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Changing patterns of economic mobility of
immigrants to the United States, 1980-2000

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Paper prepared for the LoWER Annual Conference, Mannheim, April 15-16, 2005

Abstract

The return to immigrants' time in the United States is a key measure of the economic mobility of immigrants. This paper examines changes between 1980 and 2000 in the economic returns to immigrants' time in the United States, using a consistent data set of labor-market variables constructed from the one-percent Public Use Microdata Sample (PUMS) of the decennial censuses for 1980, 1990, and 2000. The ability to compare these returns at discrete points over the last three decades provides an opportunity to see whether the economic prospects of immigrants have changed in response to either the significant and well-documented restructuring of the national wage distribution and employment structure in the United States in the 1980s and 1990s, or to the substantial rise in the immigrant population itself.

The paper estimates three measures of the return to immigrants' time in the United States: (1) the speed of convergence of hourly wages of immigrants to those of US-born workers; (2) the returns to time in the United States, relative to recent immigrants; and (3) the acceleration (or deceleration) in real wage growth for cohorts of immigrants, matched by years of time in the United States, across the 1980s and 1990s.

For men, the results generally point toward a decline in mobility. Between 1980 and 2000, the point of convergence between immigrant men shifted out about 15 years and returns to time in the United States declined for all but the longest-duration immigrants. Real wage growth did accelerate between the 1980s and 1990s for shorter duration cohorts of immigrants (while remaining essentially unchanged for longer duration cohorts), but these improvements may simply reflect the general acceleration in real wages in the US economy in the 1990s relative to the 1980s, and not a rise in the wage mobility of immigrants relative to US-born workers. The findings for women are mixed. Between 1980 and 2000, convergence of immigrant women with US-born women slipped about 10 years. At the same time, returns to time in the US were generally higher for women in 2000 than they had been in 1980.

I. Introduction

The wage structure in the United States has changed substantially since the end of the 1970s. After several decades of rapid real wage growth at rates that were almost identical across the full distribution of wages, from about 1979 real wage growth decelerated relative to productivity growth as wage inequality increased sharply. Between 1979 and 2004, for example, productivity per hour increased about 66 percent, while the median wage rose only 13 percent in real terms.¹ Over the same period, real wages grew more quickly at the 90th percentile (25 percent) and actually fell about two percent at the 10th percentile (see Figure 1). While most of this rise in inequality occurred within groups defined by education and work experience, higher returns to skills have driven an important part of the recent rise in wage inequality. The wage premium for a four-year-college degree relative to a high-school graduate, for example, increased from about 20 percent at the business-cycle peak of 1979 to over 32 percent in 2000 at a comparable point in the business cycle (see Figure 2).²

Over the same period, the share of immigrants increased markedly, from about 8 percent of the total US adult population in 1980 to about 14 percent in 2000.³ While the influx of immigrants may have contributed to these well-documented structural changes in the wage distribution,⁴ the focus of this paper is on the impact that these structural changes may have had on the wages and mobility of immigrants. In particular, this paper

1 Growth in productivity and real wages are not completely comparable since the two measures use different deflators. Hourly productivity is deflated using the GDP deflator; the data in Figure 1 were deflated using the CPI-RS.

2 Figure 2 shows the college premium from an ordinary least squares regression of the natural logarithm of wages against binary variables for five education and five age categories, separately for men and women.

3 See Appendix Table 1 for some basic characteristics of the adult foreign- and US-born populations analyzed here.

4 For analyses of the impact of immigrants on the US wage structure, see, among others: Altonji and Card (1991), Borjas (2000), Card (2001), and DeFreitas (1998).

uses microdata from the 1980, 1990, and 2000 Censuses to examine both how rapidly immigrants' wages converge on the wages of US-born workers with similar skills, and how much wages rise with immigrants' time in the United States relative to more recent immigrants.

II. Measuring the Mobility of Immigrants

Ideally, we would like to measure the mobility of immigrants using data from a large panel survey that followed several waves of US workers –both US- and foreign-born– over a long enough period of time to give a clear picture of immigrant workers' wage mobility, both in real terms and relative to other workers. Under these ideal circumstances, we could then examine changes over time in the mobility of immigrants by comparing real and relative wage growth for different waves of immigrants, say, those that arrived to the United States in the 1960s with those that arrived in the 1980s.

Unfortunately, no such large, multi-wave, panel surveys of US workers exist. The absence of such surveys forces us to rely, instead, on measurement methods based on large, repeated, cross-sectional surveys of the US labor force, such as the Decennial Census or the Current Population Survey (CPS).⁵ This section of the paper describes three techniques for measuring changes in the wage mobility of immigrants, and then describes the data from the Decennial Censuses for 1980, 1990, and 2000, that will be used in the remainder of the paper.

A. Three methods

Successive versions of both the Decennial Census and the Current Population Survey (since 1994) gather extensive labor-market data on US workers, including

5 For earlier research on immigrant wages and mobility using a single or repeated cross-sections, see, among others: Antecol, Kuhn, and Trejo (2003), Butcher and DiNardo (1998), Chiswick (1978), Borjas (1995, 2000), Duleep and Regets (1997), Funkhouser (2000), Funkhouser and Trejo (1995), LaLonde and Topel (1992, 1997), Schoeni (1997), and Schoeni, McCarthy, and Vernez (1996).

workers' immigration status. In both surveys, the immigration data include country of birth, citizenship status, and year of arrival to the United States. The three techniques used here to measure mobility all rely on the reported year-of-arrival information to define both immigration cohorts and to provide estimates of years-since-migration.

1. Convergence with US workers

The first measure of mobility uses US-born workers as a point of reference. This approach compares immigrants with US-born workers and asks how quickly immigrant workers, who typically earn less than US-born workers when they first arrive in the United States, converge to US-born wage levels. Since the Census data for 1980 and 1990 records the year of arrival in bands of years, we can measure convergence to US-born wages by taking the entire sample (US- and foreign-born) and regressing hourly earnings (in logarithms) against binary variables for year of arrival:

$$(1) w = a + b_1A0_5 + b_2A6_10 + b_3A11_15 + b_4A16_20 + b_5A21_30 + b_6A31_ + u$$

where w is the natural logarithm of the hourly wage; A indicates a binary variable for years in the United States with a suffix (0_5, 6_10, 11_15, etc.) that indicates the number of years (0-5, 6-10, 11-15, etc.); and u is a well-behaved disturbance term. The binary variables for years in the United States effectively partition a simple binary variable for immigrant into six mutually exclusive categories based on years-since-migration to the United States; each of these years-since-migration variables takes the value zero for US-born workers. Recent immigrants (those where $A0_5$ equals 1), on average, earn less than the average US worker, so the coefficient b_1 will be negative. At some point over the course of their time in the United States, however, the wage of the average immigrant

worker converges on that of the average US worker. At that point, the coefficient on the binary variable, A , would exactly equal zero. For immigrants in the United States beyond that point of convergence, the coefficient on the A variables is positive, reflecting a wage premium for longer-term immigrants.

Estimating equation (1) at two different periods of time can reveal changes in immigrant mobility in at least two ways. The first is through changes in the estimated point of convergence. If mobility relative to US-born workers increased, for example, the point of convergence might occur earlier, say, after 11-15 years in the United States, instead of after 16-20 years. Conversely, if mobility declined, we might expect to see the estimated point of convergence recede in equation (1). The second indicator of changes in mobility is a change in the measured wage premiums (or wage penalties) for time spent in the United States. If mobility increased, we might expect to lower wage penalties for immigrants at shorter durations in the United States or higher wage premiums for longer-duration immigrants, independent of any changes in the point of convergence with US-born wages.

One limitation of the approach in equation (1) is that it does not control for workers' characteristics and, therefore, implicitly compares the average immigrant worker in each of the "time in the United States" categories with the average US-born worker. An obvious drawback of this design is that immigrants that have been in the United States for a long period of time are almost mechanically much older than the average US-born worker, and these extra years of (potential) work experience act to raise the wages of immigrants relative to US workers for reasons that have little to do with our usual notions of mobility. The lack of controls in equation (1) can also create additional problems since immigrant and US-born workers differ with respect to educational attainment, and the

composition of immigrant population by country of origin may also vary greatly from one Census to the next. Fortunately, we can easily introduce a basic set of controls into equation (1):

$$(2) w = a + Ab + Xc + u$$

where A is a vector representing the full set of time in United States variables in equation (1) and X is a vector of control variables including education and age.⁶ The advantage of equation (2) over equation (1) is that the coefficient on the years-in-the-United-States variables are now relative to the average US worker after controlling for differences in age and education.

A second limitation of the approach described in equation (1) (and (2)) is that, in practice, we cannot distinguish between years-since-migration and cohort effects. The discussion that follows below will treat the coefficients on the years-since-migration variables as representing the returns to time in the United States. These effects, however, could also simply reflect years-of-arrival cohort effects. For example, if we fit equation (2) using Census data for 1980, the coefficients on the years-since-migration variables might represent returns to time in the United States of those immigrants who arrived 0-5 years earlier, 6-10 years earlier, 11-15 years earlier, and so on. Or, these coefficients could simply reflect systematic differences in the characteristics (including macroeconomic conditions upon arrival) of the cohorts that arrived in the United States in the periods 1975-1980, 1970-1974, 1965-1969, and so on.⁷

6 The control variables can also include country of origin, which will be incorporated into the next version of the paper.

