The Impact of Host-Country Schooling on Earnings—

A Study of Male Immigrants in the United States

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Abstract

Immigrants in the United States who acquire U.S. schooling earn higher wages than other immigrants. Using data from the U.S. censuses and the National Longitudinal Survey of Youth, we show that this wage advantage results from both greater educational attainment and higher returns to education. The higher returns are not the consequence of ability bias or greater English proficiency of those who acquire U.S. schooling. Returns to years of non-U.S. education are higher for immigrants who complete their schooling in the United States, consistent with the view that U.S. schooling upgrades or certifies education received in the source country. For those without U.S. schooling, returns are higher for immigrants from highly developed countries and countries for which English is an official language.

I. Introduction

Among immigrants in the United States, those who acquire U.S. schooling earn higher wages than other immigrants. For example, 1990 census data reveal that male immigrants with U.S. schooling earn 38 percent more per week than those without U.S. schooling. Prior research suggests that different educational experiences of immigrants may account for at least part of this wage differential. First of all, immigrants who acquire U.S. schooling generally obtain higher levels of schooling (Schoeni 1997). In addition, the rate of return to education may depend on whether or not the immigrant received education in the host country, especially if such education upgrades education from the source country.

Although prior studies have estimated the returns to foreign and host-country education for U.S. immigrants, the empirical evidence to date is inconclusive.[1] For example, for most immigrant groups Schoeni (1997) reports substantially lower returns to education for immigrants with no U.S. schooling. Friedberg (1993) also concludes that returns to foreign schooling are lower than returns to U.S. schooling although differences are "economically small." On the other hand, Stewart and Hyclak (1984) find similar returns to U.S. and foreign schooling, and Chiswick (1978) reports *higher* returns to foreign education than U.S. education but notes that the difference is of marginal statistical significance. These studies differ importantly, however, in how foreign education enters the earnings function as well as the time period studied.

Drawing on data from the 1970, 1980, and 1990 U.S. censuses and the National Longitudinal Survey of Youth, the present paper examines the educational experiences of male immigrants who do and do not acquire U.S. schooling, assesses the importance of differences in levels of education, and compares rates of return to education for immigrants who complete their education abroad and those who acquire schooling in the United States. We find that returns to

education are higher for those with U.S. schooling than for those with foreign schooling only and that differences in returns do not result from ability bias or reflect greater language proficiency of those with U.S. schooling. Of particular importance, results show that returns to foreign education depend on whether or not the immigrant acquires *any* U.S. schooling. For immigrants who complete their schooling in the United States, returns to pre-migration education are similar to returns to post-migration education and are significantly higher than returns to education of immigrants who do not acquire U.S. schooling. Indeed, immigrants who complete their schooling in the United States receive returns to education that are comparable to those of natives.

We also find that for immigrants without U.S. schooling returns to foreign education differ by country. In particular, U.S. labor markets place a higher value on education received in highly developed countries and on education from countries in which English is an official language. Because returns to foreign schooling vary by country, immigrants from countries whose education is valued least in U.S. labor markets have the greatest incentive to acquire additional years of U.S. education.[2] Consistent with this view but also with that of a general compression of educational levels across groups of different national origin, empirical results indicate that the additional education of immigrants with U.S. schooling is greatest for immigrants from less developed countries.

Decomposition analysis reveals that, for immigrants from most countries, the higher educational attainment of those with U.S. schooling is the major reason they earn higher wages than immigrants without U.S. schooling. But for immigrants from highly developed countries, differences in educational attainment tend to be smaller and, in some cases, are offset by advantages in labor market experience and other characteristics in favor of immigrants without

U.S. schooling. Such differences again point to the hazards of assuming that immigrants from different countries share common experiences and common outcomes in the U.S. labor market.

II. A Preliminary Look at the Relationship Between Education and Wages

To provide insights into the relationship among level of schooling, source of schooling, and earnings, we consider the joint distribution of educational attainment and log weekly earnings separately for immigrants who do and do not receive U.S. schooling. The analysis is based on samples of foreign-born men drawn from the 5/100 public-use micro data files of the 1990 census. We restrict the samples to those aged 25-64 who worked positive hours and earned at least $1,000 wage or salary income in 1989 and who were not enrolled in school at the time of the census. An immigrant is classified as having U.S. schooling if the graduation date falls later than the year of arrival in the United States. Individuals for whom the data do not permit this classification are excluded from the sample.[3] These restrictions leave samples of 143,955 immigrants without U.S. schooling and 55,154 with U.S. schooling.

Figure 1 presents "unstandardized" plots of years of education and wages for immigrants with and without U.S. schooling. To construct the plots, we arranged workers in increasing order of education and then broke each sample into twenty cells, each representing five percent of the respective sample. Next we computed the mean education and mean log wage of workers in each cell. As such, Figure 1 portrays the relationship between mean years of education and mean log wages across the twenty cells of each sample.

The first observation to be drawn from the figure is that the distribution of educational attainment differs greatly between the two groups. Approximately 10 percent of immigrants with U.S. schooling have completed less than twelve years of education compared to 50 percent

of immigrants without U.S. schooling. This finding suggests that differences in the level of

education may be an important source of the wage differences previously cited.

A second observation is that, at least for those without U.S. schooling, the rate of return

to education appears to increase at approximately eleven years of schooling. As such, a linear

specification, which is common in the literature, is likely to overstate returns to low levels of

education and understate returns to high levels of education. Of course, there is another

interpretation for the nonlinear relationship observed in Figure 1: Both the distribution of

education and the rate of return may differ by country. For example, immigrants from Mexico

generally have lower levels of education than immigrants from Canada and the United Kingdom

and perhaps lower rates of return (because of a lower quality of education or less transferability

to U.S. labor markets). In that event, it is possible that the relationship between education and

log wages is linear for each country or region and that the aggregate relationship of Figure 1

simply captures differences in the quantitative relationship between years of education and

wages across countries.

To provide some perspective on this issue, we plot education-earnings profiles for eight

groups of countries: Mexico; Other Central America; South America; Japan, Taiwan, Hong

Kong, and Singapore; Other Asia and Northern Africa; Canada, the United Kingdom, Ireland,

Australia, and New Zealand; Western and Northern Europe; and Eastern and Southern Europe

(see Figure 2). The patterns are broadly similar to those observed in Figure 1, although

intercepts and slopes vary by country grouping. Together, Figures 1-2 suggest that the rate of

return to education may not be the same for all levels of education. Accordingly, the empirical

estimation that follows allows for a nonlinear fit. Note also that the earnings profiles of Figure 2

are generally steeper for immigrants with U.S. schooling. This pattern is consistent with the proposition that returns to education are higher for those with U.S. schooling.

III. Empirical Estimates of the Returns to Education

The preliminary analysis of educational attainment and wages points to important differences between immigrants who do and do not obtain U.S. schooling. In this section we turn to multivariate regression analyses of the relationships between educational attainment and wages.

Before presenting empirical estimates, we provide background on the two census samples. Table 1 lists summary statistics of the variables used in the regressions. In addition to the differences in educational attainment and log wages described in the previous section, immigrants with and without U.S. schooling differ in other dimensions as well. Notably, immigrants with U.S. schooling possess superior language skills,[4] are less likely to have been born in Mexico, have lived in the United States longer, but have fewer years of labor market experience than immigrants without U.S. schooling.

Tables 2 and 3 present regression results based on three alternative specifications of the relationship between education and log wages. Table 2 reports results from an unrestricted specification in which educational attainment is represented by a series of nine dummy variables (0-4 years of education is the omitted category). Figure 3 portrays the earnings profiles implied by the regression coefficients of the unrestricted specification, with intercepts evaluated at the sample means of non-schooling characteristics of the regression model.

Three general findings emerge from the unrestricted estimation. First, immigrants with U.S. schooling earn higher wages than immigrants without U.S. schooling at every level of

education beyond eight years. (Recall that very few immigrants with U.S. schooling have eight

or fewer years of education; in fact, only 1.6 percent of the U.S.-educated sample falls in the two

lowest education cells of Figure 3.) Second, the wage profile is steeper for immigrants with U.S.

schooling than for immigrants without U.S. schooling. That is, the rate of return to education is

greater if the immigrant is educated in the United States. Third, the nonlinear relationship

uncovered in the preliminary analysis persists even after controlling for other determinants of

wages. As in Figures 1-2, earnings profiles are steeper beyond eleven years of education.

Table 3 lists results of both the traditional linear specification and a linear-spline model

that allows the rate of return to education to differ below and above eleven years of schooling.[5]

Both of these parsimonious models confirm a key result of the unrestricted analysis: Returns to

education are greater for immigrants with U.S. schooling than for immigrants without U.S.

schooling. According to the linear model, the return per year of education is 5.8 percentage

points [exp(.0565) – 1] higher if the immigrant obtained U.S. schooling. In the spline model, the

estimated rewards for U.S. schooling are smaller than in the linear model but remain highly

significant. U.S. schooling raises the returns to each year of education by 3.3 percentage points

for schooling less than or equal to eleven years and by 1.3 percentage points for schooling

beyond eleven years. The large difference in parameter estimates between the two models

underscores the poor fit of the traditional linear specification in these data. Intuitively, for

immigrants without U.S. schooling, the linear model derives most of its identification from

individuals with few years of education (and for whom returns are low). For immigrants with

U.S. schooling, identification in the linear model stems primarily from individuals with high

education levels (where returns to education are high, as shown in the spline model). Because of

such misspecification, the linear model overstates the additional returns to U.S. schooling.[6]

Table 2 reveals other important differences in the wage structures facing immigrants with and without U.S. schooling. Foremost, immigrants without U.S. schooling receive significantly lower returns to labor market experience than immigrants with U.S. schooling, although this difference is mitigated by their higher returns to years of residence in the United States.[7] Intuitively, the difference in returns to experience reflects low returns to pre-immigration labor market experience of immigrants without U.S. schooling, while the difference in returns to years of U.S. residence captures higher labor market assimilation rates of immigrants who do not acquire U.S. schooling.

In Table 4, we report coefficient estimates after separately fitting the spline function in subsamples representing each of the eight country groupings detailed in the prior section. In the table, differential returns to education between immigrants with and without U.S. schooling are captured by interactions between education and an indicator variable, USED, which is set to unity if the immigrant obtained U.S. schooling. Results are broadly consistent with those based on the overall sample. First, returns to education are higher for immigrants with more than eleven years of schooling. Second, for almost every country grouping, immigrants with U.S. schooling earn higher returns to education than immigrants without U.S. schooling. However, returns to source-country education and rewards for U.S. schooling vary across countries. For example, immigrants from Central America (including Mexico), Other Asia and Northern Africa, and Eastern and Southern Europe appear to receive greater relative benefits from U.S. schooling than do immigrants from developed-country groupings.

For immigrants without U.S. schooling, the constant terms are generally higher for immigrants from developed-country groupings. But for immigrants who acquire U.S. schooling, the pattern of the USED coefficient (positive for less-developed and negative for developed

countries) narrows differences in the intercepts across country groupings. This finding again suggests that economic development may influence the wage structure of immigrants, a topic addressed in the following section.

A. Why Do Returns to Education Vary by Source Country?

The analysis based on Tables 2 and 3 treats education from abroad as homogeneous, assuming that the rate of return in U.S. markets is the same whether that education is produced in Mexico, Canada, Tanzania, or Japan. But as Table 4 shows, returns to education, both for those with and without U.S. schooling, differ across immigrant groups. In this section, therefore, we relax the model specification and permit the value of education received abroad to vary from country to country based on measures of the quality of a country's education and its transferability to the United States.

Countries that are highly developed, as measured by GDP per capita, are likely to devote more resources to schooling than do less developed countries. Apart from higher funding levels, the educational systems of the more developed countries are also likely to be more comparable to the U.S. system, which should enhance transferability of skills to the United States. Education outside the United States may also be more comparable to U.S. education and be more transferable to the United States when English is an official language of the country. In that event, one would anticipate that U.S. labor markets would place a higher value on education from countries in which English is an official language.

If the value of non-U.S. education varies across countries, the incentive of immigrants to acquire U.S. education will likewise vary by country of origin. Immigrants whose foreign education is highly discounted in the United States will have the greatest incentive to obtain U.S.

education and thereby receive the higher returns associated with education from the United States. Immigrants from countries whose education is recognized as of high quality and readily transferred to the United States can be expected to gain relatively less from U.S. schooling. Applying this reasoning to the preceding analysis, if returns to non-U.S. education are higher for immigrants from countries with high GDP per capita and an official language of English, the additional returns to U.S. education are likely to be lower for such immigrants than for immigrants from countries with low GDP per capita and countries without English as an official language.

We test these hypotheses by reestimating the wage equation for a subsample of immigrants from 89 major source countries adding information on GDP per capita and official language of the country to the regression sample. Data on GDP come from Summers and Heston (1991) and the U.S. Arms Control and Disarmament Agency (1984), data on official language from the Central Intelligence Agency (1999). Immigrants from the 89 countries make up 91 percent of the original sample.[8]

The new, more richly specified regression equation is:

$$
\begin{aligned}
\ln W_{ij} = \ &\alpha_0 + \alpha_1 GDP_j + \alpha_2 ENG_j \\
&+ \alpha_3 EDUC_i + \alpha_4 GDP_j \cdot EDUC_i + \alpha_5 ENG_j \cdot EDUC_i \\
&+ \delta_0 USED_i + \delta_1 USED_i \cdot GDP_j + \delta_2 USED_i \cdot ENG_j \\
&+ \delta_3 USED_i \cdot EDUC_i + \delta_4 USED_i \cdot GDP_j \cdot EDUC_i + \delta_5 USED_i \cdot ENG_j \cdot EDUC_i \\
&+ Z_i \cdot \lambda + USED_i \cdot Z_i \cdot \pi + u_j + \varepsilon_{ij}
\end{aligned}
$$

(1)

where W_{ij} refers to the weekly wages of immigrant i from country j. In the equation, *GDP* denotes per-capita GDP and *ENG* is an indicator variable set to unity if English is an official

language of the source country; *EDUC* measures years of education in the linear specification

but appears with two segments—years less than or equal to 11 and years greater than 11—in the

linear-spline specification; *USED* captures whether or not the immigrant has acquired schooling

in the United States; and *Z* is a vector of control variables. The error term consists of two

components, with *u* reflecting a country-of-origin random effect and ε capturing white noise.[9]

Estimates of equation (1) are presented in Table 5. Consider first the results of columns 1

and 3, which include *GDP* and *ENG* but not interactions of these variables with education.

