
Research on Immigrant Earnings

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Summary

As the first in a trio of pieces devoted to incorporating immigration into policy models, this review of research on immigrant earnings trajectories brings to light several findings. Controlling for demographic and human capital characteristics, immigrants often start their U.S. lives at substantially lower earnings, but experience faster earnings growth than natives with comparable years of education and experience. The extent to which the earnings trajectories of immigrants and natives differ varies by country of origin, with the source-country's level of economic development being a key determinant of the size of the U.S.-born/foreign-born difference. The earnings profiles of immigrants from economically developed countries such as Japan, Canada, or Western Europe resemble those of U.S. natives who are of the same age and education level. In contrast, the earnings of immigrants from developing nations tend to start well below those of U.S. natives with comparable education levels and experience, but rise more rapidly than their U.S. counterparts. Comparing the earnings profiles of immigrants of similar age, sex, and years of schooling, over time and across groups, a strong inverse relationship emerges between their initial earnings and their subsequent U.S. earnings growth. In other words, the lower (higher) the initial earnings are, the higher (lower) the earnings growth. These and

other research results have important implications for the projection of immigrant earnings and emigration in microsimulation models, as discussed in the two articles following this one: (1) "Adding Immigrants to Microsimulation Models" and (2) "Incorporating Immigrant Flows into Microsimulation Models."

Introduction

Immigration policy in the United States and the source-country composition of U.S. immigration have changed radically over time. Ending a period of high immigration, the Emergency Quota Act of 1921 and the Immigration Act of 1924 created a system that allocated visas according to the national-origin composition of the late 19th and early 20th century U.S. population, favoring immigration from Western European countries and greatly reducing or eliminating immigration from Asia and Southern and Eastern Europe.¹ With the end of World War II, various changes chipped away at the national origin system and, in 1965, an Immigration and Nationality Act made family reunification, as opposed to national origin, the primary determinant of entry. To a much lesser extent, the new system also made room for persons to enter via employer requests for needed occupational skills.² Given differences in the relative economic opportunities between the United States and the countries whose immigration had been

Table 1.
National origin composition of legal immigrant flow: Percent of immigrants in each time period originating in selected countries

Period	Asia	Europe	Canada	Latin America	Other	Total
1941–1950	3.6	60.0	16.6	17.7	2.1	100
1951–1960	6.1	52.7	15.0	24.6	1.6	100
1961–1970	12.9	33.8	12.4	39.2	1.7	100
1971–1980	35.3	17.8	3.8	40.3	2.8	100
1981–1989	41.6	11.0	2.3	41.9	3.2	100

SOURCE: U.S. Immigration and Naturalization Service, *Statistical Yearbook of the Immigration and Naturalization Service*, 1990.

severely restricted before 1965, the source-country composition of U.S. immigration shifted. Most recent immigrants come from Asian and Latin American countries in marked contrast to the earlier European-dominated immigration (Table 1).

A perusal of immigration research over the 20th century reveals, not surprisingly, that the extent to which social scientists have studied U.S. immigration follows the ebbs and flows of U.S. immigration. With the restrictive immigration policy of the 1920s and subsequent decline in the number of immigrants entering the United States, immigration lost its luster as an interesting research topic. With the reopening of the U.S. admission gates in the 1960s and subsequent growth in the number of immigrants entering the United States, immigration reemerged as a hot topic. Whenever immigration has been studied, a key focal point for scholars and policy analysts has been, how do immigrants fare in the U.S. labor market? Though on the surface, a simple question, answering it has meant scaling a methodological hurdle: how to discern from the available data the earnings growth of immigrants as they live in the United States.

The first studies measured immigrant earnings growth with a single year of decennial census data, by comparing the earnings of immigrants who had recently arrived with the earnings of immigrants who had been in the U.S. multiple years. Later studies used two censuses: Using more than one census provides information on the earnings growth of the year-of-entry immigrant cohorts that are identified in both censuses. Following this, three censuses were used, permitting an analysis of how changes in the initial earnings of immigrant cohorts are related to changes in their subsequent earnings growth. Most recently, analysts have used longitudinal data to trace the earnings trajectories of the same individuals. The estimates of immigrant earnings growth from these various efforts

reflect an interesting historical interplay between how researchers have perceived changes in immigration over time, the methods they have used to measure immigrant earnings growth, and the assumptions behind those methods.

The review of immigrant earnings research that follows reveals key differences between the earnings of the foreign born and U.S. natives, differences *among* immigrant groups, and changes in these patterns over time. These findings help refine and develop appropriate methods for forecasting immigrant earnings and emigration in policy models—the subject of this article’s companion pieces also featured in this issue, “Adding Immigrants to Microsimulation Models” (Duleep and Dowhan 2008a) and “Incorporating Immigrant Flows into Microsimulation Models” (Duleep and Dowhan 2008b).

A Decline in Immigrant Entry Earnings

Following immigration’s peak in the early 20th century,³ a model of immigrant assimilation was spawned in the University of Chicago’s sociology department. Most closely associated with the works of Robert E. Park, this model portrayed immigrants’ trajectories in the host society and economy as a single process that applied to all immigrants, eventually leading to their cultural and economic assimilation in U.S. society and economy.⁴

The theme of immigrant assimilation reemerged following the resurgence of U.S. immigration in the 1960s. Echoing Park’s thesis but focusing on labor market outcomes, Chiswick (1978, 1979) theorized that migrants often lack skills specific to their destination country that would permit their home-country human capital to be fully valued in the host-country labor market. In other words, immigrants initially earn less than similarly qualified U.S. natives because the specific skills and knowledge associated with their

years of schooling and experience are not valued as much by U.S. employers as are the skills of individuals who were raised and educated in the United States. Assimilation in this context is acquiring specific skills that enable an immigrant to earn on a par with a U.S. native of comparable experience and education.

Immigrants engage in many forms of human capital investment to increase the U.S. labor market value of their home-country human capital. Human capital investment activities include learning English, pursuing various forms of informal and formal U.S. schooling and training, and becoming knowledgeable about U.S.-specific institutions, production methods, and technical terms. The specific “skills” needed to increase the U.S. labor market value of home-country human capital may also include credentials, such as a diploma or training certificate that is recognized by U.S. employers or is needed to perform a particular kind of work in the United States. As English and other U.S.-specific skills or credentials are gained, the value of the immigrant’s home-country human capital approaches that of a comparably educated and experienced U.S. native.

Chiswick found empirical support for the assimilation model using a single cross-section of data, such as one year of decennial census data; Chiswick’s seminal research was based on 1970 census data.

The census and other surveys that ask when immigrants came to the United States to stay make it possible to identify various “year-of-entry” immigrant cohorts.⁵ For instance, with the 1970 census it is possible to identify immigrants who came to the United States in the years 1965–1970,⁶ 1960–1964, 1955–1959, 1950–1954, and before 1950. The 1969 earnings (reported on the 1970 census) of immigrants who entered the United States in the 1965–1970 period can be used as an estimate of the initial earnings of immigrants. The 1969 earnings of immigrants who entered the country in the 1955–1960 period provide an estimate of the earnings that immigrants achieve after living 10–15 years in the United States. The difference in earnings between the recent entrants and the longer-term residents provides a “cross-sectional” estimate of immigrant earnings growth.

With the cross-sectional approach, immigrant earnings growth is generally estimated in an earnings regression, using the cross-sectional variation to statistically measure the relationship between “years since migration” and immigrant earnings, controlling for other variables such as age and years of schooling. A fundamental assumption underlying this approach is

that the initial earnings and earnings growth of entering immigrants will mimic the earnings paths of earlier immigrants, controlling for observable characteristics such as education, age, and sex. Studies that have used the cross-sectional methodology estimate high-earnings growth for immigrants, substantially exceeding that of U.S. natives; with time in the United States, the earnings of immigrants approach those of their U.S.-born statistical twins.

In the mid-1980s, the immigrant assimilation picture proffered by Park and Chiswick was shattered. A series of articles by Borjas (1985, 1987, 1992a, 1992b) showed that recent immigrants were starting their U.S. economic lives at much lower earnings than their predecessors. Tracing the earnings of earlier immigrant cohorts across two censuses revealed only modest earnings growth, substantially lower than the cross-sectional prediction of immigrant earnings growth. This is because much of the cross-sectionally measured earnings growth stemmed from linking the lower entry earnings of more recent cohorts with the higher earnings of earlier cohorts, whose initial earnings exceeded those of their successors.

