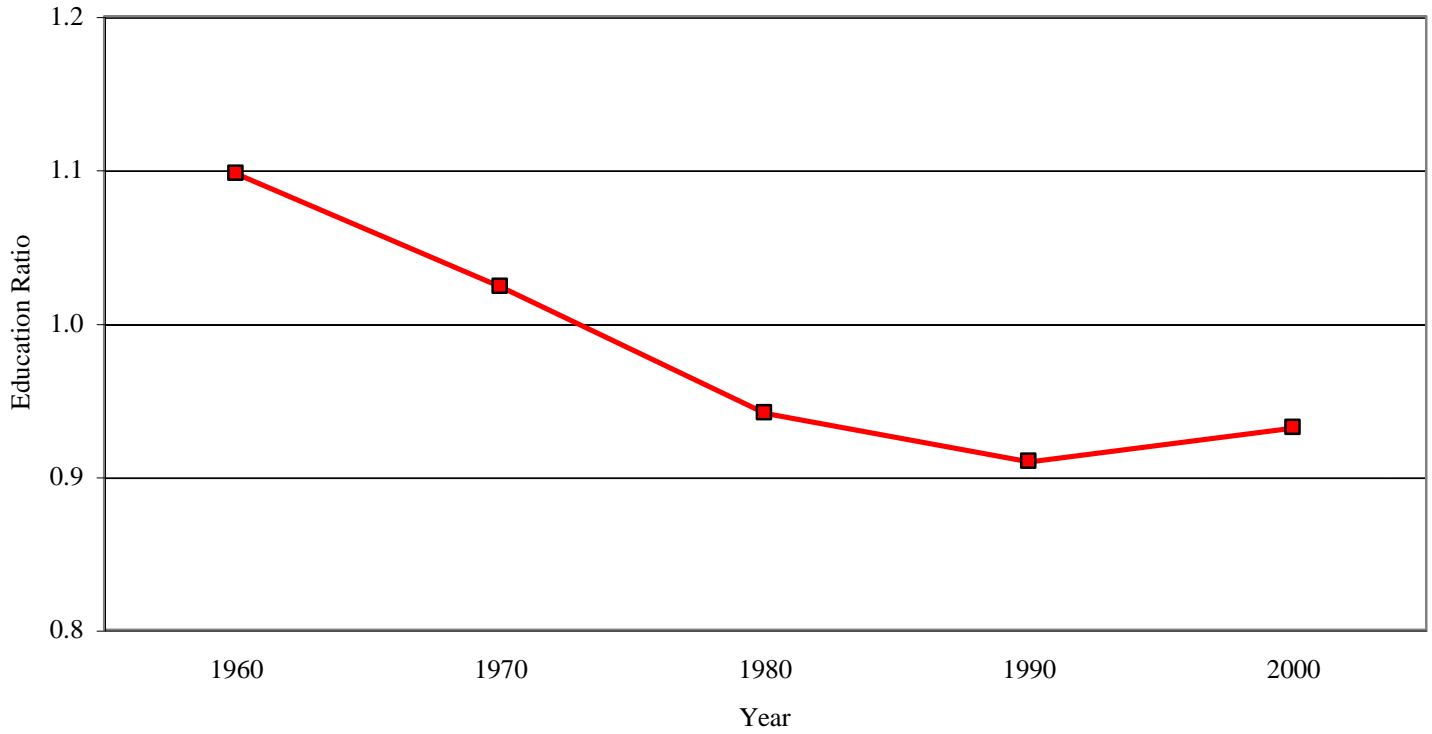
Note: Each point indicates the ratio of new immigrant to native years of schooling in the specified Census year. New immigrants are those who arrived in the five years prior to the specified year.

FIGURE 5

U.S. Labor Market Conditions

Source: U.S. Bureau of Labor Statistics.

