

U.S. Immigrants' Labor Market Adjustment:
Additional Human Capital Investment and Earnings Growth

Ilana Redstone Akresh
University of Pennsylvania

I would like to thank Richard Akresh, Paul Allison, Ricardo Godoy, Darren Lubotsky, Douglas Massey, Herbert Smith, and the participants at the ILIR labor lunch at the University of Illinois for their feedback. All mistakes are my own.

ABSTRACT

This analysis uses NIS-P data to look at the short run relationship between three types of human capital investment and earnings growth for immigrants during the first year after they receive permanent residency status. Among legal immigrants, having more years of education and lower earnings at the baseline are associated with a higher probability of enrolling in formal school in the U.S. Results indicate that earnings increase on average by 11-16% during the survey period and that approximately 9% of this growth can be attributed to additional formal schooling. Participation in English classes and vocational training are not significantly associated with short-run earnings growth.

INTRODUCTION

Concern over the quality of U.S. immigrants can be traced as far back as 1836 when Senator John Davis posed the following questions to the Senate floor: “Is it morally right for Great Britain to attempt to throw upon us this oppressive burden of sustaining her poor?” (cited in Gordon 1964, pg. 92).¹ Since that time, policy makers and the public have continued to worry about potentially low incomes and unemployment among immigrants and these apprehensions have driven much research (and policy) over the last thirty years. These worries have been amplified by increases in the immigrant population and the changing composition of source countries. The early 1970s brought between 350,000 and 400,000 immigrants to the U.S. per year. By 1980, this number was well over half a million and crossed one million in 1989 for the first time since 1914 (Department of Homeland Security's Office of Immigration Statistics 2002). For 2001 and 2002, the Office of Immigration Statistics reported that slightly over one million immigrants were admitted in each year, primarily from Mexico, India, China, the Philippines, and Vietnam. These five countries represent 41% of all legal immigrants admitted to the U.S. in 2002 and in 1996, the year of the survey, these countries averaged 62% secondary school enrollment (World Development Indicators, World Bank).² The lower schooling attainment of immigrants from these and other countries has fueled speculation about the declining quality of immigrants. Researchers have shown that recent changes in the average education of immigrants come from changes in the composition of sending countries and not from a drop in average

¹ ‘Immigrant’ in this paper refers to the Bureau of Citizenship and Immigration Services’ (BCIS) definition, which indicates ‘an alien admitted to the United States as a lawful permanent resident.’

² Percent refers to School Enrollment, Secondary (% of gross). Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Source: World Development Indicators, World Bank Statistics. Percents are: 69 for China, 49 for India, 64 for Mexico, 77 for the Philippines, and 52 for Vietnam. This compares to 107% for High Income OECD countries.

schooling within ethnic groups (LaLonde and Topel 1991), but this knowledge does not diminish the concern brought on by the new distribution.

Public concern over the ‘quality’ of immigrants has risen as U.S. citizens wonder about the costs of keeping them. Immigrants have lower earnings on average than comparable natives (Borjas 1982; Chiswick 1978, 1979) and analysis of census data has shown that takes between ten and fifteen years for earnings convergence to occur (Chiswick 1978). However, there is little consensus as to whether the pattern observed in cross-sectional results reflects actual growth or is an artifact of declining quality across immigrant cohorts. Examination of this issue has been limited by data availability, yet the present analysis takes advantage a unique source to provide a more direct test of earnings growth.

The years immediately following the receipt of permanent residency status are an important time in which to study the process of assimilation. It is not known whether one should reasonably expect growth in this period. The slope of the growth rate at this time will largely depend on how quickly immigrants incorporate new knowledge of their surroundings. This project is able to take a unique longitudinal look into that period. This analysis considers two main questions. First, what are the characteristics of immigrants who pursue further human capital investment? Second, given the generally low return to schooling and subsequent low earnings observed among the immigrant population, does the acquisition of training in the U.S. give them an earnings boost? The present work uses pooled cross-sectional ordinary least squares (OLS) and individual fixed effects to estimate the relationship between human capital investment and earnings. Participation in formal schooling, English classes, and vocational training are the three types of human capital investment under consideration.

As results in this paper indicate, income does increase, on average, over the course of the year for everyone, suggesting a rapid rate of economic assimilation. Results suggest that growth for those who enroll in school is faster than for those who do not enroll, yet there is substantial negative selection with respect to the earnings of those who make this investment. When there is selection operating with respect to who opts into a training program, the fixed effects specification will be better suited than cross-sectional OLS to identify the relationship. This paper uses New Immigrant Survey Pilot (NIS-P) data for a formal comparison of the two analyses to better understand the biases involved.