Indeed, a decline in immigrant entry earnings has occurred (Table 2). Male immigrants aged 25–54 in the 1965–1970, 1975–1980, and 1985–1990 entry cohorts earned a declining proportion of the median earnings of native men aged 25–54: In 1969, immigrant men who entered the United States in 1965–1970 earned 65 percent of native men’s earnings; in 1989, male immigrants who entered the United States in 1985–1990 earned only 41 percent of their U.S. male counterparts.⁷ The lower immigrant entry earnings of the 1975–1980 and 1985–1990 entry cohorts relative to the 1965–1970 cohort persist *within age and education categories* (Table 2)⁸ thus invalidating one of the key assumptions of the cross-sectional approach—constancy in entry earnings across year-of-entry cohorts, once demographic and human capital characteristics are controlled for.

Borjas’ research, which highlighted year-of-entry cohort effects, launched a fresh fleet of empirical studies armed with a new methodology for measuring immigrant earnings growth. In this methodology, analysts pool two or more cross sections, such as two decennial census samples, to estimate the earnings path of immigrants. Pooling data from two cross sections, such as two censuses, provides information on earnings at two points in time for each year-of-entry cohort that is identified in both censuses. For instance, using the 1970 and 1980 censuses it is possible to

Table 2.
Median entry earnings of immigrant men relative to the U.S. born, over time, by age and education level

Age group and education level	Ratio of 1969 earnings of the 1965–1970 immigrant cohort to U.S. natives (measured with 1970 census data)	Ratio of 1979 earnings of the 1975–1980 immigrant cohort to U.S. natives (measured with 1980 census data)	Ratio of 1989 earnings of the 1985–1990 immigrant cohort to U.S. natives (measured with 1990 census data)
Ages 25–54			
All education levels	0.653	0.500	0.406
Ages 25–39			
1–12 years of schooling	0.631	0.486	0.529
More than 12 years of schooling	0.577	0.463	0.485
Ages 40–54			
1–12 years of schooling	0.594	0.417	0.381
More than 12 years of schooling	0.522	0.479	0.500

SOURCES: Estimates are based on the 1970 Census of Population 1 percent public-use sample, the 1980 Census of Population 5 percent “A” public-use sample, and a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population 5 percent and 1 percent public-use samples.

NOTES: Immigrant cohorts are defined by the year they reported to the Census Bureau as the year they came to the United States to stay, which may be after the initial year of U.S. entry. For a discussion of this issue and the effect of various year-of-entry definitions on measuring immigrant earnings growth, see Duleep and Dowhan (2002). Because no labor force status restrictions are placed on the census cohorts, median earnings are computed on samples that include zeros. For a discussion of how limiting the sample to employed persons can affect measures of immigrant economic assimilation in studies that follow immigrant entry cohorts across two or more censuses, refer to Duleep and Regets (2002).

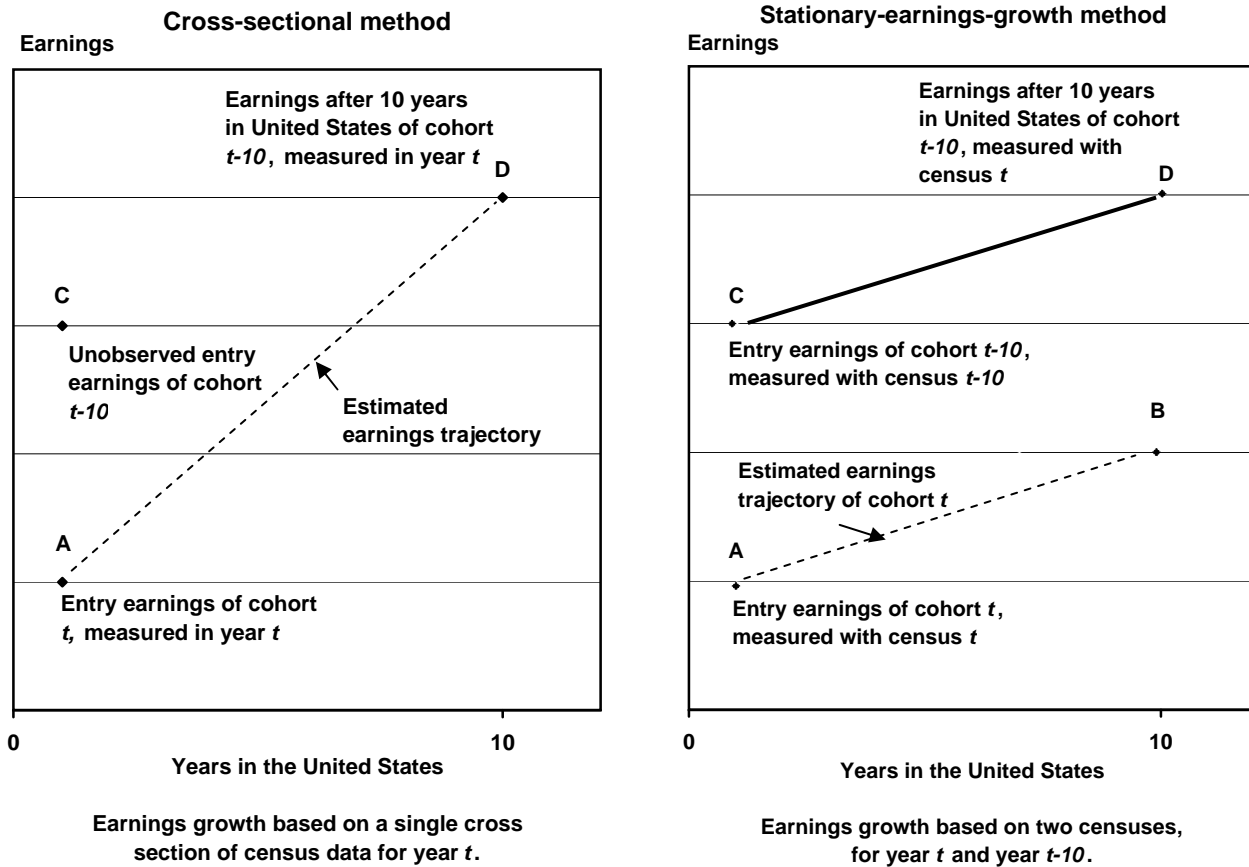
follow over 10 years the earnings of immigrants who immigrated in 1965–1970, 1960–1964, 1955–1959, 1950–1954, and before 1950, since these are the year-of-entry cohorts identified in both censuses. As in the cross-sectional approach, immigrant earnings growth is estimated in an earnings regression by statistically measuring the relationship between years since migration and immigrant earnings, controlling for age and education level. However, the information that informs the estimation of the relationship between earnings and years since migration comes not from a single cross section, but from the 10-year earnings growth of the year-of-entry cohorts that are identified in both censuses. Furthermore, categorical (zero-one) variables are included for each year of entry to capture earnings differences across the year-of-entry cohorts. The addition of the categorical variables (inspired by the fact that recent immigrant cohorts are starting at much lower earnings than earlier cohorts) permits the entry earnings of the immigrant cohorts to change, thus permitting the estimated relationship between years since migration and earnings to begin at different earnings levels.

This methodology, pioneered by Borjas and first estimated with data from two decennial censuses, is now used by many other analysts with other sources of data, including longitudinal data on individuals.

It could be called the “stationary earnings growth” approach for estimating immigrant earnings growth because it assumes that the earnings growth rate of year-of-entry immigrant cohorts is constant once observable variables, such as age and education, are accounted for. Assuming the earnings growth rate of earlier cohorts accurately predicts the growth rate of more recent cohorts yields a bleak prognosis of the ability of recent immigrants to assimilate because their initial earnings disadvantage persists unabated.

Chart 1 illustrates some key concepts. The left-hand side presents the cross-sectional methodology for estimating immigrant earnings growth. It shows the earnings that we would observe in a single cross section from census year t . We see the entry earnings of the most recent cohort (point A) and the earnings that the earlier cohort (cohort $t-10$) achieves after 10 years in the United States (point D). Unobserved, at time t , are the earnings that the earlier cohort of immigrants first received when they came to the United States 10 years ago (point C). By pairing the initial earnings of the recent cohort (cohort t) with the earnings at the 10-year point of the earlier cohort (cohort $t-10$), the cross-sectional method overestimates the earnings growth of the earlier cohort. The line A-D will accurately represent the earnings trajectory of the more recent cohort only if the earnings growth of this cohort

Chart 1.
Estimates of immigrant earnings growth based on two methods



SOURCE: Authors' illustration.

substantially exceeds that of the earlier cohort. Indeed, earnings growth would have to increase so that the recent cohort's earnings catch up to the earlier cohort in 10 years' time.

The right-hand side of Chart 1 illustrates the stationary-earnings-growth methodology for estimating immigrant earnings growth. It shows the earnings that we would observe by pooling data from two decennial censuses, one from census year t , the other from census year $t-10$. With the addition of the earlier data, we now observe the initial earnings of cohort $t-10$ (point C). The line C-D is the actual earnings trajectory of this earlier cohort. The line A-B is the projected earnings trajectory of the more recent cohort (cohort t). It will accurately predict the more recent cohort's earnings if and only if there has been no intercohort change in immigrant earnings growth.

