DOES HUMAN CAPITAL RAISE EARNINGS FOR IMMIGRANTS IN THE LOW-SKILL LABOR MARKET?*

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We use monthly Survey of Income and Program Participation data from 1996–1999 and 2001–2003 to estimate the determinants of differentiation in intercepts and slopes for age/earnings profiles of low-skill immigrant and native male workers. Our findings provide further depth of understanding to the "mixed" picture of earnings determination in the low-skill labor market that has been reported by others. On the positive side, many immigrants are employed in similar occupations and industries as natives. Both groups show substantial wage gains over time and generally receive similar returns to years of schooling completed. Immigrants also receive substantial returns to acculturation, measured as age at arrival and English language skill. These results cast doubt on the strong version of segmented labor market theory, in which low-skill immigrants are permanently consigned to dead-end jobs with no wage appreciation. On the negative side, immigrants earn approximately 24% less than natives and are less likely to occupy supervisory and managerial jobs. Latino immigrants receive lower returns to education than do white immigrants. Furthermore, age at arrival and language ability do not explain the lower returns to education experienced by Latino immigrants. These results suggest that Latino immigrants in particular may suffer from barriers to mobility and/or wage discrimination. Whether these negative labor market experiences occur primarily for illegal immigrants remains unknown.

Since the 1960s, there has been an increase in the educational gap between U.S. immigrants and natives. This shift in skill composition has led to the concentration of immigrants in low-skill jobs and occupations. Indeed, the U.S. economy's continued strong demand for low-skill workers, combined with the rising educational attainment of natives, has been a major force in keeping immigration pressure high. This observation raises classic demographic and labor market questions: Is the employment of these immigrant workers segmented from that of native U.S. workers? Are the earnings trajectories of immigrants, usually measured as returns to skills gained from work experience, more or less steep than those of otherwise similar natives? Are immigrants' earnings trajectories commensurate with their schooling level, or do they receive lower returns to education than natives?

These issues have occasioned much analysis and debate (e.g., Alba and Nee 2003; Borjas 2001; Card 2005; Hirschman 2005; Smith 2006; Waldinger and Lichter 2003; Zeng and Xie 2004), yet, with one exception, they have not been examined with longitudinal earnings data for a large national sample of immigrant and native low-skill workers. The exception is Duleep and Dowhan (2002), who used longitudinal Social Security data to test whether immigrant or native workers showed higher earnings growth between 1984 and 1993. They focused very sharply on this question, displaying a variety of earnings growth calculations for different sets of matched immigrant and native workers. Their results showed higher earnings growth for immigrants, but they did not explicitly estimate the effects of the control variables such as worker education and race/ethnicity on earnings, so

they did not test whether immigrants receive the same returns to educational attainment as natives. Nor did they concentrate on low-skill workers or undertake separate calculations for periods of stronger and weaker labor market demand.

Our study complements and extends this research by using Survey of Income and Program Participation (SIPP) data to explore the individual-level determinants of earnings trajectories for low-skill immigrant and native workers during the 1996–1999 period of strong labor market demand and during the 2001–2003 period of weak demand. Using the SIPP data, we estimate age/earnings growth curve models in which both the intercept and growth rates vary according to personal characteristics such as race/ethnicity, immigrant status, years of schooling completed, age of arrival in the United States, and English language proficiency. By estimating the returns to education by race/ethnicity and immigrant status separately, we are able to determine whether human capital raises earnings for immigrants in the low-skill labor market. Further, we test whether returns to education are explained by age at immigration or English language skill. Our calculations provide a direct test of the oft-asserted claim that immigrant workers are trapped in "bad jobs" with little or no wage appreciation and little or no returns to schooling (Doeringer and Piore 1971; Hudson 2007; Waldinger and Lichter 2003). The result is an unprecedented level of detail in examining the determinants of differential earnings trajectories for immigrant and native workers in the low-skill labor market during two different phases of the national economy.

BACKGROUND

Even as native workers with a high school or lesser education sometimes denigrate low-paying "dead end" jobs, many similarly educated immigrants regard these jobs as more attractive than those available in their home countries. Generations of immigrants have progressed upward from humble labor market beginnings. But such progress can be widespread only if immigrant workers do not face barriers and discrimination in promotion and earnings opportunities and are able to achieve positively sloped age/earnings profiles. Given the high demand for low-paying services jobs, these concerns have arguably become more salient for the most recent cohorts of immigrants (Waldinger and Lichter 2003).

The returns to education among immigrants have become a particularly important issue since the Immigration Act of 1965 and subsequent developments and policies increased the annual flow of immigrants to the United States and led to shifts in the average skill level (educational attainment), countries of origin, and racial/ethnic composition of new arrivals (Alba and Nee 2003). During the 1970s, approximately 400,000 immigrants were admitted annually, with the foreign-born representing roughly 5% of the total population. Immigration surged during the early to mid-1990s, with approximately 800,000 immigrants admitted annually (in 1990 alone, about 1.8 million immigrants were admitted).[1] This rise in immigration resulted in a foreign-born population that, by 2006, composed nearly 13% of the total U.S. population.

In 1970, the foreign-born population was dominated by European immigrants, who represented more than half of the total foreign-born population. Latino immigrants made up less than one-fifth of the foreign-born population, and Asian immigrants composed less than one-tenth. By 2000, however, the regional composition of the foreign-born had changed greatly, with Latino immigrants constituting more than half (52%) of the foreign-born population, followed by Asian (26%) and European (16%) immigrants.

As the foreign-born population grew and new immigrants sought employment, the foreign-born proportion of the labor force grew in a similar fashion. Immigrants represented about 5% of the civilian labor force in 1970; by 2000, this figure had risen to

1. As a reviewer correctly pointed out, a considerable portion of these "admissions" included those legalized by the Immigration Reform and Control Act in 1986. Over the 1990s, the average number of annual "legal new entrants" was about 435,000, peaking in 1993 at 536,294 (U.S. Department of Homeland Security 2004).

nearly 13%. In traditional immigrant-receiving metropolitan areas, immigrant labor force representation grew rapidly with upward of half the labor force being foreign-born in 2000 (Congressional Budget Office 2005). This rise in immigration, particularly from Mexico, was accompanied by a decline in the average skill level of the foreign-born population. As a consequence, from 1980 to 1994, the proportion of the low-skill labor force that was foreign-born grew from 12% to 29% (Enchautegui 1998). The possible displacement of low-skill native workers has received the greatest attention from demographers and economists (Borjas 2001; Borjas, Freeman, and Katz 1996; Card 2001, 2005; Frey 1996). By contrast, the labor market experiences of the low-skill immigrants themselves have gone relatively unexamined. Nor have many studies compared outcomes for immigrant and native workers within the low-skill labor market. This is unfortunate because as the earnings return to schooling and inequality in earnings have increased strongly over time (Krueger 2003), so too has a concern for the plight of the working poor, both natives and immigrants, and more focus has been placed on income maintenance policies and their interaction with immigration and immigration-related policies (Blank, Danziger, and Schoeni 2006; Newman 1999, 2006).

Studies by Duleep and Dowhan (2002) and Powers and Seltzer (1998; Powers, Seltzer, and Shi 1998) have addressed some of these issues. While not specifically focusing on low-skill immigrants or reporting the magnitudes of the effects of education or other variables on the returns to education, Duleep and Dowhan demonstrated that when immigrant and native workers are matched on sociodemographic variables, immigrants actually show steeper age/earnings profiles than natives.

Powers and Seltzer (1998; Powers et al. 1998) used data on immigrants who became legalized as a result of the Immigration Reform and Control Act (IRCA) to examine the occupational mobility of undocumented immigrants. Although they did not set out to focus on low-skill workers, the average educational level for male respondents in their sample was 8 years. Overall, their results suggest remarkably strong upward earnings and occupational mobility among this group. Even during a period in which the average earnings of native men declined, the authors found that the median inflation-adjusted weekly earnings of male immigrants increased by 21%. The results, however, are not all positive. Despite occupational mobility, many immigrants were still heavily concentrated in certain low-skill occupations, and both the earnings and occupational mobility of male immigrants from Mexico were notably lower (though still positive) than were the rates of growth for undocumented immigrants from other countries.