Consistent with expectations, for immigrants with no U.S. schooling wages are higher for those

who come from countries with high GDP (rising about 5.3 percent for each $1,000 increase in

per-capita GDP according to the estimate of α_1 in column 3). Prior studies, such as Jasso and

Rosenzweig (1986) and Borjas (1987), have documented a positive effect of source country

development on earnings of immigrants in general, but what Table 5 reveals is that this

relationship is limited to immigrants who do not acquire U.S. schooling. For immigrants with

U.S. schooling there is no direct influence of source country development on the level of wages

($\hat{\delta}_1$ is negative and virtually equal in absolute value to $\hat{\alpha}_1$).

Results further indicate that for immigrants without U.S. schooling returns to education

are positively related to economic development of the source country ($\hat{\alpha}_4 > 0$).[10] Immigrants

from, say, Japan receive higher returns for each year of education than do immigrants from

Mexico. The implication is that education from highly developed countries is superior in quality

or more transferable to the United States than is education from less developed countries. For

immigrants who do not continue their schooling in the United States, the higher returns to

education from developed countries are most pronounced at high levels of education. For an

immigrant with eleven or more years of schooling, each $1,000 increase in a country's per-capita

GDP raises returns to another year of schooling by a statistically significant 0.14 percentage point (the estimate of α_4 in the upper spline is .0014 in column 4).

The added value of U.S. schooling also depends on the immigrant's country of origin. In particular, the benefits of U.S. schooling are inversely related to economic development of the source country (in column 2, the coefficient of USED*GDP*Education, $\hat{\delta}_4$, is negative). Stated differently, immigrants from less developed countries, where education is highly discounted in U.S. labor markets, benefit to a greater extent from U.S. schooling than do immigrants from developed countries. Thus, whereas returns to non-U.S. education are greater for immigrants from developed countries, added returns to U.S. education are greater for immigrants from less developed countries.

As indicated by the linear-spline specification (column 4), the rewards for U.S. schooling depend not only on economic development of a country but also on the immigrant's level of education. In particular, it is the less educated immigrants from less developed countries that receive the greatest reward for U.S. schooling. For immigrants with eleven or fewer years of education, a $1,000 lower value of the per-capita GDP of the source country is associated with a 0.52 percentage point higher rate of return to education if they acquire schooling in the United States. For immigrants with more than eleven years of schooling, the comparable increment is only 0.17 percentage point.

Table 5 also provides estimates of the extent to which returns to education depend on whether or not English is an official language of the source country. According to the estimates of column 2, English language raises the returns to education for immigrants without U.S. schooling ($\hat{\alpha}_5$ is .0326). But results in column 4 indicate that the increase in returns is statistically significant only for immigrants with high levels of schooling (the coefficient of

ENG*(Education>11) is .0116). For immigrants with U.S. schooling, the advantage of English

as an official language disappears. For highly educated immigrants, the reward for U.S.

schooling is greater for immigrants who come from a country in which English is not an official

language ($\hat{\delta}_5 = -.0103$). This finding parallels results of the GDP variable and indicates that

U.S. schooling conveys relatively greater benefits when the education of the source country

might be viewed as "suspect" or of uncertain quality, because of low economic development or,

at least for the highly educated, non-English language.

B. Do the Higher Returns of Immigrants with U.S. Schooling Reflect Greater Proficiency in English?

The finding that returns to education are higher for immigrants from English-speaking

countries underscores the importance of English language. This finding also raises the question

of whether the higher returns to education for immigrants with U.S. schooling might actually

capture differential returns for fluency in English.[11] As documented in Table 1, command of

English is greater for immigrants with U.S. schooling than for other immigrants.

To account for the possible interaction between returns to education and English

proficiency, we estimate regressions that allow for different returns to education based on the

immigrant's proficiency in English. Results appear in Table 6.

As expected, returns to education rise with proficiency in English. For example, based

on the linear specification, for immigrants without U.S. schooling the returns per year of

education are 1.9 percent for immigrants who speak English poorly or not at all, 3.2 percent for

those who speak English well, 5.8 percent for those who speak English very well, and 6.1

percent for those who speak only English.[12] But importantly, the added returns to U.S. education

persist when English proficiency is taken into account. Even when we allow returns to education to vary with language skills, immigrants with U.S. schooling still receive significantly greater returns to education than immigrants without U.S. schooling (an additional 4 to 5 percentage points per year of schooling in the linear specification). This finding indicates that the higher returns to education previously documented for immigrants with U.S. schooling are not the consequence of superior English skills.

Section B of Table 6 reveals that the effect of language proficiency depends on the immigrant's level of schooling. For immigrants with foreign schooling only, the returns to education beyond the eleventh year are twice as high if the immigrant is highly proficient in English (10.3 percent per year if the immigrant speaks only English) as opposed to speaking English poorly if at all (5.0 percent per year). For immigrants with U.S. schooling, the returns to education beyond eleven years are 11.0 percent $[\exp(.0984 + .0064) - 1]$ per year for those most proficient in English compared to 7.6 percent per year for those least proficient. In contrast, for immigrants with low levels of education, returns for those without U.S. schooling are only fractionally higher for immigrants with the greatest proficiency in English than for immigrants who speak English poorly or not at all (1.7 versus 1.0 percent per year). Although the added returns to U.S. schooling are greater in the lower segment of the spline, for immigrants with U.S. schooling the returns to education remain much lower than in the upper segment of the spline and vary only modestly with English proficiency (from 3.5 to 4.6 percent per year).

In summary, immigrants who are proficient in English earn higher returns to their education than those who are not proficient, but regardless of language skills, immigrants are rewarded for U.S. schooling. Even when language proficiency is taken into account, immigrants with U.S. schooling earn higher returns to their education than immigrants without U.S.

schooling. This finding indicates that the higher returns to education for immigrants with U.S. schooling cannot be attributed to greater English proficiency of these immigrants.

IV.   Differences in Educational Attainment of Immigrants
With and Without U.S. Schooling

For immigrants in the United States, average levels of schooling vary by country of origin. For example, average educational attainment is higher for immigrants from Japan than for immigrants from Mexico. Economic development of the country and distance from the United States are two factors expected to be correlated with educational levels of immigrants. The educational attainment of immigrants is related to that of the source population (Borjas, 1994), and international data show a correlation between economic development and educational attainment (Barro and Lee 1993). In addition, studies of internal U.S. migration patterns find a positive relationship between distance of migration and educational attainment (Greenwood 1985). Schwartz (1973) shows that the (absolute) value of the distance elasticity of migration diminishes strongly with education and attributes this to lower information costs of the highly educated. Therefore, other things equal, one would anticipate that schooling levels would be higher for immigrants whose country of origin is farther from the United States.

As the results of Table 5 indicate, the returns to U.S. schooling vary by country of origin. In particular, the relative benefits of U.S. schooling are higher for immigrants from less developed countries. Thus, among immigrants who acquire U.S. schooling, the incremental education is likely to be greater for those from less developed countries. For this reason, and perhaps also because immigrants from less developed countries enter the United States with relatively low levels of education, the difference in years of education between immigrants with

and without U.S. schooling is predicted to be greater for immigrants from less developed countries.

To test this proposition and to provide insights on the differing patterns of educational attainment of immigrants from different countries, we estimate equations that attempt to explain mean education of immigrants without U.S. schooling, mean education of immigrants with U.S. schooling, and the difference in means— what we label the "U.S. differential"—for immigrants from the 89 source countries underlying the analysis in Table 5.

Independent variables include GDP per capita and distance (in thousands of miles) between the capitol and the U.S. border.[13] In addition, we include a dummy variable to allow for the possibility that educational attainment of immigrants in the United States depends on whether or not English is an official language of the source country. In one specification, we add continent dummies to allow for locational characteristics not captured by the other variables.

Empirical estimates are presented in Table 7. As predicted, mean education of immigrants without U.S. schooling is positively and significantly related to GDP per capita (columns 1 and 2). Educational attainment of immigrants with U.S. schooling, however, does not vary significantly with GDP per capita (columns 3 and 4). We interpret this finding as evidence that U.S. schooling narrows the educational distribution of immigrants across countries. Columns 5 and 6 provide direct evidence on this issue. The coefficient of the GDP variable indicates that the incremental educational attainment of those educated in the United States is greater for immigrants from less developed countries. Figure 4 provides further perspective. The figure shows that the difference in education is greatest for such countries as China, Mexico, and Portugal and smallest for highly developed countries including Japan, France, and Sweden.

Educational attainment of immigrants is also positively related to distance, but the effect of distance is weaker for immigrants with U.S. schooling. In the model of Schwartz (1973), this finding could be explained in terms of a lower informational advantage of education for immigrants who continue their schooling in the United States. Alternatively, compulsory schooling laws and easy access to education in the United States may have a leveling effect on the educational attainment of immigrants who acquire U.S. schooling. (Because immigrants from countries closer to the United States tend to arrive with lower levels of education, their potential increment in education is greater.)

Mean education appears to be greater for immigrants from countries in which English is an official language, and continent of origin conveys additional information beyond that contained in the GDP and distance variables. As noted by Butcher (1994), other things equal immigrants from Africa have higher educational attainment than immigrants from other continents.

In summary, a country's GDP per capita is a significant determinant of educational levels and of educational differences for U.S. and non-U.S. educated immigrants. Of particular note, the difference in educational attainment of those with and without U.S. schooling is greatest for immigrants from less developed countries. This finding is consistent with evidence earlier in the paper that the added returns to U.S. schooling are greater for immigrants from less developed countries and with the corresponding proposition that incremental education in the United States should be greater for immigrants from less developed countries. Educational attainment is also related to distance of the source country from the United States, whether or not English is an official language of the country, and continent of origin.

V. Digging Deeper—Additional Empirical Evidence

A. Does the Distribution of U.S./Non-U.S. Education Affect Wages?

The empirical analysis has allowed returns to education to differ for immigrants with and without U.S. schooling but, for immigrants with U.S. schooling, has constrained returns to be the same for education received in the United States and education from abroad. In other words, the distribution of education between the source country and the United States has been assumed to be irrelevant for those who receive schooling in the United States. Schoeni (1997) adopts a similar specification. In contrast, other studies (Chiswick 1978; Stewart and Hyclak 1984; Friedberg 1993) permit returns to U.S. and non-U.S. education to differ but restrict returns to foreign education to be the same whether or not the immigrant acquires U.S. schooling. In this section, we examine the relative appropriateness of the two specifications.

Unfortunately, census data are poorly suited for this purpose. Because the census record gives the time of arrival in the United States in multi-year brackets, it is difficult to ascertain the years of education completed prior to arrival for immigrants who also obtain U.S. schooling. For this reason, we turn to data drawn from the National Longitudinal Survey of Youth (NLSY), in which respondents report both the month in which they entered the United States and the date they were last enrolled in school. As such, the NLSY data allow great precision in separating years of education obtained prior to and after the time of immigration.[14]

The NLSY is a longitudinal survey of 12,686 youths aged 14-22 when they were first interviewed in 1979. The original sample included 874 persons who were born abroad. Restricting the analysis to males in the non-military subsamples and dropping observations prior to the last enrollment date and observations with missing data, we obtain a regression sample of 2,636 observations of 351 immigrants.[15] The majority of immigrants (288 persons yielding

2,145 observations) acquired some schooling after arriving in the United States. Further, the sample includes 1,100 observations of 144 persons who attended school both abroad and in the United States. (In the latter subsample, average years of foreign and U.S. education are 5.24 and 6.55, respectively.)

Table 8 reports results from regressions of the log hourly wage on years of education and other characteristics of the immigrant.[16] Results in columns 1 and 2 are based on the full sample, whereas the sample underlying column 3 is restricted to immigrants who attended school both in the United States and abroad.

When returns to non-U.S. education are constrained to be the same for immigrants who continue schooling in the United States and for those who do not (column 1), results suggest that the returns to education may be lower (by about 0.6 percentage point) for education from abroad. But when returns are allowed to differ for the two groups (column 2), the interpretation changes. First, returns to education are significantly lower for immigrants without U.S. schooling— approximately 3.7 percentage points less per year than received by immigrants with U.S. schooling. Second, and of particular importance, returns to foreign education are significantly higher for immigrants who continue their schooling in the United States than for immigrants with foreign schooling only.[17] Indeed, the estimated return to each year of foreign education is virtually the same as (and not significantly different from) the return to each year of U.S. education. When the sample is restricted to immigrants with both U.S. and foreign schooling (column 3), results again point to similar returns to both types of education.

The finding that immigrants earn higher returns to years of foreign education if they continue their schooling in the United States squares with the view that U.S. schooling upgrades or certifies education received in the source country.[18] An alternative interpretation, however, is

that immigrants who continue their schooling in the United States have greater innate ability than immigrants without U.S. schooling. In that event, observed differences in returns to foreign education between those who do and do not acquire U.S. schooling may simply reflect ability bias in the wage regression. Fortunately, the NLSY data set includes a good proxy for innate ability—the percentile score of the Armed Forces Qualification Test (AFQT). Recent studies based on the NLSY, such as Blackburn and Neumark (1995), Griffin and Ganderton (1996), and Neal and Johnson (1996), use the AFQT score to proxy for skills that otherwise are unobserved in the wage regression.

In column 4 of Table 8, we add the AFQT score to the wage model.[19] Results show that wages of immigrants are significantly related to this measure of ability and that the coefficient of education is reduced when the AFQT score is included in the model, suggesting, perhaps, ability bias in the estimated rate of return to education. (A ten percentile improvement of the AFQT score is associated with 3.6 percent higher wages, and the estimated rate of return to education drops by 30 percent—consistent with the findings of Griffin and Ganderton.) But more important for the present study, inclusion of the AFQT score does not alter the key findings of column 2. In particular, the estimated rate of return to years of foreign education remains significantly higher for immigrants with U.S. schooling than for immigrants without U.S. schooling.