Borjas correctly showed that in a situation where immigrant initial earnings are falling over time, the cross-sectional methodology (pairing the initial earn-

ings of more recent immigrants with the earnings achieved by *earlier* immigrants after 10–15 years in the country) overstates the earnings growth of the earlier immigrants. However, we cannot deduce from Borjas' finding that the earnings growth of earlier cohorts predicts the earnings growth of more recent cohorts, as is assumed in the stationary-earnings-growth methodology.

Theories about the Decline in Immigrant Entry Earnings

Whether a decline in the initial earnings of immigrants is accompanied by an increase, decrease, or no change in immigrant earnings growth depends on the reason for the decline. Two hypotheses, with opposing predictions about the relationship between immigrant entry earnings and earnings growth, have been put forth to explain why the age- and education-adjusted entry earnings of U.S. immigrants declined. One hypothesis (the income distribution-immigrant ability hypothesis) proposes that the decline reflects a decrease in the

(labor market) quality of U.S. immigrants. The other hypothesis (the economic development-skills transferability hypothesis) proposes that the decline reflects a decrease in immigrant skill transferability.

The Income Distribution–Immigrant Ability Hypothesis

Borjas theorized that the cause of the decline in immigrants' initial earnings was a decline in the labor market quality of immigrants fueled by an increase in the income inequality of the countries contributing to U.S. immigration (Borjas 1987, 1990, 1992a, 1992b). According to this theory, immigrants coming from countries with greater income inequality than the United States will be selected from the lower tail of the ability distribution in the country of origin, whereas immigrants coming from countries with less income inequality than the United States will be selected from the upper tail of their countries' ability distributions.⁹

Borjas (1987, 537) noted that before the 1965 Immigration and Nationality Act, immigration from Western Europe was dominant in the United States. The national origins quota system, based on the late 19th and 20th centuries' U.S.-ethnic composition, "encouraged immigration from (some) Western European countries and discouraged immigration from all other countries." Measuring income inequality by the ratio of income accruing to the top 10 percent of households to that accruing to the bottom 20 percent, Borjas (1992a, 44) showed that the amount of dispersion in the average immigrant's source country doubled in the postwar period, with most of that increase occurring after 1960.¹⁰ He observed that with the decline of the national origins system,

The new flow of migrants originates in countries that are much more likely to have greater income inequality than the United States. It would not be surprising, therefore, if the [labor market] quality of immigrants declined as a result of the 1965 Amendments. (Borjas 1987, 537)

Although it is theoretically ambiguous whether lower labor market ability leads to initially lower earnings,¹¹ under any human capital model a decline in immigrant labor market ability would not be associated with an increase in earnings growth. According to the income distribution–immigrant ability explanation for the decline in immigrant entry earnings, immigrant earnings growth should have declined or stayed constant as immigrant entry earnings declined. The method pioneered by Borjas for measuring immigrant earnings growth assumes that immigrant earnings

growth remains constant as immigrant entry earnings decline.

The Economic Development-Skills Transferability Hypothesis

An alternative hypothesis for the decline in the education- and age-adjusted entry earnings of immigrants is that it reflects a decline in the extent to which the country-of-origin skills of immigrants transfer to the United States (Duleep and Regets 1997b).

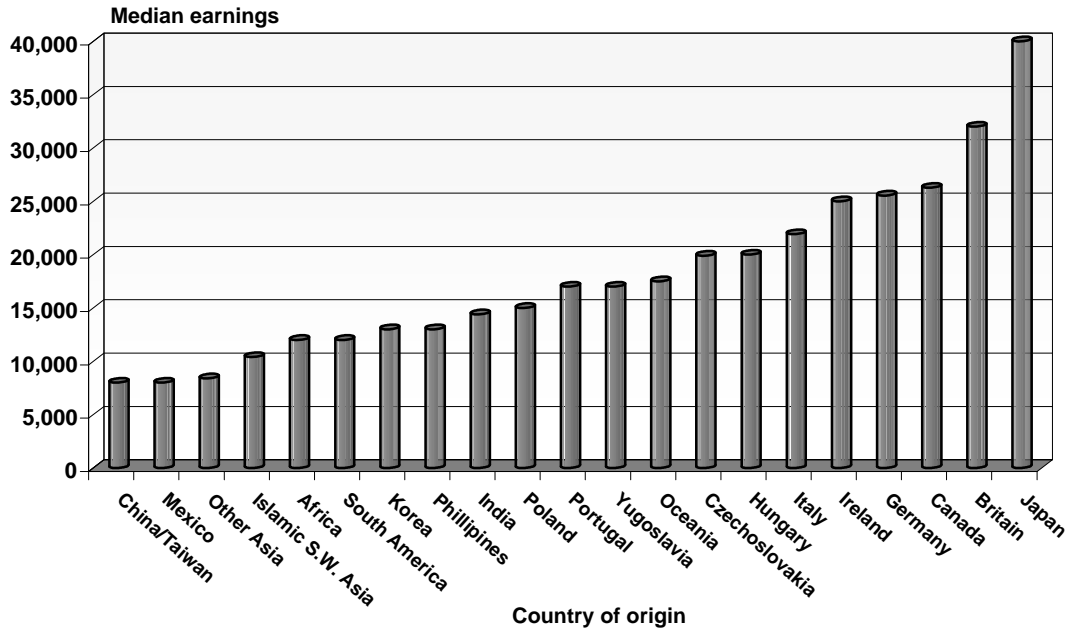
The initial earnings of U.S. immigrants vary enormously depending on where they come from (Chart 2).¹² Immigrants from the source regions that dominate recent U.S. immigration (Asia and Central and South America) initially earn about half or less than half of what U.S. natives earn, whereas the entry earnings of Western European immigrants resemble those of the U.S. born. Moreover, these differences persist within age and education categories (Table 3).¹³

A key factor underlying the variation in immigrants' initial U.S. earnings appears to be the source country's level of economic development. Immigrants from regions of the world with levels of economic development similar to the U.S., such as Western Europe and Japan, have initial earnings approaching or exceeding those of comparably educated and experienced U.S. natives. Those hailing from economically developing countries have low initial earnings relative to their U.S.-born counterparts. When the median 1989 U.S. earnings of immigrant men who entered the United States in the 1985–1990 period is plotted against the 1987 per adult gross domestic product (GDP) of each source country,¹⁴ a positive relationship between immigrant entry earnings and level of economic development emerges (Chart 3).¹⁵

Though Borjas focused on an increase in the inequality of U.S. immigrant source countries, post-1965 immigrants are also more likely to come from countries that are less economically developed relative to the United States than was true of earlier cohorts (Reimers 1996).¹⁶ This decrease in the economic development of the countries contributing to U.S. immigration could have contributed to a decline in immigrant skill transferability. That is, it could have contributed to a decline in the extent to which immigrant home-country education and experience is valued in the U.S. labor market.

Two conceptualizations link immigrant skill transferability to the level of economic development of immigrants' countries of origin. One suggests that

Chart 2.
Median 1989 U.S. earnings of men aged 25–54 who immigrated in the years 1985–1990, by country of origin



SOURCE: Estimates are based on the 1990 Census of Population 5 percent and 1 percent public-use samples.

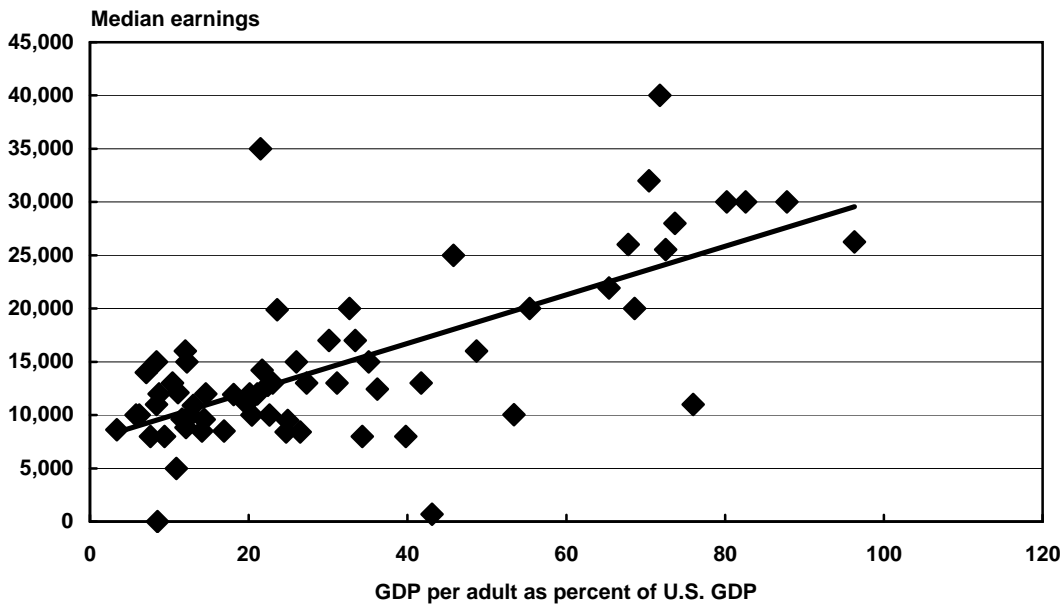
Table 3.
Median entry earnings in 1989 of immigrant men aged 25–54 who entered the United States from 1985 through 1990 relative to the U.S. born, by immigrant region of origin: Ratio of 1989 earnings of the 1985–1990 immigrant cohort to U.S. natives

Region of origin	All	Aged 25–39		Aged 40–54	
		12 years of schooling	More than 12 years of schooling	12 years of schooling	More than 12 years of schooling
All immigrants	0.406	0.529	0.485	0.381	0.500
Asia	0.443	0.589	0.434	0.316	0.439
Central/South America	0.364	0.506	0.447	0.376	0.401
Western Europe	1.010	1.147	0.931	0.845	1.372

SOURCE: Estimates are based on a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population 5 percent and 1 percent public-use samples.