These findings appear to contradict at least the "strong form" of theories of labor market segmentation. As summarized in a recent review (Hudson 2007), this research literature dates back to Doeringer and Piore's (1971) discussion of firm internal labor markets and focuses on the distinction between "good" jobs in the core of the economy and "bad" jobs in the periphery. These are distinguished as follows. Good (core) jobs typically pay higher wages, are connected to job ladders with upward wage trajectories, have relatively good job security, and include fringe benefits such as health insurance and pensions. By contrast, bad (peripheral) jobs pay lower wages, are associated with little or no wage growth, provide little job security, and do not include fringe benefits. Crucially, there is also little mobility between the two employment sectors, so that disadvantaged workers, typically ethnic minorities and workers with low levels of education, are permanently consigned to low-paying peripheral employment with little opportunity for advancement.

For more than 30 years, researchers have studied and debated the extent to which such segmentation characterizes the U.S. economy. Results have been mixed. After reviewing these findings and presenting his own calculations, Hudson (2007) reached the following conclusions. First, labor market segmentation has increased over this time period, at least partly because of the sharp rise in the share of the labor force represented by low-skill immigrant workers. Second, the economy is characterized by three segments, with about

one-third of all workers employed in the primary, or "good," jobs portion; 42% employed in an intermediary portion, where jobs have mixed characteristics, some from the primary sector and others from the periphery; and about 20% of workers employed in peripheral jobs. Third, most workers who begin their careers in peripheral jobs eventually move up to better jobs. Finally, over the past 25 years, being a noncitizen immigrant has become a stronger determinant of peripheral employment than either race or gender.

Consistent with prior research, Hudson reached mixed conclusions about labor market segmentation. On the negative side, many workers are employed in bad jobs in the periphery or mixed segments of the economy. This is particularly the case for low-skill immigrants. On the positive side, many workers who begin in such jobs show improved employment and wage growth over time. This latter finding is consistent with Duleep and Dowhan (2002) and Powers and Seltzer (1998).

Similar findings were reported by Newman (1999, 2006). She has published two volumes examining the employment careers of individuals who, in 1993, were either hired or rejected applicants to minimum-wage, fast-food jobs in Harlem, New York. In the second of these volumes, she included analyses of SIPP data from 1996 to 1999, thereby seeking to generalize her results to the nation as a whole (see Newman 2006: ch. 5 and appendix D). She concluded that many of these workers saw significant wage gains during this time period and that these results should extend to other periods of weaker labor market demand (higher unemployment) and to low-wage workers throughout the nation. Additionally, she argued that human capital models can be applied even to the low-skill labor market. Thus, she emphasized that the educational differentiation of these workers is important in explaining who succeeds in the labor market, even though the education of low-skill workers is centered in the lower part of the U.S. educational distribution. However, her regression analyses of SIPP data (Newman 2006:330–31, appendix tables D11 and D12) do not actually show this for low-skill workers. That is, her regressions fail to show statistically significant effects (at the conventional .05 level) of educational attainment categories at or below high school on wage growth. Nor do these regressions account for immigration status or other important variables. In the present paper, we account for a number of such characteristics. We do so within a random coefficients regression model, which is well-suited to a detailed analysis of the available data. Thus, our research extends the work of Hudson (2007) and Newman (2006) in significant ways.

HYPOTHESIZED EFFECTS

We hypothesize that the following effects will be observed in the SIPP data we analyze:

Age

As individuals progress through the life course, employment experience increases, productivity-related skills are perfected, and social networks are extended and strengthened. Consequently, earnings should trend upward with age. On the other hand, human capital models show that earnings increase at a decreasing rate as workers approach the end of their careers (Hanushek and Welch 2006). This has been explained as "decreasing returns to human capital investment" toward the end of the work career, and can be expected to be particularly the case for men in low-skill jobs, where physical strength and stamina may be important. Net of human capital, and in the absence of discrimination and occupational segmentation, we hypothesize that immigrants and natives should have similar age/earnings profiles.

The Effect of Education on Age/Earnings Profiles

Empirically estimated earnings functions have established that better-educated workers tend to have more positively sloped age/earnings profiles (Hanushek and Welch 2006). This relationship is explained by a combination of the skills and credentials gained from schooling.

Steeper age/earnings profiles for more highly educated workers have been widely reported, and the neoclassical perspective expects to find them at all educational levels (even among those with less than a high school diploma). However, segmented market theory suggests otherwise. In this view, there are few or no returns to human capital—whether acquired via schooling or work experience—in the peripheral, low-skill economy.

Several recent studies have estimated age/earnings profiles at different schooling levels for low- and medium-skilled workers. French, Mazumder, and Taber (2006) found that among men with no college, hourly wages grew substantially with labor market experience, with growth rates peaking during the late 1990s before rapidly declining (though remaining positive) during the early 2000s. This trend was particularly true for male workers without a high school diploma (see French et al. 2006: figures 5.3 and 5.4). However, Connolly and Gottschalk (2000) and Heckman, Lochner, and Taber (1998) found that less-educated workers have substantially flatter earnings profiles than better-educated workers, suggesting that the returns to work experience are indeed lower for low-skill workers.

These findings lead us to expect that age/earnings profiles will slope upward for all workers and that even among low-skill workers, those with more education will have more positively sloped earnings profiles. However, this positive effect of schooling on the returns to work experience may be modest in magnitude in a sample such as ours, in which all workers have a high school education or less.

Immigrant Acculturation

The classic assimilation model refers to a process whereby immigrant groups grow to accept the attitudes, behaviors, and beliefs of the dominant group, as well as to cultivate the network connections (social capital) that are necessary for upward mobility in the labor market. With the growing interest in socioeconomic stratification, demographers and immigration scholars began to emphasize the importance of socioeconomic assimilation—the ability of immigrant and/or minority groups to achieve economic parity with the dominant group (Alba and Nee 2003). This contemporary version of the classical model focuses on the joint roles of acculturation (the adoption of mainstream values, attitudes, behaviors, and network connections) and status attainment (education, language ability, occupational skills, and credentials).

Past researchers have assumed acculturation to be positively related to the immigrant's current age, as well as to how young he or she was at arrival (Chiswick 1978). Immigrants who arrive during the early part of their childhood (the 1.5 generation) should be particularly advantaged in that not only will they have received a majority of their schooling in the United States, but the critical early years of socialization and network-building will have taken place in the United States.[2] Early exposure to the customs, attitudes, and behaviors of Americans will build social capital and ease incorporation into the broader society. Consistent with past research, we expect to find age at arrival to be inversely related to earnings such that immigrants who arrive earlier achieve steeper age/earnings profiles.

Immigration scholars have long acknowledged the importance of English language ability in removing barriers and creating new opportunities for economic success (Bleakley and Chin 2004; Chiswick and Miller 1995; McManus, Gould, and Welch 1983). Since communication is necessary to both acquire information about jobs and perform occupational tasks, it is no surprise that research finds a strong positive effect of English language ability on the earnings of immigrants. Research is mixed, however, regarding the differential returns to English language ability by skill level (see Kossoudji 1988). Importantly, research

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2. In more technical terms, the skill transferability parameter of immigrants who arrive at early ages will be considerably higher than that of immigrants who arrive at later ages (see Duleep and Regets 1999 for a detailed discussion of skills transferability).

has suggested that the gains associated with language ability are largely mediated by schooling, such that net of educational attainment, English ability has only a small direct effect on earnings (Bleakley and Chin 2004).

Race/Ethnicity

Decades of research have documented the inequalities experienced by racial and ethnic minorities in the U.S. labor market (see Altonji and Blank 1999). This research often begins with a discussion of the discrimination faced by minority groups in both job hiring and promotion (Bertrand and Mullainathan 2004; Collins 1997; Kirschenman and Neckerman 1991), though alternative explanations, such as differences in skills and schooling (Farkas and Vicknair 1996; Smith 2001) and the spatial mismatch between residences and jobs (Kain 1992), have explanatory strength. The joint challenges associated with being a racial minority and an immigrant have led some to suggest that minority immigrants are "doubly disadvantaged" (De Jong and Madamba 2001). Mean differences in wages generally support this hypothesis (Borjas 2006): the wage differentials for Asian and Hispanic foreign-born workers are well below those of their native coethnics and of native whites.