In column 5, the specification introduces an interaction term between education and the AFQT score, allowing returns to education to differ for those with high and low innate ability. (To facilitate interpretation of other coefficients of the model, the AFQT interaction uses the deviation of the individual score from the group mean.) Results reveal that the AFQT effect on wages identified in column 4 takes place through higher rates of return to education for more

able immigrants rather than through shifts of the intercept, as suggested in the previous column. But once more, results indicate that returns to foreign education differ significantly for immigrants with and without U.S. schooling. The robustness of this finding to the inclusion of AFQT in the wage regression lends further support to the interpretation that U.S. schooling upgrades foreign education among immigrants.

In summary, the results of this section indicate that immigrants with U.S. schooling earn higher returns to years of foreign education than do immigrants without U.S. schooling. Further, for immigrants who complete their education in the United States we find no evidence of different returns to their foreign and U.S. education. What matters is where immigrants complete their schooling—and not the distribution of education between the source country and the United States. These findings justify the model specification underlying our analysis of the census data and indicate a bias in U.S. studies that restrict returns to foreign education to be the same for immigrants who acquire U.S. schooling and immigrants who do not.[20]

B. Are Returns to U.S. Education Actually Returns to Growing Up in the United States?

Immigrants with U.S. schooling tend to arrive in the United States at a younger age than immigrants who receive no U.S. schooling. Indeed, some immigrants arrive at such a young age that all of their schooling and all or most of their socialization occurs in the United States. Such immigrants might be expected to receive returns to education comparable to the returns received by natives. In that event, what has been interpreted as the direct effects of U.S. schooling on wages may instead reflect the influences of growing up in the United States.

To investigate this issue, we return to the large samples from the 1990 census and consider three categories of immigrants based on age at arrival: (1) children, age six and

younger, (2) youths, 7-24 years of age, and (3) adults, 25 and older.[21] Based on this

categorization, the wage regression was re-estimated for child immigrants, assumed to have U.S.

education only; youth immigrants with U.S. schooling; youth immigrants without U.S.

schooling; adult immigrants without U.S. schooling; and natives.[22] Results appear in the upper

half of Table 9. The bottom half of the table reports F-statistics and p-values (in parentheses) for

each pairwise test of equality of the two slope segments across groups.

A comparison of the estimates in columns 3-4 shows the importance of U.S. education

for immigrants who entered the United States with foreign schooling. Immigrants who arrived

as youths and continued their schooling in the United States receive significantly higher returns

to education than immigrants who also arrived as youths but did not acquire U.S. schooling ($F =$

12.52). Likewise, youth immigrants with U.S. schooling receive higher returns to education than

adult immigrants without U.S. schooling. Furthermore, the returns to education for U.S.-

educated youth immigrants do not differ significantly from the returns received by immigrants

who arrived as children ($F = .42$) or from the returns received by natives ($F = 1.32$). By

implication, immigrants with U.S. schooling, whether or not they also received foreign

schooling, receive returns to education that are comparable to those of natives; immigrants

without U.S. schooling receive lower returns. These results indicate that the higher returns

estimated for U.S.-educated immigrants reflect the rewards to U.S. schooling and cannot be

attributed to growing up in the United States.

C. Results from 1970 and 1980 Census Data

To provide historical perspective, Figure 5 presents "unstandardized" education-wage

plots comparable to those of Figures 1 and 2, and Table 10 lists empirical estimates of the wage

model based on census data from 1970 and 1980. Several conclusions can be drawn. First, a nonlinear specification is also appropriate for these earlier years. Wald tests demonstrate conclusively that the linear spline fits the data better than the linear specification.[23] When estimated with a spline function, the data show that, for all three census years, returns to education are greater for those with more than eleven years of schooling than for those with eleven or fewer years. But regardless of the specification, results reveal that immigrants with U.S. schooling earn higher rates of return to their education than do immigrants without U.S. schooling—the central finding of the regression analysis of 1990 census data is documented to hold in earlier census years as well. Therefore, differences in the time period cannot explain the conflicting findings in the literature concerning the relative returns to host-country and foreign education for U.S. immigrants.

A comparison of Tables 3 and 10 shows that the returns to education have increased over time. Based on the linear model, the return to an additional year of education rose from 3.5 percent [exp(.0348) – 1] in 1970 to 3.7 percent in 1980 to 3.9 percent in 1990 for immigrants without U.S. schooling. For immigrants with U.S. schooling, the gains were even larger—rising from 7.3 percent in 1970 to 7.9 percent in 1980 to 10.0 percent in 1990. The finding that returns to education for immigrants rose disproportionately in the 1980s is consistent with findings for workers in general (Katz and Murphy 1992).

Finally, the spline specification reveals that the increase in the returns to schooling was concentrated among those with high levels of education. In fact, for immigrants with educational attainment of eleven years or less, the estimated return to an additional year of education increased by less than 0.2 percentage point between 1970 and 1990. For immigrants with U.S. schooling and more than eleven years of education, returns rose from 8.8 percent [exp(.0847) –

1] to 10.7 percent. For immigrants without U.S. schooling and more than eleven years of

education, returns rose from 7.4 percent to 9.3 percent. Because immigrants with U.S. schooling

tend to be more highly educated than other immigrants, and to have higher wages, the increase in

the returns, especially for the highly educated, could be expected to widen the pay gap between

immigrants with and without U.S. education. In fact, the pay gap did widen—from 30.6 percent

in 1970 to 38.1 percent in 1990.

VI. Decomposing the Wage Gap

The results to this point indicate that immigrants with U.S. schooling differ from

immigrants without U.S. schooling, notably in terms of higher educational attainment.

Immigrants with U.S. schooling also face a different pay structure, which includes higher returns

to education. In this final section of the paper, we use the Oaxaca decomposition technique

(Oaxaca 1973) to estimate the relative importance of differences in characteristics and

differences in returns to characteristics in explaining the 1990 pay gap between immigrants with

U.S. schooling and immigrants without U.S. schooling.

The experiment consists of partitioning the average log wage gap as follows:

(2a) $\overline{\ln W}^{US} - \overline{\ln W}^{FOR} = \overline{X}^{US} \cdot \hat{\beta}^{US} - \overline{X}^{FOR} \cdot \hat{\beta}^{FOR}$

(2b) $= (\overline{X}^{US} - \overline{X}^{FOR}) \cdot \hat{\beta}^{US} + \overline{X}^{FOR} \cdot (\hat{\beta}^{US} - \hat{\beta}^{FOR})$,

where $\overline{X}$ denotes a row vector of sample means (from Table 1), $\hat{\beta}$ is a vector of parameter

estimates obtained from Table 2, and superscripts refer to the samples of immigrants with and

without U.S. schooling. The first term in equation 2b provides an assessment of the importance

of differences in characteristics of the two groups of immigrants, and the second term measures the effect of differences in returns to these characteristics. Results of the decomposition are presented in Table 11, first for the full sample and then for each of the eight country groupings.

Overall and for most of the countries, the principal reason for differences in wages is differences in characteristics, especially differences in educational attainment. For the sample of all immigrants, 82.4 percent of the wage gap can be attributed to differences in years of education, 3.5 to differences in other characteristics, and 14.1 percent to differences in coefficients. For five of the eight country groupings, the story is more or less the same: Immigrants with U.S. schooling earn more than other immigrants, and differences in education account for between 61 and 104 percent of the difference in pay.[24]

For three of the country groupings, however, average pay is lower for immigrants with U.S. schooling. The countries for which this is true are Japan, Hong Kong, Taiwan, and Singapore; Canada, the United Kingdom, Ireland, Australia, and New Zealand; and the countries of Western and Northern Europe. For immigrants from these countries the higher education associated with U.S. schooling is more than offset by greater experience and other advantages enjoyed by immigrants without U.S. schooling. The finding that the educational advantage of immigrants with U.S. schooling is smaller for immigrants from these countries is consistent with our earlier finding that differences in educational attainment of those with and without U.S. schooling is smallest for immigrants from highly developed countries.

VII.   Summary

Immigrants with U.S. schooling earn higher wages than immigrants without U.S. schooling. This study shows that this difference in pay is related to differences in both level of

education and returns to education. Immigrants with U.S. schooling earn higher returns to their education, and these higher returns are not the result of ability bias or superior English skills. Although returns to education are higher for immigrants who are proficient in English, the added returns to U.S. schooling are as high for immigrants who are not fluent in English as for immigrants who are fluent.

Supplementing U.S. census data with data from the National Longitudinal Survey of Youth, we show that returns to years of foreign education are significantly higher for immigrants who continue their schooling in the United States than for other immigrants. In fact, for immigrants with U.S. schooling returns to foreign education mirror returns to U.S. education. We interpret this finding as evidence that U.S. education upgrades or validates source-country education. The finding has important implications for empirical specifications of the education-earnings relationship of immigrants and suggests a bias in studies that restrict returns to foreign education to be the same whether or not the immigrant acquired U.S. schooling. Differences in the literature concerning the relative returns to foreign and U.S. education are a consequence of this restriction.

Although immigrants with U.S. schooling typically arrive in the United States at a younger age than immigrants who do not continue their schooling, the higher returns to education for the former group do not capture the effects of growing up in the United States. For U.S.-educated immigrants, the returns to education are the same whether the immigrant arrived as a child and was educated entirely in the United States or arrived at a more advanced age and completed education begun in the source country. For immigrants with foreign schooling, the returns to education are not only greater for those who continue their education in the United States, but they are also comparable to the returns received by natives.

The finding that returns to education are higher for immigrants with U.S. schooling holds whether the relationship between years of education and log wages is assumed to be linear, as is traditionally done, or allowed to be nonlinear. Nonlinear specifications reveal that the returns to education are higher for immigrants with high levels of education.

Between 1970 and 1990, returns to education increased for immigrants with more than eleven years of schooling but held steady for those with less education. This increase in returns to education contributed to the growing wage gap between immigrants with and without U.S. schooling.

We also uncover evidence that returns to foreign education vary by source country based on measures of the quality of the education and its transferability to the United States. In particular, returns to foreign education are higher for immigrants from developed countries, as measured by GDP per capita, and from countries in which English is an official language. An implication is that immigrants whose source-country education is valued least highly have the greatest incentive to acquire U.S. schooling. Consistent with this proposition, the reward for U.S. schooling is greatest for immigrants from less developed countries and, for the highly educated, from countries for which English is not an official language.

The educational attainment of immigrants with U.S. schooling generally exceeds that of immigrants without U.S. schooling, and the difference in years of education depends on economic development of the source country. In particular, the additional education of immigrants with U.S. schooling is greatest for immigrants from less developed countries.

Decomposition analysis reveals that, overall and for most country groupings, the difference in educational attainment of immigrants with and without U.S. schooling is the primary reason that wages are higher for immigrants with U.S. schooling. But for immigrants

from highly developed countries, the educational advantage of those with U.S. schooling is small and sometimes offset by disadvantages in experience and other characteristics. As a consequence, for immigrants from certain highly developed countries average wages are higher for those without U.S. schooling.

In conclusion, for immigrants in the United States the returns to education depend on economic development and language of the source country, whether or not the immigrant acquired schooling in the United States, and educational attainment of the immigrant. Returns to education are higher when immigrants come from developed countries with an official language of English, when immigrants obtain U.S. schooling, and when the level of education exceeds eleven years. Although differences in returns are important, the higher educational attainment of immigrants with U.S. schooling is the primary reason that they generally earn higher wages than immigrants without U.S. schooling.

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Table 1

Descriptive Sample Statistics

Variable	Non-US Schooling		US Schooling	
	Mean	Standard Deviation	Mean	Standard Deviation
ln(Weekly Wage)	6.006	0.748	6.329	0.706
Years of Education	10.205	5.254	14.331	2.953
Years of Education<=11	8.492	3.624	10.871	0.758
Years of Education>11	1.712	2.426	3.460	2.693
Education Indicator Variables:				
Less than 5th Grade (Omitted)	0.162	0.368	0.003	0.051
5th-8th Grades	0.183	0.387	0.014	0.116
9th Grade	0.043	0.202	0.012	0.108
10th-11th Grades	0.106	0.308	0.074	0.263
12th Grade	0.161	0.368	0.205	0.404
Some College	0.104	0.305	0.199	0.399
Associate Degree	0.046	0.209	0.081	0.272
Bachelor's Degree	0.107	0.310	0.213	0.409
Master's Degree	0.050	0.218	0.102	0.302
Professional, Doctoral Degree	0.038	0.191	0.098	0.298
Experience	25.338	11.379	15.062	8.107
Years Since Migration	11.975	8.595	26.169	10.241
English Proficiency	0.668	0.471	0.974	0.160
Married, Spouse Present	0.767	0.423	0.666	0.472
SMSA	0.949	0.219	0.930	0.255
Health Limiting Work	0.032	0.177	0.031	0.173
Part-time Work	0.060	0.237	0.047	0.212
Census Division:				
New England	0.049	0.217	0.067	0.251
Mid Atlantic	0.203	0.402	0.183	0.387
East North Central	0.077	0.266	0.099	0.299
West North Central	0.011	0.106	0.022	0.147
South Atlantic	0.141	0.348	0.174	0.379
East South Central	0.005	0.072	0.017	0.129
West South Central	0.099	0.299	0.088	0.283
Mountain	0.036	0.188	0.047	0.212
Pacific (Omitted)	0.378	0.485	0.302	0.459
Country:				
Mexico	0.288	0.453	0.135	0.342
Other Central America	0.153	0.360	0.124	0.329
South America	0.058	0.233	0.045	0.207

Japan, Hong Kong, Taiwan, Singapore	0.030	0.169	0.056	0.231
Other Asia, North Africa	0.228	0.419	0.169	0.375
Canada, UK, Ireland, Australia, NZ	0.052	0.222	0.126	0.332
West, North Europe	0.030	0.170	0.162	0.369
East, South Europe	0.108	0.311	0.133	0.339
Other or N/A (Omitted)	0.055	0.228	0.050	0.218
Observations		143,955		55,154