Figure 6
Trends in Immigrant Earnings
by Years Since Migration
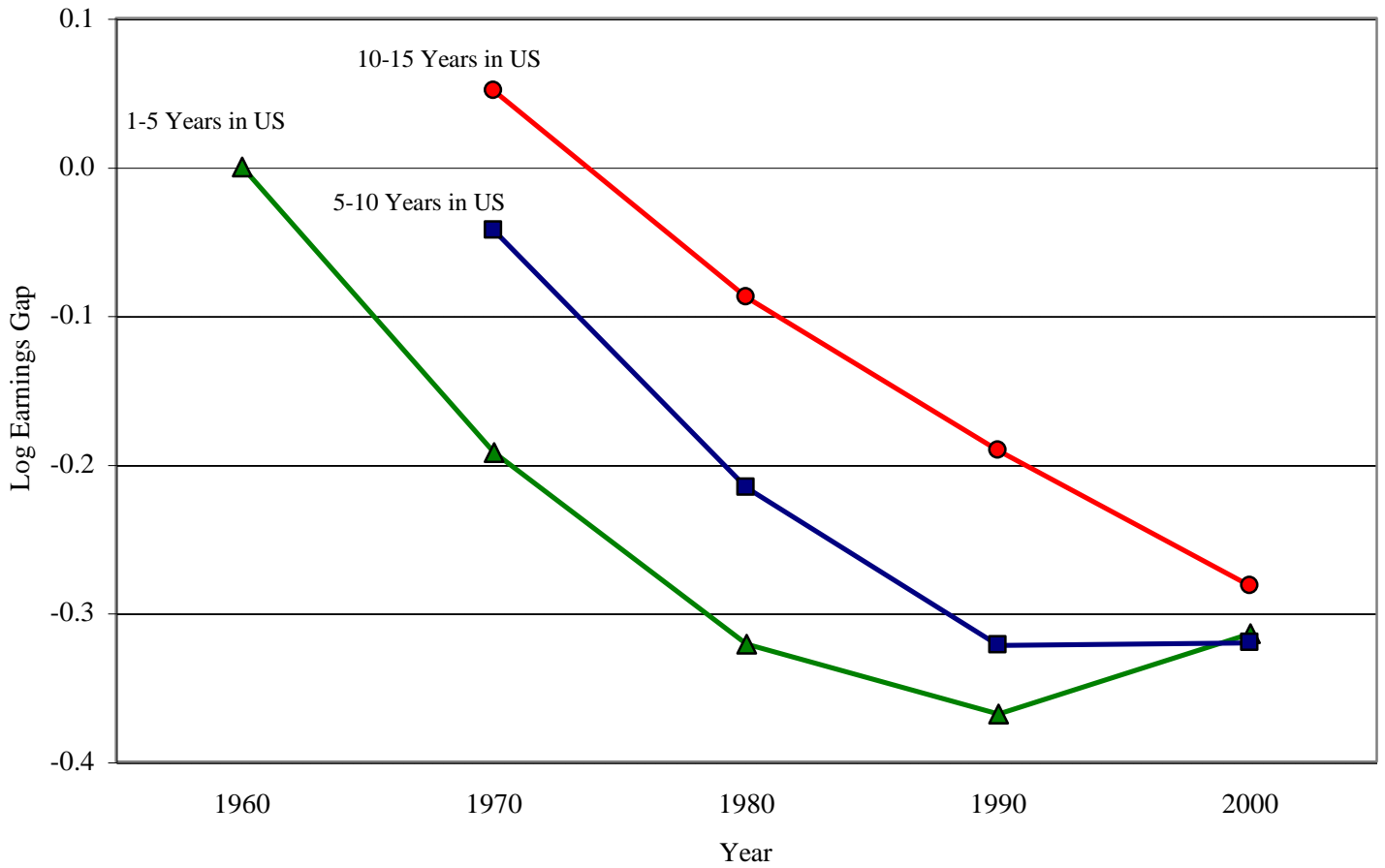
Note: The relative wage is calculated in the sample of working men aged 25-64 who are not enrolled in school and who worked in the civilian sector. The hourly wage rate is defined as the ratio of total income earned annually to annual hours worked in the calendar year prior to the Census.