7 As is argued below, the interpretation given here --that the coefficients better reflect returns to time in the United States than they do cohort-effects-- rests on several assumptions supported by the data. First,

2. Returns to experience in the United States

The second measure of immigrant mobility uses recent arrivals to the United States as a reference point. This approach asks how quickly immigrants improve their wages relative to those immigrants who have just arrived in the United States. Concretely, this involves using only the data for immigrants to estimate an equation such as:

$$(3) w = a + b_1A6_{10} + b_2A11_{15} + b_3A16_{20} + b_4A21_{30} + b_5A31_{+} + u$$

where the reference group for the binary variables --the A s, as defined in equation (1)-- are immigrants who have been in the United States 0-5 years only. The coefficients on the binary variables for years of experience trace out the earnings profile of immigrants, which typically increases for each successive period of time in the United States.

Estimating equation (3) at two different periods of time provides a second picture of immigrant mobility. If mobility increased --so that longer-term immigrants were more quickly distancing themselves from recent immigrants-- we might expect to see the profile for years in the United States "shift up," with the coefficient on each of the successive A variables in (3) higher in 2000, say, than was the case in 1980. On the other hand, if mobility decreased, and longer-term immigrants were not able to capitalize on their time in the United States as much as they had in the past, then we might expect to see the profile traced out by the coefficients on the A variables to fall by 2000.

as we shall see, neither the raw, nor the regression-controlled estimates of the years-since-migration variables show any strong cohort effects (such as a strong positive or negative wage effect associated with a particular cohort as it moves through successive Censuses. Second, the regression-controlled equations control for age and experience (and will, in the next version of the paper, also control for country of origin), factors that likely capture a large share of the main reasons that the data might exhibit strong cohort effects in the first place. Finally, the main aim of the paper is to measure whether mobility has changed over time. The separation of cohort from time-in-the-United-States effects may contribute to an understanding of any changes we observe, but the first task is to determine whether the relative wage structure of immigrant workers has changed.

As with the first method for measuring mobility, the approach in equation (3) is not completely satisfactory because it does not control for workers' characteristics. Immigrants that arrived in different periods (and therefore have different levels of time in the United States at any fixed point in time) may differ significantly with respect to education, age, and country of origin, all factors that could affect their earnings. As above, however, we can add basic controls to equation (3):

$$(4) w = a + Ab + Xc + u$$

The A coefficients in (4) would now reflect controls for differences in education, age, and country of origin, which have been incorporated into X.⁸

3. Comparison of cohorts

Both of the first two approaches to measuring mobility use contemporaneous workers as the reference point for gauging changes in immigrant mobility. The final approach to measuring mobility, however, compares wage gains (or losses) experienced by immigrants in recent periods (in the ten years ending in 2000, say) with wage gains (or losses) experienced by immigrants over a comparable period of time in an earlier period (in the ten years ending in 1990, for example). This approach is the closest in spirit to the ideal based on a multi-wave panel survey. In the absence of true panel data, however, this technique has several limitations. In particular, we can only follow changes in the average wages of cohorts (by year-of-arrival), not changes in the actual wages received by each individual. Moreover, since we don't have retrospective data on these cohorts' wages, in order to include a particular cohort in our analysis, we must observe the cohort in at least

⁸ The inability to distinguish formally between years-since-migration and cohort effects also applies in this case as well.

two of the three Censuses.

Once these basic constraints are recognized, this final technique is straightforward to implement. With three Censuses spaced ten years apart, we can easily compare the real wage growth over ten years for different groups of workers over two time periods 1980-1990 and 1990-2000. A simple example illustrates the general approach. We can calculate the average change in wages between 1980 and 1990 for recently arrived immigrants in 1980 by looking at the average wage for the cohort that arrived in 1975-1979 in both the 1980 and 1990 Censuses. We can then measure the average change in wages between 1990 and 2000 for recently arrived immigrants in 1990 by calculating the average wage for the cohort that arrived in 1985-1989 in the 1990 and 2000 Censuses. If mobility increased between the first period (1980-1990) and the second period (1990-2000), we would expect real wage growth to be faster for the cohort that arrived in 1985-1989 than it was for the cohort that arrived in 1975-1979. Similarly, if mobility decreased between the two periods, we might expect real-wage growth to be slower in the second period than the first.

By construction, both of the cohorts in this example had an average of 2.5 years of time in the United States in the first period and an average of 12.5 years in the United States in the second period. By choosing cohorts that initially had 7.5 years of time in the United States in the first period (immigrants that arrived in 1970-1974 in 1980 and 1980-1984 in 1990), and 12.5 years (arrived in 1965-1969 in 1980 and 1975-1979 in 1990), and so on, we can construct a set of matched cohorts that can give a more complete picture of mobility for immigrants with different amounts of time in the United States.

The measurement strategy discussed so far does not control for differences in age and education, factors that could have an important impact on wage growth over time.

We can introduce controls for these characteristics using regression analysis. The simplest technique is to pool the data for two consecutive Censuses for each cohort and then fit a regression of the form:

$$(5) w = a + bG + Xc + u$$

where G is a binary variable that takes the value one for observations in the second of the two Censuses and the rest of the terms are identical to earlier equations –in particular, X is a vector of variables related to age and education.⁹ In equation (5), the coefficient b then gives the regression-controlled real-wage growth for the particular cohort over the ten-year period. After fitting (5) separately for each cohort, we can look for signs of rising or falling mobility by comparing the coefficient b across the matched pairs of cohorts, exactly as in the example without regression controls.

Both the raw- and regression-controlled versions of this third approach to measuring mobility use the experience of earlier cohorts of immigrants as a benchmark for assessing changes in mobility. If overall wage growth, however, were lower in the second period than it was in the first for *all workers* in the US economy (perhaps because productivity growth decelerated), then we would conclude that the mobility of immigrants had declined, even though it might not have declined when measured relative to growth rates obtained by US-born workers. Of course, our main interest main interest might well be whether the US economy is providing immigrant workers with the same opportunities for wage mobility as in the past, independent of what is happening to US-born workers.

One way to attempt to isolate changes in the mobility specifically of immigrants

⁹ As above, the next version of the paper will also include controls for country of origin here.

would be to employ a simple difference-in-differences strategy. In the present context, such an approach would involve comparing the difference in ten-year growth rates in real wages across matched cohorts of immigrants with the difference in ten-year growth rates in real wages for US-born workers over the same periods. Concretely, this would following a three-step procedure. In the first step, we would use pooled data from two consecutive years of the Census to estimate equation (5) as above. In the second step, we would estimate an identical equation using only the US-born workers:

$$(6) w = a + b_{US}G + cX + u$$

As in equation (5), G would take the value one if the worker was in the second of the two pooled Censuses. The coefficient b_{US} gives an estimate of the growth rate in US-born workers wages across the two Censuses, controlling for differences in the age and educational attainment. In the final step, we would compare the difference in these two differences: b (from equation 5) minus b_{US} (from equation 6).

B. The Data

The main source of data for the paper is a consistent extract of labor-market variables from the one-percent version of the Public Use Microdata Sample (PUMS) for the 1980, 1990, and 2000 decennial Censuses. In addition to an extensive set of standard labor-market variables, the PUMS includes information on an individual's country of birth, year of arrival to the United States, citizenship, and self-assessed English-language proficiency.¹⁰ The main sample of immigrants analyzed here are adult (18 or older) men and women born outside the United States and outlying areas, including those who

¹⁰ A complete set of programs used to convert the raw PUMS data into a consistent extract for 1980, 1990, and 2000 are available upon request.

entered the United States as children. The US-born sample includes all adult men and women born in the United States. Appendix Tables 1 through 9 provide a detailed look at basic features of both the US- and foreign-born sample.

III. Results

The wage penalty associated with being an immigrant (on average, for immigrants at all lengths of time in the United States) rose substantially over the 1980s and then remained roughly constant through the 1990s. Appendix Table 3 presents estimates of the hourly wage gap (in log points) between immigrants and US-born workers from the 1980, 1990, and 2000 decennial censuses, separately for all workers (panel a), men (panel b), and women (panel c).¹¹ The first row of each panel shows the gap for the "raw" data which controls only for state of residence (in an effort to control for regional differences in the cost of living combined with the uneven distribution of immigrants throughout the country). In 1980, on average, without controlling for the education and age structure of the population, immigrants earned about 0.064 log points less than US-born workers. The gap was substantially higher for men (0.093 log points) than it was for women (0.034 log points). Between 1980 and 1990, the raw immigrant wage gap almost doubled for men and women together (to 0.128 log points) and for men (to 0.173 log points), and almost tripled for women (to 0.094 log points). For all three groups, the immigrant gap then changed little between 1990 and 2000.