Lieberson's (1980) notion of the "ethnic queue," which was expanded upon by Waldinger (1996), is relevant here. The argument is that racial minorities and immigrants participate in a segmented occupational system in which opportunity structures are bounded by both nativity and ethnicity. This line of research generally suggests that race trumps nativity and that, particularly in the low-skill labor market, a clear racial hierarchy exists, with non-Hispanic whites on top and blacks on the bottom (Waldinger 1997).

An alternative perspective argues that the selective process of international migration places immigrants at a competitive advantage. Consistent with the classic "laws" of migration (Lee 1966), the more selective the migration flow between origin and destination, the greater this premium should be. Support for this perspective has been found when comparing African, West Indian, and Cuban immigrants with their native counterparts (Borjas 2001, 2006; Waters 1999). The problem when examining earnings differences in the low-skill labor market is that *skill* is often the defining quality that distinguishes immigrant groups from one another and from natives. However, even among high school dropouts, Borjas (2006) found that in 2000, the wages of white, black, and Asian immigrants were greater than their native counterparts. The one group that does appear to be "doubly disadvantaged" is Latino immigrants—particularly those of Mexican descent.

DATA AND METHODS

Data

We use longitudinal data from the 1996–1999 and 2001–2003 panels of the SIPP to estimate age/earnings profiles of low-skill workers and how they differ according to human capital, race/ethnicity, and acculturation. Like its cross-sectional counterpart, the Current Population Survey, the SIPP is nationally representative of the noninstitutionalized U.S. population. The SIPP is designed to capture all households and all members of those households. However, the SIPP does not distinguish between legal and illegal immigrants. Undocumented workers are likely underrepresented in the SIPP but are nonetheless present in the sample. SIPP interviews are conducted triannually, but respondents are asked to provide employment and earnings information for both the reference month and the preceding three months, thus providing monthly earnings data for the entire observation period.

We limit our analysis to men with a high school diploma or less and who were between the ages of 18 and 40 at the time of the first interview in either 1996 or 2001. We then construct a person-month database in which each respondent contributes four person-months for every survey wave in which they participate. For each person-month, we record several

time-varying covariates, including employment status and personal earnings. Employment status refers to whether the respondent worked (part-time/full-time) during the reference period, and personal earnings is reported as monthly earned income in dollars.

We also measure age at first interview, race (Hispanic, and non-Hispanic white, black, and Asian), and educational attainment. For immigrants, we generate four dummy variables referring to the age at which the respondent arrived in the United States. The first age dummy variable refers to immigrants who arrived before age 13 and is consistent with the standard definition of the 1.5 generation (Rumbaut and Ima 1988). The second age dummy variable refers to immigrants who arrived in the United States between ages 13 and 18; the third, between 19 and 28; and the fourth, the reference category, between 29 and 40 years of age. To account for the impact of language ability on earnings, we create a dummy indicator of whether the respondent speaks English at home.[3]

For models that estimate the trends and determinants in full-time wage rates, we delete all observations for which the individual was employed less than full-time. Additionally, we set a lower monthly income bound of $400, assuming that no full-time worker would accept a wage of lower than $2.85 per hour (at 35 hours per week), and an upper bound of $7,000 ($35 per hour at 40 hours per week). To test the robustness of our full-time earnings models, we repeat the analysis with part-time jobs (with a lower monthly income bound of $100) added back into the data.

Due to the large size of each sample of native workers, we take a 50% subsample of natives for each panel. In total, we analyze 55,625 person-months (2,225 persons) of full-time earnings data for the 1996 panel, and 33,123 person-months (1,702 persons) for the 2001 panel. Adding back part-time earnings data brings the totals to 68,849 person-months (2,427 persons) for the 1996 panel and 41,183 person-months (1,813 persons) for the 2001 panel. Approximately 40% of the final sample for each panel is foreign-born.

Analytic Strategy

To best utilize the longitudinal nature of the data and to model both initial wages and wage growth aspects of age/earnings profiles, we employ hierarchical linear modeling (HLM) techniques (Raudenbush and Bryk 2002), where both the intercept and the slopes of earnings are a function of time-invariant person-specific characteristics. More specifically, we estimate random-coefficient growth curve models (Greene 2000) with the following form:

$$\text{Ln}(earnings)_{ij} = \beta_0 + \beta_1 time_{ij} + r_{ij}$$

$$\beta_0 = \gamma_{00} + \gamma_{01}X_j + \gamma_{02}\mathbf{W_j} + \gamma_{03}\mathbf{Z_j} + \gamma_{04}(X_j \times \mathbf{W_j}) + \gamma_{05}(\mathbf{W_j} \times \mathbf{Z_j}) + \gamma_{06}(X_j \times \mathbf{W_j} \times \mathbf{Z_j}) + \mu_{0j}$$

$$\beta_1 = \gamma_{10} + \gamma_{11}X_j + \gamma_{12}\mathbf{W_j} + \gamma_{03}\mathbf{Z_j} + \gamma_{14}(X_j \times \mathbf{W_j}) + \gamma_{15}(\mathbf{W_j} \times \mathbf{Z_j}) + \gamma_{16}(X_j \times \mathbf{W_j} \times \mathbf{Z_j}) + \mu_{1j},$$

where i refers to chronological month, and j represents individuals. Each value of i corresponds to the number of months elapsed since first interview. There are, depending on the panel, 48 (1996 panel) or 36 (2001 panel) possible values of i. $\text{Ln}(earnings)_{ij}$ represents logged personal earnings of respondent j at month i. β_0 is the intercept, and β_1 is the earnings growth rate, which are both a function of person-specific characteristics X, $\mathbf{W}$, and $\mathbf{Z}$. X_j is a dichotomous indicator of immigrant status for person j; $\mathbf{W_j}$ and $\mathbf{Z_j}$ are vectors of characteristics for person j. $(X_j \times \mathbf{W_j})$, $(\mathbf{W_j} \times \mathbf{Z_j})$, and $(X_j \times \mathbf{W_j} \times \mathbf{Z_j})$ are vectors of interaction terms; μ_j are unobserved differences that affect income; and r_{ij} is a stochastic error term.

These models allow both the intercepts and slopes to be correlated (tau) and for autoregressive error terms to adjust for serial correlation and heterogeneity in the variance

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3. This variable is available only for the 2001 panel, and because it is measured at the eighth wave (Month 32), it is time-invariant.

within individuals (rho). To account for the nonrandom sample loss of poor households (Bavier 2002), both the descriptive and inferential parts of this analysis are adjusted using the person weights provided by SIPP.

RESULTS

Table 1 shows descriptive statistics for the variables used in the analysis, by panel and month (pooled, first and last months), separately for immigrants and for natives. Since Hispanic

Table 1. **Descriptive Statistics for Variables Used in the Analysis for Immigrant and Native Male Full-Time Workers**

	1996–1999 Panel			2001–2003 Panel		
	Pooled	Month 1	Month 48	Pooled	Month 1	Month 36
Immigrants						
Earned income	1,928.72	1,775.80	2,078.82	2,051.18	1,938.77	2,363.32
Log income	7.43	7.34	7.49	7.51	7.44	7.67
Age	33.45	31.74	34.44	32.41	30.73	34.35
Black	0.02	0.03	0.03	0.04	0.04	0.03
Hispanic	0.72	0.69	0.72	0.77	0.75	0.77
Asian	0.11	0.11	0.11	0.06	0.06	0.05
Education	9.20	9.38	9.36	9.68	9.75	9.73
Age at arrival						
0–12	0.19	0.22	0.21	0.20	0.22	0.18
13–18	0.26	0.27	0.26	0.30	0.29	0.31
19–28	0.45	0.43	0.44	0.42	0.41	0.41
29–40	0.10	0.08	0.09	0.08	0.08	0.10
Speaks English	—	—	—	0.59	0.62	0.61
Hispanic Immigrants						
Earned income	1,778.07	1,628.25	1,901.17	1,954.13	1,853.91	2,236.14
Log income	7.36	7.26	7.41	7.48	7.40	7.63
Age	32.61	31.07	33.53	32.07	30.10	34.04
Education	8.36	8.38	8.47	9.18	9.18	9.24
Age at immigration						
0–12	0.17	0.18	0.20	0.16	0.18	0.14
13–18	0.31	0.32	0.29	0.33	0.32	0.36
19–28	0.46	0.44	0.44	0.42	0.42	0.40
29–40	0.06	0.07	0.07	0.09	0.08	0.10
Speaks English	—	—	—	0.51	0.53	0.53
Natives						
Earned income	2,387.65	2,234.04	2,560.42	2,549.92	2,462.52	2,684.96
Log income	7.66	7.60	7.73	7.73	7.70	7.80
Age	33.83	32.05	35.49	33.15	31.93	34.34
Black	0.10	0.09	0.10	0.10	0.10	0.09
Hispanic	0.07	0.07	0.08	0.11	0.12	0.12
Asian	0.01	0.01	0.01	0.01	0.01	0.01
Education	11.69	11.72	11.68	11.67	11.64	11.72