Figure 7
Earnings Assimilation by Arrival Cohort
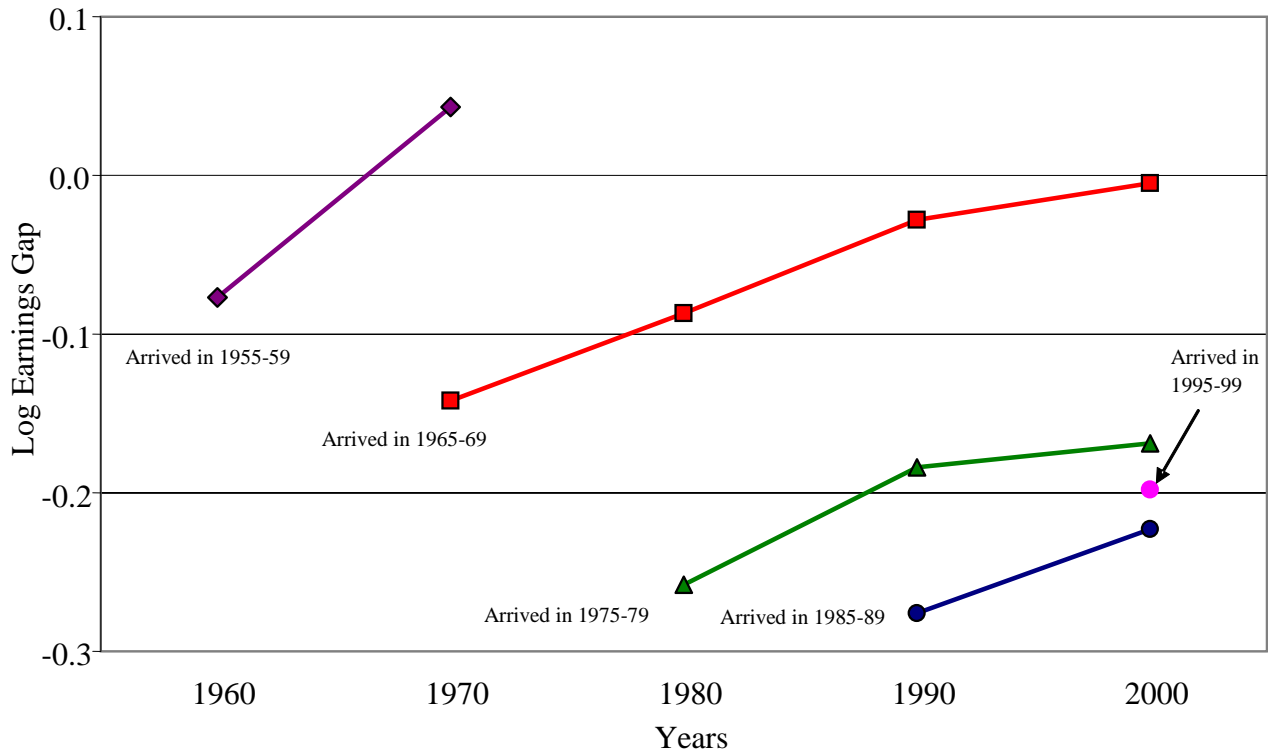
Note: The relative wage is calculated in the sample of working men who are not enrolled in school, worked in the civilian sector, and were 25-34 years old upon their arrival to the US. The hourly wage rate is defined as the ratio of total income earned annually to annual hours worked in the calendar year prior to the Census.