The last row in each panel of Appendix Table 3 attempts to control for differences in the educational and age characteristics of immigrants relative to the US-born population. The last rows of the panels report the coefficient on immigrant status from a

¹¹ The paper does not address the difficult issue of women's self-selection into employment. Given that immigrant women have lower employment rates than US-born women, and that immigrant women's employment rates increased more than US women's did over the period examined here, these issues are likely to be even more important in the present context than they are in other settings.

simple regression of the natural logarithm of the hourly wage against a binary variable for immigrants, and binary variables for the interaction of six education and six age groups (plus the same controls for state of residence in the first row of each panel). For all, male, and female workers, the education and age controls cut the immigrant wage gap by about half. In 2000, for example, the overall immigrant gap falls from 0.137 log points in the "raw" data to 0.075 log points after skills controls. The skills controls also reduce the size of the increase in the immigrant wage gap between 1980 and 1990 or 2000. Between 1980 and 2000, for example, the immigrant gap for men increased 0.091 log points in the "raw" data, but only 0.026 log points after controlling for education and age; for women, the "raw" increase was 0.073 log points, compared to 0.037 log points after controlling for workers' skills. Together, these findings suggest that differences in the age structure and educational attainment of immigrants accounts for about half of the gap in earnings between the two groups, and for somewhere between half and two-thirds of the increase in the immigration gap over the period.

These results for the average immigrant gap place the results of the three tests of mobility into a broader context. The analysis in Appendix Table 3 suggests that the wage gap between the average immigrant and the average US-born worker is significant (between 0.11 and 0.18 log points, depending on gender, in 2001) and rising (up 0.7-0.10 log points between 1980 and 2000). Nevertheless, at least half of the gap and more than half of the increase in the gap simply reflects differences in the skills of immigrants relative to the US born.

A. Speed of convergence

Table 1 summarizes the first set of results on the economic mobility of immigrants over time. The table presents the "raw" hourly wage gap between US-born workers and

immigrants, by the immigrants' length of time in the United States, separately for men and women (see also Figures 3 and 5).¹² Reading down each column gives one representation of the speed of convergence of immigrants' wages to those of US-born workers. For men, in 1980, for example, recent immigrants (0-5 years in the United States) were about 0.341 log points behind the average US worker. After 6-10 years in the country, the immigrant gap shrunk to -0.190 log points. By 16-20 years, the gap was actually positive (0.017), suggesting that immigrants had "converged" on average US wages. From that point on, immigrant wages grew continuously relative to the average US-born worker, rising to a 0.191 log-point advantage after 31 or more years in the country. For women in 1980, the size of the gaps –both the negative gap after recent arrival (-0.183 log points) and the positive gap after a long period in the country (0.089 log points after 31 or more year)-- were smaller than they were for men, but "convergence" occurred at about the same point (the coefficient on 16-20 years in the country is -0.002 log points). The columns for 1990 and 2000 for both men reveal important shifts in the point of convergence relative to 1980. For men in 2000, the immigrant gap does not switch between positive and negative until somewhere between 21-30 and 31 or more years after arrival in the United States, up from convergence in 1980 somewhere between 11-15 and 16-20 years in the country. For women, the point of convergence first shifts in from about 16-20 years in 1980, to somewhere between 6-10 and 11-15 years in 1990, and then out again to about 21-30 years in 2000 (a coefficient of 0.002). These changing patterns suggest that the substantial changes in the US wage structure in the 1980s and 1990s ultimately required immigrants to spend a considerably longer period of time in the United States before they could expect to "converge" on

¹² As above, these "raw" numbers actually include controls for state of residence.

average US wages.

The wage gaps in Table 1, however, do not control for differences in the educational attainment and age structure of immigrant and US-born workers. The two most obvious impacts of the exclusion of age and education controls are the large wage penalty for recent immigrants, who are generally younger (and less educated) than the US-born population, as well as the large wage premium for immigrants who have been in the United States for at least 31 years, who are, almost mechanically, much older than the full US population.¹³ Table 2, therefore, repeats the analysis in Table 1, adding controls for age and education (see also Figures 4 and 6). The inclusion of these controls has a substantial impact on the estimated path of wage convergence. For both men and women, the regression-controlled wage gaps are much smaller in absolute value across the entire set of years-since-migration variables. The controls do not change the timing of convergence for immigrant men, but do hasten the process of convergence for immigrant women. Without controls, immigrant women's wages in 1980 first match or exceed US-born wages after about 16-20 years, rising to about 21-30 years in 2000; with controls, immigrant women first match or exceed US-born women somewhere between 0-5 and 6-10 years in 1980; rising to about 11-15 years in 1990; and then to about 16-20 years in 2000. The inclusion of controls therefore suggest that an important reason that immigrant women fell behind US-born women between 1980 and 1990-2000 may have been related to the lower skills of immigrants relative to US-born women workers.

Using the raw data, between 1980 and 2000, mobility appears to have declined for both men and women, with the rough point of convergence between immigrant and US-born workers increasing by about a 15 years for men and about a half-decade for women.

¹³ For a comparison of the educational and age distributions of the immigrant population by time in the United States, see Tables 5 and 6 below.

After controlling for the age and education, the decline in mobility appears to have been about the same for men and much larger for women. The results that control for immigrants' skills suggest that immigrants did not fall behind primarily because they were immigrants, but rather because they were less-skilled than the average US worker, over a period when --whether for reasons of skill-biased technological change or declines in the strength of labor-market institutions that protect middle- and low-wage workers-- less-skilled workers were struggling relative to better-skilled workers.¹⁴

B. Returns to time in the United States

The analysis so far has concentrated on the position of immigrants relative to US-born workers. Another important reference point for judging the mobility of immigrants is the position of longer-term immigrants relative to those who have arrived most recently. Table 3 reports the wage premium associated with increasing years spent in the United States, relative to immigrants who have been in the United States for 0-5 years (including controls for age and education).¹⁵ Figures 7 and 8 summarize the results for 1980 and 2000. As the figures illustrate, between 1980 and 2000, the profile of returns for experience in the United States became steeper for both men and women. In the case of men, the time-in-the-United-States profile tilted upward primarily because the wage returns to time in the country declined for the first five periods, with the largest proportional declines for the shorter periods. For women, the profile became steeper because the returns to the shortest period (6-10 years) fell and the returns to the longest two periods rose (21-30 and 31+ years).

¹⁴ So far, I have not discussed any of the forces that may have contributed to recent trends in the wage distribution. The apparent shift against less-skilled immigrants could reflect skill-biased technological change, or the relative deterioration of wages at the middle and bottom of the distribution could have resulted from a decline in the role of labor-market institutions, such as unions, the minimum wage, the social safety net, and others, which previously worked to improve the bargaining power of less-skilled workers (see, for example, Schmitt, 2003; Mishel, Bernstein, and Allegreto, 2005).

¹⁵ The regression does not include data for US-born workers.

According to these results, if we use recent immigrants as a point of reference, between 1980 and 2000, mobility declined for immigrant men. In 2000, the wage premium associated with the time immigrant men had spent in the United States was lower than it was for the corresponding period in 1980. By the time immigrant men had spent at least 31 years in the country, however, the returns were essentially identical in 1980 and 2000.

The results for women, however, are more ambiguous. In 2000, the initial return (after 0-6 years) to time in the country was lower than had been the case in 1980; the returns to longer periods in the United States (16-20, 21-30, 31+), however, were markedly higher in 2000.

C. Real wage growth by matched cohorts-of-arrival

Table 4 presents the results of the third test of immigrant mobility. The table reports the real wage growth (in log points) for eight cohorts of arrival, matched across the 1980, 1990, and 2000 Censuses according to years of experience in the United States. Panel (a) summarizes the wage trends for relatively recent immigrants. The first row shows the ten-year real wage growth between 1980 and 1990 for the group of immigrants that arrived to the United States between 1975 and 1979 (including the first three months of 1980). This group of immigrants had an average of about 2.5 years of time in the United States at the time of the 1980 Census and an average of about 17.5 years in the United States in 1990. The second row of the same panel shows the wage trajectory between 1990 and 2000 of the corresponding group of immigrants that arrived ten years later. These immigrants arrived between 1985 and 1989 (including the first three months of 1990) and had about 2.5 years of experience in the United States in 1990 and about 17.5 years in the United States by 2000. For men in the earlier cohort, average real wage

growth (after controlling for age and education) was 0.160 log points over ten years, almost 0.04 log points below the 0.198 log point growth experienced by the later cohort (see Figure 9). Women in the same recent-immigrant category experienced a nearly identical rate of acceleration (up 0.039 log points) between the first and the second ten-year periods. The next matched cohort (7.5-17.5 years in the United States) also saw an acceleration in wage growth in the later period, with wage growth rising about 0.07 log points for men and about half that rate for women. For longer-duration immigrants, the cohort-analysis suggests little change in mobility for men (small, but statistically insignificant declines in rates of wage growth) and some decline for women (statistically significant drops of about 0.04 log points for both of the longer-duration groups).