BACKGROUND AND PREVIOUS WORK

Substantial research has been done on immigrants' earnings assimilation, with the seminal work, mentioned earlier, published by Chiswick in 1978. The 10-15 year time frame he found was shown again by Lalonde and Topel (1991). The corresponding theory argues that, during this period, immigrants accumulate U.S. specific human capital, language skills, and knowledge of the labor market that all lead to earnings growth. An alternative theory explaining economic assimilation is that there is a matching process between immigrants and employers that takes time to work out. The idea is that it simply takes time, and possibly multiple jobs, to find the 'right' job with the 'right' employer. Naturally, these processes are not mutually exclusive and could be operating simultaneously on multiple levels.

Immigrants' motivation to ascend the occupational ladder may be particularly high if their initial labor market experience involved occupational downgrading. Studies have looked at immigrants' occupational mobility, finding downgrading to be a common phenomenon, as high as 50% (Redstone 2004), particularly for immigrants from regions that differ culturally and linguistically from the host country (Chiswick 1977; Chiswick, Lee and Miller 2003; Jasso and

Rosenzweig 1995). If there is an inverse relationship between entry earnings and earnings growth (see below), a high prevalence of downgrading suggests that initial growth might be substantial.

Duleep and Regets use matched CPS files to measure immigrants' wage growth and confirm that it exceeds that of the native born, although they find that this pattern is somewhat mediated by geographic distribution (1997b). Other researchers have speculated whether there is an inverse relationship between earnings at arrival and the earnings growth rate. This is suggested by the work of Lalonde and Topel (1991), Yu (2000), and Duleep and Regets (1997a; 1999). This idea is also key to their Immigrant Human Capital Investment (IHCI) model (Duleep and Regets 1992, 1994, 2002).

Some of the implications of the IHCI model are described here. First, the authors hold that immigrants will experience faster earnings growth due to increased valuation over time of their source country human capital and higher likelihood of human capital investment. Second, they predict that immigrants with lower skill transferability will be more likely to invest in human capital and will therefore have faster earnings growth. Third, there should be an inverse relationship between entry level earnings and earnings growth (for a complete description of the model, see Duleep and Regets 1999).

A consideration of immigrants' earnings growth can not be considered independent of an understanding of how their human capital is valued. Research has shown that the country in which an immigrant's education and labor market experience is acquired matters. This has been demonstrated for Israel (Friedberg 2000) and the U.S. (Redstone 2004). Similarly, it has been shown that immigrants' receive lower returns to their education than do natives, especially when they have no U.S. education supplementing that acquired abroad (Bratsberg and Ragan Jr. 2002;

Friedberg 1993; Schoeni 1997). In related work, looking specifically at immigrants, Clark and Jaeger use CPS data to explore the effects of the GED (General Education Development exam) and find evidence of a ‘sheepskin effect’ in that the certificate is more beneficial to earnings for that population than it has been shown to be for the general U.S. population. The importance of host country language ability for immigrants’ earnings has been shown for the U.S. (Bleakley and Chin 2004; Kossoudji 1988), Germany (Dustmann and van Soest 2002), Canada (Chiswick and Miller 1992), Australia (Chiswick and Miller 1995), and Israel (Chiswick 1993) and needs little elaboration here.

The literature examining the relation between training and earnings is too vast to cover in detail and this review will therefore highlight selected works. In his pioneering work in economics, Ashenfelter uses social security data and finds that training leads to increased earnings, although results are not without ambiguity (1975; 1978).³ Later work considering the effects on earnings of the Comprehensive Employment and Training Act has also led the authors to argue that the lack of randomization makes conclusions difficult (Ashenfelter and Card 1984). In more recent work, Veum uses the National Longitudinal Survey of Youth to examine the effects of various types of non-government training on earnings (1995; 1999). He finds that employer-sponsored or company training is positively associated with wage levels and wage change. Neuman and Ziderman (2001) use data from Israel and find that, while there is heterogeneity by ethnic group and gender, vocational training does not lead to an increase in earnings (2001).

The present analysis uses a new data set to look at immigrants’ short-run earnings growth in the first year after receipt of permanent residency. One of the advantages of the sampling frame of the NIS-P is that it pulls from one legalization cohort. Several of the studies mentioned

³ This ambiguity was largely due to difficulties in accounting for selection into the training programs

above pool across arrival cohorts of immigrants, a practice that will bias earnings profiles if cohorts are changing over time (see Borjas 1985 for a discussion). Decennial census data and Immigration and Naturalization Service data (now handled by the Department of Homeland Security's Office of Immigration Statistics) have been the two most commonly used sources of information to study U.S. immigrants. Decennial census data are not well-suited to the study of earnings growth because they lack repeated measures from the same subjects. They also pool across multiple cohorts, combine legal statuses, and the survey's measure of U.S. duration has been shown to be unreliable (Redstone and Massey 2004). INS data lack certain key variables, such as education and earnings, although they avoid the complication of combining legal statuses. A particular improvement with the NIS-P over the previous matched CPS study is a larger sample of immigrants and an exclusive focus on those with permanent residency status.⁴ The NIS-P also allow for specific consideration of the role of human capital investment and job changes, jointly and separately, in earnings growth.