Figure 8A
Wage Distribution by Nativity in 1990
(Natives and New Immigrants)
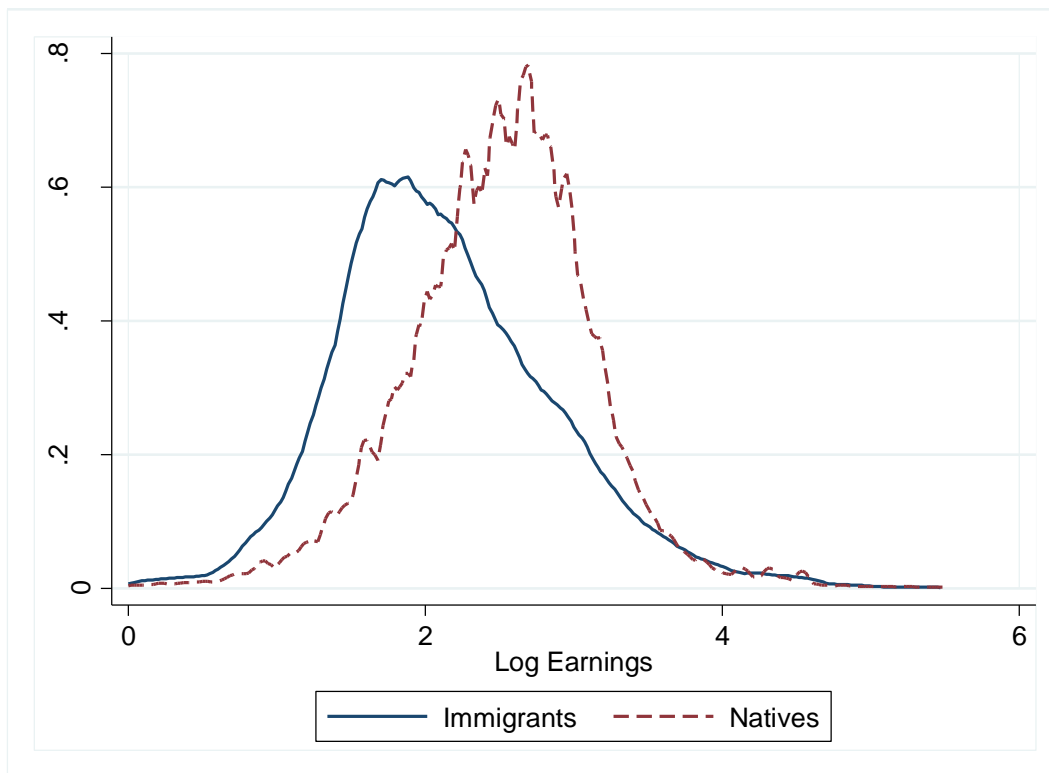
Figure 8B
Wage Distribution by Nativity in 2000
(Natives and New Immigrants)
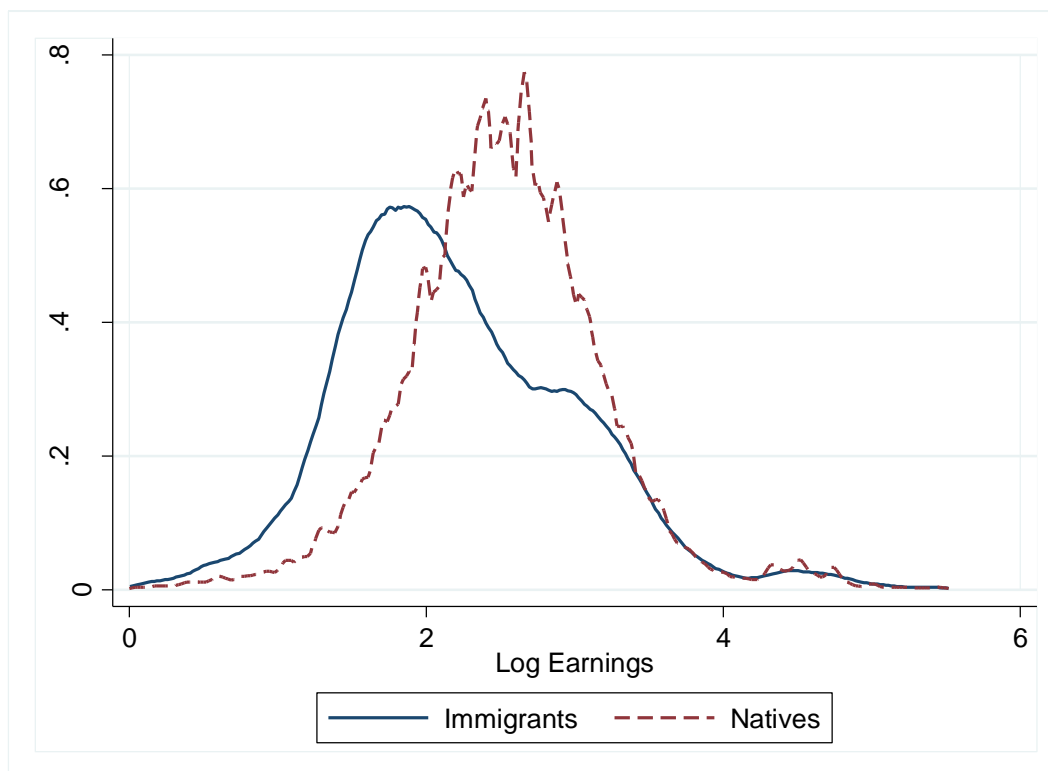