Chart 3.

The relationship between gross domestic product (GDP) per adult and U.S. median initial earnings of immigrant men



SOURCE: Earnings estimates are based on 1990 Census of Population 5 percent and 1 percent public-use samples. The statistics on GDP per adult as a percent of U.S. GDP per adult are from Heston and Summers (1991).

source-country variations in immigrants' initial earnings stem from variations in the skills learned by growing up and working in different source countries (Chiswick 1978, 1979; Mincer and Ofek 1982). Holding constant the level of human capital (years of schooling and work experience), the skills of immigrants hailing from economically developed countries transfer more easily to the U.S. because these countries and the U.S. share similar educational systems, industrial structures, and labor market reward structures; the skills of immigrants from economically less-developed countries are less transferable to the United States (initially resulting in lower U.S. earnings) because the formal education and work experience in these countries are less applicable to the U.S. labor market.

The other conceptualization links immigrant skill transferability to the level of economic development of immigrants' home countries via an opportunity selection mechanism (Duleep and Regets 1997b). According to this conceptualization, immigrants from less-developed countries have lower skill transferability because the limited opportunities in less-developed countries make it worthwhile for them to migrate even when immigration entails substantial post-migration investments in new skills and credentials such as learning English, undertaking a U.S. degree program, or

starting a business; their equivalents in economically developed countries would only migrate if there were positions for them in the United States that immediately valued their source-country skills and they did not have to invest in new human capital, whether it be learning English or undertaking additional training.

The opportunity selection explanation for variations in the skill transferability of immigrants accommodates otherwise inexplicable intergroup patterns of English proficiency and entry earnings. Reflecting India's British colonial history, the English proficiency of Asian Indian immigrants far surpasses that of non-British European immigrants (Table 4). Yet the initial earnings of Asian Indians in the United States are low relative to those of European immigrants, particularly when intergroup variations in educational achievement are held constant (second data row, Table 4). Filipino immigrants are more proficient in English than their non-British European counterparts, yet have lower initial earnings. Conversely, the initial earnings of Japanese immigrant men are very high, despite their very low English proficiency.¹⁷ The entry earnings of Korean, Asian Indian, Filipino, and Chinese immigrants are similar despite enormous variation in their English proficiency (Table 4). Of those entering the United States from 1975 to 1980, only 24 percent of

Table 4.
Entry earnings of immigrant men relative to the U.S. born and immigrant English proficiency

	Filipino	Chinese	Korean	Asian Indian	Japanese	West European, excluding British	British
The ratio of foreign-born to native-born 1979 median earnings ^a	0.57	0.36	0.56	0.68	1.09	0.77	1.23
The ratio of foreign-born to native-born earnings holding years of schooling and demographic variables constant ^b	0.59	0.43	0.54	0.49	1.01	1.07	1.23
Percent of 1975–1980 entry cohort that:							
Speaks English poorly or not at all	9.4	42.2	45.9	6.1	26.8	30.7	0.3
Speaks only English or speaks English very well	50.9	19.0	15.0	68.0	25.3	41.4	99.2

SOURCE: Estimates are based on the 1980 Census of Population 5 percent "A" public-use sample.

- Men, ages 25–64. The foreign born are those who reported to the census entering the United States from 1975 through 1980.
- To compare the earnings of the various immigrant groups, group-specific regressions were estimated in which the natural logarithm of earnings was regressed on the following explanatory variables: level of schooling (a three-part spline), age, age squared, age x education, years since migration, education x years since migration, marital status, metropolitan status, and regions of residence. Using the estimated coefficients from the group-specific earnings regressions, we simulated the earnings profiles of each immigrant group. To provide a benchmark by which the earnings of each immigrant group could be compared, we also simulated the earnings growth of American-born, non-Hispanic white men. Each simulation begins at age 28, which for immigrants we also held constant as the age at migration. The estimates in the table show the ratio immigrant to native earnings evaluated at one year after migration. In these estimations, years of schooling, marital status, metropolitan status, and region of residence are held constant at the mean values of the U.S.-born white men. These group-specific analyses are from Duleep and Regets (1992b).

the Chinese and 15 percent of the Koreans reported speaking English very well compared with 69 percent of Asian Indian men and 51 percent of Filipino men. The similarity in their entry earnings is not surprising, however, if intergroup differences in skill transferability stem from variations in immigrant selection based on intercountry differences in economic opportunity: The common link among these countries is a low level of economic opportunity relative to the United States.

It is not necessarily the language of the sending country that determines immigrants' initial earnings in the United States, or even the language proficiency of those who migrate. Rather, persons who migrate from economically developed countries will tend to be persons with U.S. positions not requiring additional human capital investment. The opportunity selection argument also accommodates findings that the qual-

ity of education in some less economically developed countries is not inferior to that in the United States, and may be superior (Rivera-Batiz 1996). Rather than the skills learned in less-developed countries being less applicable to the United States, economic conditions in those countries make it worthwhile for persons to immigrate even when they lack skills that immediately transfer to the U.S. labor market.

Immigrant Skill Transferability and the Propensity to Invest in Human Capital

Regardless of what is behind a decline in immigrant skill transferability, a decline in the initial earnings of immigrants caused by a decline in immigrant skill transferability should be accompanied by an increase in earnings growth. This prediction flows from two basic concepts of a simple Immigrant Human Capital Investment (IHCI) model (Duleep and Regets 2002,

1999). First, immigrants whose home-country skills transfer poorly to the U.S. labor market will, by virtue of their lower wages, have a lower opportunity cost of human capital investment than natives or immigrants with high skill transferability. That is, the time they spend learning new skills, instead of applying their current skills to earning, is less costly than it is for high skill transferability immigrants or natives who earn more with the same level of education and experience. Second, the source-country human capital that is not valued in the U.S. labor market is still useful for learning new skills. There are several reasons for this (Duleep and Regets 2002):

- Part of the difficulty in transferring human capital between the labor markets of countries is a matter of information costs and risks. It can be much harder for potential employers to evaluate foreign educational credentials and work experience. However, even if employers have difficulty evaluating immigrant human capital, those skills are still useful in gaining new skills.¹⁸
- Learning skills—the set of abilities and experiences that aid in gaining new knowledge and skills—should transfer more readily than skills more specifically related to the business and production practices in the origin and destination countries. Those with home-country skills have learned how to learn; previously learned work and study habits may greatly facilitate the learning of destination-country skills.
- Similarity and common elements between old and new skills aid learning. Although the technologies in producing goods and services differ across countries—particularly between developed and less-developed countries—the processes, materials, and ultimate aims are analogous. Thus, skills acquired in a less-developed source country are useful for learning skills in a more-developed destination country: A Cambodian carpenter’s experience with a hand saw is useful in learning to use an electric saw. More generally, persons who have learned one set of skills—even if those skills are not valued in the destination-country labor market—have advantages in learning a new set of skills. Cognitive psychologists refer to this phenomenon as “transfer”.

The lower opportunity cost of human capital investment for immigrants lacking skills that immediately transfer to the U.S. labor market combined with the usefulness of the undervalued human capital for creating new human capital creates a greater incentive for

low-skill-transferability immigrants to invest in human capital than would be true of either high-skill-transferability immigrants or natives with similar levels of education and experience (Duleep and Regets 1999, 1994a, 2002). Because greater human capital investment fuels greater earnings growth, the IHCI model predicts that immigrants will experience higher earnings growth than natives, and among immigrants, there will be an inverse relationship between entry earnings and earnings growth.¹⁹ Immigrants whose skills initially transfer poorly to the United States will have lower initial earnings but higher earnings growth than natives or immigrants with similar levels of education and experience, but with highly transferable skills.