Table 2

Wage Regression, Unrestricted Specification

	Non-US Schooling	US Schooling	US Differential
5th-8th Grades	.0331***	.0717	.0386
	(.0056)	(.0546)	(.0549)
9th Grade	.0637***	.2175***	.1538***
	(.0089)	(.0555)	(.0562)
10th-11th Grades	.0909***	.2762***	.1854***
	(.0070)	(.0513)	(.0517)
12th Grade	.1567***	.3911***	.2344***
	(.0067)	(.0509)	(.0513)
Some College	.2650***	.5075***	.2426***
	(.0075)	(.0509)	(.0515)
Associate Degree	.3198***	.5865***	.2666***
	(.0094)	(.0514)	(.0523)
Bachelor's Degree	.5143***	.8093***	.2950***
	(.0079)	(.0511)	(.0517)
Master's Degree	.6711***	1.0184***	.3473***
	(.0096)	(.0514)	(.0523)
Professional, Doctoral Degree	.8733***	1.1605***	.2872***
	(.0103)	(.0514)	(.0524)
Experience	.0179***	.0424***	.0244***
	(.0007)	(.0015)	(.0016)
Experience^2/100	-.0312***	-.0687***	-.0375***
	(.0012)	(.0038)	(.0040)
Years Since Migration	.0251***	.0098***	-.0153***
	(.0006)	(.0014)	(.0016)
Years Since Migration^2/100	-.0346***	-.0142***	.0204***
	(.0019)	(.0027)	(.0033)
English Proficiency	.1605***	.2102***	.0498***
	(.0039)	(.0166)	(.0171)
Married, Spouse Present	.1338***	.1889***	.0551***
	(.0039)	(.0057)	(.0069)
SMSA	.1149***	.1559***	.0410***
	(.0075)	(.0104)	(.0128)
Health Limiting Work	-.0742***	-.1895***	-.1153***
	(.009)	(.0150)	(.0175)
Part-time Work	-.4997***	-.5753***	-.0756***
	(.0067)	(.0122)	(.0139)
Constant	5.7985***	5.6870***	-.1115**
	(.0048)	(.0506)	(.0508)
R^2		.3556	

Standard Error	.6026

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of weekly wages. Sample size is 199,109. Regression also includes indicator variables for census division and country of origin. Constant terms are evaluated at means of non-education variables.

Table 3

Wage Regressions, Linear and Linear-Spline Specifications

	Linear			Linear Spline		
	Non-US Schooling	**US Schooling**	**US Diff'l**	**Non-US Schooling**	**US Schooling**	**US Diff'l**
Education	.0385***	.0950***	.0565***			
	(.0004)	(.0010)	(.0011)			
Education<=11				.0081***	.0409***	.0328***
				(.0006)	(.0036)	(.0037)
Education>11				.0887***	.1018***	.0131***
				(.0008)	(.0011)	(.0013)
Constant	6.0369***	6.0127***	-.0242***	5.8747***	5.9825***	.1077***
	(.0016)	(.0042)	(.0045)	(.0028)	(.0046)	(.0054)
R^2		.3370			.3544	
Standard Error		.6112			.6031	

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of weekly wages. Sample size is 199,109. Regressions also include experience and its square, years since migration and its square, indicator variables for English proficiency, marital status, residence in SMSA, health status, part-time work, census division, and country of origin. Constants are evaluated at 11 years of education and at means of non-education variables.

Table 4

Wage Regressions by Country

	Mexico	Other Central America	South America	Japan, HK, Taiwan, Singapore	Other Asia, North Africa	Canada, UK, NZ, Australia, Ireland	West, North Europe	East, South Europe
Education<=11	.0129***	.0106***	-.0021	-.0113*	.0025	.0001	-.0024	-.0028
	(.0009)	(.0014)	(.0030)	(.0065)	(.0016)	(.0063)	(.0069)	(.0020)
USED*(Education<=11)	.0344***	.0459***	-.0058	.0043	.1056***	.0289	.0243*	.0358***
	(.0050)	(.0124)	(.0260)	(.0795)	(.0258)	(.0184)	(.0139)	(.0116)
Education>11	.0706***	.0791***	.0946***	.0975***	.0915***	.0904***	.0915***	.0649***
	(.0033)	(.0025)	(.0032)	(.0045)	(.0015)	(.0031)	(.0038)	(.0023)
USED*(Education>11)	.0170***	.0319***	.0041	.0106	.0218***	.0047	.0102**	.0236***
	(.0048)	(.0040)	(.0059)	(.0066)	(.0030)	(.0044)	(.0048)	(.0036)
USED	.1681***	.1339***	.0996***	-.1800***	.0568***	-.2663***	-.3020***	.0241*
	(.0112)	(.0136)	(.0239)	(.0334)	(.0155)	(.0188)	(.0199)	(.0145)
Constant	5.7106***	5.7947***	5.8671***	6.1070***	5.8492***	6.3454***	6.3058***	6.1760***
	(.0059)	(.0063)	(.0097)	(.0217)	(.0061)	(.0128)	(.0164)	(.0081)
R^2	.2036	.2811	.2741	.2890	.3265	.2689	.3087	.2027
Standard Error	.5531	.5849	.5851	.6447	.6212	.6411	.6013	.6027
Observations	48,841	28,773	10,789	7,895	37,750	14,414	13,217	22,908

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of weekly wages. USED is an indicator variable set to unity if the immigrant has

U.S. schooling. Regressions also include experience and its square, years since migration and its square, indicator variables for

English proficiency, marital status, residence in SMSA, health status, part-time work, and census division, as well as interaction terms

between USED and each variable. Constant terms and USED differentials are evaluated at 11 years of education and at means of non-

education variables.

Table 5

Returns to Education with GDP and English Interactions

	Linear		Linear Spline	
	(1)	**(2)**	**(3)**	**(4)**
GDP	.0529***	.0502***	.0514***	.0479***
	(.0029)	(.0028)	(.0029)	(.0028)
ENG	.0195	-.0561***	.0069	-.0240
	(.0203)	(.0192)	(.0201)	(.0193)
Education	.0388***	.0343***		
	(.0005)	(.0005)		
Education<=11			.0081***	.0088***
			(.0006)	(.0007)
Education>11			.0896***	.0857***
			(.0009)	(.0010)
GDP*Education		.0015***		
		(.0002)		
GDP*(Education<=11)				.0004
				(.0003)
GDP*(Education>11)				.0014***
				(.0003)
ENG*Education		.0326***		
		(.0012)		
ENG*(Education<=11)				.0001
				(.0023)
ENG*(Education>11)				.0116***
				(.0019)
USED*GDP	-.0515***	-.0489***	-.0496***	-.0453***
	(.0012)	(.0018)	(.0012)	(.0020)
USED*ENG	-.0559***	-.0022	-.0465***	-.0195
	(.0083)	(.0127)	(.0082)	(.0140)
USED*Education	.0516***	.0544***		
	(.0011)	(.0012)		
USED*(Education<=11)			.0286***	.0247***
			(.0038)	(.0042)
USED*(Education>11)			.0093***	.0126***
			(.0013)	(.0016)
USED*GDP*Education		-.0015***		
		(.0004)		
USED*GDP* (Education<=11)				-.0052***
				(.0018)
USED*GDP* (Education>11)				-.0017***
				(.0004)
USED*ENG*Education		-.0264***		
		(.0025)		

USED*ENG* (Education<=11)				.0085 (.0173)
USED*ENG* (Education>11)				-.0103*** (.0030)
USED	-.0345*** (.0069)	-.0250*** (.0069)	.0911*** (.0075)	.0853*** (.0077)
Constant	6.1226*** (.0105)	6.1211*** (.0098)	5.9589*** (.0107)	5.9659*** (.0099)

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of weekly wages. Sample consists of 181,257 immigrants from 89 countries; regressions are estimated with country-of-origin random effect. GDP denotes 1970 per-capita GDP expressed in thousands of 1985 U.S. dollars and enters regressions as deviation from sample mean; ENG is an indicator variable set to unity if English is an official language of the source country; and USED is an indicator variable set to unity if the immigrant has U.S. schooling. Additional control variables are as in Table 4.

Table 6

Returns to Education by English Proficiency

	Speaks English not well/ not at all (1)	Speaks English well (2)	Speaks English very well (3)	Speaks only English (4)
A. Linear Specification				
Education	.0186***	.0316***	.0561***	.0588***
	(.0007)	(.0007)	(.0007)	(.0011)
USED*Education	.0419***	.0480***	.0382***	.0419***
	(.0042)	(.0028)	(.0016)	(.0018)
USED	.0298*	-.0537***	-.0717***	-.1210***
	(.0173)	(.0112)	(.0076)	(.0085)
Constant/Differential	5.8384***	.1927***	.2599***	.2908***
	(.0037)	(.0049)	(.0051)	(.0065)
B. Linear Spline Specification				
Education<=11	.0100***	.0067***	.0136***	.0167***
	(.0008)	(.0011)	(.0013)	(.0019)
USED*(Education<=11)	.0353***	.0381***	.0305***	.0175**
	(.0077)	(.0075)	(.0063)	(.0082)
Education>11	.0491***	.0719***	.0973***	.0984***
	(.0024)	(.0016)	(.0013)	(.0018)
USED*(Education>11)	.0238***	.0171***	.0025	.0064***
	(.0073)	(.0036)	(.0020)	(.0024)
USED	.0392	.0314**	.0776***	.0116
	(.0245)	(.0138)	(.0093)	(.0101)
Constant/Differential	5.7913***	.1210***	.1321***	.1862***
	(.0051)	(.0072)	(.0076)	(.0090)

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of weekly wages. Sample size is 199,109. R^2s are

.3471 and .3580 and standard errors of regression are .6066 and .6015 in models A and B, respectively.

USED equals one if the immigrant has U.S. schooling and zero otherwise. Regressions also include

experience and its square, years since migration and its square, indicator variables for marital status, residence in SMSA, health status, part-time work, census division, and country of origin, as well as interaction terms between USED and each variable. Constant terms (column 1), proficiency differentials (columns 2-4), and USED differentials are evaluated at 11 years of education and at means of non-education variables.

Table 7

Determinants of Average Educational Attainment

	Non-US Schooling		US Schooling		US Differential	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
GDP/1000	.2117***	.3243***	-.0345	.0257	-.2511***	-.2986***
	(.0596)	(.0727)	(.0315)	(.0389)	(.0420)	(.0523)
Distance/1000	.5036***	.4319***	.3139***	.2358***	-.1897***	-.1962*
	(.0825)	(.1419)	(.0436)	(.0759)	(.0582)	(.1021)
English	.9469**	.6115	.5921***	.4850**	-.3548	-.1265
	(.4176)	(.4187)	(.2206)	(.2240)	(.2945)	(.3012)
Americas		.3186		.2079		-.1107
		(.6327)		(.3385)		(.4552)
Africa		2.2779***		1.1403***		-1.1376**
		(.6955)		(.3721)		(.5003)
Asia		.7421		.7629**		.0208
		(.6381)		(.3414)		(.4590)
Constant	9.3597***	8.7155***	13.7349***	13.4346***	4.3752***	4.7191***
	(.4865)	(.8500)	(.2570)	(.4572)	(.3431)	(.6115)
R^2	.4077	.4850	.4873	.5430	.3428	.4055
Standard Error	1.7081	1.6216	.9025	.8675	1.2047	1.1665

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Sample size is 89. GDP denotes 1970 per-capita GDP (measured in 1985 U.S. dollars);

Distance is the air distance between the capitol and the closest U.S. gateway; and English is an

indicator variable set to unity if English is an official language of the source country.

Table 8

Wage Regressions, NLSY79

	(1)	(2)	(3)	(4)	(5)
Education	.0587***	.0654***	.0609***	.0458***	.0456***
	(.0040)	(.0044)	(.0066)	(.0053)	(.0053)
Education, Years Foreign	-.0060*	-.0368***	-.0007	-.0318***	-.0278***
	(.0035)	(.0091)	(.0065)	(.0102)	(.0103)
(Education, Years Foreign)*USED		.0350***		.0340***	.0303***
		(.0095)		(.0106)	(.0107)
AFQT				.0036***	-.0014
				(.0005)	(.0020)
AFQT*Education					.0004***
					(.0001)
R^2	.3206	.3241	.3105	.3360	.3380
Standard Error	.4097	.4087	.4085	.4031	.4026
Observations		2,636	1,100		2,351

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of the hourly wage. USED equals one if the immigrant has U.S. schooling and zero otherwise; AFQT is the age-adjusted percentile score on the Armed Forces Qualification Test, expressed as deviation from the group mean. Sample size is reduced in columns 4-5 because not all survey respondents took the qualification test. The sample of column 3 is restricted to immigrants with both U.S. and non-U.S. schooling. All regressions also include experience and its square, years since migration and its square, tenure and its square, and indicator variables for interview in English, marital status, residence in SMSA, health status, union status, and country of origin. In columns 1, 2, 4, and 5, regressions additionally include USED and interaction terms between USED and each variable.

Table 9

Returns to Education for Natives and Immigrant Subgroups

	Natives	Child Immigrants	Youth Immigrants USED=1	Youth Immigrants USED=0	Adult Immigrants USED=0
	(1)	(2)	(3)	(4)	(5)
Education<=11	.0284***	.0349***	.0286**	.0167***	.0040***
	(.0027)	(.0059)	(.0114)	(.0015)	(.0010)
Education>11	.1052***	.1055***	.1018***	.0812***	.0871***
	(.0013)	(.0039)	(.0017)	(.0039)	(.0011)
Constant	6.0122***	5.9192***	5.9546***	5.8253***	5.8758***
	(.0045)	(.0114)	(.0076)	(.0067)	(.0043)
R^2	.2750	.2889	.3263	.2182	.3498
Standard Error	.5965	.5487	.5930	.5559	.6405
Observations	43,943	13,453	24,455	37,536	75,104

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of weekly wages. Regressions also include experience and its square, years since migration and its square (cols. 2-5), indicator variables for English proficiency (cols. 2-5), marital status, residence in SMSA, health status, part-time work, census division, and country of origin (cols. 2-5). Constants are evaluated at 11 years of education and means of non-education variables. Child immigrants were six or younger when they arrived in the United States; youth immigrants arrived between the ages of 7-24; adult immigrants were 25 or older.