LIMITATIONS

The limitations of the study should be noted in addition to its advantages. First, the small sample size means a loss of power in identifying the relationship between human capital investment and earnings growth. Second, that the survey follows individuals for one year is a short time horizon in which to identify patterns of earnings growth. Third, although the fixed effects approach corrects for differences in earnings levels between those who invest and those who do not, it can not correct for differences in patterns of earnings growth.

DATA

The data used in this analysis come from the NIS-P, a unique study of legal immigrants to the U.S. These data have been used to shed new light on characteristics of legal immigrants in

⁴ Duleep and Regets (1997b) analysis has 351 foreign-born individuals.

the late 1990s. Use of these data has added insight to patterns of assortative mating (Jasso et al. 2000a), religious tendencies and affiliations (Jasso et al. 2003), the paths people take to permanent residency status (Massey and Malone 2002), and an assessment of the validity of the census measure of U.S. duration (Redstone and Massey 2004). The survey is longitudinal beginning shortly after permanent residency status is granted. The sampling frame is U.S. immigrants who received their green cards (became permanent residents) in July and August of 1996. It is representative of the 1996 cohort of legal immigrants to the U.S. and is based on probability samples of administrative records of the INS (Jasso et al. 2000b).⁵ Children and adults were sampled, although the analysis here is restricted to the adult files as children typically do not have earnings.⁶

The pilot study included four waves of data collection: a baseline survey, and three-month, six-month, and twelve-month follow-ups.⁷ Completion rates for those contacted for the baseline survey and were subsequently chosen for the follow-up surveys were 92% at the six-month follow-up and 95% at the twelve-month (Jasso et al. 2000b). It has been shown elsewhere that individuals interviewed do not differ demographically or by country of origin distribution from those not interviewed (Jasso et al. 2000b).

Surveyors gathered data on demographic characteristics, each respondent's migration history, prior visas, household structure in the U.S., public and private transfers, and employment. In each wave, individuals were asked questions about their current employment and each reported occupation has associated earnings information. For the purposes of this

⁵ Further information about the dataset is available from the project website at <http://nis.princeton.edu>.

⁶ Of the adults, employment-based immigrants were oversampled with a 3.5:1 ratio. Immigrants in this category had a sampling probability of 0.047201, compared to 0.013486 for other visa categories (Jasso et al. 2000b). All descriptive statistics and tabulations are adjusted using sampling weights.

⁷ The three-month follow-up was designed primarily to determine the feasibility of successfully finding those surveyed and an attempt was made to contact only half the sample. For this reason, the following analyses are restricted to data drawn from the baseline, six month, and twelve month surveys.

analysis, I draw from the survey's earnings data, questions asked about training participation, and about changing jobs. I develop three indicators, one for participation in each of three types of training. The first indicates participation in formal schooling; the second indicates enrollment in English classes; and the third detects participation in vocational training. The fixed effects estimation was carried out with an unbalanced panel, where casewise deletion applied to individuals without income data. Table 1 displays a description of the variables used in the analysis along with the period in which they were measured.

VARIABLES AND METHODS

Slightly over half (54%) of people reporting enrollment in formal school are matriculated at a university or a community college in Associate or Bachelor's degree programs.

Approximately one-third are enrolled in classes as non-degree students. With respect to job changes, there is wide variation with respect to the types of changes individuals make. Further, an individual might switch employers yet stay in the same job and this would be considered a change in jobs. Some examples of job changes of those enrolled in school are from farm labor → construction, from fast food counter help → waiter, assistant engineer → database administration.

With respect to the fixed effects analysis in Table 6, the following equation is specified:

$$\ln Earnings_{it} = \alpha + \gamma_i + \beta_1(Post_t * Enroll_i) + \beta_2(Hrs_Week_{it}) + \delta_t + \varepsilon_{it}$$

where $\ln Earnings_{it}$ is individual i 's annual earnings at time t , Hrs_Week is the individual's time varying hours of labor supply, γ_i is the individual fixed effect, $Post_t * Enroll_i$ denotes the post period for those who enrolled, δ_t are dummies for the six and twelve month surveys to capture any secular time effects in earnings growth, and ε_{it} is an idiosyncratic error

term.⁸ The coefficient β_1 on the product term gives the effect of the training on those who enrolled compared to those who did not enroll.⁹ This quantity can be understood as the estimated effect of the investment on the income of those who enrolled under the assumption that, without enrollment, income growth for the two groups would not systematically differ. With fixed effects estimation, the identification strategy rests on the assumption that an individual's innate ability and motivation, and the effects of these factors, do not change during the study, and that by differencing them out, these personal attributes will not affect the estimation.¹⁰

RESULTS

Table 2 shows conditional means for the respective enrollment categories. Overall, men have slightly lower enrollment, on average, than women. An individual enrolling in formal school is in his or her mid twenties, speaks English well, has some college education, and has almost four years of experience already in the U.S. Individuals who enroll in English classes have approximately a high school education and just over two years of U.S. experience. Not surprisingly, those who enroll in English classes also have the lowest reported English ability. Among individuals who enroll in school and among those who enroll English classes, the average number of hours worked per week is lower while they are enrolled than while they are not. This difference significantly differs from zero at the 1% and 10% levels respectively. For those participating in some type of human capital investment, between 47-55% changed jobs during the survey period, compared to 35% of individuals who did not participate in any training.