Figure 8C
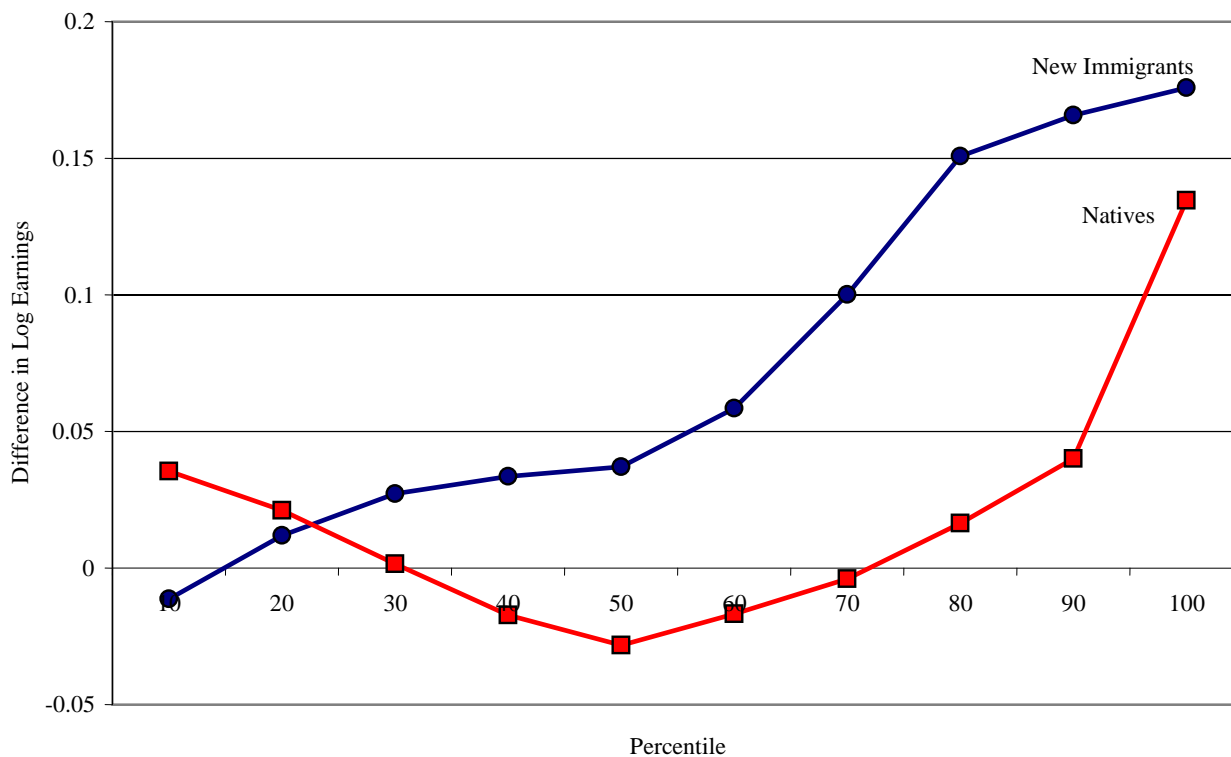**The New Immigrant Wage Distribution in 1990 and 2000**
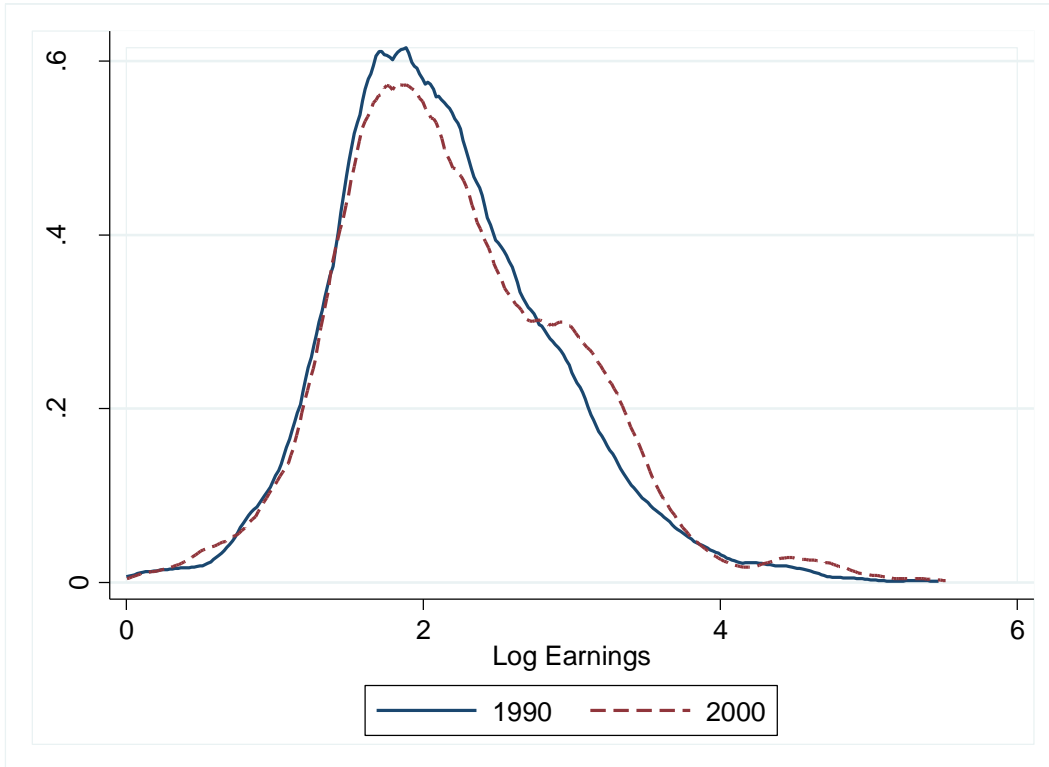
Figure 9
**Change in Earnings by Percentile, 1990-2000**