The results of this third measure of immigrant mobility are somewhat ambiguous. Wage mobility appeared to have increased for both male and female shorter-duration immigrants, but was either flat (men) or fell (women) for longer-duration immigrants.¹⁶

III. Conclusions

This paper set out to use repeated cross-section data from the 1980, 1990, and 2000 Censuses to measure changes in the wage mobility of immigrants to the United States. For men, the results generally point toward a decline in mobility between 1980 and 2000. The first test --based on convergence to US-level wages-- showed a marked decline in mobility, with the point of convergence between immigrant men occurring much later in 2000 than it did in 1980. The second test --based on measuring returns to time in the United States-- found a sharp drop in the returns to time in the United States for all but the longest-duration male immigrants. The final test --based on ten-year real

¹⁶ Real wage growth accelerated in the 1990s for the entire US wage distribution. The acceleration for shorter-duration immigrants may simply reflect this broader trend. The next version of the paper will include a simple difference-in-difference test, using the change over the two decades in growth rates for US-born workers as a reference point.

wage growth rates for matched immigrant cohorts-- however, suggests that mobility increased for shorter-duration male immigrants and was unchanged for longer-duration immigrants. However, this final test, which contradicts the first two, may simply reflect the general acceleration in real wages in the US economy in the 1990s relative to the 1980s, and not some improvement in the wage mobility of immigrants relative to US-born workers.

The data for women paint a mixed picture with respect to changes in mobility. The first of the three tests suggests a decline in mobility (an increase of at least 10 years in the point of convergence with US born workers); a second suggests an increase in mobility (generally higher returns to time in the United States); and a third finds increases in mobility for shorter-duration immigrants and decreases for longer-duration immigrants.

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APPENDIX TABLE 1
Characteristics of PUMS sample, age 18 and older
 (share)

	Men			Women		
	1980	1990	2000	1980	1990	2000
<i>(a) US born</i>	92.2	89.7	85.6	91.8	90.0	86.4
Age						
18-24	19.5	14.9	13.6	17.9	13.4	12.3
25-34	23.8	24.0	18.5	22.1	22.4	17.3
35-44	16.3	21.0	22.3	15.3	19.6	21.0
45-54	14.3	14.2	18.7	13.9	13.4	17.9
55-64	13.4	11.5	11.8	13.8	11.7	11.8
65+	12.7	14.4	15.1	17.1	19.6	19.8
Education						
Primary	13.3	7.8	4.8	12.8	7.7	4.6
LTHS	17.2	15.1	13.3	18.1	15.1	12.3
HS	31.0	29.4	29.5	36.3	32.9	30.5
Some college	21.3	27.1	29.1	21.2	27.8	31.3
College	8.0	13.3	15.1	6.5	11.5	14.4
Advanced	9.2	7.4	8.3	5.3	4.9	6.9
Employed (18+)	73.0	71.1	68.3	48.1	54.4	56.2
Employed (18-64)	80.9	80.2	77.2	56.4	65.7	67.8
<i>(b) Foreign born</i>	7.8	10.3	14.4	8.2	10.0	13.7
Years in US						
0-5	21.2	21.5	21.5	17.3	18.6	18.6
6-10	15.3	18.8	16.1	14.1	16.0	16.3
11-15	12.9	14.3	15.3	12.6	12.9	14.3
16-20	10.1	11.9	13.9	10.5	12.1	12.9
21-30	15.2	15.8	16.9	15.6	17.5	17.3
31+	25.3	17.9	16.2	29.9	23.1	20.7
Citizen	54.9	44.9	42.8	56.1	48.3	48.4
Age						
18-24	15.7	15.9	14.5	12.4	12.4	11.6
25-34	23.2	28.6	26.4	20.5	24.3	23.6
35-44	16.7	21.5	24.7	16.4	20.5	23.8
45-54	12.9	13.3	16.2	13.5	14.4	16.6
55-64	10.6	8.8	8.8	11.5	10.8	10.5
65+	20.9	11.9	9.4	25.7	17.6	14.0
Education						
Primary	30.3	23.5	21.7	33.1	24.7	21.1
LTHS	13.0	16.0	16.8	13.0	15.9	15.5
HS	20.0	18.1	19.1	26.0	22.3	21.0
Some college	17.8	20.4	18.8	16.8	21.1	21.5
College	6.8	11.9	12.8	5.6	10.7	13.5
Advanced	12.1	10.2	10.9	5.7	5.4	7.5
Employed (18+)	67.2	73.1	68.3	41.0	49.1	48.0
Employed (18-64)	80.8	80.7	73.6	53.2	58.0	54.5

APPENDIX TABLE 2**Number of immigrants by period of arrival in United States, 1980-2000**

(thousands)

Years of entry	Men			Women		
	1980	1990	2000	1980	1990	2000
-1950	1,450.0	813.5	380.7	2,005.4	1,212.8	618.2
1950-1959	868.9	817.8	684.0	1,047.0	1,003.0	868.8
1960-1964	605.5	621.5	532.5	729.5	762.0	669.2
1965-1969	858.4	818.0	750.7	966.5	918.2	888.5
1970-1974	1,109.5	1,130.1	1,041.6	1,180.0	1,205.9	1,122.8
1975-1979	1,732.2	1,518.1	1,410.3	1,658.0	1,443.1	1,419.4
1980-1984	--	2,115.7	2,046.6	--	1,908.7	1,922.6
1985-1989	--	2,773.8	2,485.8	--	2,528.9	2,359.6
1990-1994	--	--	2,875.9	--	--	2,898.6
1995-2000	--	--	4,193.8	--	--	3,735.1
Total	6,624.5	10,608.5	16,401.9	7,586.4	10,982.6	16,502.8

APPENDIX TABLE 3
Effect of immigrant status in United States on log hourly wage, 1980-2000

	1980	1990	2000
<i>(a) All</i>			
Raw data	-0.064** (0.003)	-0.128** (0.002)	-0.137** (0.002)
Controlling for:			
Gender	-0.067** (0.003)	-0.140** (0.002)	-0.152** (0.002)
Gender, age, education	-0.047** (0.003)	-0.076** (0.002)	-0.075** (0.002)
Sample size	998,010	1,156,840	1,303,470
<i>(b) Men</i>			
Raw data	-0.093** (0.004)	-0.173** (0.003)	-0.184** (0.003)
Controlling for:			
Age, education	-0.068** (0.004)	-0.097** (0.003)	-0.094** (0.003)
Sample size	554,640	613,991	680,697
<i>(c) Women</i>			
Raw data	-0.034** (0.004)	-0.096** (0.003)	-0.107** (0.003)
Controlling for:			
Age, education	-0.011** (0.004)	-0.041** (0.003)	-0.048** (0.003)
Sample size	443,370	542,849	622,773

Notes: Analysis of PUMS1% extract of US Decennial Censuses, 1980, 1990, and 2000. Coefficients from a regression where the dependent variable is the natural log of the average hourly wage in the calendar year before each census. Coefficients are with respect to to US-born workers; all regressions, including "raw," control for 51 states of residence. Age and education controls are 36 binary variables created by interacting six education levels (primary only, incomplete secondary, secondary, some college, completed college, advanced

APPENDIX TABLE 4
Educational characteristics by time in United States, 1980-2000
(percent of each cohort)

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5						
Primary	27.0	24.4	23.0	30.5	24.6	19.6
LTHS	12.8	17.4	18.5	13.7	16.9	16.4
HS	15.4	17.7	19.2	20.5	20.4	20.7
Some college	22.5	18.4	14.7	20.4	19.4	19.0
College	7.1	11.9	13.5	7.2	12.8	15.3
Advanced	15.2	10.3	11.0	7.6	6.0	9.0
6-10						
Primary	30.8	25.2	21.0	33.4	26.4	22.3
LTHS	13.4	18.5	20.2	13.1	17.9	17.7
HS	17.9	17.4	20.7	21.9	19.3	20.8
Some college	16.9	19.5	17.0	17.3	20.1	18.9
College	7.1	10.7	10.6	6.9	11.1	13.1
Advanced	13.9	8.7	10.6	7.4	5.3	7.2
11-15						
Primary	28.0	23.7	22.6	29.8	24.9	21.9
LTHS	14.1	16.7	19.8	12.0	15.9	17.9
HS	19.8	16.5	20.0	26.1	19.9	20.6
Some college	17.9	20.9	18.5	18.6	22.2	21.2
College	6.5	12.9	10.4	6.4	12.0	11.9
Advanced	13.7	9.3	8.7	7.1	5.1	6.6
16-20						
Primary	22.2	22.8	21.3	22.9	24.5	21.5
LTHS	11.7	17.0	17.5	12.3	15.6	16.1
HS	22.7	19.2	19.7	31.5	21.0	19.7
Some college	21.9	21.3	20.7	21.9	23.3	23.7
College	7.5	10.6	12.4	5.5	11.1	13.3
Advanced	14.1	9.1	8.5	5.9	4.5	5.8
21-30						
Primary	24.6	20.1	22.2	24.9	20.6	21.8
LTHS	11.2	13.9	14.2	11.8	14.1	13.3
HS	24.8	19.7	17.4	33.9	24.3	19.1
Some college	18.6	22.8	20.7	18.3	24.2	23.4
College	8.3	12.8	14.5	5.6	11.2	15.2
Advanced	12.5	10.7	11.1	5.5	5.6	7.1
31+						
Primary	44.9	24.6	18.7	46.9	27.3	19.7
LTHS	14.0	15.7	13.4	13.8	17.3	14.3
HS	20.6	19.9	19.5	24.8	26.5	24.6
Some college	9.4	19.0	22.4	8.9	18.1	23.3
College	4.8	10.6	13.0	3.0	6.3	10.7