An implication of the IHIC model is that a decline in immigrant entry earnings caused by a decline in immigrant skill transferability will be accompanied by an increase in earnings growth. This prediction holds regardless of whether skill-transferability variations arise from variations in the skills learned in immigrants’ countries of origin (as proposed by Chiswick) or from an opportunity-driven selection of immigrants (as proposed by Duleep and Regets), or both. However, an implication of the opportunity-selection theory is that immigrants will be more likely than natives to invest in human capital in general, not just human capital that restores their original human capital.

Empirical Evidence on the Relationship Between Immigrant Entry Earnings and Earnings Growth

Several different approaches have been used to measure the relationship between immigrant entry earnings and earnings growth.

Using Census Data to Measure the Relationship

Without imposing any restrictions on either entry earnings or earnings growth, Duleep and Regets (1994a, 1994b, 1997b, 2002) followed country-of-origin/age/education cohorts of immigrants across the 1960 through 1980 and 1970 through 1990 decennial censuses.²⁰ For instance, using the 1980 census, they measured the 1979 earnings of immigrants, ages 25–54, who entered the United States in the 1975–1980 period.²¹ Using the 1990 census, they measured the 1989 earnings of the same cohort of immigrants—those who entered the United States in the 1975–1980 period and were ages 35–64 in 1990. Similarly, using the 1970 and 1980 censuses, they measured the entry earnings and earnings after 10 to 14 years of U.S.

residence of immigrants who entered the country in the 1965–1970 period. They also measured the earnings of comparably aged U.S. natives to provide estimates of relative immigrant earnings growth.²²

Duleep and Reget’s analyses show that as immigrants’ entry earnings decreased over time, their earnings growth increased. Despite a 23.4 percent drop in the initial earnings relative to the native born between the 1965–1970 and the 1975–1980 immigrant entry cohorts, there is very little difference in the relative earnings of each cohort after 10 to 14 years of U.S. residence—85.4 percent for the 1965–1970 cohort and 83.9 percent for the 1975–1980 cohort (Table 5). This is because the more recent cohort, with lower relative entry earnings, had a much higher earnings growth rate. The effect is even more dramatic when separating into age and education groups. In each case, the cohort with lower relative entry earnings surpassed the initially higher-earning immigrant cohort in relative earnings.²³ This suggests an inverse relationship between immigrant entry earnings and earnings growth.²⁴

Duleep and Regets also examined the relationship between immigrant entry earnings and earnings growth across groups, again finding that within age/education groups, the lower the entry earnings, the higher the earnings growth. Dividing countries of origin according to level of economic development, they found that immigrants coming from less economically developed regions of the world have lower entry earnings but higher earnings growth than immigrants of similar age and education coming from economically developed

countries. Finally, Duleep and Regets find a strong inverse relationship between the entry earnings of immigrants and their earnings growth over time for the same country.²⁵

Evidence from Longitudinal Data

Analyses, such as those of Duleep and Regets, which follow year-of-entry immigrant cohorts across decennial censuses could reflect immigrant emigration and changes in census coverage over time. To circumvent problems with changing cohort composition, Duleep and Dowhan (2002) used longitudinal Social Security Administration (SSA) earnings data matched to the 1994 March Current Population Survey (CPS) to follow the annual earnings of the same working-age foreign- and native-born men, from multiple year-of-immigration cohorts, over time.²⁶ Using the longitudinal data on individuals, Duleep and Dowhan (2000) also measured the earnings trajectories of immigrant women.

The left-hand side of Table 6 shows the foreign- to native-born earnings ratios at the first year following the CPS-defined year of immigration, and 10 years later. The results adjusting for differences in age and education between the foreign and native born are to the right of the unadjusted results. These results show that the initial earnings of immigrant men have generally fallen over time in relation to native-born men, a decline that persists when evaluating native-born earnings at each foreign-born cohort’s age and education distribution. Foreign-born men who immigrated

Table 5.
Median earnings of immigrant men relative to natives during the first 5 years in the United States and 10 years later: 1965–1970 and 1975–1980 immigrant entry cohorts

Age group and education level	1965–1970 cohort		1975–1980 cohort	
	1969 ratio to natives (measured with 1970 census data)	1979 ratio to natives (measured with 1980 census data)	1979 ratio to natives (measured with 1980 census data)	1989 ratio to natives (measured with 1990 census data)
Ages 25–54				
All education levels	0.653	0.854	0.500	0.839
Ages 25–39				
1–12 years of schooling	0.631	0.706	0.486	0.750
More than 12 years of schooling	0.577	0.864	0.463	0.886
Ages 40–54				
1–12 years of schooling	0.594	0.769	0.417	0.867
More than 12 years of schooling	0.522	0.720	0.479	0.788

SOURCES: Estimates are based on the 1970 Census of Population 1 percent public-use sample, the 1980 Census of Population 5 percent “A” public-use sample, and a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population 5 percent and 1 percent public-use samples.

in the 1960–1964 period earned on a par with U.S. natives; those who immigrated in the 1965–1969 period earned only 17 percent less than their U.S.-born statistical twins; and those who immigrated after 1969 earned 28 percent to 46 percent below the earnings of comparable natives, with an unadjusted foreign-born deficit ranging from 38 percent to 51 percent. The data on women tell a similar story: The entry earnings of the pre-1980 foreign-born cohorts equal or exceed the earnings of their U.S.-born counterparts; for the post-1979 cohorts, a 23 percent to 29 percent unadjusted, and 19 percent to 24 percent adjusted, earnings deficit emerges.

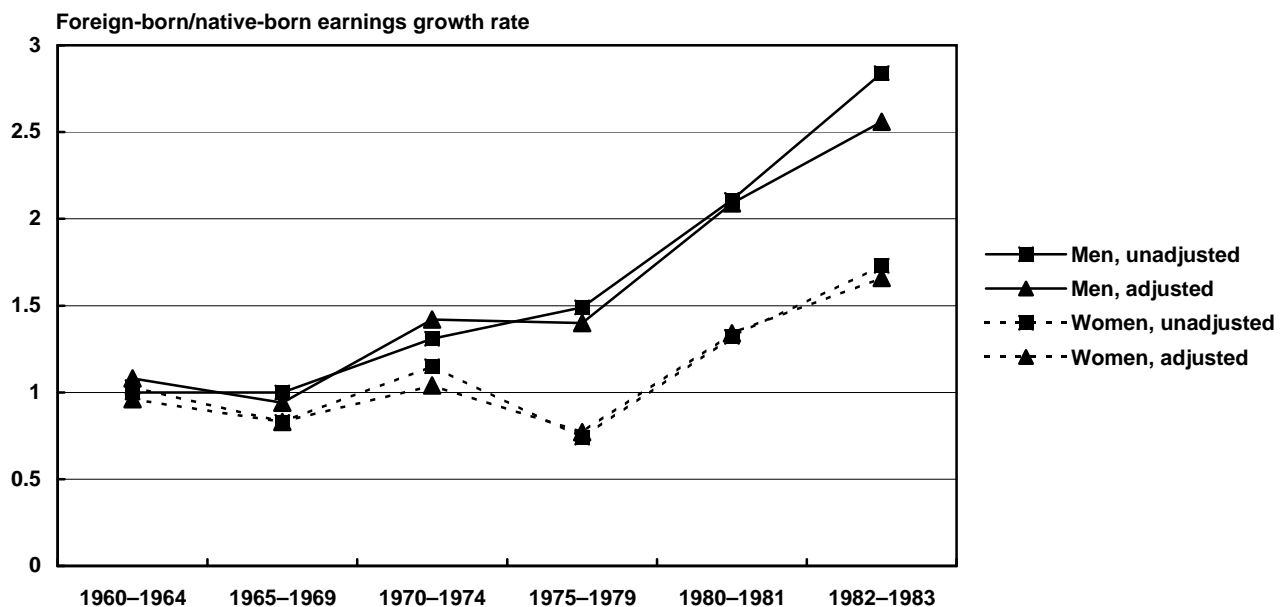
At the 10-year mark, substantial earnings convergence occurs because as the relative entry earnings of immigrants have fallen, their relative earnings growth has generally increased. When we examine ratios of foreign-born to U.S.-born earnings growth rates we see that the growth rates of the early cohorts of immigrant men equal or closely approximate those of U.S.-born men (the right-hand side of Table 6).²⁷ Then, starting with the 1970–1974 cohort, the earnings growth rates exceed those of the U.S. born.²⁸ Echoing the results for immigrant men, immigrant women show declining entry earnings and increasing earnings growth. The earnings growth rates of immigrant women range

from equaling those of U.S.-born women, to surpassing them. However, the transformation occurs later for immigrant women than it does for immigrant men; starting with the 1980–1981 cohort, foreign-born women have higher-earnings growth than their U.S. counterparts.²⁹