⁸ The 'post' period is specified as all periods after the enrollment, yet excludes the period of the enrollment. Repeating the analyses with the period of enrollment included as 'post' yields qualitatively similar results.

⁹ The specifications presented here designate the reference group as individuals who did not enroll in the type of training under consideration. Results are qualitatively similar if the reference group is restricted to individuals who did not enroll in any type of training throughout the survey period.

¹⁰ Table 7 expands this specification to include an indicator for changing jobs and its interaction with post*enrolled and Tables 5 and 6 present the pooled cross-sectional results minus the γ_i .

An additional important factor to note is that individuals who enroll in formal schooling have the lowest average earnings of all groups at the baseline and that, although their average increases the most over the twelve month survey period, it only surpasses that of those who enroll in English classes.

TABLE TWO ABOUT HERE

Table 3 moves to a multinomial logit model predicting which type of training the individual enrolled in. The omitted category for the dependent variable is those who did not enroll in any program throughout the survey period. Eighty-six cases are excluded from the regression due to individuals' participation in multiple training types and an inability to systematically allocate them to one category or another. Consistent with Duleep and Reget's Human Capital Investment model, which predicts that those with higher skills will choose to invest, years of education abroad and in the U.S. are associated with a higher probability of enrolling in formal school. English ability is also positively correlated with this outcome. There is a strong negative correlation between earnings and school enrollment, suggesting that individuals factor the costs of time away from work into their investment decision. With respect to participation in English classes, the strongest correlates are English ability and education, both of which are negatively associated with the probably of enrolling. It is likely that many school curricula from other countries include English classes and that the more education an individual has, the more likely he or she is to have studied English as well.

TABLE THREE ABOUT HERE

Table 4 displays the results from a pooled cross-sectional OLS looking at the relationship between earnings and human capital investment. If selection into schooling were random, the resulting point estimate on the enrollment variable would indicate the causal relationship

between enrollment and earnings. The specifications in Table 4 include controls for other factors known to influence earnings such as English ability and years of education. Information about the number of hours worked per week allows for a more precise distinction between differences in labor supply and actual differences in earnings. The specifications also include indicators for each survey period to capture any secular time trend in earnings growth.

TABLE FOUR ABOUT HERE

Results indicate that English ability, years of education – abroad and in the U.S. –, and years of U.S. experience are associated with higher earnings. The coefficient on schooling abroad (about 0.05) is approximately half of what is expected in the U.S., confirming previous work suggesting that the returns to schooling are lower for immigrants. Notably, there is an unexpected strong, negative relationship between school enrollment and earnings. Standard human capital theory would lead one to expect that the school enrollment variable would capture an individual's unmeasured ability, yielding an upwardly biased, positive estimate. In this case, the potential bias due to an individual's ability is overshadowed by the high proportion of individuals with lower incomes enrolling in formal school. The indicators for survey month also suggest a strong upward time trend over the course of the year for all individuals, a finding consistent with theories of rapid earnings growth for this population.

Table 5 takes the models from Table 4 and includes an indicator for whether the individual changed jobs since the previous interview. One possibility, mentioned earlier, is that the process of economic assimilation involves a matching process between immigrants and employers. One implication of this theory is that changing jobs should be positively associated with earnings. The results in Table 5 suggest that changing jobs is negatively associated with earnings levels. The interaction between changing jobs and participating in vocational training is

positive and significantly differs from zero and the magnitude is large enough to offset the negative main effect of vocational training participation. However, with evidence suggesting non-random selection into training, it is no longer appropriate to consider estimates resulting from the cross-sectional analysis as unbiased. For this reason, the analysis continues in Tables 6 and 7 with the addition of an individual fixed effect.¹¹

In the fixed effects specifications in Tables 6 and 7, which control for an individual's unobserved ability and other constant characteristics, the bias in the cross-sectional estimates becomes clear. The standard error of 0.078 on the interaction of post*enrolled for the schooling equation suggests that the positive point estimate on the interaction term approaches statistical significance at the 10% level. This would indicate a significantly steeper earnings slope for those who enroll in school compared to those who do not. The estimated effects of having enrolled in English classes or in vocational training do not dramatically differ in magnitude or in standard error from those resulting from the pooled cross-section in Table 4. When compared to the fixed effects analysis, it is apparent that the negative relationship in the pooled cross-section is an artifact of the selection operating on those who enroll in formal school. Again, the indicators for survey period suggest consistent earnings growth over the course of the survey period. Earnings increase between 11-16% over the course of the survey period and approximately 9% of that growth can be attributed to formal school enrollment for those who enroll.