APPENDIX TABLE 5**Educational characteristics by time in United States, 1980-2000**

(percentage-point gap with respect to US-born population)

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5						
Primary	13.7	16.6	18.2	17.7	16.9	15.0
LTHS	-4.5	2.2	5.3	-4.3	1.7	4.1
HS	-15.6	-11.7	-10.2	-15.7	-12.5	-9.8
Some college	1.2	-8.7	-14.4	-0.7	-8.4	-12.3
College	-0.9	-1.4	-1.7	0.8	1.2	0.9
Advanced	6.0	3.0	2.7	2.3	1.1	2.1
6-10						
Primary	17.6	17.5	16.2	20.6	18.7	17.7
LTHS	-3.9	3.4	6.9	-4.9	2.7	5.4
HS	-13.0	-12.0	-8.8	-14.4	-13.6	-9.7
Some college	-4.4	-7.6	-12.1	-3.8	-7.7	-12.4
College	-1.0	-2.6	-4.6	0.4	-0.4	-1.3
Advanced	4.7	1.4	2.3	2.1	0.3	0.3
11-15						
Primary	14.8	15.9	17.9	17.1	17.2	17.3
LTHS	-3.1	1.6	6.5	-6.1	0.7	5.6
HS	-11.2	-12.9	-9.5	-10.2	-13.0	-9.9
Some college	-3.4	-6.2	-10.6	-2.6	-5.6	-10.2
College	-1.5	-0.4	-4.7	-0.1	0.4	-2.5
Advanced	4.5	1.9	0.4	1.8	0.2	-0.3
16-20						
Primary	9.0	15.1	16.5	10.1	16.8	16.9
LTHS	-5.5	1.8	4.2	-5.8	0.5	3.8
HS	-8.3	-10.2	-9.8	-4.8	-11.9	-10.8
Some college	0.5	-5.8	-8.4	0.8	-4.5	-7.7
College	-0.6	-2.7	-2.8	-1.0	-0.4	-1.1
Advanced	4.9	1.8	0.2	0.6	-0.4	-1.1
21-30						
Primary	11.3	12.3	17.4	12.1	12.9	17.2
LTHS	-6.0	-1.2	0.9	-6.3	-1.0	1.0
HS	-6.1	-9.7	-12.1	-2.3	-8.6	-11.4
Some college	-2.7	-4.3	-8.4	-2.8	-3.6	-7.9
College	0.3	-0.5	-0.7	-0.9	-0.3	0.9
Advanced	3.3	3.3	2.8	0.2	0.7	0.2
31+						
Primary	31.7	16.9	13.9	34.2	19.6	15.1
LTHS	-3.3	0.6	0.1	-4.2	2.1	2.0
HS	-10.4	-9.5	-9.9	-11.5	-6.4	-5.9
Some college	-11.9	-8.1	-6.7	-12.2	-9.7	-8.1
College	-3.2	-2.7	-2.1	-3.5	-5.2	-3.7

APPENDIX TABLE 6
Age distribution by time in United States, 1980-2000
(percent of each cohort)

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5						
18-24	32.2	31.9	32.8	28.3	26.8	26.8
25-34	38.1	37.8	35.8	37.8	38.1	36.6
35-44	14.9	16.8	17.9	14.6	17.2	18.7
45-54	7.3	7.4	7.5	8.2	8.1	9.0
55-64	4.0	3.2	3.2	5.9	5.0	4.9
65+	3.5	2.9	2.7	5.3	4.9	4.2
6-10						
18-24	19.1	20.1	20.6	17.0	17.1	16.6
25-34	39.3	41.2	38.9	40.3	39.2	37.2
35-44	23.2	22.6	21.9	21.3	23.3	23.7
45-54	10.3	9.0	9.9	10.7	9.7	11.0
55-64	4.7	4.1	4.5	5.5	5.3	5.7
65+	3.3	3.2	4.1	5.3	5.5	5.8
11-15						
18-24	16.1	15.2	12.7	13.0	14.4	12.7
25-34	26.9	36.2	36.4	26.4	31.8	30.6
35-44	28.8	28.5	30.3	30.4	29.7	31.7
45-54	16.5	11.3	12.6	15.6	12.1	13.6
55-64	7.1	5.2	4.5	7.7	6.3	5.6
65+	4.6	3.5	3.6	7.0	5.7	5.9
16-20						
18-24	17.5	19.2	12.3	15.6	17.5	12.4
25-34	18.4	21.9	23.0	16.3	18.9	20.9
35-44	27.9	30.5	35.5	32.0	32.6	34.4
45-54	19.8	17.4	18.3	18.9	17.2	18.5
55-64	10.4	7.3	6.4	9.2	7.5	7.1
65+	6.0	3.8	4.5	8.0	6.4	6.7
21-30						
18-24	5.5	6.0	3.5	5.4	5.3	3.6
25-34	20.5	26.7	19.7	16.5	22.6	18.9
35-44	18.5	21.6	29.4	19.5	20.2	26.4
45-54	25.6	24.1	28.7	29.2	27.8	29.2
55-64	17.5	13.5	11.8	16.3	13.6	12.5
65+	12.3	8.1	7.0	13.2	10.5	9.5
31+						
18-24	0.0	0.0	0.0	0.0	0.0	0.0
25-34	2.1	4.8	2.8	1.6	3.6	2.2
35-44	4.2	15.6	16.8	3.2	11.4	14.0
45-54	7.7	15.5	22.7	7.7	13.0	18.8
55-64	18.0	19.8	23.3	17.7	21.0	23.4

APPENDIX TABLE 7

Age distribution by time in United States, 1980-2000

(percentage-point gap with respect to US-born population)

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5						
18-24	12.7	17.0	19.2	10.4	13.4	14.4
25-34	14.3	13.8	17.3	15.6	15.7	19.3
35-44	-1.4	-4.2	-4.3	-0.7	-2.4	-2.3
45-54	-7.0	-6.8	-11.2	-5.6	-5.3	-8.9
55-64	-9.4	-8.3	-8.6	-7.9	-6.7	-6.9
65+	-9.2	-11.5	-12.3	-11.8	-14.7	-15.6
6-10						
18-24	-0.4	5.1	7.0	-0.8	3.7	4.3
25-34	15.5	17.2	20.4	18.1	16.8	19.9
35-44	6.9	1.6	-0.3	6.0	3.7	2.7
45-54	-4.0	-5.2	-8.8	-3.2	-3.7	-6.9
55-64	-8.7	-7.5	-7.3	-8.3	-6.4	-6.1
65+	-9.4	-11.2	-11.0	-11.8	-14.1	-13.9
11-15						
18-24	-3.4	0.3	-0.9	-4.9	1.0	0.4
25-34	3.0	12.2	17.8	4.3	9.4	13.3
35-44	12.5	7.6	8.0	15.2	10.1	10.7
45-54	2.2	-2.9	-6.2	1.7	-1.3	-4.3
55-64	-6.3	-6.3	-7.3	-6.1	-5.4	-6.2
65+	-8.0	-10.9	-11.5	-10.2	-13.9	-13.9
16-20						
18-24	-2.0	4.2	-1.3	-2.3	4.0	0.1
25-34	-5.5	-2.1	4.5	-5.8	-3.5	3.6
35-44	11.6	9.6	13.2	16.8	13.0	13.4
45-54	5.6	3.2	-0.4	5.1	3.8	0.6
55-64	-3.1	-4.3	-5.4	-4.6	-4.2	-4.7
65+	-6.7	-10.6	-10.6	-9.1	-13.1	-13.0
21-30						
18-24	-14.0	-9.0	-10.2	-12.5	-8.1	-8.8
25-34	-3.3	2.7	1.2	-5.6	0.3	1.6
35-44	2.2	0.7	7.1	4.3	0.6	5.4
45-54	11.3	9.9	10.0	15.3	14.4	11.3
55-64	4.1	2.0	-0.1	2.5	1.9	0.7
65+	-0.3	-6.3	-8.1	-3.9	-9.1	-10.3
31+						
18-24	-19.5	-14.9	-13.6	-17.9	-13.4	-12.3
25-34	-21.8	-19.2	-15.7	-20.6	-18.8	-15.1
35-44	-12.1	-5.4	-5.4	-12.0	-8.2	-7.0
45-54	-6.6	1.3	4.0	-6.1	-0.4	0.9
55-64	4.5	8.3	11.4	3.9	9.4	11.6