Notes: Each point indicates the difference between 2000 and 1990 earnings for each percentile. The sample includes men aged 25-64. New immigrants are those who arrived in the five years prior to the Census.

Figure 10
Earnings of New Immigrants Relative to Natives
**by Level of Education**
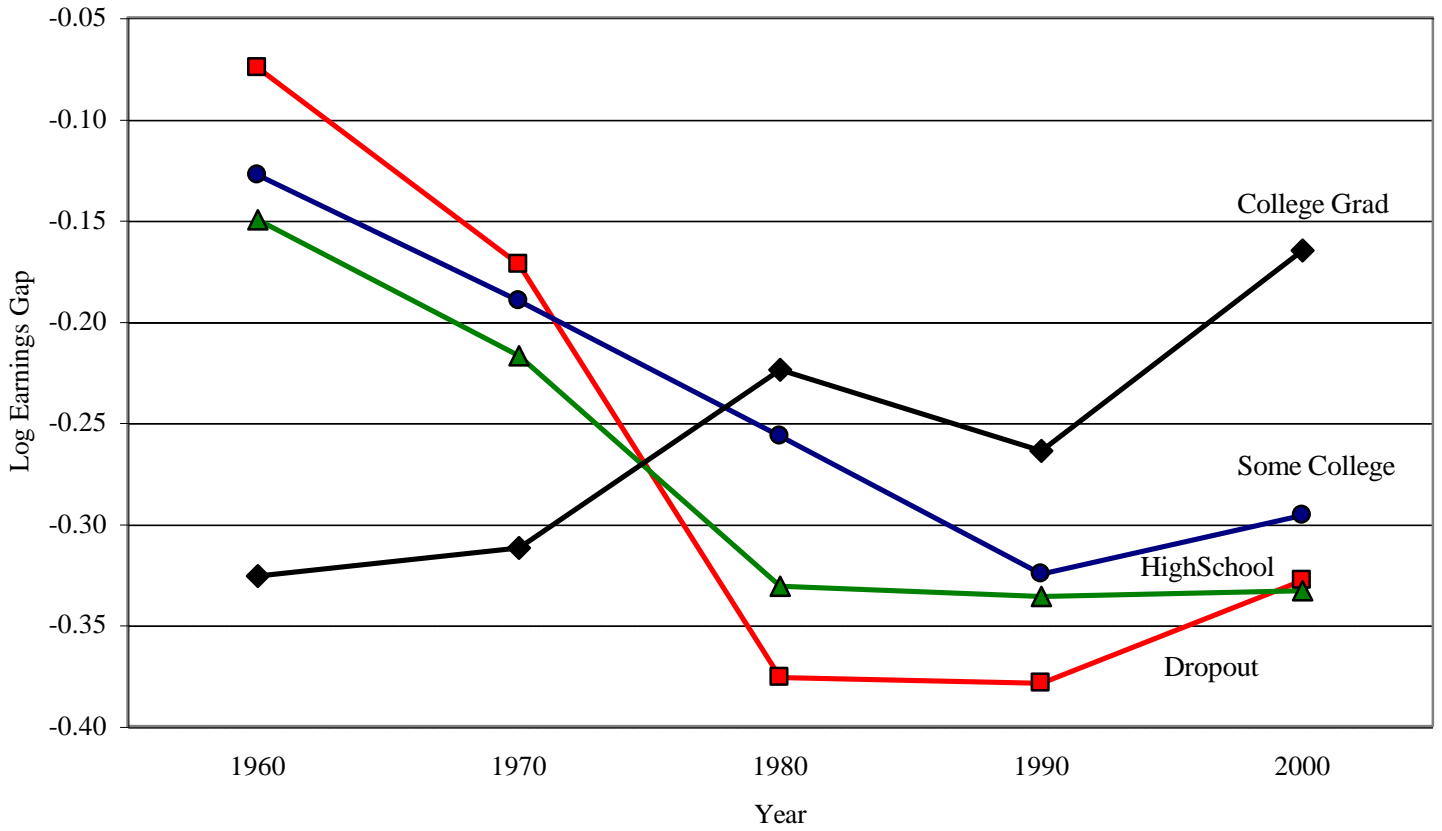
Note: The relative wage is calculated in the sample of men aged 25-64. The hourly wage rate is defined as the ratio of total income earned annually to annual hours worked in the calendar year prior to the Census.