F-Statistics of H0: Pairwise Equality of Coefficients of Education Variables Across Groups

	Natives	Child Immigrants	Youth Immigrants USED=1	Youth Immigrants USED=0
Child Immigrants	.47 (.6237)			
Youth Immigrants USED=1	1.32 (.2677)	.42 (.6539)		
Youth Immigrants USED=0	25.41 (.0000)	11.80 (.0000)	12.52 (.0000)	
Adult Immigrants USED=0	102.79 (.0000)	13.90 (.0000)	28.80 (.0000)	22.10 (.0000)

Note: p-values are reported in parentheses.

Table 10

Returns to Education, 1970 and 1980

	1970 Census		1980 Census	
	Linear	**Linear Spline**	**Linear**	**Linear Spline**
	(1)	**(2)**	**(3)**	**(4)**
Education	.0348***		.0362***	
	(.0016)		(.0006)	
USED*Education	.0353***		.0395***	
	(.0040)		(.0015)	
Education<=11		.0079***		.0081***
		(.0027)		(.0009)
USED*(Education<=11)		.0316***		.0468***
		(.0083)		(.0055)
Education>11		.0710***		.0714***
		(.0033)		(.0010)
USED*(Education>11)		.0137**		.0069***
		(.0060)		(.0018)
USED	.1429***	.2028***	-.0879***	.0224***
	(.0124)	(.0205)	(.0069)	(.0083)
Constant	5.2673***	5.1488***	5.6195***	5.4952***
	(.0061)	(.0111)	(.0020)	(.0035)
R^2	.1302	.1351	.2428	.2548
Standard Error	.9027	.9001	.5874	.5828
Observations	32,029		113,326	

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 1 percent level.

Note: Dependent variable is the natural logarithm of weekly wages. USED equals one if the

immigrant has U.S. schooling and zero otherwise. Regressions also include experience and its

square, years since migration and its square, indicator variables for English proficiency (1980

only), marital status, residence in SMSA, health status, part-time work, census division, and

country of origin, as well as interaction terms between USED and each variable. Constants and

USED differentials are evaluated at 11 years of education and at means of non-education

variables.

Table 11

Decomposition of Log Wage Differential Between Immigrants With and Without U.S. Schooling

	All	Mexico	Other Central America	South America	Japan, HK, Taiwan, Singapore	Other Asia, North Africa	Canada, UK, NZ, Australia, Ireland	West, North Europe	East, South Europe
A. Total Differential	.3231	.3388	.4106	.2845	-.0891	.3402	-.2231	-.2732	.1960
	(.0037)	(.0076)	(.0092)	(.0155)	(.0180)	(.0087)	(.0123)	(.0132)	(.0095)
B. Due to Differences in Characteristics:									
Education	.2661	.3212	.3322	.1728	.0380	.2538	.0382	.0156	.2047
	(.0093)	(.0242)	(.0308)	(.0251)	(.0283)	(.0359)	(.0058)	(.0062)	(.0281)
Other Characteristics	.0113	.0979	.0575	.0091	-.0640	-.0608	-.1140	-.1565	-.0193
	(.0116)	(.0321)	(.0404)	(.0529)	(.0541)	(.0274)	(.0335)	(.0309)	(.0349)
Total Characteristics	.2774	.4191	.3897	.1819	-.0261	.1929	-.0758	-.1410	.1854
	(.0137)	(.0346)	(.0478)	(.0556)	(.0613)	(.0443)	(.0337)	(.0310)	(.0428)
C. Due to Differences in Coefficients:	.0457	-.0803	.0209	.1026	-.0630	.1472	-.1473	-.1322	.0105
	(.0140)	(.0353)	(.0485)	(.0572)	(.0631)	(.0449)	(.0353)	(.0330)	(.0437)

Note: Decompositions are based on "unrestricted" wage regressions (see Table 2). Standard errors are reported in parentheses.

Differentials attributable to differences in average characteristics (part B) are evaluated using coefficients of immigrants with U.S. schooling; differentials attributable to different coefficients (part C) are evaluated at sample mean characteristics of immigrants without U.S. schooling.

Table A1

Coefficients not Reported in Table 2

	Non-US Schooling	US Schooling	US Differential
New England	.0557***	-.0174	-.0732***
	(.0080)	(.0114)	(.0139)
Mid Atlantic	.059***	.0075	-.0515***
	(.0049)	(.0081)	(.0095)
E N Central	.0204***	-.0397***	-.0601***
	(.0064)	(.0096)	(.0116)
W N Central	-.0896***	-.1726***	-.083***
	(.0153)	(.0181)	(.0237)
S Atlantic	-.0508***	-.1242***	-.0734***
	(.0054)	(.0083)	(.0099)
E S Central	-.0523**	-.1858***	-.1335***
	(.0222)	(.0206)	(.0303)
W S Central	-.1292***	-.1876***	-.0585***
	(.0058)	(.0099)	(.0115)
Mountain	-.1095***	-.1969***	-.0874***
	(.0089)	(.0129)	(.0157)
Mexico	-.0927***	-.0023	.0904***
	(.0079)	(.014)	(.0161)
Other C Am	-.0452***	.0947***	.1399***
	(.008)	(.0138)	(.016)
S America	.0283***	.104***	.0758***
	(.0096)	(.0167)	(.0193)
Japan, HK, Taiwan, Singapore	.3557***	.121***	-.2347***
	(.0117)	(.0159)	(.0197)
Other Asia	.0094	.1276***	.1182***
	(.0077)	(.0132)	(.0153)
Can, UK, Ireland, Aus, NZ	.4426***	.1372***	-.3054***
	(.0099)	(.0138)	(.017)
W, N Europe	.3873***	.0974***	-.29***
	(.0117)	(.0135)	(.0178)
E, S Europe	.1925***	.1579***	-.0346**
	(.0086)	(.0138)	(.0162)

Table A2

Coefficients not Reported in Table 3

	Linear			Linear Spline		
	Non-US Schooling	**US Schooling**	**US Diff'l**	**Non-US Schooling**	**US Schooling**	**US Diff'l**
Experience	.0168***	.0405***	.0238***	.0179***	.0410***	.0231***
	(.0007)	(.0015)	(.0016)	(.0007)	(.0015)	(.0016)
Experience^2/100	-.0255***	-.0632***	-.0377***	-.0311***	-.0667***	-.0356***
	(.0012)	(.0038)	(.0040)	(.0012)	(.0038)	(.0039)
Years Since Migration	.0248***	.0105***	-.0143***	.0251***	.0103***	-.0147***
	(.0007)	(.0014)	(.0016)	(.0006)	(.0014)	(.0016)
Years Since Migration^2/100	-.0398***	-.0149***	.0249***	-.0346***	-.0143***	.0204***
	(.0019)	(.0027)	(.0033)	(.0019)	(.0027)	(.0033)
English	.1706***	.1744***	.0038	.1610***	.2089***	.0480***
	(.0040)	(.0167)	(.0172)	(.0039)	(.0166)	(.0171)
Married, Spouse Present	.1428***	.1907***	.0478***	.1335***	.1893***	.0559***
	(.0040)	(.0058)	(.0070)	(.0039)	(.0057)	(.0069)
SMSA	.1122***	.1571***	.0450***	.1156***	.1574***	.0418***
	(.0077)	(.0105)	(.0130)	(.0076)	(.0104)	(.0128)
Health Limiting Work	-.0818***	-.1874***	-.1057***	-.0746***	-.1889***	-.1143***
	(.0091)	(.0152)	(.0177)	(.0090)	(.0150)	(.0175)
Part-time Work	-.5009***	-.5749***	-.0741***	-.4990***	-.5751***	-.0762***
	(.0068)	(.0124)	(.0141)	(.0067)	(.0122)	(.0140)
New England	.0609***	-.0140	-.0749***	.0555***	-.0198*	-.0754***
	(.0081)	(.0115)	(.0141)	(.0080)	(.0113)	(.0139)
Mid Atlantic	.0557***	.0096	-.0461***	.0594***	.0068	-.0526***
	(.0049)	(.0082)	(.0096)	(.0049)	(.0081)	(.0095)
E N Central	.0242***	-.0395***	-.0637***	.0209***	-.0406***	-.0615***
	(.0065)	(.0098)	(.0117)	(.0064)	(.0096)	(.0116)
W N Central	-.0697***	-.1709***	-.1011***	-.0856***	-.1739***	-.0882***
	(.0155)	(.0183)	(.0240)	(.0153)	(.0181)	(.0237)
S Atlantic	-.0444***	-.1228***	-.0784***	-.0501***	-.1256***	-.0755***
	(.0055)	(.0084)	(.0100)	(.0054)	(.0083)	(.0099)
E S Central	-.0193	-.1819***	-.1626***	-.0484**	-.1876***	-.1392***
	(.0226)	(.0209)	(.0307)	(.0223)	(.0206)	(.0303)
W S Central	-.1134***	-.1809***	-.0675***	-.1284***	-.1889***	-.0604***
	(.0058)	(.0101)	(.0116)	(.0058)	(.0099)	(.0115)
Mountain	-.1120***	-.1967***	-.0847***	-.1098***	-.1978***	-.0881***
	(.0090)	(.0131)	(.0159)	(.0089)	(.0129)	(.0157)
Mexico	-.0781***	-.0005	.0776***	-.0930***	-.0061	.0869***
	(.0080)	(.0141)	(.0162)	(.0079)	(.0140)	(.0160)
Other C Am	-.0796***	.0882***	.1678***	-.0442***	.0953***	.1395***
	(.0081)	(.0140)	(.0162)	(.0080)	(.0138)	(.0160)
S America	-.0007	.1015***	.1022***	.0299***	.1057***	.0759***

	(.0097)	(.0170)	(.0195)	(.0096)	(.0167)	(.0193)
Japan, HK, Taiw,	.4148***	.1195***	-.2953***	.3501***	.1173***	-.2328***
Singapore	(.0118)	(.0161)	(.0200)	(.0116)	(.0159)	(.0197)
Other Asia	.0295***	.1294***	.0999***	.0095	.1265***	.1170***
	(.0078)	(.0134)	(.0155)	(.0077)	(.0132)	(.0153)
Can, UK, Ire, Aus,	.4537***	.1290***	-.3247***	.4417***	.1350***	-.3067***
NZ	(.0100)	(.0140)	(.0172)	(.0099)	(.0138)	(.0170)
W, N Europe	.4083***	.0894***	-.3189***	.3840***	.0958***	-.2881***
	(.0118)	(.0136)	(.0180)	(.0117)	(.0135)	(.0178)
E, S Europe	.1803***	.1505***	-.0298*	.1907***	.1564***	-.0343**
	(.0087)	(.0140)	(.0164)	(.0086)	(.0138)	(.0162)

Table A3

Coefficients not Reported in Table 4

	Mexico	Other Central America	South America	Japan, HK, Taiwan, Singapore	Other Asia	Canada, UK, NZ, Australia, Ireland	West, North Europe	East, South Europe
Experience	.0148***	.0110***	.0202***	.0727***	.0169***	.0518***	.0600***	.0104***
	(.0013)	(.0017)	(.0028)	(.0044)	(.0015)	(.0036)	(.0043)	(.0022)
Experience^2/100	-.0249***	-.0169***	-.0379***	-.1286***	-.0370***	-.0817***	-.0946***	-.0235***
	(.0021)	(.0029)	(.0050)	(.0094)	(.0028)	(.0069)	(.0084)	(.0037)
Years Since Migration	.0288***	.0288***	.0309***	-.0654***	.0412***	-.0076***	-.0127***	.0250***
	(.0011)	(.0018)	(.0029)	(.0047)	(.0016)	(.0029)	(.0038)	(.0019)
Years Since Migration^2/100	-.0395***	-.0443***	-.0444***	.2113***	-.0655***	.0155*	.0367***	-.0314***
	(.0032)	(.0055)	(.0096)	(.0189)	(.0055)	(.0084)	(.0103)	(.0048)
English Proficiency	.1326***	.1428***	.1477***	.2663***	.1689***	.3160***	.2771***	.1631***
	(.0058)	(.0089)	(.0154)	(.0255)	(.0097)	(.0933)	(.0790)	(.0131)
Married, Spouse Present	.1107***	.1385***	.1472***	.2366***	.0973***	.1675***	.2021***	.1383***
	(.0066)	(.0088)	(.0149)	(.0271)	(.0093)	(.0185)	(.0225)	(.0135)
SMSA	.0626***	.0971***	.0863	.0557	.0358*	.3772***	.2504***	.1771***
	(.0094)	(.0358)	(.0544)	(.0643)	(.0216)	(.0286)	(.0369)	(.0331)
Health Limiting Work	-.0053	-.0739***	-.0386	-.0482	-.0553***	-.2937***	-.2476***	-.0695***
	(.0151)	(.0221)	(.0390)	(.0816)	(.0200)	(.0433)	(.0505)	(.0260)
Part-time Work	-.3599***	-.3948***	-.3854***	-.8047***	-.6121***	-.7886***	-.6364***	-.6114***
	(.0110)	(.0162)	(.0286)	(.0500)	(.0143)	(.0350)	(.0435)	(.0234)
New England	.3290***	.1669***	.0264	-.0709	.0474**	.0396	.0553	-.0583***
	(.0741)	(.0208)	(.0302)	(.0552)	(.0186)	(.0267)	(.0407)	(.0181)
Mid Atlantic	.0094	.1465***	.0158	.0870***	.0287***	.0493**	.0524*	-.0078
	(.0225)	(.0117)	(.0193)	(.0254)	(.0091)	(.0230)	(.0267)	(.0153)
E N Central	.0584***	.0531*	-.0050	.0593	-.0330**	-.0114	.0043	-.0561***
	(.0108)	(.0287)	(.0385)	(.0364)	(.0132)	(.0269)	(.0326)	(.0178)
W N Central	-.0158	.0225	-.2018**	-.2424**	-.0584**	-.1631***	-.1986***	-.2088***