Chart 4, which illustrates the unadjusted and adjusted growth-rate ratios from Table 6, underscores two key points: (1) post-1969 immigrants tend to have faster earnings growth than natives; and (2) for both men and women the earnings growth of immigrants, relative to natives, has increased in recent years, as the relative entry earnings of immigrants has decreased.³⁰

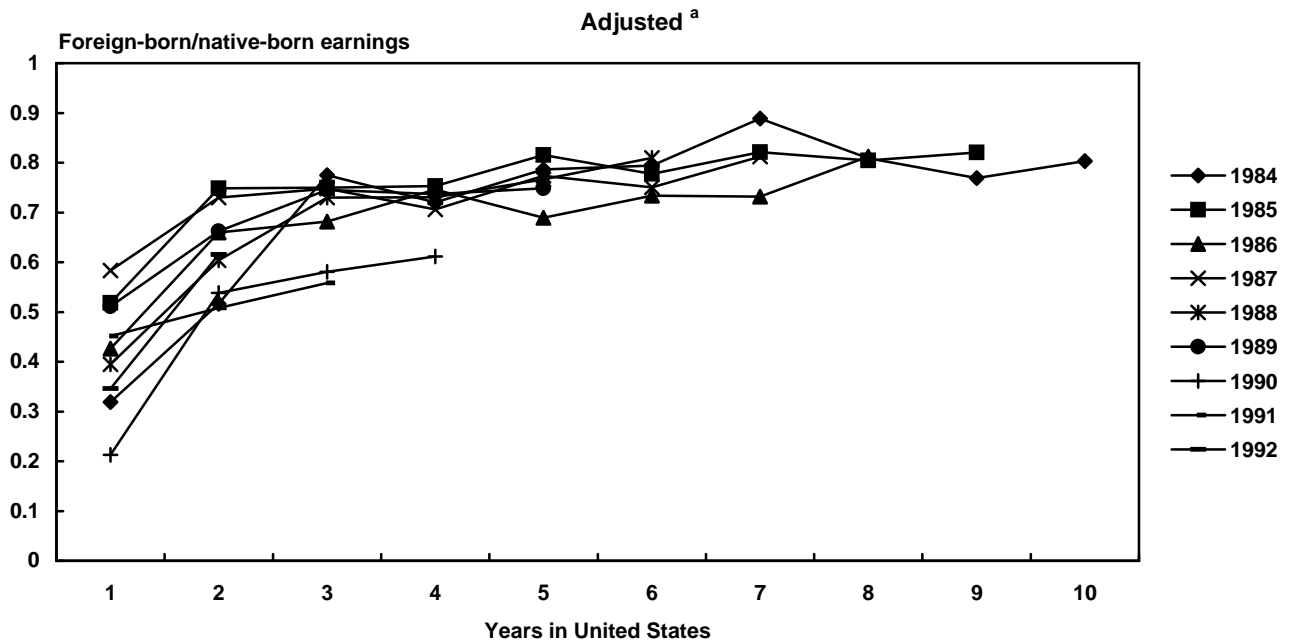
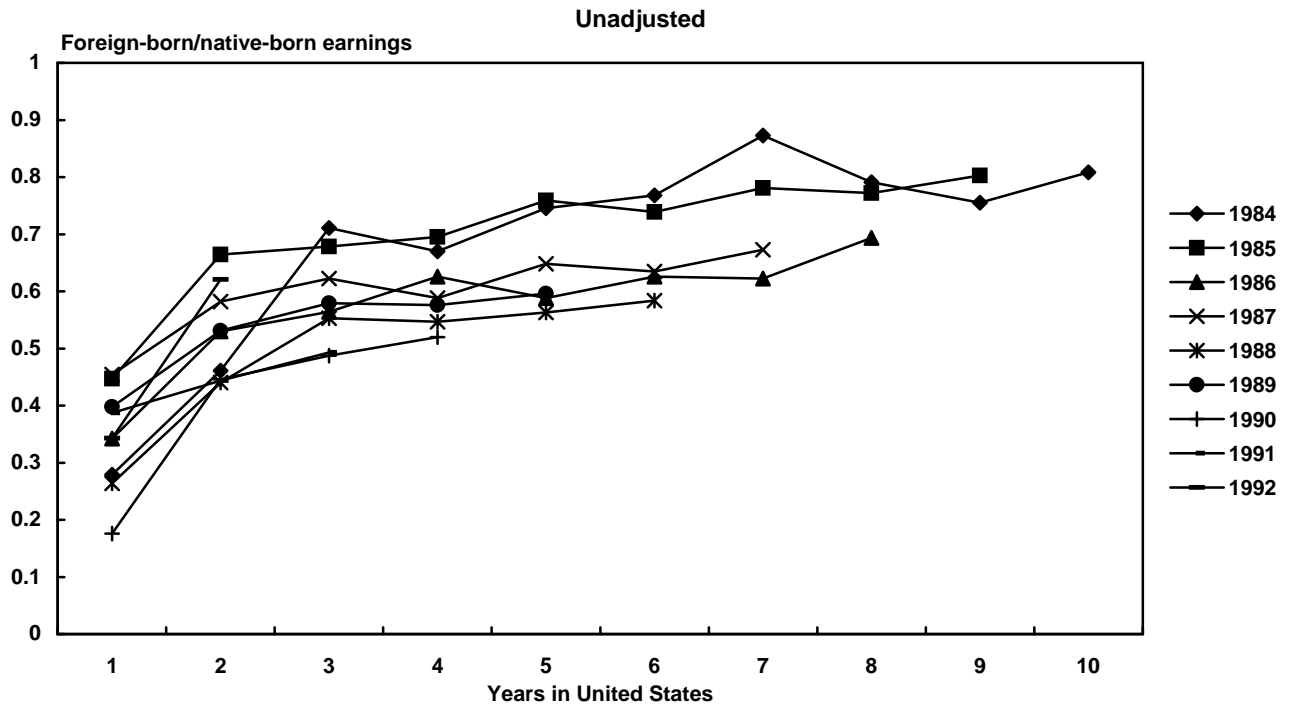
Chart 5 (top panel) uses Social Security earnings data to trace the earning profiles of immigrant men in nine cohorts, relative to U.S.-born men through the year 1993, with the earliest cohort's earnings beginning in 1984 and the most recent cohort's first year of earnings being recorded in 1992. The analysis is repeated in the bottom panel of the chart, but adjusts for foreign-born/native-born differences in age and education. This chart highlights another important point—although immigrant earnings profiles have changed dramatically over time, the adjusted earnings profiles of recent, post-1980, immigrant cohorts are remarkably similar.

Chart 4.
Cohort-specific ratios of foreign-born to native-born 10-year earnings growth rates



SOURCE: Estimates of earnings growth rates are based on longitudinal Social Security Administration earnings data matched to the 1994 March Current Population Survey.

Chart 5.
Ratio of foreign-born to native-born median earnings of men, by years in the United States
among recent immigrant cohorts



SOURCE: Earnings estimates are based on longitudinal Social Security Administration earnings data matched to the 1994 March Current Population Survey.

a. Adjusted for foreign- and native-born differences in age and education.

Age at Entry, Education, and Interactive Effects

Relative to natives, the entry earnings of immigrants with a high school education or less are lower for those who enter the United States at older working ages compared with those who enter at younger working ages. This relationship holds for each entry cohort (Table 2) and across regions of origin (Table 3).

For adult immigrants younger than age 40, education's effect on earnings is most apparent in the long run. This finding emerges by comparing, at entry and 10 years later, the earnings ratio of immigrants with more than 12 years of schooling to those with 12 years or less. For both the cohorts who entered the United States in the 1965–1970 and 1975–1980 periods, the beneficial effect of education on earnings increases markedly with length of time in the country for immigrants from all source regions (Table 7). Among immigrants in the more recent cohort, the initial earnings of the more-educated immigrants exceed the earnings of less-educated immigrants by 30 percent. Ten years later, the earnings of the more educated are double those of the less educated.

There may also be interactive effects between skill transferability and education that influence how education affects the propensity to invest in human capital.³¹ In most human capital models, prior edu-

cation or experience has an ambiguous effect upon investment decisions: An increase in an individual's education increases the opportunity cost of time spent in human capital investment, but it will also most likely increase the productivity of that time. In the IHIC model, source-country human capital that is not valued in the destination-country labor market is still useful in gaining new skills. Because low skill transferability reduces the opportunity cost of human capital investment more than it reduces its productivity, the lower the degree of skill transferability, the greater the likelihood that highly educated immigrants will invest more than poorly educated immigrants. If natives are the special case of perfect skill transferability, we would expect education to have a more positive effect on further human capital investment for immigrants than for natives; the lower the skill transferability of immigrants, the more this would be true. Consistent with these theoretical expectations, Duleep and Regets (2002) find that the earnings growth of the more educated versus the less educated is higher among immigrants coming from economically developing countries than it is for immigrants coming from economically developed countries.