The regressions in Table 7 also include the individual fixed effect, yet have an added indicator for whether the individual changed jobs and a three-way interaction between this and

¹¹ The fixed effects models have also been specified with gender interactions, interactions for region of origin, and interactions for having below/above a high school education. The interactions were almost entirely insignificant with the exception of an emergent pattern that the results for formal school enrollment appear to be strongest for immigrants from Europe, Australia, and Canada.

post*enrolled.¹² Adding the two coefficients together results in the conclusion of a positive effect of changing jobs and enrolling in school when the two are combined. Although not significant either jointly or alone, the same general pattern is observed for English and for vocational training. For those two specifications as well, when the coefficient on the enrollment variable and is added to that on the interaction with changed jobs, the result is a positive relationship with earnings growth.

One must be wary of interpreting the interaction between changing jobs and training participation as they are likely to be jointly determined. Although Table 2 suggests a difference in the proportions changing jobs by whether they participate make additional human capital investment, further investigation shows the correlations between training participation of all types and changing jobs to be low, never surpassing 0.16, suggesting that those who choose to undertake one of the types of human capital investment are no more likely to change jobs than those who do not. Even with the low observed correlations, it is important not to assign a causal relationship to the interaction, yet to point out that the combination of the two factors appears to make a difference.

DISCUSSION

This paper uses NIS-P panel data to consider selection into post-immigration human capital investment and the relationship between these investments and earnings growth for U.S. immigrants with ‘green cards’. The analysis presents findings consistent with other work suggesting that recent immigrants experience substantial earnings growth. Results indicate that selection into formal schooling in particular is dominated by individuals with higher education yet lower earnings. In the cross-section, these lower earnings suggest a negative relationship

¹² Estimating Tables 6 and 7 while excluding the observation(s) in which the individual was enrolled in the training program yields results of the same, yet slightly weaker, general patterns.

between school enrollment and earnings. However, adding the individual fixed effect shows steeper earnings growth for those who enroll. This is consistent with the Immigrant Human Capital Investment model which predicts that immigrants with high skills, yet low-skill transferability will be more likely to invest and will experience greater earnings growth. The analysis also suggests that the combination of changing jobs and training participation is an important one. While it is difficult to disentangle the precise timing and ordering of the two events, it is clear that the combination matters for growth rates. The importance of changing jobs is consistent with that of a matching process occurring between employers and immigrants, one of the theories proposed to explain immigrants' rapid economic assimilation.

Fixed effects results indicate that earnings increase approximately 11-16% during the year and that approximately 9% of that growth can be attributed to formal school enrollment for those who enroll. I do not find evidence of an effect of English classes or vocational training on earnings growth in the short run. The lack of a strong relationship in the fixed effects regression is unexpected given that prior research, and the current analysis, shows that, in the cross-section, English ability correlates with higher earnings for the immigrant population in the short run and the long run (Bleakley and Chin 2004; Chiswick and Miller 1995; Kossoudji 1988).

Further exploration suggests that returns to the three investment types may be tied to changing jobs. It may be the case that with a longer follow-up period, one would see an impact of these types of training on earnings. Fortunately, it will be possible to address this issue when data from the full New Immigrant Survey are available as it will follow individuals for five years.

This analysis constitutes a significant contribution to the literature on immigrants and earnings in its use of a unique data source and its ability to look longitudinally at the short-run

economic assimilation of immigrants with ‘green cards’. Several of the questions addressed here have not previously been attempted for this population due to a lack of appropriate data. Much of the available data are cross-sectional. Although work on immigrants and earnings is well-established, the absence of panel data has inhibited researchers from overcoming problems of selection and endogeneity in cross-sectional wage equations. When Veum carried out a similar analysis for the U.S. native population, he placed it in the context of concern over the quality of the overall U.S. workforce (Veum 1995). Concern for the subset that is the immigrant population is generally even stronger. With this in mind, learning how to minimize any cause for concern over immigrants’ financial well-being is of great value to the public and policy makers. Further, understanding the relationship between the various types of human capital investment and earnings informs policy decisions about which programs to promote.

References

- Ashenfelter, Orley. 1975. "The Effect of Manpower Training on Earnings: Preliminary Results." *Proceedings of the Twenty-Seventh Annual Winter Meeting of the Industrial Relations Research Association*:252-260.
- . 1978. "Estimating the Effect of Training Programs on Earnings." *Review of Economics and Statistics* 60(1):47-57.
- Ashenfelter, Orley and David Card. 1984. "Using the Longitudinal Structure of Earnings to Estimate the Effect of Training Programs." *Review of Economics and Statistics* 67(4):648-660.
- Bleakley, Hoyt and Aimee Chin. 2004. "Language Skills and Earnings: Evidence from Childhood Immigrants." *Review of Economics and Statistics* 86:481-496.
- Borjas, George. 1982. "The Earnings of Male Hispanic Immigrants in the United States." *Industrial and Labor Relations Review* 35:343-353.
- . 1985. "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants." *Journal of Labor Economics* 3(4):463-489.
- Bratsberg, Bernt and James F. Ragan Jr. 2002. "The Impact of Host Country Schooling on Earnings: A Study of Male Immigrants in the United States." *The Journal of Human Resources* 37(1):63-105.
- Chiswick, Barry R. 1977. "A Longitudinal Analysis of the Occupational Mobility of Immigrants." Pp. 20-27 in *Proceedings of the Thirtieth Annual Winter Meeting*, edited by B. Dennis. New York: Industrial Relations Research Association.
- . 1978. "The Effect of Americanization on the Earnings of Foreign-Born Men." *Journal of Political Economy* 86(5):897-921.
- . 1979. "The Economic Progress of Immigrants: Some Apparently Universal Problems." Pp. 359-399 in *Contemporary Economic Problems*, edited by W. Fellner. Washington, D.C.: American Enterprise Institute.
- . 1993. "Hebrew Language Usage: Determinants and Effects on Earnings among Immigrants in Israel." Presented at Conference on "Immigrant Absorption: The Interface between Research and Policy Making", June 1993, Technion, Haifa, Israel.