immigrants constitute such a large share of the low-skill immigrant population, we also report descriptive numbers for this group separately. A number of findings are noteworthy. First, at both the first and last months, the gap in earnings between natives and immigrants, and particularly Hispanic immigrants, is substantial. Second, the earnings of both immigrants and natives grow steadily but unevenly during the survey periods. Earnings growth was slightly higher for immigrants than for natives between 1996 and 1999 (about 17% compared with about 15%), and considerably higher for immigrants than for natives between 2001 and 2003 (about 22% for immigrants compared with 9% for natives). Third, because international migration is selective of age, the average age of immigrants is slightly lower than that of natives. Fourth, low-skill immigrants have attained significantly less education than low-skill natives—a difference of about two years of education. Importantly, Hispanic immigrants have even lower levels of education (a difference with natives of about 3 years). Fifth, in both time periods, nearly half of immigrants arrived in the United States before age 19, with about 20% arriving during the early part of their childhood. Finally, about three-fifths of low-skill immigrant workers in the 2001 panel spoke English at home; about half of Latino immigrants were English speakers.

Table 2 shows the industrial and occupational distributions of the jobs held by immigrant and native low-skill workers in 1996, by decreasing order of employment share for each group (the equivalent table for 2001 is very similar[4]). For both immigrant and native low-skill male workers, the largest share of employment was in construction, constituting 11.1% of immigrant employment and 13.2% of native employment. This contrasts with Newman (1999, 2006), whose original sample was collected from applicants to fast food jobs in New York City. It seems likely that this focus on fast food establishments caused Newman to miss the fact that, at least for males, construction work is the predominant employer of low-skill workers, both for immigrants and for natives.

For immigrants, eating and drinking places are the second most common employer of low-skill workers, constituting 8.1% of jobs. This is followed by agricultural production (3.7%) and landscape and horticultural services (3.4%). For natives, trucking is the second most common employer (3.3%), followed by eating and drinking places (2.9%) and justice, public order, and safety (2.6%).

Where detailed occupations are concerned, immigrants are most likely to be cooks (5.8%), followed by janitors and cleaners (4.3%), truck drivers (4.3%) machine operators (4.1%) and farm workers (4%). Natives are most likely to be truck drivers (6%), followed by sales supervisors (3.1%), production supervisors (2.9%) and machine operators (2.8%). The greater industrial and occupational concentration of immigrants is not surprising, considering their low levels of schooling, weaker language skills, lack of citizenship (and for some, lack of legality), and employment discrimination.

Table 3 reports, for pooled samples of immigrants and natives, growth-curve regression coefficients for the determinants of age/earnings profiles in each time period. The table is divided into two parts; Panel A indicates effects on initial earnings (intercept), and Panel B indicates effects on earnings trajectories (slopes). Because earnings are logged, the coefficients give an approximate indication of the percentage change in earnings associated with a one-unit change in the independent variables. We also include estimates of the correlation between an individual's error terms over time (ρ), and the correlation between the estimated intercepts and slopes (τ).

Because this table is complex, we will proceed as follows. First, we will examine the estimated models for the 1996–1999 period, discussing the determinants of intercepts and slopes in sequence. Then, we will summarize the estimated models for 2001–2003, focusing in particular on any differences in findings from the prior time period.

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4. Results for the 2001 panel are available upon request.

Table 2.   Industries and Occupations Employing Immigrant and Native Low-Skill Male Workers, in Order (descending) of Employment Share, 1996

Industry	Immigrants %	Industry	Natives %
Construction	11.1	Construction	13.2
Eating and drinking places	8.1	Trucking services	3.3
Agricultural production, crop	3.7	Eating and drinking places	2.9
Landscape and horticultural services	3.4	Justice, public order, and safety	2.6
Grocery stores	3.1	Motor vehicles and equipment	2.3
Automotive repair	2.7	Motor vehicle dealers	2.3
Hotels and motels	2.3	Grocery stores	2.3
Groceries and related products	2.0	Machinery, except electrical	2.0
Electrical machinery	1.8	Groceries and related products	2.0
Trucking services	1.6	General government	1.9
Fabricated structural metal products	1.6	Automotive repair	1.8
Miscellaneous fabricated metal products	1.4	Furniture and fixtures	1.3
Services to dwellings	1.3	Hospitals	1.3
Agricultural production, livestock	1.3	Miscellaneous entertainment and rec. services	1.2
Apparel and accessories, except knit	1.1	Fabricated structural metal products	1.1
Scrap and waste materials	1.1	Printing and publishing	1.1
Motor vehicle dealers	1.1	Miscellaneous plastic products	1.0
Machinery, except electrical	1.1	Machinery, equipment and supplies	1.0

Occupation	Immigrants %	Occupation	Natives %
Cooks	5.8	Truck drivers	6.0
Janitors and cleaners	4.3	Supervisors, sales	3.1
Truck drivers	4.3	Supervisors, production	2.9
Miscellaneous machine operators	4.1	Miscellaneous machine operators	2.8
Farm workers	4.0	Managers and administrators	2.5
Gardeners	3.1	Janitors and cleaners	2.5
Construction laborers	2.4	Auto mechanics	2.4
Assemblers	2.4	Construction laborers	2.1
Laborers, except construction	2.4	Carpenters	2.0
Shipping/receiving clerks	1.6	Assemblers	1.9
Supervisors, sales	1.6	Laborers, except construction	1.8
Auto mechanics	1.6	Gardeners	1.5
Welders and cutters	1.6	Sales representatives, mining, manufacturing	1.4
Truck and tractor operators	1.5	Machine operators	1.4
Carpenters	1.5	Industrial machine repairers	1.4
Supervisors, production	1.4	Welders and cutters	1.4
Food preparation	1.4	Truck and tractor operators	1.4
Painters	1.4	Machinists	1.3

Column 1 shows differences in initial logged earnings (in 1996) and subsequent monthly earnings growth between natives and immigrants. The intercept differential for immigrants indicates that foreign-born men initially (when the data begin in 1996) earned about 23.3% less than natives. The estimate for time in column 1 indicates that low-skill men's earnings grew by a statistically significant 0.3% each month, with the difference in growth between natives and immigrants not being statistically significant.

The high correlation between error terms (ρ) is expected given the nonindependence of individual monthly earnings. Also, the negative relationship between individual estimated intercepts and slopes (τ) reveals that earnings trajectories are flatter for workers with higher initial earnings. This commonly observed finding is often attributed to regression to the mean.

Column 2 adds age, age squared, an age $\times$ immigrant interaction, race/ethnicity dummy variables, education, interactions between these variables and immigrant status, and three-way interactions among education, immigrant status, and race to the intercept and slope equations. Looking first at the equation for the intercept, we see that the effect of age is significant and positive, and age squared is significant and negative. Wages when the panel began in 1996 were higher for older workers, but at a decreasing rate of change. We also find that the effect of education is positive and significant, showing that better-educated workers had higher starting wages in 1996. Interactions between education and either race/ethnicity or immigrant status are not significant, indicating that these positive returns to schooling apply to all categories of workers. This is an important finding. It shows that even in the low-wage labor market, restricted to workers with a high school education or less, years of schooling completed is strongly and significantly related to earnings. This strongly supports the human capital interpretation of educational attainment, even at the low end of the educational distribution. It is also consistent with Newman's (2006) findings regarding the subsequent earnings careers of her sample of fast food applicants from Harlem, New York. However, the three-way interaction among education, immigrant status, and Hispanic ethnicity is negative and significant. This indicates that Hispanic immigrants fail to achieve higher starting wages when they are better-educated. This is consistent with previous findings and suggests a problem calling for further investigation.