Table 7.
Earnings ratio of high education immigrants to low education immigrants at U.S. entry and 10 years later for men aged 25–39

	1965–1970 cohort		1975–1980 cohort	
	Ratio at immigrant entry ^a	Ratio 10-years later ^b	Ratio at immigrant entry ^c	Ratio 10-years later ^d
All	1.26	1.83	1.30	2.05
Central/South America	1.29	1.53	1.17	1.75
Asia	1.25	2.18	1.27	1.68
Europe	1.29	1.67	1.50	1.61

SOURCES: Estimates are based on the 1970 Census of Population 1 percent state public-use sample based on the 5 percent questionnaire, the 1980 Census of Population 5 percent "A" public-use sample, and a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population 5 percent and 1 percent public-use samples.

The ratios in this table are based on earnings estimates presented in Duleep and Regets, "The Elusive Concept of Immigrant Quality: Evidence from 1970–1990," and Program for Research on Immigration Policy (revised version), Discussion Paper PRIP-UI-41, Washington, DC: Urban Institute.

NOTE: The education categories are 1–12 years (low education) and 13 or more years (high education).

- a. The annual 1969 earnings, as measured by the 1970 Census, of immigrant men who entered the United States in the 1965–1970 period.
- b. The annual 1979 earnings, as measured by the 1980 Census, of immigrant men who entered the United States in the 1965–1970 period.
- c. The annual 1979 earnings, as measured by the 1980 Census, of immigrant men who entered the United States in the 1975–1980 period.
- d. The annual 1989 earnings, as measured by the 1990 Census, of immigrant men who entered the United States in the 1975–1980 period.

Conclusion : Research Findings on Immigrant Earnings Trajectories

This article highlights variations, over time and across groups, in immigrant-earnings patterns.

For immigrants, as with U.S. natives, human capital (often measured by age and years of schooling) affects earnings. Thus in efforts to model immigrant earnings—the topic of the next two articles—variables that are relevant to modeling the earnings of U.S. natives are also relevant to modeling the earnings of U.S. immigrants.

In addition, the degree to which human capital transfers to the U.S. labor market affects the earnings of immigrants. If the human capital that immigrants possess transfers easily to the U.S. labor market, immigrant earnings profiles resemble those of similarly educated and experienced U.S. natives. The less home-country skills transfer to the U.S. labor market, the lower the initial earnings of immigrants, relative to otherwise similar U.S. natives, but the higher their earnings growth—a phenomenon that likely reflects a higher propensity to invest in U.S. human capital.

A key predictor of immigrant skill transferability, hence immigrants' initial and subsequent earnings, is the source country's level of economic development. Immigrants from countries with economic opportunities resembling those in the U.S. tend to have earnings profiles resembling those of U.S. natives. Immigrants from economically developing countries tend to have earnings profiles with lower initial earnings, but higher earnings growth than otherwise similar U.S. natives. Indeed the level of economic development of an immigrant's source country is so important that it can sometimes trump what one would otherwise consider an essential predictor of immigrants' initial earnings—proficiency in English. The source country's level of economic development also appears to influence the relationship between an immigrant's level of education and earnings growth.

Immigrant earnings profiles have changed over time. As the country-of-origin mix of U.S. immigration shifted from primarily European and Canadian to primarily Asian and Hispanic, immigrant entry earnings decreased and earnings growth increased, a transformation that persists within age and education categories. This transformation most likely reflects an increase in the proportion of immigrants from economically developing countries and a concomitant decrease in the proportion of immigrants with skills that immediately transfer to the U.S. labor market. Moreover,

even for the same countries of origin, immigrant-earnings profiles have changed with the passage of time. Such within-country transformations most likely reflect changes in the relative economic conditions of source countries relative to the United States as well as responses to U.S.-admission policy changes.³²

Holding age and years of schooling constant, a persistent pattern emerges regardless of whether immigrant earnings patterns are analyzed over time, or across groups, or both: There is a strong inverse relationship between immigrant entry earnings and earnings growth. The inverse relationship yields several implications for estimating immigrant earnings growth.

In situations where immigrant entry earnings (adjusted for age and education) are changing, the inverse relationship invalidates both the cross-sectional and stationary-earnings-growth methods for estimating immigrant earnings growth. In a situation where the adjusted entry earnings of immigrants are falling (as has occurred in the post-1950 United States), the inverse relationship implies that the stationary-earnings-growth method will underestimate the earnings growth of recent cohorts, whereas the cross-sectional method will overestimate the earnings growth of earlier immigrant cohorts. The fact that the cross-sectional method provides accurate estimates for recent immigrant cohorts reflects the fact that as immigrant entry earnings have fallen, earnings growth has increased to such an extent that the adjusted earnings of recent immigrants after 10 to 15 years in the United States closely approximate the earnings, at the 10- to 15-year mark, of earlier immigrants. Despite considerable variation over time in the age- and education-adjusted initial earnings of immigrants, when measured after 10 to 15 years in the United States, the adjusted earnings of immigrants show little change.

In the articles that follow this one (Duleep and Dowhan 2008a, 2008b), these findings and insights are used to help guide the representation of immigrant-earnings trajectories and emigration patterns in policy models.

Notes

¹ Various laws, enacted in several years, worked to exclude almost all immigration from Asia. For a synopsis, refer to Duleep (1988, Chapter 2). There was also a preference system in place that allocated quota visas among applicants on the basis of occupational skills (see Hutchinson 1981): Among immigrants from Eastern Hemisphere coun-

tries, half of all visas were granted on the basis of occupational skills.

² The occupational skills classification included two components: (1) workers, skilled and unskilled, in occupations for which labor is deemed scarce in the United States; and (2) professionals, scientists, and artists of exceptional ability. The Immigration Act of 1990 increased occupation-based admissions from 54,000 to 140,000 a year. It also placed a ceiling of 10,000 on unskilled workers within the occupation-based admissions, and it imposed an education requirement on a lottery program increasing admissions from countries “adversely affected” by the Immigration and Nationality Act Amendments of 1965. These reforms were not sufficient, however, to alter the essentially family-based nature of U.S. immigration (Lowell 1996).

³ For information on the numbers of legal immigrants by decade, refer to the companion piece to this article—“Adding Immigrants to Microsimulation Models,” (Duleep and Dowhan 2008a).

⁴ See, for instance, Park, Miller, and Thompson (1921) and Park’s (1950) collected works published posthumously and edited by Everett Hughes.

⁵ The term “year of entry” is used throughout this article even though Duleep and Dowhan (2002)—and earlier papers by them using matched survey and Social Security data—show that people may have worked in the United States before the year they reported to the survey as being their year of immigration. The census and CPS ask immigrants, “When did you come to stay in the U.S.?” as opposed to “When did you first come to the U.S.?” As shown in Duleep and Dowhan (2002), the question asking about intent to stay does appear to yield information on permanence, which is an important determinant of immigrant earnings profiles. The conclusions reached in this article persist regardless of whether *year of entry* is defined by an immigrant’s first earnings in the United States or by the year given as a response to the “when-did-you-come-to-stay” question (Duleep and Dowhan 2002).

⁶ Note that 1965–1970 refers to 1965 through April 1970, when the 1970 census was taken. This detail, which is true for any given census’s most recent year-of-immigration period, will be assumed throughout the article when we refer to the year-of-immigration period that includes the census year.

⁷ To an unknown extent, the reported annual earnings for the year preceding the census reflect earnings gained abroad or incomplete annual earnings for immigrants who entered the United States during the year. Conclusions concerning changes in the entry earnings of immigrant cohorts will be unaffected if the rate of immigrant entry within the census year-of-migration categories is similar across the entry cohorts considered.

⁸ The 1969 to 1989 decline across year-of-entry cohorts within the age/education categories is not continuous for all of the age/education groups. There is a continuous decline in

relative earnings for the group aged 40–54 with 1–12 years of schooling. For the other three age/education groups, there is a slight increase from 1979 to 1989. Refer to Fix and Passel (1994) and Simon and Akbari (1995) for analyses of trends in the educational attainment of immigrants. Both studies show that although immigrant education levels have risen in recent years, the increase for immigrants was somewhat less than the corresponding increase for natives.

⁹ When countries have relatively egalitarian income distributions, as discussed in Borjas (1992b, 429), “...the source country in effect ‘taxes’ able workers and ‘insures’ the least productive against poor labor market outcomes. This situation obviously generates incentives for the most able to migrate to the U.S. and the immigrant flow is positively selected.... Conversely, if the source country offers relatively high rates of return to skills (which is typically true in countries with substantial income inequality...), the United States now taxes the most able and subsidizes the least productive. Economic conditions in the U.S. relative to those in the country of origin become a magnet for individuals with relatively low earnings capacities, and the immigrant flow is negatively selected.”