Chiswick, Barry R., Yew Liang Lee, and Paul W. Miller. 2003. "Patterns of Immigrant Occupational Attainment in a Longitudinal Survey." *International Migration* 41(4):47-69.

Chiswick, Barry R. and Paul W. Miller. 1992. "Language in the Labor Market: The Immigrant Experience in Canada and the United States." Pp. 229-296 in *Immigration, Language, and Ethnic Issues*, edited by B.R. Chiswick. Washington, D.C.: American Enterprise Institute.

—. 1995. "The Endogeneity between Language and Earnings: International Analyses." *Journal of Labor Economics* 13(2):246-287.

Department of Homeland Security's Office of Immigration Statistics. 2002. "Yearbook of Immigration Statistics." Washington, D.C.: Department of Homeland Security.

Duleep, Harriet Orcutt and Mark C. Regets. 1992. "The Elusive Concept of Immigrant Quality: The Borjas/Chiswick Debate Revisited." Presented at the Annual Meetings of the North American Economics and Finance Association/Allied Social Science Association, New Orleans, LA.

—. 1994. "The Elusive Concept of Immigrant Quality." in *Discussion Paper PRIP-UI-28, Program for Research on Immigration Policy*: The Urban Institute.

—. 1997a. "Immigrant Entry Earnings and Human Capital Growth." *Research in Labor Economics* 16:297-317.

—. 1997b. "Measuring Immigrant Wage Growth Using Matched CPS Files." *Demography* 34(2):239-249.

—. 1999. "Immigrants and Human Capital Investment." *The American Economic Review* 89(2):186-191.

—. 2002. "The Elusive Concept of Immigrant Quality: Evidence from 1970-1990." *IZA Discussion Paper No. 631*.

Dustmann, Christian and Arthur van Soest. 2002. "Language and the Earnings of Immigrants." *Industrial and Labor Relations Review* 55(3):473.

Friedberg, Rachel. 1993. "The Success of Young Immigrants in the U.S. Labor Market: An Evaluation of Competing Explanations." Providence, R.I.: Brown University.

—. 2000. "You Can't Take It With You? Immigrant Assimilation and the Portability of Human Capital." *Journal of Labor Economics* 18(2):221-251.

Gordon, Milton Myron. 1964. *Assimilation in American Life: the Role of Race, Religion, and National Origins*. New York: Oxford University Press.

Jasso, Guillermina, Douglas S. Massey, Mark R. Rosenzweig, and James P. Smith. 2000a. "Assortative Mating among Married New Legal Immigrants to the United States: Evidence from the New Immigrant Survey Pilot." *International Migration Review* 34(2):443-459.

—. 2003. "Exploring the Religious Preference of Recent Immigrants to the United States: Evidence from the New Immigrant Survey Pilot." in *Religion and Immigration: Christian, Jewish, and Muslim Experiences in the United States*, edited by Y. Haddad, J.I. Smith, and J.L. Esposito: Altamira Press.

Jasso, Guillermina, Douglas S. Massey, Mark R. Rozenzweig, and James P. Smith. 2000b. "The New Immigrant Survey Pilot (NIS-P): Overview and New Findings about U.S. Legal Immigrants at Admission." *Demography* 37(1):127-138.

Jasso, Guillermina and Mark R. Rosenzweig. 1995. "Do Immigrants Screened for Skills Do Better than Family Reunification Immigrants?" *International Migration Review* 29(1):85-111.

Kossoudji, Sherrie A. 1988. "English Language Ability and the Labor Market Opportunities of Hispanic and East Asian Immigrant Men." *Journal of Labor Economics* 6(2):205-228.

LaLonde, Robert J. and Robert H. Topel. 1991. "Immigrants in the American Labor Market: Quality, Assimilation, and Distributional Effects." *American Economic Review* 81(2):297-302.

Massey, Douglas S. and Nolan J. Malone. 2002. "Pathways to Legalization." *Population Research and Policy Review* 21(6):473-504.