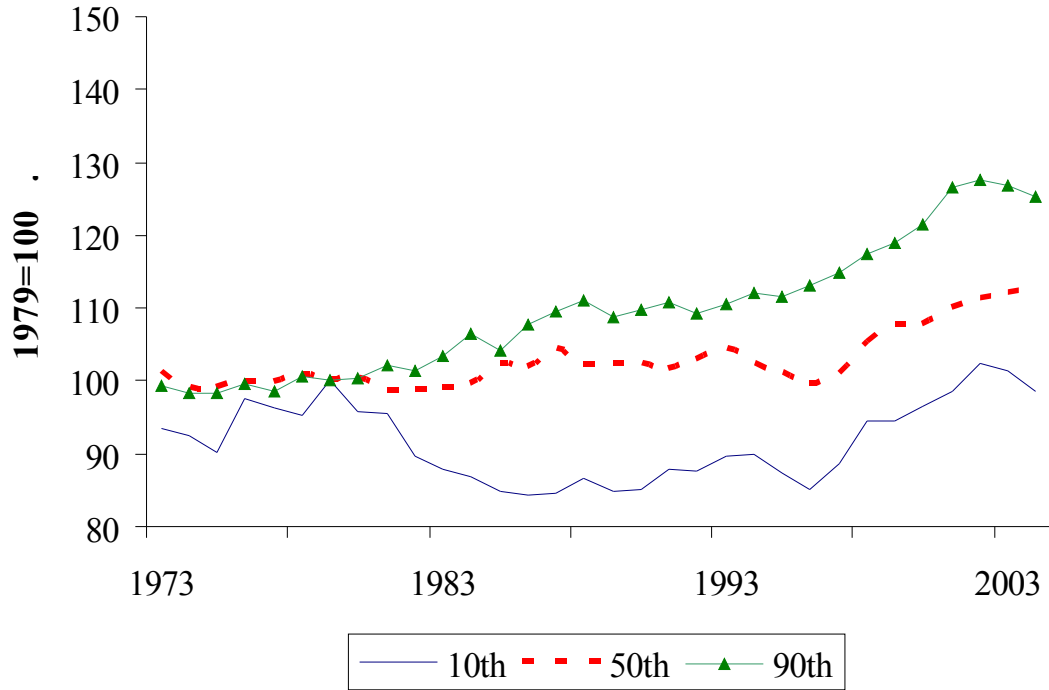
APPENDIX TABLE 8
Citizenship by time in United States, 1980-2000
 (percent)

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5	8.4	12.6	9.2	8.8	12.4	10.2
6-10	27.6	27.7	23.7	27.0	28.3	26.2
11-15	43.7	43.6	38.7	42.8	45.0	42.7
16-20	59.2	55.6	55.5	54.5	56.3	60.2
21-30	76.4	69.1	67.7	71.8	66.9	73.1
31+	92.8	88.1	84.9	89.4	86.0	85.6
All immigrants	54.9	44.9	42.8	56.1	48.3	48.4

APPENDIX TABLE 9**Employment-to-population rate, 18-64 year olds, by time in United States, 1980-2000**
(percent)

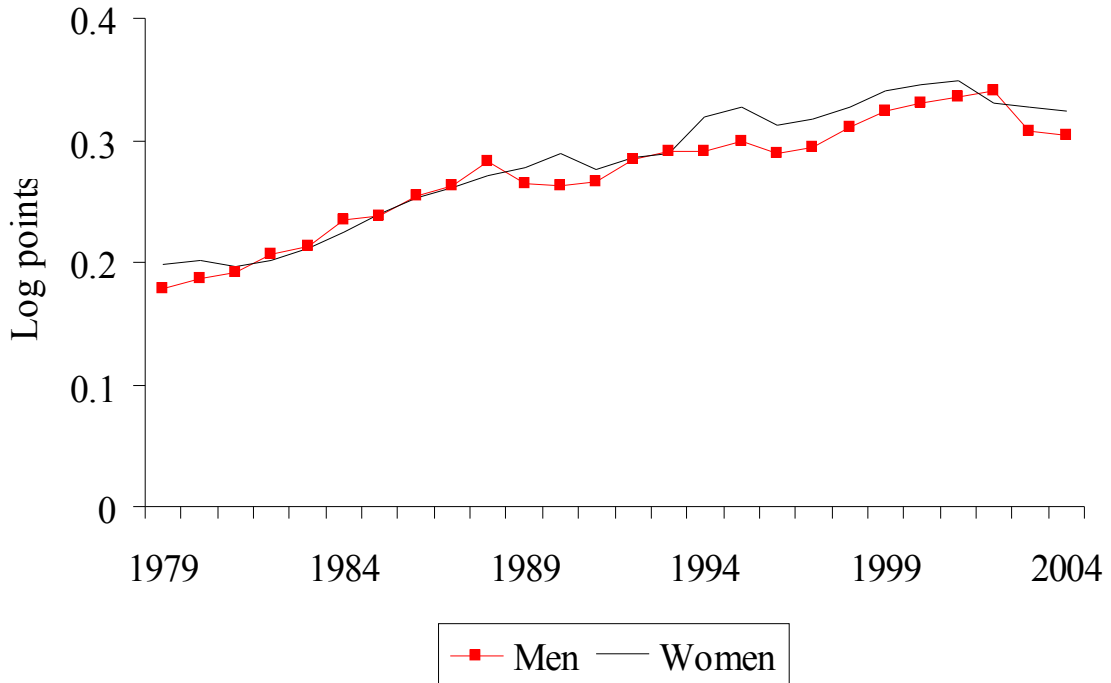
Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5	70.6	73.9	70.4	44.8	46.5	43.4
6-10	84.0	80.9	72.8	55.8	57.2	50.4
11-15	85.8	82.1	72.2	60.1	60.6	54.6
16-20	84.9	81.4	72.9	56.5	62.6	59.7
21-30	87.6	83.6	76.1	55.3	64.1	62.2
31+	78.8	80.7	74.8	45.6	55.5	58.9
All immigrants	80.8	80.7	73.6	53.2	58.0	54.5

Figure 1: Growth in real hourly wages, by percentile, 1973-2004



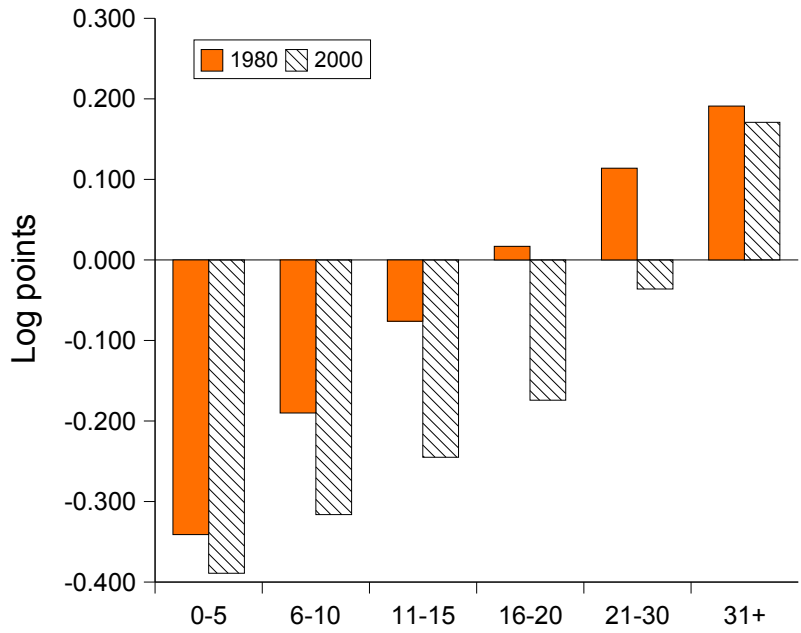
Source: Analysis of CEPR CPS ORG extract chained to EPI May CPS extract (1973-79).

Figure 2: College versus high school wage premium, 1979-2004



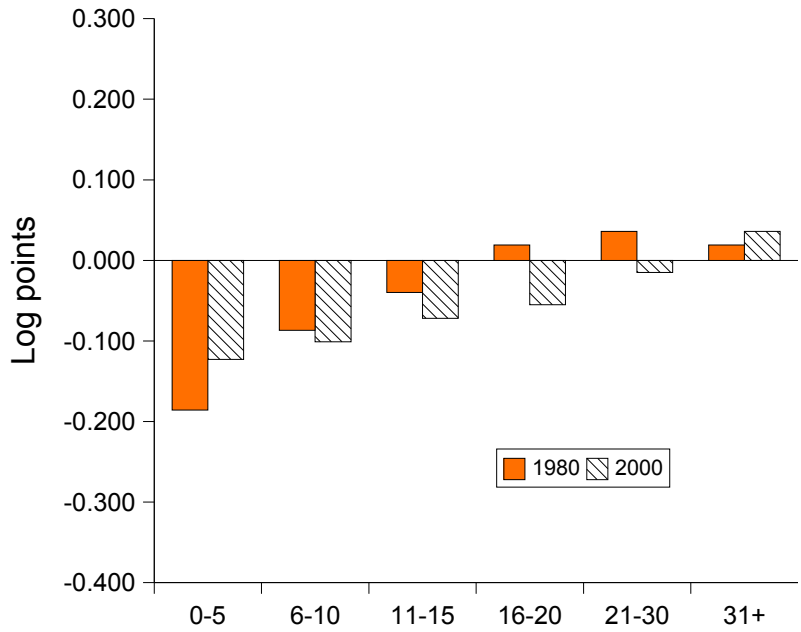
Source: Analysis of CEPR CPS ORG extract.