As for the slope coefficient equation, the overall finding is that, on average, wages for low-skill workers grew during 1996–1999 in a way that was relatively undifferentiated across individuals, except that older workers' wages grew at a slower rate.

To test the robustness of our findings against the exclusion of part-time jobs, the third column reestimates the model in column 2, but with part-time jobs added back into the sample (this adds 172 men and about 13,000 person-months). Perhaps surprisingly, we find that these results *strengthen* the findings based on estimates for full-time jobs alone. In particular, the effect of human capital on the earnings intercept in column 3 is found to be larger than that in column 2, with the negative coefficient for education $\times$ Hispanic $\times$ immigrant also larger in absolute magnitude than in column 2. The column 3 estimates of the earnings slope coefficient are similar to those in column 2 except that the time coefficient is somewhat larger in column 3. This diagnostic analysis thus provides strong evidence that (1) human capital *does* matter in the low-skill labor market; (2) it matters as much for immigrants as it does for natives; and (3) Hispanic immigrants receive considerably smaller gains to education than do other population subgroups.

Thus far, our analyses have been based on data from 1996 to 1999, a period of strong labor market demand as indicated by low national unemployment. However, it is plausible to suppose that the negative aspects of segmented labor markets for low-skill workers will be masked during such periods of strong labor demand. Columns 4–6 of Table 3 test this possibility by reestimating our models, using SIPP data for 2001–2003, a period of relatively high unemployment.

Table 3.   Growth Curve Regression Coefficients Predicting Logged Earnings Among Male Workers, 1996–1999 and 2001–2003

	1996–1999			2001–2003		
	(1)	(2)	(3)[a]	(4)	(5)	(6)[a]
Panel A. Intercepts						
Constant	7.486***	4.821***	3.422***	7.637***	5.148***	4.161***
	(0.014)	(0.275)	(0.340)	(0.017)	(0.331)	(0.409)
Immigrant	–0.233***	–0.223	0.606	–0.251***	–0.036	0.989
	(0.024)	(0.386)	(0.510)	(0.025)	(0.463)	(0.598)
Age (in years)		0.104***	0.136***		0.080***	0.113***
		(0.014)	(0.019)		(0.016)	(0.020)
Age, squared		–0.001***	–0.001***		–0.001***	–0.001***
		(0.000)	(0.000)		(0.000)	(0.000)
Age × immigrant		–0.001	–0.001		–0.001	0.000
		(0.003)	(0.004)		(0.003)	(0.000)
Black		–0.664	–0.479		–0.429	–0.397
		(0.587)	(0.699)		(0.464)	(0.479)
Hispanic		0.322	0.492		0.208	0.540
		(0.321)	(0.405)		(0.324)	(0.414)
Asian		0.126	0.136		0.118	0.723
		(0.133)	(0.126)		(0.527)	(0.678)
Black × immigrant		1.019	1.573		–0.655	–0.409
		(0.981)	(1.151)		(0.593)	(0.329)
Hispanic × immigrant		0.171	0.042		0.616	–0.209
		(0.458)	(0.602)		(0.511)	(0.663)
Asian × immigrant		1.191	0.068		1.611**	0.325
		(1.420)	(1.427)		(0.701)	(0.227)
Education		0.069***	0.128***		0.087***	0.117***
		(0.014)	(0.017)		(0.020)	(0.025)
Education × black		0.038	0.022		0.046	0.194
		(0.050)	(0.060)		(0.096)	(0.123)
Education × Hispanic		–0.039	–0.049		–0.019	–0.050
		(0.028)	(0.035)		(0.029)	(0.037)
Education × Asian		0.114	0.122		0.123**	0.055
		(0.115)	(0.113)		(0.042)	(0.054)
Education × immigrant		0.026	0.035		0.023	0.061
		(0.032)	(0.042)		(0.039)	(0.051)
Education × black × immigrant		0.099	0.142		0.526	0.230
		(0.085)	(0.100)		(0.496)	(0.131)
Education × Hispanic × immigrant		–0.057*	–0.090**		–0.079**	–0.104***
		(0.029)	(0.035)		(0.027)	(0.029)
Education × Asian × immigrant		0.012	0.007		0.010	0.009
		(0.012)	(0.127)		(0.010)	(0.008)

(continued)

    In general, the results for the 2001 panel are similar to those found between 1996 and 1999. Column 4 shows that immigrants had earnings in 2001 (intercept) that were about 25.1% lower than those of natives. Interestingly, the slope coefficients show that immigrants had wage growth that was 0.3% per month *higher* than that of natives. This strongly

(Table 3, continued)

	1996–1999			2001–2003		
	(1)	(2)	(3)[a]	(4)	(5)	(6)[a]
Panel B. Slopes						
Time	0.003***	0.013*	0.018*	0.000	0.014	0.012
	(0.001)	(0.006)	(0.007)	(0.001)	(0.010)	(0.014)
Time, squared	0.000	0.000	0.000	0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Immigrant	0.001	0.005	0.013	0.003***	0.023*	0.001
	(0.001)	(0.011)	(0.015)	(0.001)	(0.001)	(0.026)
Age		–0.000***	–0.000***		–0.000**	–0.000*
		(0.000)	(0.000)		(0.000)	(0.000)
Black		–0.021	–0.016		–0.038	–0.150
		(0.020)	(0.026)		(0.076)	(0.082)
Hispanic		–0.010	–0.003		–0.003	–0.003
		(0.010)	(0.013)		(0.014)	(0.019)
Asian		–0.020	–0.014		–0.036	–0.010
		(0.050)	(0.017)		(0.021)	(0.031)
Black × immigrant		0.037	0.018		0.347	0.230
		(0.073)	(0.044)		(0.227)	(0.131)
Hispanic × immigrant		–0.031	–0.018		–0.025	–0.014
		(0.021)	(0.019)		(0.021)	(0.030)
Asian × immigrant		0.014	0.019		0.009	0.006
		(0.053)	(0.043)		(0.008)	(0.007)
Education		0.000	0.000		0.000	0.000
		(0.000)	(0.000)		(0.001)	(0.001)
Education × black		0.002	0.001		0.003	0.012
		(0.002)	(0.002)		(0.006)	(0.007)
Education × Hispanic		–0.001	–0.001		0.000	–0.001
		(0.001)	(0.001)		(0.001)	(0.002)
Education × Asian		0.001	0.003		0.004*	0.002*
		(0.004)	(0.003)		(0.002)	(0.001)
Education × immigrant		–0.001	–0.001		–0.002	0.001
		(0.001)	(0.001)		(0.002)	(0.002)
Education × black × immigrant		–0.002	–0.002		–0.029	–0.020
		(0.006)	(0.004)		(0.019)	(0.011)
Education x Hispanic x immigrant		–0.002	–0.002		–0.002*	–0.001*
		(0.006)	(0.004)		(0.001)	(0.000)
Education × Asian × × immigrant		0.000	0.002		0.000	0.000
		(0.001)	(0.004)		(0.001)	(0.001)
Number of Individuals	2,255	2,255	2,427	1,702	1,702	1,813
Number of Person-Months	55,625	55,625	68,849	33,123	33,123	41,183
Covariance Parameters						
ρ	.239	.220	.421	.217	.205	.361
τ	–.556	–.572	–.583	–.537	–.547	–.587

Note: Standard errors are in parentheses.

[a]Includes part-time workers.

*p < .05; **p < .01; ***p < .001

contradicts the notion that immigrants' earnings were negatively affected by the rising national unemployment rates beginning in 2001.[5]

Column 5 shows that net of age, race, and nativity, human capital has a positive and significant effect on the intercept of the earnings of low-skill workers (of about 8.7% per additional year of schooling). Also, as with the 1996 panel, the earnings returns to education are particularly low for Hispanic immigrants. The slope coefficients show stronger earnings growth for immigrants than for natives, once again contradicting the notion that immigrants are uniquely disadvantaged during periods of high unemployment. However, Hispanic immigrants show lower monthly returns to education than other groups.

As with the earlier time period, the inclusion of part-time jobs (column 6) generally supports the findings from the estimates restricted to full-time jobs. This is particularly the case for the overall positive returns to education and the lower returns to education for Hispanic immigrants in the intercept equation.