Neuman, Shoshana and Adrian Ziderman. 2001. "Can Vocational Education Improve the Wages of Minorities and Disadvantaged Groups? The Case of Israel." Pp. 35. London: Centre for Economic Policy Research.

Redstone, Ilana. 2004. "Occupational Mobility among Legal Immigrants to the United States." Presented at Population Association of America, April 2, 2004, Boston, MA.

Redstone, Ilana and Douglas S. Massey. 2004. "Coming to Stay: An Analysis of the U.S. Census Question on Year of Arrival." *Demography* 41(4).

Schoeni, Robert F. 1997. "New Evidence on the Economic Progress of Foreign-Born Men in the 1970s and 1980s." *The Journal of Human Resources* 32(4):683-740.

Veum, Jonathan R. 1995. "Sources of Training and Their Impact on Wages." *Industrial and Labor Relations Review* 48(4):812-826.

—. 1999. "Training, Wages, and the Human Capital Model." *Southern Economic Journal* 65(3):526-538.

Yu, Wei-Yin. 2000. "Immigrant Earnings Assimilation: Estimates from Longitudinal Data." *American Economic Review* 90(2, Papers and Proceedings of the One Hundred Twelfth Annual Meeting of the American Economic Association):368-372.

Table 1. Description of Variables

Variable	Description	Period Measured
School	Enrolled in formal school since last interview	Baseline, Six Months, Twelve Months
English	Enrolled in formal school since last interview	Baseline, Six Months, Twelve Months
Vocational	Enrolled in formal school since last interview	Baseline, Six Months, Twelve Months
Male	1 if male, 0 otherwise	Baseline
Age	Age at time of baseline	Baseline
Years of U.S. Experience	Prior U.S. experience	Baseline
Speaks English Well/Very Well	1 if speaks well/very well, 0 otherwise (self-reported)	Baseline, Six Months, Twelve Months
Years of Education	Total completed years of education	Baseline
Years of Education Abroad	Years of education completed outside of the U.S.	Baseline
Years of U.S. Education	Years of education Completed in the U.S.	Baseline
Changed Jobs	1 if not in same primary job as last interview, 0 otherwise	Six Months, Twelve Months (zero assigned to all individuals for Baseline)
Annual Earnings	Reported earnings	Baseline, Six Months, Twelve Months
Hours Worked Per Week	Total hours usually worked per week	Baseline, Six Months, Twelve Months

Table 2. Conditional Means

Variable	School (n=168)	English (n=138)	Vocational (n=104)	None (n=383)
Male	0.473	0.463	0.455	0.571
Age	26.2	31.0	31.2	35.7
Years of U.S. Experience	3.1	2.2	3.1	4.0
Years of Education	14.0	12.0	14.1	13.3
Years of Education Abroad	12.1	11.6	12.8	12.5
Years of U.S. Education	1.9	0.39	1.3	0.74
Speaks English Well/Very Well (Baseline)	0.561	0.159	0.568	0.489
Changed Jobs During the Survey Period	0.545	0.468	0.544	0.345
Log of Annual Earnings (Baseline)	9.24	9.32	9.63	9.70
Log of Annual Earnings (Twelve Months)	9.60	9.51	9.89	9.83
Latin American and the Caribbean	0.375	0.464	0.415	0.376
Europe, Australia, and Canada	0.267	0.214	0.188	0.260
Asia	0.289	0.314	0.314	0.299
Hours Worked Per Week (while enrolled)—For Individuals Enrolled in at Least One Period	32.3 ^a	37.3 ^b	40.2	41.2
Hours Worked Per Week (while not enrolled)—For Individuals Enrolled in at Least One Period	37.7 ^a	39.7 ^b	37.8	--

Note: The total number of observations is 699. There are 96 individuals who enrolled just in school, 77 who enrolled just in English classes, 57 enrolled just in vocational training, 383 who did not enroll in any type, and 86 who enrolled in more than one type. Of those 86, there are also 25 who enrolled in school and vocational training, 14 enrolled in English and vocational training, 39 who enrolled in school and English classes, and 8 who enrolled in all three types.

^a Differ from one another at the 1% level

^b Differ from one another at the 10% level

Table 3. Multinomial Logit Predicting Type of Enrollment

	Enrolled In:		
	School	English	Vocational
Log of Annual Earnings (first reported)	-0.047*** (0.014)	-0.002 (0.011)	0.006 (0.017)
Male	0.000 (0.024)	-0.017 (0.019)	-0.015 (0.028)
Age	-0.019** (0.009)	-0.006 (0.005)	0.005 (0.009)
Age Squared	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Years of Education Abroad	0.011*** (0.003)	-0.004* (0.002)	0.001 (0.004)
Years of U.S. Education	0.033*** (0.006)	-0.022** (0.010)	0.011 (0.008)
Married	-0.058** (0.027)	0.005 (0.024)	0.014 (0.034)
Speaks English Well/Very Well (Baseline)	0.072*** (0.027)	-0.139*** (0.026)	0.024 (0.030)
Years of U.S. Experience	-0.008* (0.004)	-0.002 (0.003)	-0.005 (0.004)
Constant	0.595*** (0.167)	0.204 (0.133)	-0.315 (0.195)
Observations	613	613	613

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Note: Results are marginal effects. Omitted category for dependent variable is not enrolled in any training type during the survey period. 86 cases are excluded due to enrollment in more than one type.