Figure 3: Raw wage gap relative to US-born workers, men



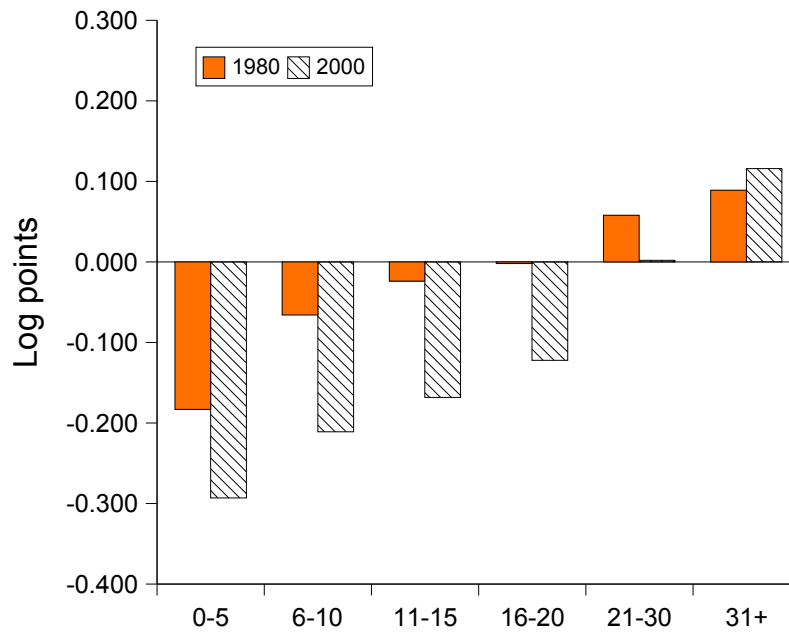
Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

Figure 4: Regression-controlled wage gap relative to US-born workers, men



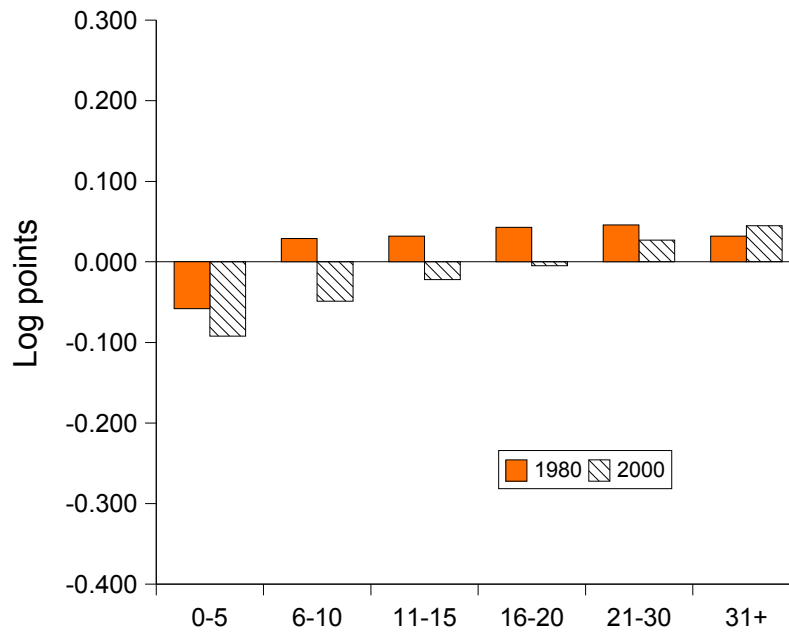
Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

Figure 5: Raw wage gap relative to US-born workers, women



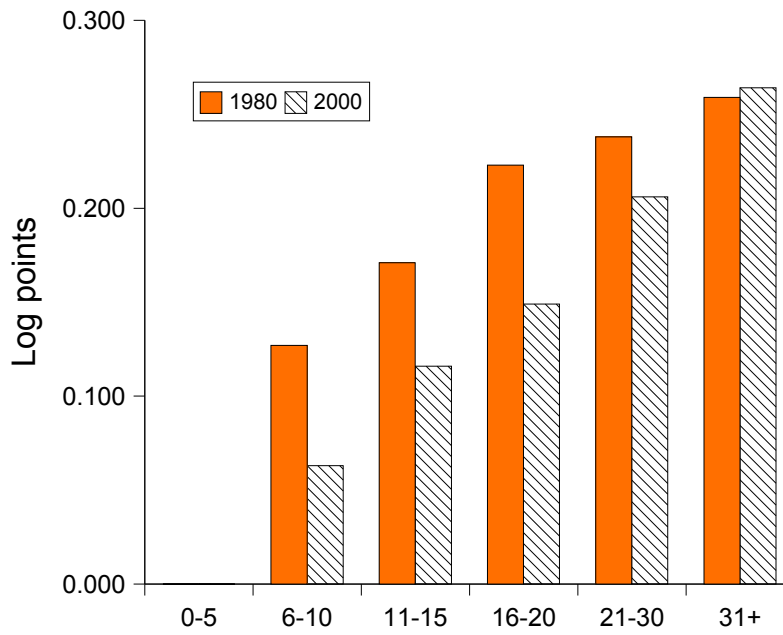
Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

Figure 6: Regression-controlled wage gap relative to US-born workers, women



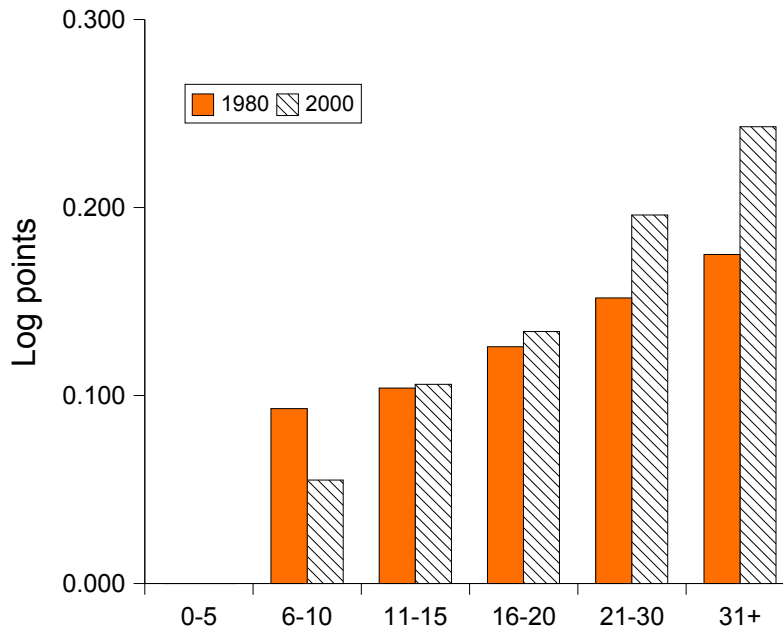
Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

Figure 7: Regression-controlled returns to time in United States, men, 1980-2000



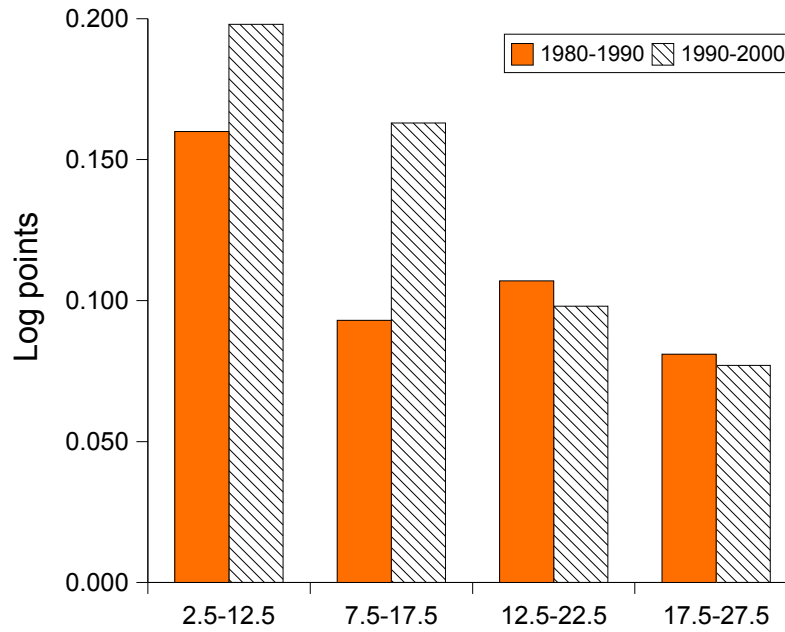
Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