Figure 11
Number of H-1B Visas
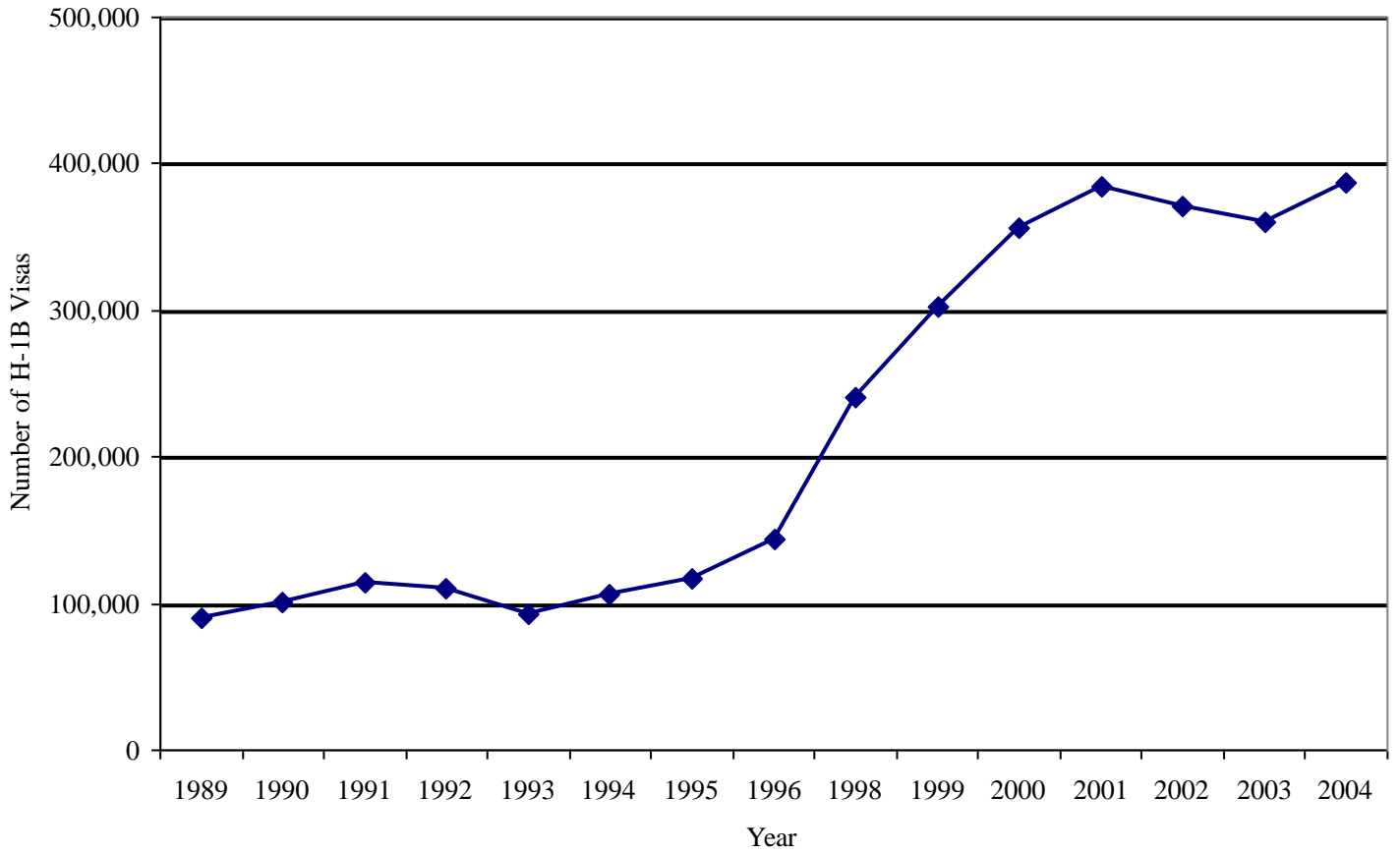
Source: INS Statistical Yearbook, 1996 and 1999; U.S. Department of Homeland Security, Office of Immigration Statistics Yearbook, 2004.