Thus far, our analyses have used combined data for natives and immigrants. However, it is also of interest to test for differential earnings by immigrants from different racial and ethnic groups, as well as for the effects of age at arrival and language ability. To do so, we restrict attention to data for immigrants alone. Because language ability was not measured for respondents in the 1996 panel, the analysis is restricted to immigrants in the 2001 panel who participated in the Wave 8 (Month 32) topical module, when the variable "speaks English at home" was collected. Because the observation period (2001–2003) represents a period of high national unemployment rates, this analysis represents a conservative test of human capital effects for low-skill immigrant workers. That is, if human capital raises earnings among low-skill immigrants during a period within the economic cycle in which they are particularly vulnerable, this is strong evidence that human capital increases earnings regardless of position in the economic cycle. The results from this analysis are shown in Table 4. As before, we estimate a series of increasingly complex random coefficients growth curve regression models for age/earnings profiles, with exogenous variables affecting both the intercepts and slopes.

Column 1 of Table 4 includes age, age squared, and dummy variables for race/ethnicity (white immigrants are the referent) in the intercept and slope equations. Consistent with the findings in the pooled (immigrants and natives) models in Table 3, the intercept equation estimates in column 1 show that earnings increase with age, but at a decreasing rate. All three of the measures of race/ethnicity are negative and significant, indicating that the monthly earned incomes of black, Hispanic, and Asian immigrants are significantly below those of white immigrants.[6] The time coefficient for immigrants shows a positive rate of monthly wage growth during the 2001–2003 period, with slightly slower growth among workers who were older when this period began. None of the race/ethnicity variables are significant in the slope equation.

Column 2 adds our primary measure of human capital—education—to the equation. It is significant in the intercept equation, indicating that, for every additional year of schooling completed, earnings increased by 2.2%. This is a substantial effect, and it strongly supports the human capital model of earnings determination, even during this period of rising

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5. The reader may wonder how inflation rates compared between the 1996–1999 and 2001–2003 periods. For each of the four years 1996–1999, the inflation rates were, respectively, 2.93%, 2.34%, 1.44%, and 2.19%. For the 2001–2003 period, they were, respectively, 2.83%, 1.59%, and 2.27% (Financial Trend Forecaster 2008). Thus, overall, inflation was roughly similar in the two time periods.

6. In models not shown but available on request, we substituted race with country-/region-of-origin dummy variables. Since cell sizes for most country groups are small, and race is not consistent across countries (e.g., we observe white and black African immigrants), we elected to use race instead of country of origin. Moreover, our diagnostic tests reveal that race has a net effect, regardless of country-of-origin, and variation across country groups in the magnitude of the key findings is low (e.g., the Hispanic effect is similar for immigrants of Mexican, other Central American, Caribbean, and other Latin American descent). Nonetheless, we note important differences between these groups where observed.

Table 4. **Growth Curve Regression Coefficients Predicting Logged Earnings Among Male Immigrant Workers, 2001–2003**

	(1)	(2)	(3)	(4)	(5)	(6)[a]
Panel A. Intercepts						
Constant	6.220***	6.050***	5.786***	4.840***	4.814***	4.676***
	(0.373)	(0.373)	(0.385)	(0.538)	(0.535)	(0.626)
Age	0.080***	0.073**	0.075**	0.076**	0.077**	0.106***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.029)
Age, squared	–0.001**	–0.001*	–0.001*	–0.001*	–0.001*	–0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Black	–0.317**	–0.327**	–0.301*	–4.738	–4.901	–1.945
	(0.113)	(0.112)	(0.111)	(5.721)	(5.687)	(2.597)
Hispanic	–0.239***	–0.181***	–0.161	0.805*	0.827*	0.496
	(0.055)	(0.057)	(0.057)	(0.390)	(0.388)	(0.455)
Asian	–0.218*	–0.201*	–0.172	0.179*	0.123**	0.685
	(0.088)	(0.087)	(0.087)	(0.047)	(0.047)	(0.539)
Education		0.022***	0.021***	0.106***	0.104***	0.088*
		(0.006)	(0.006)	(0.034)	(0.034)	(0.039)
Age at arrival ≤ 12			0.220**	0.197**	0.165*	0.205*
			(0.079)	(0.080)	(0.080)	(0.090)
Age at arrival 13–18			0.240***	0.233***	0.213**	0.274***
			(0.073)	(0.072)	(0.072)	(0.082)
Age at arrival 19–28			0.084	0.072	0.058	0.103
			(0.068)	(0.068)	(0.067)	(0.076)
Black × education				0.367	0.380	0.154
				(0.479)	(0.476)	(0.219)
Hispanic × education				–0.086*	–0.086*	–0.055
				(0.034)	(0.034)	(0.040)
Asian × education				0.121**	0.124**	0.065
				(0.041)	(0.041)	(0.048)
Speaks English					0.075***	0.074***
					(0.020)	(0.022)

(continued)

national unemployment and within the population of low-skill immigrant workers. It also supports and extends Newman's (2006) finding that, within the low-wage population, years of education completed is a strong predictor of earnings success. With education controlled, the negative effects for black, Hispanic, and Asian immigrants continue to be significant. Neither education nor the race/ethnicity variables are significant in the slope equation for monthly earnings growth.

Column 3 adds dummy variables for age of arrival in the U.S. to the equation (the reference group is immigrants who arrived between the ages of 29 and 40). We find that all three age-of-arrival variables are statistically significant in the intercept equation. Arriving at an age younger than 18 significantly increases earnings in 1996, net of other variables. Compared with workers who were older than 19 when they arrived (the initial earnings of immigrants arriving between the ages of 19 and 28 were not significantly different from those arriving after age 28), those who arrived within the first 12 years of age earned 22.0% more; and those who arrived between the ages of 13 and 18 earned 24.0% more. These large effects indicate the importance of the human and social capital gained from early

(Table 4, continued)

	(1)	(2)	(3)	(4)	(5)	(6)[a]
Slopes						
Time	0.016**	0.014*	0.023*	0.045**	0.045**	0.022
	(0.005)	(0.007)	(0.008)	(0.018)	(0.018)	(0.020)
Time, squared	0.000*	0.000	0.000	0.000*	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	–0.000*	–0.000*	–0.000**	–0.000**	–0.000**	–0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Black	–0.002	–0.002	–0.003	0.276	0.278	0.071
	(0.005)	(0.005)	(0.005)	(0.238)	(0.238)	(0.089)
Hispanic	–0.002	–0.002	–0.003	–0.026	–0.026	–0.011
	(0.002)	(0.003)	(0.003)	(0.017)	(0.017)	(0.019)
Asian	–0.005	–0.004	–0.005	–0.044*	–0.044*	–0.027
	(0.004)	(0.004)	(0.004)	(0.021)	(0.021)	(0.023)
Education		0.000	0.000	0.002	0.002	0.001
		(0.000)	(0.000)	(0.002)	(0.002)	(0.002)
Age at arrival ≤ 12			–0.008	–0.007	–0.007	–0.002
			(0.004)	(0.004)	(0.004)	(0.004)
Age at arrival 13–18			–0.006	–0.006	–0.006	–0.004
			(0.003)	(0.003)	(0.003)	(0.004)
Age at arrival 19–28			–0.004	–0.004	–0.004	–0.001
			(0.003)	(0.003)	(0.003)	(0.003)
Black × education				–0.023	–0.023	–0.007
				(0.020)	(0.020)	(0.008)
Hispanic × education				0.002	0.002	0.001
				(0.002)	(0.002)	(0.002)
Asian × education				0.004*	0.004*	0.002
				(0.002)	(0.002)	(0.002)
Speaks English					0.001	0.001
					(0.001)	(0.001)
Number of Individuals	667	667	667	667	667	703
Number of Person-Months	12,345	12,345	12,345	12,345	12,345	15,407
Covariance Parameters						
ρ	.209	.204	.199	.196	.196	.196
τ	–.565	–.573	–.568	–.561	–.561	–.561

Note: Standard errors are in parentheses.

[a]Includes part-time workers.

p < .05; **p* < .01; ***p* < .001

U.S. acculturation in increasing earnings. Thus, even after years of schooling differences are controlled for, immigrants who arrive during the childhood and early employable years have considerably higher earnings than immigrants who arrive at later ages. With these variables in the intercept equation, the negative effects for Hispanic and Asian immigrants reduce to nonsignificance, although black immigrants remain at a large disadvantage. As before, very few variables are significant in the slope equation.