¹⁰ In an empirical test of the income distribution–immigrant ability thesis, Borjas (1987) found the extent of income inequality of source countries to be negatively associated with the relative quality of U.S. immigrants, as measured by the wage differential between entering immigrants and natives of the same education level. A potential specification error of the empirical test of the income distribution–immigrant ability thesis is that the relevant distribution for a potential emigrant, in an analysis that focuses on immigrant earnings controlling for education, is the earnings distribution associated with that person’s level of education, not the income distribution of the entire country, which was used in the empirical analysis (Borjas 1987). This would not be a problem if there was a high correlation between the overall income distribution of a country and the income distribution that individuals with specific levels of education face. Yet, the overall earnings distributions of countries may have little relationship to the earnings distributions of individuals with specific levels of education. To give an example, a country with a large proportion of illiterates and a large proportion of Ph.D.’s would have an extremely unequal income distribution relative to the overall income distribution of the United States. Yet, the earnings distribution of Ph.D.’s might be narrower in that country than the earnings distribution of American Ph.D.’s. In such a case, it would be the higher quality Ph.D.’s that would have the most to gain by migrating to a country that would reward their higher abilities.

¹¹ If all factors remain unchanged, higher ability individuals would theoretically be expected to invest in more human capital than lower ability individuals, which would lower the initial earnings of the higher ability group.

¹² Chart 1 shows by country of origin the 1989 median initial earnings of working-age immigrant men who entered the United States between 1985 and 1990. The 1989 median

earnings estimates for the 1985–1990 cohort shown in the chart are based on a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population 5 percent and Public-Use 1 percent samples. Technical documentation may be found for the 1990 census data in Census Bureau (1992).

¹³ Asian immigration is dominated by immigration from less-developed countries. In Table 3, Asia includes Japan.

¹⁴ The 1987 per adult GDP of each source country is shown as a percent of the U.S. per adult GDP. The observations in Chart 3 on U.S. median earnings for immigrant men and GDP per adult as a percent of U.S. GDP per adult are for the following countries: Argentina, Australia, Bangladesh, Bolivia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czechoslovakia, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, France, West Germany, Greece, Guatemala, Guyana, Haiti, Honduras, Hong Kong, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, the Republic of Korea, Laos, Malaysia, Mexico, Morocco, Myanmar, Netherlands, New Zealand, Nicaragua, Nigeria, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Romania, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria, Taiwan, Thailand, Trinidad and Tobago, Turkey, Union of Soviet Socialist Republics (USSR), United Kingdom, Venezuela, and Yugoslavia. All countries for which we had information on the GDP per adult were included. Median earnings for immigrant men in the 1985–1990 cohort from the 65 countries listed above were estimated using a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population 5 percent and Public-Use 1 percent samples. The statistics on GDP per adult as a percent of U.S. GDP per adult are from Heston and Summers (1991).

¹⁵ When the median 1989 entry earnings of immigrant men in the 1985–1990 cohort are regressed on source-country GDP, the estimated coefficient indicates that the initial earnings of immigrant men increase \$2,280 for each 10 percentage-point change in the country-of-origin GDP measure. The R^2 for this regression is .48.

¹⁶ Borjas (1992a, 44) notes, “The changing national origin mix of successive immigrant waves cut by more than half the per capita GNP of the country represented by the typical immigrant, with most of this decline occurring after 1960.”

¹⁷ Cobb-Clark (2004) also finds “anomalous” results indicating no relationship between English language proficiency and labor market employment experience among a recent cohort of Australian immigrants.

¹⁸ In addition, individuals’ superior knowledge of their own abilities will be used in making their human capital investment decisions.

¹⁹ The Duleep/Regets Immigrant Human Capital Investment (IHCI) model is conditional on initial levels of human capital, as measured by education and age. Empirically, they find evidence of a very strong inverse relationship between initial earnings and earnings growth conditional on educa-

tion and age, as well as an unconditional relationship that generally holds up.

²⁰ In describing their methodology Duleep and Regets (2002) write, “Median earnings were measured within education and age subsets for 24 countries or regions of origin. (Median rather than mean earnings were used since the median is a much less volatile measure of central tendency in small samples.) Entry earnings were measured by the earnings reported in 1980 by the 1975–1980 entry cohort. The earnings growth rate of each of the country, age, and education groups was then measured by the difference between their 1980 earnings and their respective earnings 10 years later, as measured by the 1990 census, dividing the difference by their 1980 earnings. An alternative approach would be to first estimate a parametric model and then, using the predicted values, estimate the correlation between the predicted entry earnings and predicted earnings growth. Although our approach ignores information beyond the median within each age/education/country cell, we can be very certain that our results are not the product of a particular set of model assumptions.”

²¹ Refer to note 5.

²² Attrition is a problem in all analyses that follow individuals or cohorts over time. Although we can assume that the mortality of the foreign and native born is similar, attrition as a result of emigration will affect the foreign born far more than the native born. For an analysis of determinants of foreign-born emigration from the United States and reviews of other related research, refer to Duleep (1994) and Ahmed and Robinson (1994).

²³ Although these results suggest that the earnings of recent immigrants approach those of natives, they do not imply that the earnings of recent immigrants, will on average, exceed those of natives. According to the IHIC model, the incentive for human capital investment decreases with age and as source-country human capital becomes more transferable; it suggests that the strength of the inverse relationship between initial earnings and earnings growth decreases with immigrant time in the United States. This theoretical expectation is supported in research following immigrants for 20 years. Duleep and Regets (2002) found that although the inverse relationship continues beyond the initial 10-year period (the earnings growth increase associated with lower initial earnings continues beyond the initial 10-year period), it is about one-third of the 10-year effect. The decrease in the ratio of immigrant-to-native earnings growth rates is also apparent in the longitudinal data discussed in the section “Evidence from Longitudinal Data” below.

²⁴ This strong inverse relationship between relative entry earnings for an immigrant cohort and its subsequent relative earnings growth rate has been explored theoretically and empirically in a number of recent papers (Duleep and Regets 1992, 1994a, 1994b, 1996a, 1996b, 1996c, 1997a, 1997b, 1999, 2002).

²⁵ Their finding of a strong inverse relationship persists even when several methodological concerns are taken into account. In Duleep and Regets (1994a, 2002) a simple method to completely circumvent regression-to-the-mean bias in cohort analyses of entry earnings and earnings growth is introduced and used. In Duleep and Regets (1994a, 1994b, 2002), a method for testing the sensitivity of the estimated inverse relationship to the effects of emigration is introduced and applied.

²⁶ Refer to Duleep and Dowhan (1999a, 1999b, 2002) for earlier analyses using the Social Security matched longitudinal data focused on the trend in foreign- and native-born earnings growth and the diverse ways these data can be used to study immigrant economic assimilation.

²⁷ The ratios are defined as $[(Y_{10} - Y_1)/Y_1]_F / [(Y_{10} - Y_1)/Y_1]_N$ where Y_1 and Y_{10} denote the beginning- and end-year earnings, and F and N denote foreign and native born.

²⁸ These foreign- and native-born differences in earnings growth rates are statistically significant at a .05 level. The 1984–1985 and 1986–1987 cohorts are exceptions to the pattern of increasing earnings growth, possibly reflecting the newly legalized Immigration Reform and Control Act (IRCA) immigrants, as well as relatively high unemployment rates for these years.

²⁹ These differences are statistically significant at a .05 level.

³⁰ As discussed in note 23, the empirical fact of faster earnings growth for recent immigrants does not imply that recent immigrants will eventually surpass the wages of the native born. Theoretically, one would expect the relative earnings growth advantage of the foreign born to the native born to be highest in the initial years of earning in the United States and to decrease with time in the country. This is borne out empirically. Dividing time of earning between first 5 years, and 5 years and beyond (as illustrated in Charts 5 and 6), one can see that the slope of the foreign- and native-born median earnings lines decreases with immigrant time in the United States.

³¹ The IHCI model (Duleep and Regets 1999, 2002) predicts that both age at entry and education have important interactive effects on the inverse relationship between entry earnings and earnings growth. At younger ages and at higher education levels, the inverse relationship between immigrant entry earnings and earnings growth is intensified.

³² The restrictive nature of the pre-1965 admission policy meant that post-1965 migrants from countries whose immigration had been severely restricted generally lacked immediate U.S. family members. They were therefore most likely to immigrate under the employment preference provisions and thus the initial immigrants were more likely to have transferable skills to the U.S. labor market. As they established a U.S. base, relatives with less transferable skills could enter under the family admission categories.

For instance, the entry earnings of working-age Korean men were 75 percent of the earnings of working-age U.S.-born men for the cohort of immigrants who entered the United States in the 1965–1970 period and 44 percent of the U.S. native 1985–1990 cohort.

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