Figure 8: Regression-controlled returns to time in United States, women, 1980-2000



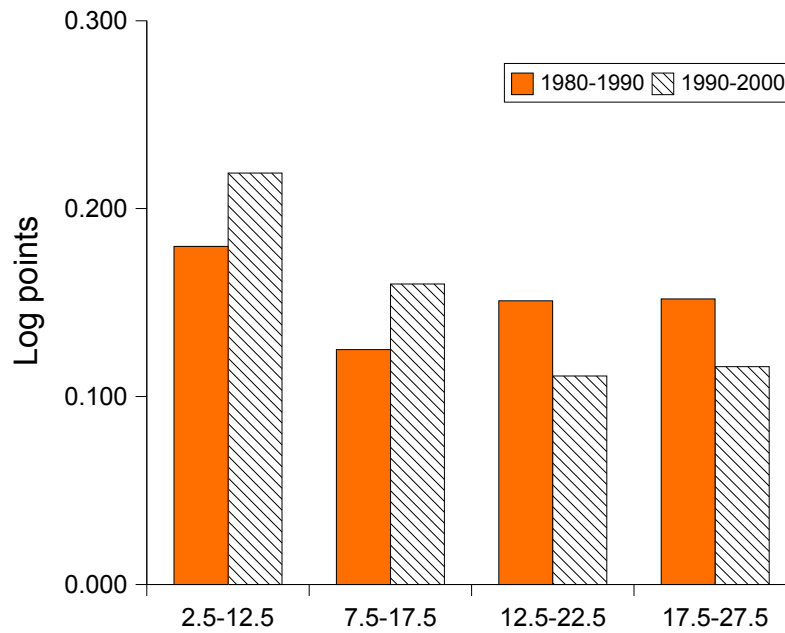
Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

Figure 9: Regression-controlled ten-year real wage growth, men, 1980-2000



Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

Figure 10: Regression-controlled ten-year real wage growth, women, 1980-2000



Source: Analysis of PUMS 1% extract 1980, 1990, 2000.

TABLE 1
Raw effect of time in United States on hourly wage of immigrants, 1980-2000:
log hourly earnings gap with respect to US-born workers

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5	-0.341** (0.009)	-0.453** (0.007)	-0.389** (0.005)	-0.183** (0.010)	-0.320** (0.008)	-0.293** (0.006)
6-10	-0.190** (0.009)	-0.338** (0.007)	-0.316** (0.006)	-0.066** (0.010)	-0.216** (0.008)	-0.211** (0.008)
11-15	-0.076** (0.010)	-0.191** (0.008)	-0.245** (0.006)	-0.024* (0.010)	0.096** (0.008)	-0.168** (0.007)
16-20	0.017 (0.012)	-0.162** (0.008)	-0.174** (0.006)	-0.002 (0.011)	0.086** (0.008)	-0.122** (0.007)
21-30	0.114** (0.010)	0.046** (0.007)	-0.036** (0.006)	0.058** (0.010)	0.032** (0.007)	0.002 (0.006)
31+	0.191** (0.013)	0.216** (0.009)	0.171** (0.007)	0.089** (0.013)	0.092** (0.008)	0.116** (0.007)
State effects	Yes	Yes	Yes	Yes	Yes	Yes
Number obs.	552,449	613,991	680,697	441,705	542,849	622,773
R-squared	0.021	0.038	0.031	0.016	0.043	0.031

Notes: Analysis of PUMS1% extract of US Decennial Censuses, 1980, 1990, and 2000.

Coefficients from a regression of the natural log of the average hourly wage in the calendar year before each census, against binary variables for 51 states of residence only.

Standard errors in parentheses; # indicates statistical significance at the 10% level; *, at

TABLE 2**Age, education controlled effect of time in United States on hourly wage of immigrants, 1980-2000: log hourly earnings gap with respect to US-born workers**

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5	-0.186** (0.011)	-0.206** (0.008)	-0.123** (0.007)	-0.058* (0.013)	-0.142** (0.009)	-0.092** (0.008)
6-10	-0.087** (0.011)	-0.147** (0.007)	-0.101** (0.007)	0.029* (0.012)	-0.066** (0.008)	-0.049** (0.007)
11-15	-0.040** (0.011)	-0.065** (0.008)	-0.072** (0.006)	0.032** (0.011)	0.018* (0.008)	-0.022** (0.007)
16-20	0.019# (0.011)	-0.045** (0.008)	-0.055** (0.006)	0.043** (0.012)	0.022** (0.008)	-0.005 (0.006)
21-30	0.036** (0.009)	0.025** (0.007)	-0.015** (0.005)	0.046** (0.010)	0.038** (0.007)	0.027** (0.005)
31+	0.019 (0.012)	0.042** (0.008)	0.036** (0.006)	0.032* (0.013)	0.034** (0.008)	0.045** (0.006)
Citizen	0.029* (0.009)	0.045** (0.006)	0.066** (0.005)	0.056** (0.010)	0.057** (0.007)	0.075** (0.005)
State effects	Yes	Yes	Yes	Yes	Yes	Yes
Number obs.	552,449	613,991	680,697	441,705	542,849	622,773
R-squared	0.178	0.261	0.246	0.113	0.209	0.218

Notes: Analysis of PUMS1% extract of US Decennial Censuses, 1980, 1990, and 2000. The dependent variable is the natural log of the average hourly wage in the calendar year before each census year. The independent variables are binary variables for interaction of education (primary only, incomplete secondary, completed secondary, college, completed college, advanced degree), age (18-24, 25-34, 35-44, 45-54, 55-64, 65+), and state of residence.

TABLE 3

**Education, age controlled effect of time in United States on hourly wage of immigrants,
1980-2000 log hourly earnings gap relative to immigrants in United States 0-5 years**

Years in US	Men			Women		
	1980	1990	2000	1980	1990	2000
0-5	--	--	--	--	--	--
6-10	0.127** (0.013)	0.084** (0.009)	0.058** (0.007)	0.093** (0.014)	0.088** (0.010)	0.062** (0.009)
11-15	0.171** (0.014)	0.176** (0.010)	0.113** (0.008)	0.104** (0.015)	0.185** (0.012)	0.108** (0.009)
16-20	0.223** (0.016)	0.192** (0.010)	0.138** (0.008)	0.126** (0.017)	0.195** (0.012)	0.129** (0.010)
21-30	0.238** (0.016)	0.269** (0.011)	0.195** (0.008)	0.152** (0.017)	0.233** (0.012)	0.191** (0.010)
31+	0.259** (0.020)	0.301* (0.013)	0.253** (0.010)	0.175** (0.022)	0.254** (0.014)	0.238** (0.012)
Citizen	0.023** (0.010)	0.033** (0.007)	0.067** (0.006)	0.058** (0.010)	0.044** (0.007)	0.065** (0.006)
State effects	Yes	Yes	Yes	Yes	Yes	Yes
Number obs.	36,339	59,762	97,222	28,307	45,596	71,902
R-squared	0.181	0.290	0.258	0.112	0.217	0.218

Notes: Analysis of PUMS1% extract of US Decennial Censuses, 1980, 1990, and 2000. The dependent variable is the natural log of the average hourly wage in the calendar year before each census. The independent variables are binary variables for interactions for education (primary only, incomplete secondary, some college, completed college, advanced degree, relative to completed secondary), age (18-24, 25-34, 35-44, 45-54, 65+ relative to 55-64), and state of residence

TABLE 4
Regression-controlled ten-year real-wage growth by year-of-arrival cohort
(log points, difference-in-differences)

Cohort	Period 1	Period 2	Change in ln real wage	
			Men	Women
<i>(a) 2.5 ~ 12.5 years in US</i>				
1975-79	1980	1990	0.160** (0.012)	0.180** (0.014)
1985-89	1990	2000	0.198** (0.009)	0.219** (0.013)
Difference			0.038* (0.015)	0.039** (0.019)
<i>(b) 7.5 ~ 17.5 years in US</i>				
1970-74	1980	1990	0.093** (0.013)	0.125** (0.013)
1980-84	1990	2000	0.163** (0.009)	0.160** (0.010)
Difference			0.070** (0.016)	0.035** (0.016)
<i>(c) 12.5 ~ 22.5 years in US</i>				
1965-69	1980	1990	0.107** (0.014)	0.151** (0.014)
1975-79	1990	2000	0.098** (0.010)	0.111** (0.011)
Difference			-0.009 (0.017)	-0.040* (0.018)
<i>(d) 17.5 ~ 27.5 years in US</i>				
1960-64	1980	1990	0.081** (0.016)	0.152** (0.017)
1970-74	1990	2000	0.077** (0.012)	0.116** (0.012)
Difference			-0.009 (0.020)	-0.040* (0.021)