To examine the differential returns to education by race, we interact education with race/ethnicity (in both the intercept and slope equations). These results are presented in

column 4. As we observed in the pooled models in Table 3, Hispanic immigrants have substantially lower returns to education than do other immigrants. More specifically, the earnings of white and black immigrants increase by nearly 11% for each additional year of schooling, while Hispanic immigrants receive returns to education of only 2%. Supplemental analyses (not shown) suggest that the low returns to education for Hispanics are particularly striking for immigrants of Mexican and other Central American locations (although all observed Latin American groups have substantially lower returns than other immigrant groups). By contrast, column 4 estimates show that Asian immigrants have particularly high returns to human capital investment. This large positive effect of education is found in both the intercept and slope equations and, for low-skill Asian immigrants, appears not to have been reported previously.

Consistent with prior research documenting the importance of language ability in raising the earnings of immigrants, column 5 adds English language ability to the equation. The significant and positive effect of English in the intercept equation is expected, indicating that the earnings of immigrants who speak English are about 8% higher than those of non-English-speaking immigrants. More importantly, and consistent with Bleakley and Chin (2004), column 5 reveals that the positive effect of education is not mediated by language ability. Indeed, the coefficients in column 5 are quite similar to those in column 4.

Again, to test the robustness of our findings, we add back months in which low-skill men were employed part-time (this adds 36 men and 3,062 person-months). These results are shown in column 6. Unlike in the pooled models in Table 3, the addition of part-time work *weakens* the basic findings of the full-time immigrant models. While the main effect of human capital remains significant, it decreases in magnitude. Similarly, the steep returns to education for Asian immigrants (in both the intercepts and slopes) and the lower returns to education for Hispanic immigrants reduce to nonsignificance. This suggests that the returns to human capital for low-skill immigrants during 2001–2003 were stronger for those with full-time jobs.

DISCUSSION

We used monthly longitudinal data from two SIPP panels, 1996–1999 and 2001–2003, to estimate the determinants of differentiation in intercepts and slopes for earnings growth among low-skill immigrant and native male workers. These calculations provide more detail about the operation of the low-skill labor market than has been available previously. We found both similarities and differences in the jobs held by low-skill immigrant and native male workers. Similarities include the fact that both groups of low-skill workers are likely to be employed as janitors and cleaners, truck drivers, construction laborers, machine operators, gardeners, and auto mechanics. Differences include the high share of immigrants employed as cooks and as farm workers, and the high share of natives employed as sales and production supervisors, as well as miscellaneous managers and administrators. The advantage enjoyed by natives in moving into supervisory and managerial employment within the low-skill labor market is clear.

We found that at the beginning of each of the time periods under study, 1996 and 2001, immigrants earned approximately 24% less than natives. During the earlier period (of relatively strong national labor market demand), the earnings of low-skill native workers increased at a rate of 0.3% per month, while those of immigrants grew slightly faster. During the later period (of relatively weak labor market demand), the earnings of natives did not grow significantly, but those of immigrants increased at a (statistically significant) rate of 0.3% per month. Education was strongly and positively related to earnings in the low-skill labor market, with each additional year of schooling leading to an average 6.9% increase in earnings for native whites when earnings intercepts were measured in 1996, and to an average 8.7% increase when measured in 2001. This return to education was essentially

absent for one population subgroup: Latino immigrants. Thus, the answer to the question posed in the title of this paper is that human capital does raise earnings for immigrants in the low-skill labor market, but not for Hispanic immigrants. This finding suggests that Latino immigrants may encounter barriers to job mobility as well as wage discrimination not experienced by other groups. One possibility that we cannot provide evidence on is whether these weak returns to human capital for Latino immigrants are limited to, or are exaggerated by, the labor market experiences of illegal immigrants (a subpopulation that is largely Latin American [Passel 2006]). We know that the SIPP included such workers, though they were likely underrepresented; however, we are unable to identify them in the data. Nevertheless, it may well be that our results reflect the lower returns experienced by these workers. Undocumented immigrants face unique sets of occupational and industrial barriers, have less extensive social networks than natives, and are more likely to be exploited by employers (Cranford 2005; Massey, Durand, and Malone 2002). Future research should address this issue with attention paid to differential earnings and earnings growth among legal and illegal immigrant workers.

Our final set of calculations restricted attention to immigrant workers and asked how their earnings are differentiated by race/ethnicity, education, age at arrival in the United States, and language ability. We found further evidence that the returns to education are lower for Latino immigrants, particularly those of Mexican and Central American descent, in comparison with white immigrants. In addition, our immigrant-specific models suggest that Asian immigrants fare particularly well in the low-skill labor market, with returns to education more than twice as large as those realized by other groups. We also found that younger age at arrival and English language ability both increase earnings but do not explain the positive effect of education on earnings for low-skill immigrants.

Our findings provide further depth of understanding to the "mixed" picture of earnings determination in the low-skill labor market that has been reported by others. On the positive side, many male immigrants are employed alongside natives in similar industries and occupations. Both groups show wage gains over time, and they generally receive similar returns to years of schooling completed. Immigrants also receive substantial returns to a younger age at arrival and speaking English, two standard measures of acculturation.

On the negative side, immigrants are less likely to occupy supervisory and managerial jobs than are natives. Overall, immigrants earn substantially less than natives; and in periods of both high and low unemployment, Latino immigrants receive lower returns to education than do white immigrants.

Thus, human capital earnings models apply in low-skill labor markets, but they do not fully explain the worker earnings differentiation observed there. One possible explanation is that, because of the difficulties faced by American schools in absorbing the large numbers of non-English-speaking immigrants concentrated in some neighborhoods, and because of debate and uncertainty over how to most effectively educate these students, the cognitive skills gained per year of school may have been lower for immigrants than for natives.[7] Of course, undocumented immigrants have always faced employment and earnings barriers, and these may account for at least a portion of the lower returns to human capital experienced by Latino immigrants. In particular, both legal and illegal Latino immigrants may be particularly at risk for experiencing the consequences of restricted social capital and job-seeking networks, as well as discrimination and segregation with respect to access to jobs in higher-paying industries and occupations. Testing these possibilities should be on the research agenda for the years ahead.

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7. For discussion of the debate over bilingual education versus English immersion, see Gershberg, Danenberg, and Sanchez (2004); Rossell (2000); Snow (2000); and the literature cited there. For comparison of the cognitive performance of white and black natives with that of Mexican immigrant children in U.S. schools, see Crosnoe (2006).

REFERENCES

Alba, R. and V. Nee. 2003. *Remaking the American Mainstream: Assimilation and Contemporary Immigration.* Cambridge, MA: Harvard University.

Altonji, J.G. and R.M. Blank. 1999. "Race and Gender in the Labor Market." Pp. 3143–259 in *Handbook of Labor Economics,* Vol. 3C, edited by O. Ashenfelter and D. Card. Amsterdam: Elsevier.

Bavier, R. 2002. "Welfare Reform Impacts in the SIPP." *Monthly Labor Review* 125:23–38.

Bertrand, M. and S. Mullainathan. 2004. "Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination." *American Economic Review* 94:991–1013.

Blank, R., S. Danzinger, and R. Schoeni. 2006. *Working and Poor: How Economic and Policy Changes Are Affecting Low-Wage Workers*. New York: Russell Sage.

Bleakley, H. and A. Chin. 2004. "Language Skills and Earnings: Evidence From Childhood Immigrants." *Review of Economics and Statistics* 86:481–96.

Borjas, G.J. 2001. *Heaven's Door: Immigration Policy and the American Economy.* Princeton, NJ: Princeton University.

———. 2006. "Wage Trends Among Disadvantaged Minorities." Pp. 59–86 in *Working and Poor: How Economic and Policy Changes are Affecting Low-Wage Workers,* edited by R. Blank, S. Danzinger and R. Schoeni. New York: Russell Sage.

Borjas, G.J., R.B. Freeman, and L.F. Katz. 1996. "Searching for the Effect of Immigration on the Labor Market." *American Economic Review* 86:246–51.