	(.0298)	(.0729)	(.0913)	(.0999)	(.0265)	(.0507)	(.0583)	(.0467)
S Atlantic	-.1205***	.0022	-.0862***	-.2109***	-.0101	-.1594***	-.0831***	-.0925***
	(.0158)	(.0112)	(.0215)	(.0358)	(.0114)	(.0225)	(.0285)	(.0216)
E S Central	.0221	.1754*	-.0891	-.0984	-.1265***	-.0359	-.0792	-.1193
	(.0784)	(.0909)	(.1290)	(.0836)	(.0370)	(.0603)	(.0789)	(.0883)
W S Central	-.1588***	-.0386*	-.0833**	-.1127**	-.0829***	-.1018***	-.1099***	-.1221***
	(.0069)	(.0203)	(.0390)	(.0469)	(.0149)	(.0339)	(.0416)	(.0391)
Mountain	-.1062***	-.0461	-.1143**	-.1337*	-.0742***	-.1625***	-.2540***	-.2561***
	(.0110)	(.0412)	(.0576)	(.0788)	(.0240)	(.0354)	(.0459)	(.0386)
USED*Experience	.0253***	.0213***	.0155*	-.0324***	.0324***	-.0091*	-.0209***	.0327***
	(.0046)	(.0049)	(.0082)	(.0085)	(.0041)	(.0055)	(.0056)	(.0046)
USED*Experience^2/100	-.0450***	-.0289**	-.0115	.0461*	-.0525***	.0124	.0375***	-.0496***
	(.0118)	(.0135)	(.0233)	(.0247)	(.0111)	(.0121)	(.0123)	(.0100)
USED*Years Since Migration	-.0106**	-.0071	-.0180**	.0706***	-.0259***	.0073	.0106*	-.0223***
	(.0042)	(.0048)	(.0072)	(.0081)	(.0039)	(.0052)	(.0059)	(.0050)
USED*Years Since Migration^2/100	.0146*	.0130	.0338**	-.2114***	.0391***	-.0144	-.0308**	.0300***
	(.0086)	(.0105)	(.0166)	(.0231)	(.0091)	(.0112)	(.0128)	(.0093)
USED*English Proficiency	.1048***	.0869*	.1362*	-.2463**	.0427	-.2375	-.3520***	-.0099
	(.0234)	(.0488)	(.0801)	(.1145)	(.0521)	(.1551)	(.1102)	(.0670)
USED*Married, Spouse Present	.0822***	.0501***	.0341	-.0526	.0187	.0387	.0018	.0787***
	(.0159)	(.0176)	(.0295)	(.0378)	(.0175)	(.0254)	(.0266)	(.0214)
USED*SMSA	.0215	.1145**	.3515***	.1684**	.0507	-.2275***	-.0771*	.0802*
	(.0247)	(.0572)	(.0913)	(.0793)	(.0407)	(.0378)	(.0424)	(.0474)
USED*Health Limiting Work	-.1096***	-.0798	-.1847**	-.1285	-.1366***	.0030	.0468	-.0950*
	(.0415)	(.0500)	(.0938)	(.1095)	(.0504)	(.0573)	(.0602)	(.0487)
USED*Part-time Work	-.0897***	-.0610	-.1789***	.1384*	-.0602*	.1441***	-.0085	.1094***
	(.0316)	(.0373)	(.0621)	(.0762)	(.0342)	(.0503)	(.0544)	(.0418)
USED*New England	-.2329**	-.2006***	-.0892	-.0177	-.0230	-.1040***	-.0786	.0406
	(.1170)	(.0461)	(.0688)	(.0819)	(.0355)	(.0377)	(.0504)	(.0318)
USED*Mid Atlantic	-.0759	-.1250***	-.0791**	-.0833*	-.0171	-.0679**	-.0343	.0267
	(.0667)	(.0258)	(.0389)	(.0446)	(.0209)	(.0344)	(.0345)	(.0269)
USED*E N Central	-.0709**	-.0640	-.1425**	-.1319**	-.0093	-.0706*	-.0454	.0212
	(.0282)	(.0506)	(.0655)	(.0604)	(.0268)	(.0377)	(.0397)	(.0312)
USED*W N Central	.0531	-.2129*	.0782	.0420	-.0887*	-.0617	.0011	.1281*
	(.0840)	(.1110)	(.1327)	(.1226)	(.0529)	(.0675)	(.0676)	(.0751)
USED*S Atlantic	.0134	-.1138***	-.0791*	.0744	-.0941***	-.0002	-.0295	-.0559

	(.0472)	(.0240)	(.0415)	(.0503)	(.0236)	(.0330)	(.0348)	(.0366)
USED*E S Central	-.1964	-.2512**	-.0908	-.1848	-.0111	-.2147***	-.1042	-.0829
	(.1497)	(.1164)	(.1788)	(.1165)	(.0661)	(.0834)	(.0866)	(.1142)
USED*W S Central	-.1161***	-.1155***	.0145	-.0318	-.0350	-.0526	-.0526	-.0848
	(.0175)	(.0416)	(.0663)	(.0639)	(.0308)	(.0485)	(.0485)	(.0614)
USED*Mountain	-.1309***	-.1351*	.0661	.0232	-.1121**	-.0330	.0383	.0267
	(.0274)	(.0690)	(.0971)	(.0958)	(.0456)	(.0485)	(.0539)	(.0614)

Table A4

Coefficients not Reported in Table 5

	Linear		Linear Spline	
	(1)	**(2)**	**(3)**	**(4)**
Experience	.0176***	.0175***	.0188***	.0188***
	(.0007)	(.0007)	(.0007)	(.0007)
Experience^2/100	-.0266***	-.0268***	-.0324***	-.0324***
	(.0013)	(.0013)	(.0012)	(.0012)
Years Since	.0251***	.0243***	.0254***	.0252***
Migration	(.0007)	(.0007)	(.0007)	(.0007)
Years Since	-.0425***	-.0391***	-.0373***	-.0364***
Migration^2/100	(.0020)	(.0020)	(.0020)	(.0020)
English	.1599***	.1688***	.1509***	.1544***
	(.0043)	(.0043)	(.0042)	(.0042)
Married, Spouse	.1510***	.1497***	.1422***	.1425***
Present	(.0042)	(.0042)	(.0041)	(.0041)
SMSA	.1086***	.1046***	.1124***	.1109***
	(.0079)	(.0079)	(.0078)	(.0078)
Health Limiting	-.0830***	-.0792***	-.0767***	-.0759***
Work	(.0096)	(.0096)	(.0095)	(.0095)
Part-time Work	-.4721***	-.4711***	-.4703***	-.4698***
	(.0072)	(.0072)	(.0071)	(.0071)
New England	.0425***	.0462***	.0401***	.0408***
	(.0088)	(.0088)	(.0087)	(.0087)
Mid Atlantic	.0417***	.0428***	.0491***	.0490***
	(.0053)	(.0053)	(.0052)	(.0052)
E N Central	.0166**	.0125*	.0139**	.0131*
	(.0068)	(.0068)	(.0067)	(.0067)
W N Central	-.0736***	-.0820***	-.0966***	-.0984***
	(.0171)	(.0170)	(.0168)	(.0168)
S Atlantic	-.0767***	-.0782***	-.0788***	-.0796***
	(.0059)	(.0059)	(.0059)	(.0059)
E S Central	-.0138	-.0266	-.0501**	-.0522**
	(.0246)	(.0245)	(.0243)	(.0243)
W S Central	-.1251***	-.1298***	-.1419***	-.1422***
	(.0061)	(.0061)	(.0060)	(.0060)
Mountain	-.1217***	-.1246***	-.1210***	-.1217***
	(.0094)	(.0094)	(.0093)	(.0093)
USED*Exp	.0243***	.0244***	.0239***	.0237***
	(.0017)	(.0017)	(.0017)	(.0017)
USED*	-.0367***	-.0370***	-.0348***	-.0348***
Exp^2/100	(.0041)	(.0041)	(.0040)	(.0040)
USED*Years S Migr	-.0152***	-.0145***	-.0167***	-.0164***
	(.0016)	(.0016)	(.0016)	(.0016)
USED*Years	.0267***	.0238***	.0237***	.0228***

S Migr^2/100	(.0034)	(.0034)	(.0034)	(.0034)
USED*English	.0026	-.0088	.0474***	.0389**
	(.0182)	(.0182)	(.0181)	(.0182)
USED*Married,	.0413***	.0434***	.0495***	.0495***
Sp Present	(.0073)	(.0073)	(.0072)	(.0072)
USED*SMSA	.0549***	.0582***	.0489***	.0508***
	(.0134)	(.0133)	(.0132)	(.0132)
USED*Health	-.1250***	-.1290***	-.1321***	-.1346***
	(.0183)	(.0183)	(.0181)	(.0181)
USED*Part-time	-.0967***	-.0967***	-.0991***	-.0998***
	(.0148)	(.0147)	(.0146)	(.0146)
USED*New England	-.0767***	-.0814***	-.0866***	-.0877***
	(.0142)	(.0142)	(.0141)	(.0141)
USED*Mid Atlantic	-.0399***	-.0457***	-.0599***	-.0608***
	(.0093)	(.0093)	(.0092)	(.0092)
USED*E N Central	-.0758***	-.0741***	-.0774***	-.0777***
	(.0119)	(.0119)	(.0117)	(.0117)
USED*W N Central	-.1181***	-.1115***	-.0993***	-.0983***
	(.0253)	(.0253)	(.0250)	(.0250)
USED*S Atlantic	-.0694***	-.0705***	-.0799***	-.0787***
	(.0098)	(.0098)	(.0097)	(.0097)
USED*E S Central	-.2044***	-.1939***	-.1750***	-.1744***
	(.0326)	(.0326)	(.0322)	(.0322)
USED*W S Central	-.0596***	-.0541***	-.0508***	-.0503***
	(.0120)	(.0120)	(.0119)	(.0119)
USED*Mountain	-.0905***	-.0882***	-.0939***	-.0931***
	(.0164)	(.0163)	(.0161)	(.0161)

Table A5

Coefficients not Reported in Table 9

	Natives	Child Immigrants	Youth Immigrants USED=1	Youth Immigrants USED=0	Adult Immigrants USED=0
	(1)	(2)	(3)	(4)	(5)
Experience	.0363***	.0464***	.0340***	.0159***	.0187***
	(.0011)	(.0049)	(.0032)	(.0025)	(.0011)
Experience^2/100	-.0542***	-.0791***	-.0448***	-.0183***	-.0335***
	(.0023)	(.0129)	(.0099)	(.0053)	(.0018)
Years Since Migration		.0053	.0170***	.0253***	.0232***
		(.0082)	(.0034)	(.0022)	(.0012)
Years Since Migration^2/100		-.0064	-.0322***	-.0430***	-.0259***
		(.0128)	(.0083)	(.0064)	(.0044)
English		.1513***	.2380***	.1329***	.1757***
		(.0381)	(.0209)	(.0065)	(.0059)
Married, Spouse Present	.2162***	.2060***	.1693***	.1220***	.1370***
	(.0065)	(.0102)	(.0085)	(.0065)	(.0060)
SMSA	.1650***	.1514***	.1289***	.0954***	.1074***
	(.0072)	(.0155)	(.0189)	(.0119)	(.0121)
Health Limiting Work	-.1632***	-.2155***	-.1586***	-.0467***	-.0744***
	(.0124)	(.0251)	(.0253)	(.0172)	(.0130)
Part-time Work	-.6741***	-.5691***	-.5733***	-.3938***	-.5400***
	(.0133)	(.0230)	(.0174)	(.0122)	(.0098)
New England	-.0156	.0065	-.0363**	.0549***	.0720***
	(.0141)	(.0218)	(.0172)	(.0168)	(.0114)
Mid Atlantic	-.0221**	.0107	.0009	.0503***	.0687***
	(.0107)	(.0167)	(.0115)	(.0105)	(.0068)
E N Central	-.0813***	-.0583***	-.0412***	.0266**	.0265***
	(.0104)	(.0178)	(.0147)	(.0120)	(.0096)
W N Central	-.1975***	-.1918***	-.1787***	-.0758**	-.0804***
	(.0131)	(.0275)	(.0308)	(.0300)	(.0220)
S Atlantic	-.1485***	-.1299***	-.1187***	-.0633***	-.0360***
	(.0103)	(.0146)	(.0123)	(.0112)	(.0075)
E S Central	-.2284***	-.2229***	-.1856***	-.1285**	-.0056
	(.0140)	(.0287)	(.0384)	(.0552)	(.0292)
W S Central	-.2119***	-.1853***	-.1898***	-.1554***	-.0986***
	(.0118)	(.0173)	(.0151)	(.0088)	(.0093)
Mountain	-.1680***	-.2205***	-.1750***	-.1224***	-.0923***
	(.0144)	(.0211)	(.0212)	(.0143)	(.0140)
Mexico		.0056	-.0032	-.0102	-.1503***
		(.0283)	(.0191)	(.0138)	(.0121)
Other C Am		.1147***	.1045***	.0176	-.0765***
		(.0290)	(.0184)	(.0150)	(.0116)

S America	.1679***	.1022***	.1172***	-.0037
	(.0360)	(.0220)	(.0191)	(.0136)
Japan, HK, Taiwan,	.1058***	.1447***	.2281***	.3906***
Singapore	(.0289)	(.0233)	(.0337)	(.0154)
Other Asia	.1115***	.1418***	.0940***	-.0319***
	(.0302)	(.0171)	(.0153)	(.0109)
Can, UK, Ire, Aus, NZ	.1287***	.1645***	.3529***	.4762***
	(.0260)	(.0209)	(.0244)	(.0137)
W, N Europe	.0882***	.1471***	.3763***	.4082***
	(.0250)	(.0222)	(.0294)	(.0168)
E, S Europe	.1552***	.1867***	.3050***	.1354***
	(.0282)	(.0193)	(.0176)	(.0123)