Figure 12
Post-2000 Trends in the Relative Earnings of New Arrivals

RAW EARNINGS

PUMS trend

CPS

ADJUSTED EARNINGS

CPS

PUMS trend
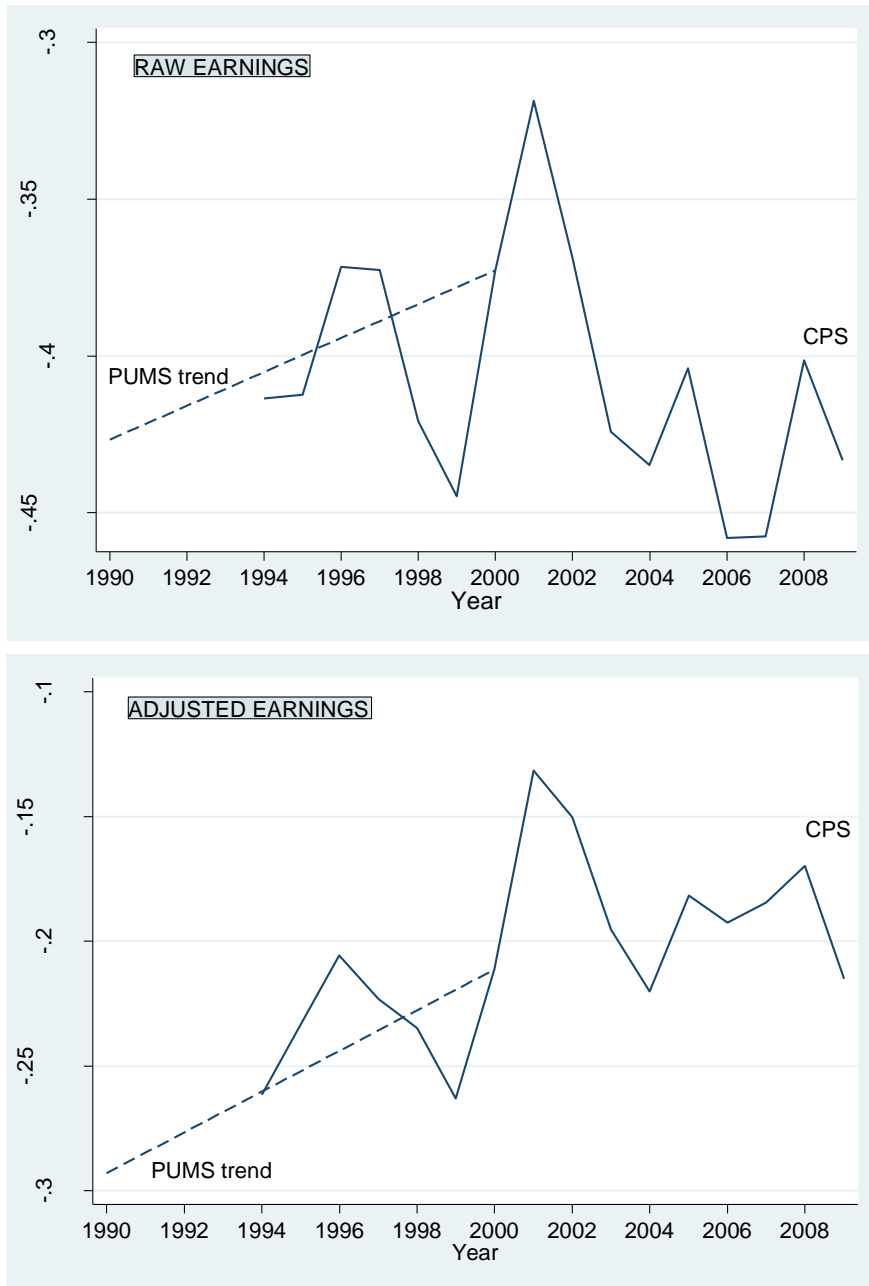
Note: Data are the March CPS 1994-2009. Adjusted earnings condition upon age, education, and share Mexican.