Card, D. 2001. "Immigrant Inflows, Native Outflows, and the Local Market Impacts of Higher Immigration." *Journal of Labor Economics* 19:22–64.

———. 2005. "Is the New Immigration Really So Bad?" *Economic Journal* 115:F300–F323.

Chiswick, B. 1978. "The Effect of Americanization on the Earnings of Foreign-Born Men." *Journal of Political Economy* 86:897–921.

Chiswick, B. and P.W. Miller. 1995. "The Endogeneity Between Language and Earnings: International Analyses." *Journal of Labor Economics* 13:246–88.

Collins, S.M. 1997. "Black Mobility in White Corporations: Up the Ladder But Out on a Limb." *Social Problems* 44:55–67.

Congressional Budget Office (CBO). 2005. *The Role of Immigrants in the U.S. Labor Market*. Washington, DC: CBO.

Connolly, H. and P. Gottschalk. 2000. "Returns to Tenure and Experience Revisited—Do Less Educated Workers Gain Less From Work Experience?" Working paper. Boston College, Boston, MA.

Cranford, C. 2005. "Networks of Exploitation: Immigrant Labor and the Restructuring of the Los Angeles Janitorial Industry." *Social Problems* 52:379–97.

Crosnoe, R. 2006. *Mexican Roots, American Schools: Helping Mexican Immigrant Children Succeed.* Stanford, CA: Stanford University Press.

De Jong, G.F. and A.B. Madamba. 2001. "A Double Disadvantage? Minority Group, Immigrant Status, and Underemployment in the United States." *Social Science Quarterly* 82:117–30.

Doeringer, P. and M. Piore. 1971. *Internal Labor Markets and Manpower Analysis.* Lexington, MA: D.C. Heath.

Duleep, H.O. and D.J. Dowhan. 2002. "Longitudinal Data on Earnings Growth of U.S. Foreign-Born Men." *Demography* 39:485–506.

Duleep, H.O. and M. Regets. 1999. "Immigrants and Human Capital Investment." *American Economic Review* 89:186–91.

Enchautegui, M.E. 1998. "Low-Skilled Immigrants and the Changing American Labor Market." *Population and Development Review* 24:811–24.

Farkas, G. and K. Vicknair. 1996. "Appropriate Test of Racial Wage Discrimination Require Controls for Cognitive Skill: Comment on Cancio, Evans, and Maume." *American Sociological Review* 61:557–60.

Financial Trend Forecaster. 2008. "Historical US Inflation Rate 1914–Present." Available online at http://www.InflationData.com/inflation/inflation_rate/HistoricalInflation.aspx.

French, E., B. Mazumder, and C. Taber. 2006. "The Changing Pattern of Wage Growth for Low-Skilled Workers." Pp. 141–72 in *Working and Poor: How Economic and Policy Changes Are Affecting Low-Wage Workers,* edited by R. Blank, S. Danzinger, and R. Schoeni. New York: Russell Sage.

Frey, W.H. 1996. "Immigration, Domestic Migration and Demographic Balkanization in America: Evidence for the 1990s." *Population and Development Review* 22:741–63.

Gershberg, A.I., A. Danenberg, and P. Sanchez. 2004. *Beyond 'Bilingual' Education: New Immigrants and Public School Policies in California.* Washington, DC: Urban Institute Press.

Greene, W.H. 2000. *Econometric Analysis*. Upper Saddle River, NJ: Prentice Hall.

Hanushek, E. and F. Welch, eds. 2006. *Handbook of the Economics of Education.* Amsterdam: North-Holland/Elsevier.

Heckman, J., L. Lochner, and C. Taber. 1998. "Explaining Rising Wage Inequality: Explorations With a Dynamic General Equilibrium Model of Labor Earnings With Heterogeneous Agents." *Review of Economic Dynamics* 1:1–58.

Hirschman, C. 2005. "Immigration and the American Century." *Demography* 42:595–620.

Hudson, K. 2007. "The New Labor Market Segmentation: Labor Market Dualism in the New Economy." *Social Science Research* 36:286–312.

Kain, J.F. 1992. "The Spatial Mismatch Hypothesis: Three Decades Later." *Housing Policy Debate* 3:371–92.

Kirschenman, J. and K.M. Neckerman. 1991. "'We'd Love to Hire Them, but…': The Meaning of Race for Employers." Pp. 203–32 in *The Urban Underclass,* edited by C. Jencks and P. Peterson. Washington, DC: Brookings Institution.

Kossoudji, S. 1988. "English Language Ability and the Labor Market Opportunities of Hispanic and East Asian Immigrant Men." *Journal of Labor Economics* 6:205–28.

Krueger, A.B. 2003. "Inequality, Too Much of a Good Thing." Pp. 1–76 in *Inequality in America: What Role for Human Capital Policies?,* edited by J.J. Heckman and A.B. Krueger. Cambridge, MA: MIT Press.

Lee, E.S. 1966. "A Theory of Migration." *Demography* 3:47–57.

Lieberson, S. 1980. *A Piece of the Pie: Blacks and White Immigrants Since 1980.* Berkeley, CA: University of California.

Massey, D.S., J. Durand, and N.J. Malone. 2002. *Beyond Smoke and Mirrors: Mexican Immigration in an Era of Economic Integration.* New York: Russell Sage.

McManus, W., W. Gould, and F. Welch. 1983. "Earnings of Hispanic Men: The Role of English Language Proficiency." *Journal of Labor Economics* 1:101–30.

Newman, K. 1999. *No Shame in My Game.* New York: Russell Sage.

———. 2006. *Chutes and Ladders: Navigating the Low-Wage Labor Market.* New York: Russell Sage.

Passel, J.S. 2006. "The Size and Characteristics of the Unauthorized Migrant Population in the U.S.: Estimates Based on the March 2005 Current Population Survey." Research report. Pew Hispanic Center, Washington, DC.

Powers, M.G. and W. Seltzer. 1998. "Occupational Status and Mobility Among Undocumented Immigrants by Gender." *International Migration Review* 32:21–55.

Powers, M.G., W. Seltzer, and J. Shi. 1998. "Gender Differences in the Occupational Status of Undocumented Immigrants in the United States: Experience Before and After Legalization." *International Migration Review* 32:1015–46.

Raudenbush, S.W. and A.S. Bryk. 2002. *Hierarchical Linear Models*. Newbury Park, CA: Sage Publications.

Rossell, C.H. 2000. "The Federal Bilingual Education Program." Pp. 215–43 in *Brookings Papers on Education Policy 2000,* edited by D. Ravitch. Washington, DC: Brookings Institution.

Rumbaut, R.G. and K. Ima. 1988. "The Adaptation of Southeast Asian Refugee Youth: A Comparative Study, Final Report." U.S. Department of Human Services, Family Support Administration, Office of Refugee Resettlement, Washington, DC.

Smith, J.P. 2001. "Race and Ethnicity in the Labor Market: Trends Over the Short and Long Run." Pp. 52–97 in *America Becoming: Racial Trends and Their Consequences,* Vol. 2, edited by N. Smelser, W.J. Wilson, and F. Mitchell. Washington, DC: National Academy of Sciences.

———. 2006. "Immigrants and the Labor Market." *Journal of Labor Economics* 24:203–33.

Snow, C. 2000. "Comment." Pp. 244–55 in *Brookings Papers on Education Policy 2000,* edited by D. Ravitch. Washington, DC: Brookings Institution.

U.S. Department of Homeland Security. 2004. *Yearbook of Immigration Statistics, 2003*. Washington, DC: U.S. Government Printing Office.

Waldinger, R. 1996. *Still the Promised City? African Americans and New Immigrants in Post-Industrial New York*. Cambridge, MA: Harvard University.

———. 1997. "Black/Immigrant Competition Reassessed: New Evidence From Los Angeles." *Sociological Perspectives* 40:365–86.

Waldinger, R. and M. Lichter. 2003. *How the Other Half Works: Immigration and the Social Organization of Labor*. Berkeley, CA: University of California.

Waters, M.C. 1999. *Black Identities: West Indian Immigrant Dreams and American Realities*. Cambridge, MA: Harvard University.

Zeng, Z. and Y. Xie. 2004. "Asian-Americans' Earnings Disadvantage Reexamined: The Role of Place of Education." *American Journal of Sociology* 109:1075–108.