Table A6

Coefficients not Reported in Table 10

	1970 Census		1980 Census	
	Linear	Linear Spline	Linear	Linear Spline
	(1)	(2)	(3)	(4)
Experience	.0158***	.0212***	.0165***	.0185***
	(.0027)	(.0027)	(.0009)	(.0009)
Experience^2/100	-.0327***	-.0435***	-.0262***	-.0323***
	(.0045)	(.0045)	(.0015)	(.0015)
Years Since Migration	.0356***	.0367***	.0252***	.0246***
	(.0021)	(.0021)	(.0008)	(.0008)
Years Since Migration^2/100	-.0474***	-.0478***	-.0544***	-.0470***
	(.0052)	(.0051)	(.0022)	(.0022)
English			.1401***	.1480***
			(.0051)	(.0051)
Married, Spouse Present	.2406***	.2409***	.1542***	.1496***
	(.0179)	(.0178)	(.0053)	(.0053)
SMSA	-.0039	-.0033	.0281***	.0389***
	(.0120)	(.0120)	(.0072)	(.0071)
Health Limiting Work	-.0130	-.0089	-.1026***	-.0961***
	(.0233)	(.0232)	(.0107)	(.0106)
Part-time Work	.0195	.0159	-.2415***	-.2451***
	(.0225)	(.0225)	(.0087)	(.0086)
New England	-.1453***	-.1568***	-.0446***	-.0522***
	(.0258)	(.0258)	(.0093)	(.0092)
Mid Atlantic	-.0526***	-.0535***	-.0327***	-.0328***
	(.0172)	(.0171)	(.0059)	(.0058)
E N Central	-.0016	.0006	.1218***	.1239***
	(.0198)	(.0197)	(.0068)	(.0067)
W N Central	.1133**	.0980*	.0224	.0134
	(.0501)	(.0499)	(.0165)	(.0163)
S Atlantic	-.0682***	-.0810***	-.0469***	-.0553***
	(.0251)	(.0251)	(.0075)	(.0075)
E S Central	.0449	.0202	.0379	.0148
	(.0952)	(.0949)	(.0270)	(.0268)
W S Central	-.1355***	-.1660***	-.0123	-.0250***
	(.0344)	(.0344)	(.0080)	(.0079)
Mountain	-.0985**	-.0977**	-.0486***	-.0467***
	(.0399)	(.0398)	(.0119)	(.0118)
Mexico	-.2037***	-.2433***	-.0629***	-.1010***
	(.0411)	(.0411)	(.0098)	(.0098)

Other C Am	-.0603	-.0406	-.1019***	-.0838***
	(.0396)	(.0395)	(.0099)	(.0098)
S America	.0052	.0214	-.0243**	-.0091
	(.0460)	(.0459)	(.0120)	(.0119)
Japan, HK, Taiwan,	.0752	.0395	.2567***	.2153***
Singapore	(.0468)	(.0468)	(.0166)	(.0165)
Other Asia	.0474	.0252	-.0274***	-.0552***
	(.0401)	(.0400)	(.0095)	(.0095)
Can, UK, Ire, Aus, NZ	.2185***	.2456***	.2824***	.2880***
	(.0384)	(.0383)	(.0107)	(.0106)
W, N Europe	.3054***	.3278***	.2523***	.2562***
	(.0393)	(.0392)	(.0112)	(.0111)
E, S Europe	.2189***	.2180***	.1033***	.1017***
	(.0373)	(.0372)	(.0095)	(.0094)
USED*Exp	.0073	.0080	.0372***	.0358***
	(.0063)	(.0064)	(.0029)	(.0029)
USED* $Exp^2/100$	.0174*	.0168	-.0742***	-.0715***
	(.0102)	(.0105)	(.0089)	(.0088)
USED*Years S Migr	-.0190***	-.0229***	-.0232***	-.0223***
	(.0062)	(.0062)	(.0031)	(.0031)
USED*Yrs S $Migr^2/100$	.0219**	.0253***	.0512***	.0432***
	(.0088)	(.0088)	(.0068)	(.0067)
USED*English			.0568*	.0672**
			(.0309)	(.0310)
USED*Married,	.0032	.0044	.0227**	.0266**
Spouse Present	(.0349)	(.0348)	(.0107)	(.0106)
USED*SMSA	.0072	.0059	.0469***	.0368**
	(.0235)	(.0235)	(.0145)	(.0144)
USED*Health	.0019	-.0005	-.0366	-.0439*
	(.0429)	(.0428)	(.0264)	(.0262)
USED*Part-time	.0365	.0318	-.0819***	-.0796***
	(.0411)	(.0410)	(.0208)	(.0207)
USED*New England	-.0143	-.0101	-.0080	-.0021
	(.0466)	(.0465)	(.0204)	(.0203)
USED*Mid Atlantic	-.0025	-.0029	-.0071	-.0080
	(.0340)	(.0339)	(.0135)	(.0134)
USED*E N Central	-.0445	-.0459	-.0583***	-.0614***
	(.0377)	(.0376)	(.0149)	(.0148)
USED*W N Central	-.0936	-.0837	-.0792***	-.0722**
	(.0799)	(.0797)	(.0296)	(.0294)
USED*S Atlantic	.0133	.0181	-.0366**	-.0299*
	(.0517)	(.0516)	(.0162)	(.0161)
USED*E S Central	-.0927	-.0643	-.1766***	-.1560***
	(.1581)	(.1577)	(.0434)	(.0431)
USED*W S Central	.1047	.1168*	-.0540***	-.0448**
	(.0663)	(.0663)	(.0186)	(.0185)
USED*Mountain	-.0296	-.0273	.0074	.0051
	(.0712)	(.0710)	(.0242)	(.0240)
USED*Mexico	-.0248	.0005	.0762***	.1117***
	(.0805)	(.0804)	(.0213)	(.0212)
USED*Other C Am	.0267	.0214	.1711***	.1573***

	(.0893)	(.0892)	(.0214)	(.0212)
USED*S America	.0143	.0007	.0822***	.0694**
	(.1209)	(.1206)	(.0289)	(.0286)
USED*Japan, HK,	.1158	.1440	-.1946***	-.1529***
Taiwan, Singapore	(.0934)	(.0932)	(.0317)	(.0315)
USED*Other Asia	.1350*	.1640**	.1242***	.1510***
	(.0748)	(.0746)	(.0205)	(.0203)
USED*Can, UK, Ire,	-.1371**	-.1487**	-.1543***	-.1557***
Aus, NZ	(.0696)	(.0696)	(.0202)	(.0201)
USED*W, N Europe	-.1844**	-.1984***	-.1329***	-.1331***
	(.0722)	(.0721)	(.0199)	(.0198)
USED*E, S Europe	-.1122	-.1022	.0362*	.0413**
	(.0693)	(.0692)	(.0196)	(.0194)
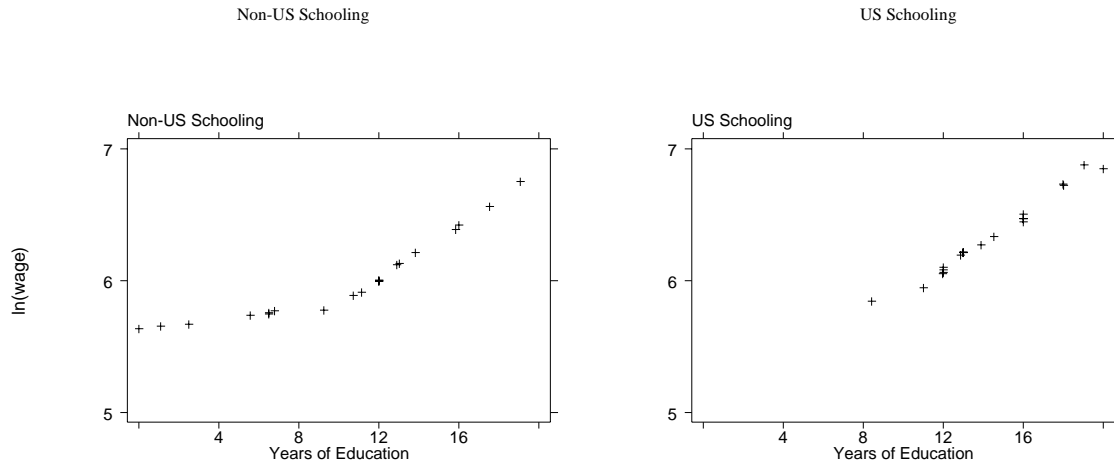
Figure 1
Educational Attainment and Wages—
Profiles for Immigrants With and Without U.S. Schooling
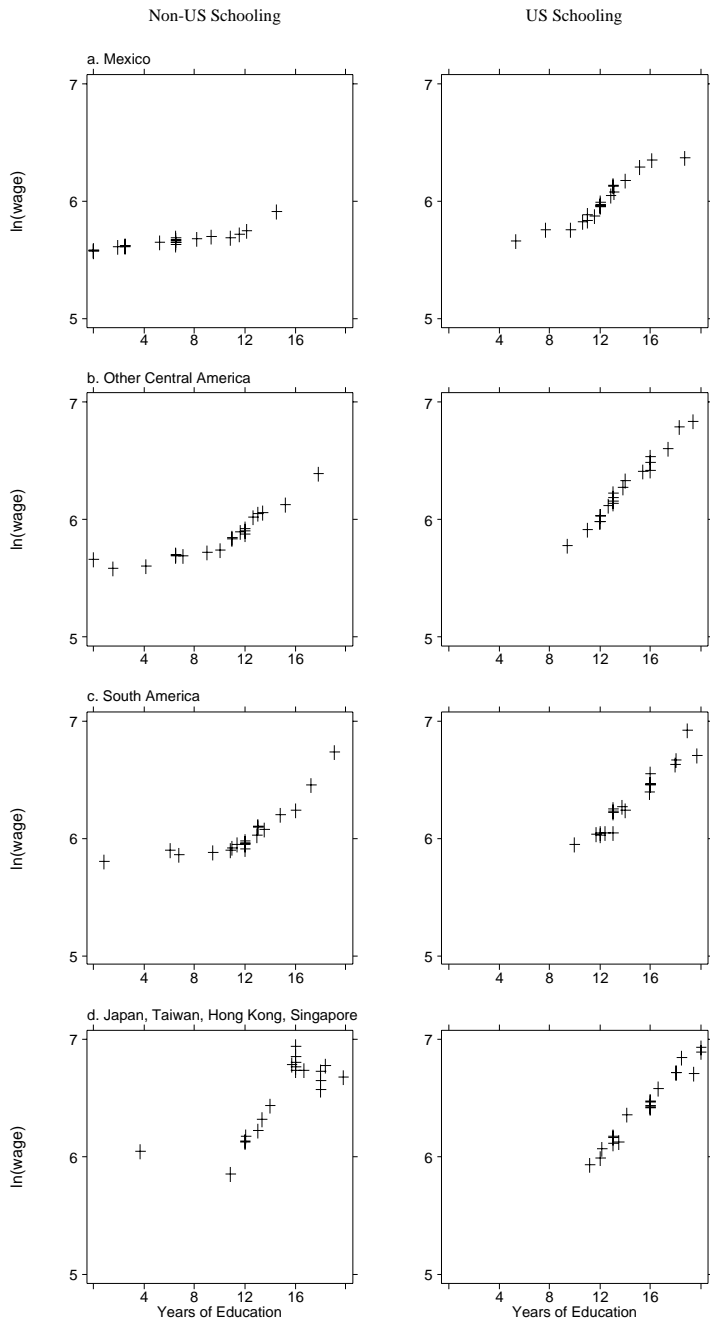
Figure 2
Educational Attainment and Wages by Country
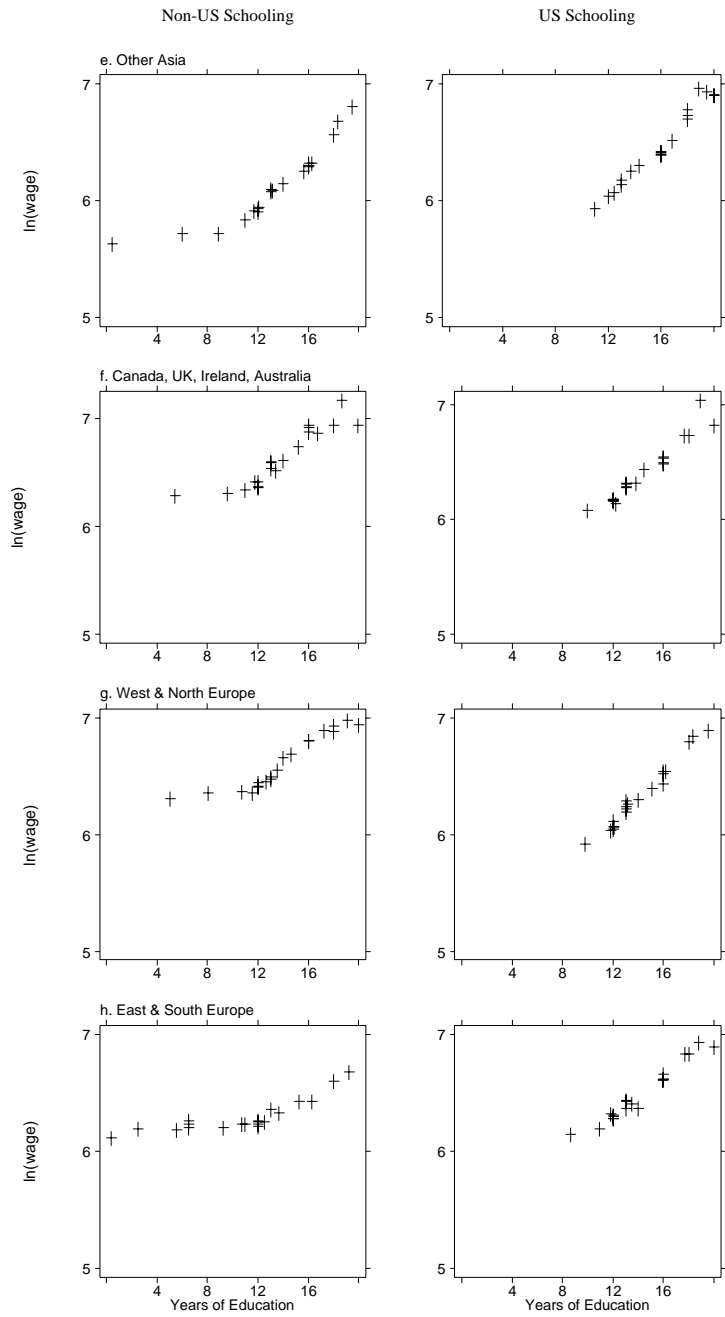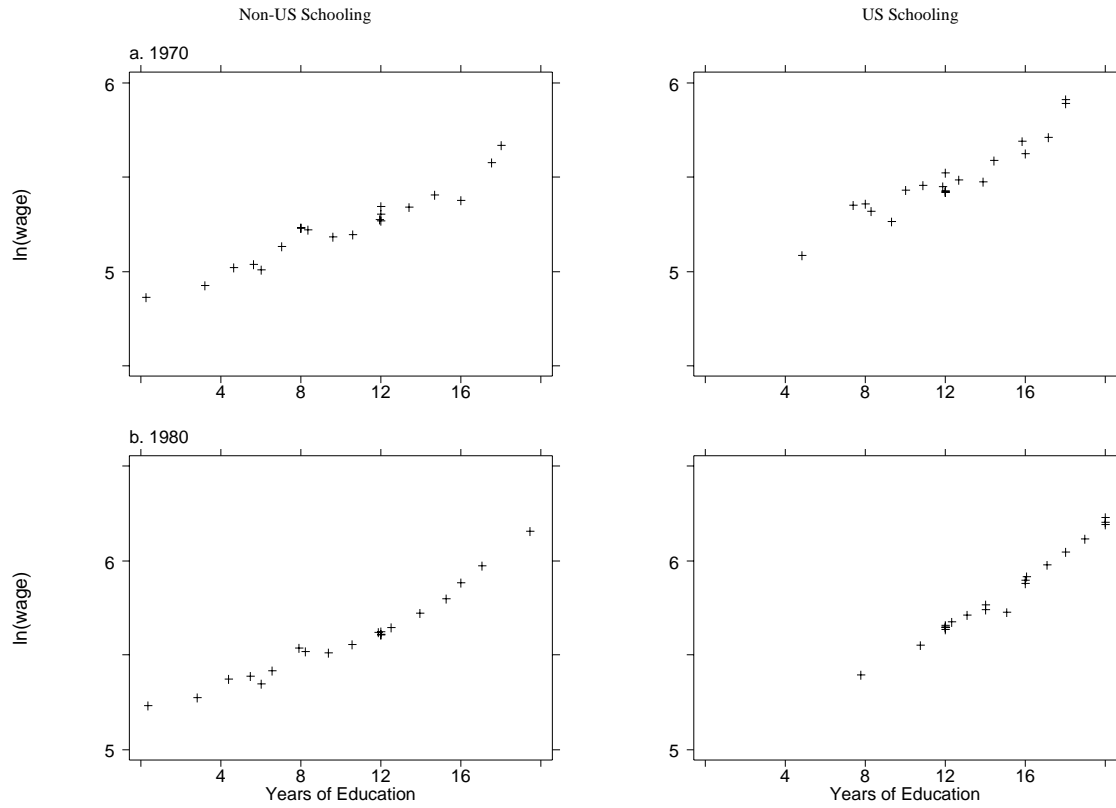
Figure 2
Continued
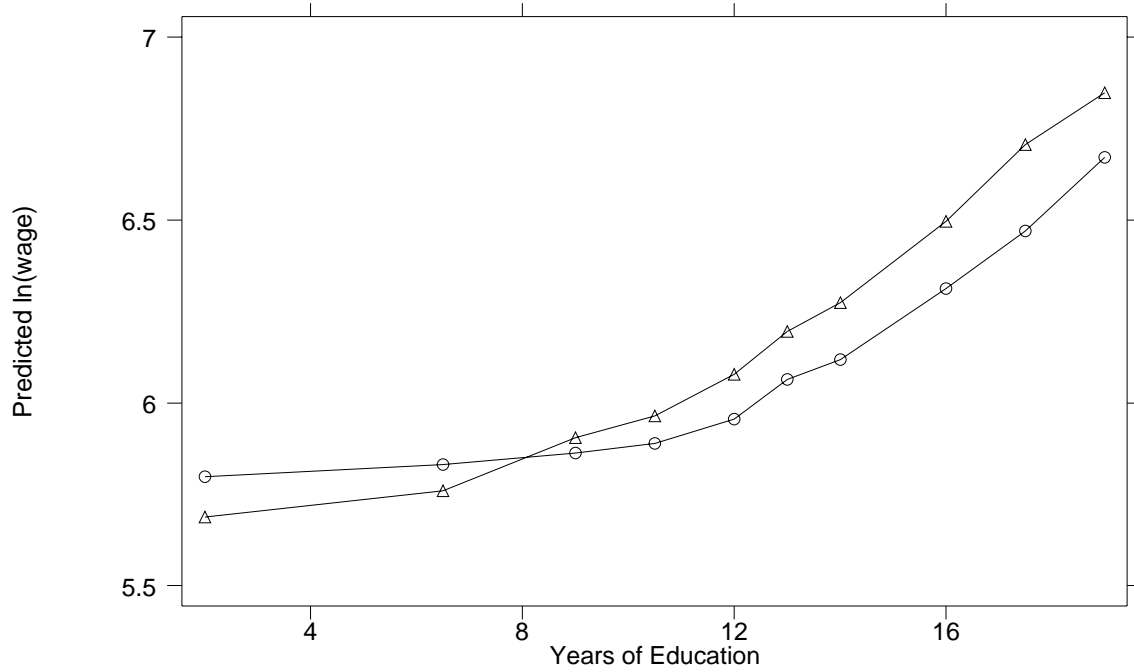
Figure 3
Predicted Wages as a Function of Educational Attainment

Note: Profiles are constructed from regression estimates reported in Table 2.
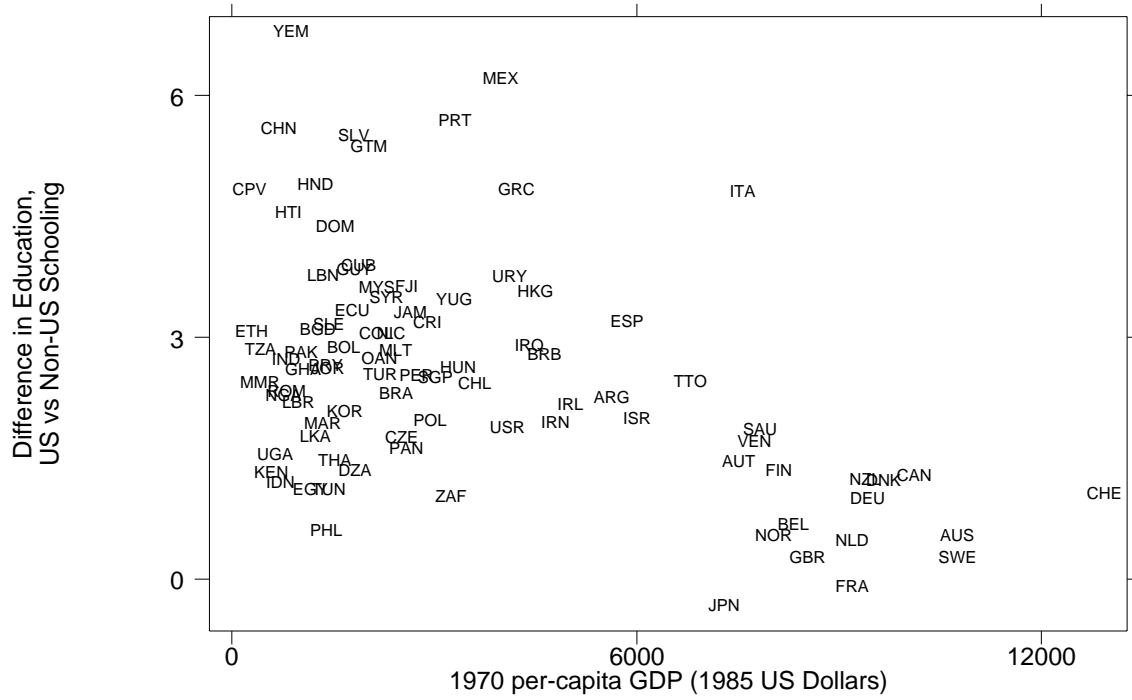
Figure 4
Source Country GDP and Difference in Educational Attainment

Figure 5
Educational Attainment and Wages—1970 and 1980 Census Data

Endnotes

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1. Returns to education have also been estimated for immigrants in other countries. For example, Raaum (1998) and Friedberg (2000) find significantly lower returns to foreign schooling than to host-country schooling among immigrants in Norway and Israel, respectively.

2. A related literature examines the probability of school enrollment in the host country. For example, Chiswick and Miller (1994) and Khan (1997), studying immigrants in Australia and the Unites States, respectively, report that enrollment rates decline with age at arrival and vary by source country. An extensive literature addresses the impact of education on the labor market performance of U.S. immigrants; see, e.g., Borjas (1994) and Funkhouser and Trejo (1995).

3. In general, we assume that the graduation date is year of birth plus six plus years of education. When census data are reported in intervals (e.g., 1st-4th grade), we calculate education as the midpoint of the interval (e.g., 2.5 years). Exceptions to the rule are professional and doctoral degrees, for which the age of graduation is assumed to be 26 and 28, respectively. When the graduation date falls within the reported immigration interval (typically given in two-, three-, or five-year brackets), the observation is dropped. This procedure eliminates 24,787 observations that otherwise would be included in the sample.

4. The English Proficiency indicator variable is set to unity if the immigrant speaks English well or very well, and is set to zero if the immigrant speaks English not well or not at all.

5. We also estimated spline models alternatively placing the spline at ten and twelve years of schooling but found that the reported specification (using eleven) gives the best fit in terms of R^2 and standard error of the regression.

6. A Wald test of the linear specification versus the spline specification overwhelmingly rejects the linear model, yielding an $F(2; 199,053)$ test statistic of 2,674.73 (the critical value at the one percent level is 4.61).

7. The experience-wage profile of immigrants with U.S. schooling is steeper for 33 years and returns to years-since-migration are higher for non-U.S. schooled immigrants for 38 years.

8. Sample inclusion is determined by availability of data on GDP and a cell count of at least 50 in the census files.

9. Inclusion of the country-of-birth random effect avoids bias in standard errors from within-country correlation of regressions errors (Moulton 1986).

10. Using the two-step method of Card and Krueger (1992), Bratsberg and Terrell (1997) study the impact of school quality on returns to education of immigrants who do not acquire U.S. schooling and find strong source-country components in these returns.

11. In their study of earnings of Hispanic men, McManus, Gould, and Welch (1983) conclude that returns to education are higher for those who speak English proficiently.

12. The English proficiency categories reflect information available in the census data on ability to speak English. Because of small cell counts, we collapse the "not well" and "not at all" categories.

13. Data on distance are collected from Fitzpatrick and Modlin (1986).

14. To our knowledge, the only U.S. survey data that include explicit information on years of education obtained abroad is the 1976 Survey of Income and Education used by Borjas (1982), Reimers (1983), Friedberg (1993), and Khan (1997).

15. The NLSY sample is clearly not a representative sample of U.S. immigrants. First, the immigrant must have been present in the United States in 1978 to be included in the survey, a

year in which the oldest surveyed birth cohort was 21 years of age. Second, Hispanics were over-sampled in the NLSY data, which means that immigrants from Mexico are over-represented in our sample. It is unclear, however, whether such non-representative data create biases in the analysis of this section.

16. Because of small sample sizes in the relevant education cells, the data do not allow us to study the differential effects of foreign education beyond eleven years for those who do and do not obtain U.S. schooling. A simpler version of the spline function, in which returns to education beyond eleven years are constrained to be the same for both groups, yields results that mirror those discussed here.

17. Despite problems with measuring foreign education for immigrants who continue their schooling in the United States, census data confirm that returns to years of foreign education are significantly higher for immigrants with U.S. schooling.

18. Friedberg (2000) reports that host-country schooling significantly raises the returns to education from abroad of immigrants in Israel and offers a similar explanation.

19. The NLSY administered the Armed Services Vocational Aptitude Battery (from which the AFQT score is derived) to survey participants in 1980. The AFQT score in the NLSY sample is known to be correlated with the age of the respondent at the time of the test. To adjust for age, we follow the approach of Griffin and Ganderton (1996) and use the residual from a regression of AFQT on a set of indicator variables depicting the 1980 age of the respondent.

20. An anomalous finding of early studies is that returns to foreign education exceed returns to U.S. education. When coefficients of foreign education and all other variables are constrained to be the same for immigrants who do and do not continue their schooling in the United States, we

are able to replicate this result. But once we allow the wage structure to differ for those with and

without U.S. schooling, the apparent advantage of foreign education disappears.

21. Because age at immigration is based on the bracketed information on year of entry available

in census data, observations are dropped when the age cutoff falls within the immigration

interval and it is unclear into which age category the immigrant should be placed.

22. The native extract is a 1/1000 random sample of individuals born in the United States;

sample restrictions are otherwise the same as those of the immigrant extract.

23. Test statistics are as follow: $F(2; 31,975) = 91.03$ for 1970 and $F(2; 113,270) = 912.48$ for

1980. Critical value at the one percent level is 4.61 for both tests.

24. Based on the alternative decomposition formula, in which differences in characteristics are

weighted by coefficients for immigrants without U.S. schooling, differences in education account

for 45 to 56 percent of the difference in pay for these five countries. At the aggregate level, the

portion of the pay gap attributable to education is 54 percent. Not surprisingly, because returns

to education are lower for those without U.S. schooling, the alternative decomposition attributes

a smaller share of the overall wage differential to differences in educational attainment.