Table 4. Pooled Cross-Sectional OLS of Log of Annual Earnings on Human Capital Investment

	School	English	Vocational
Enrolled	-0.240*** (0.056)	-0.061 (0.061)	-0.007 (0.070)
Male	0.264*** (0.036)	0.257*** (0.037)	0.258*** (0.037)
Married	0.014 (0.043)	0.023 (0.043)	0.024 (0.043)
Age	0.049*** (0.011)	0.057*** (0.011)	0.057*** (0.011)
Age Squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Years of Education Abroad	0.052*** (0.005)	0.051*** (0.005)	0.051*** (0.005)
Years of U.S. Education	0.033*** (0.009)	0.028*** (0.009)	0.028*** (0.009)
Speaks English Well/Very Well (Baseline)	0.380*** (0.038)	0.361*** (0.040)	0.371*** (0.039)
Years of U.S. Experience	0.022*** (0.004)	0.023*** (0.004)	0.023*** (0.004)
Hours Worked Per Week	0.029*** (0.002)	0.030*** (0.001)	0.030*** (0.001)
Dummy for Six Months	0.128*** (0.043)	0.134*** (0.044)	0.129*** (0.043)
Dummy for Twelve Months	0.196*** (0.043)	0.194*** (0.044)	0.191*** (0.044)
Constant	6.596*** (0.195)	6.387*** (0.190)	6.364*** (0.189)
Observations	1543	1543	1543
R-squared	0.46	0.45	0.45

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5. Pooled Cross-Sectional OLS of Log of Annual Earnings on Human Capital Investment, Including Interactions with Changing Jobs

	School ^a	English	Vocational ^a
Enrolled	-0.260*** (0.062)	-0.062 (0.070)	-0.106 (0.082)
Changed Jobs	-0.125** (0.055)	-0.115** (0.054)	-0.157*** (0.053)
Enrolled*Changed Jobs	0.103 (0.122)	0.021 (0.135)	0.391** (0.156)
Male	0.265*** (0.036)	0.258*** (0.037)	0.260*** (0.037)
Married	0.013 (0.043)	0.022 (0.043)	0.024 (0.043)
Age	0.049*** (0.011)	0.056*** (0.011)	0.056*** (0.011)
Age Squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Years of Education Abroad	0.052*** (0.005)	0.051*** (0.005)	0.051*** (0.005)
Years of U.S. Education	0.033*** (0.009)	0.029*** (0.009)	0.030*** (0.009)
Speaks English Well/Very Well (Baseline)	0.377*** (0.038)	0.358*** (0.040)	0.365*** (0.039)
Years of U.S. Experience	0.021*** (0.004)	0.022*** (0.004)	0.022*** (0.004)
Hours Worked Per Week	0.029*** (0.002)	0.030*** (0.001)	0.030*** (0.001)
Dummy for Six Months	0.154*** (0.045)	0.162*** (0.045)	0.164*** (0.045)
Dummy for Twelve Months	0.218*** (0.044)	0.218*** (0.045)	0.222*** (0.045)
Constant	6.633*** (0.195)	6.421*** (0.190)	6.414*** (0.189)
Observations	1543	1543	1543
R-squared	0.46	0.45	0.45

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

^a When tested jointly, the two main effects (for enrollment and changing jobs) and the interaction term significantly differ from zero at the 1% level. The same test for English classes approaches significance at the 10% level, with a p-value of 0.12.

Table 6. OLS Individual Fixed Effects Measuring the Impact of Human Capital Investment on Log of Annual Earnings

	School	English	Vocational
Post*Enrolled	0.127 (0.078)	-0.012 (0.073)	-0.018 (0.098)
Hours Worked Per Week	0.012*** (0.002)	0.013*** (0.002)	0.013*** (0.002)
Dummy for Six Months	0.096*** (0.033)	0.111*** (0.032)	0.111*** (0.032)
Dummy for Twelve Months	0.145*** (0.035)	0.166*** (0.035)	0.166*** (0.034)
Constant	9.281*** (0.091)	9.274*** (0.091)	9.275*** (0.091)
Observations	1543	1543	1543
Number of individuals	699	699	699
R-squared	0.07	0.06	0.06

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 7. OLS Individual Fixed Effects Measuring the Impact of Human Capital Investment on Log of Annual Earnings, Including Interaction with Changing Jobs

	School ^a	English	Vocational
Changed Jobs	-0.015 (0.058)	0.035 (0.056)	0.033 (0.055)
Post*Enrolled	0.053 (0.084)	-0.025 (0.081)	-0.043 (0.107)
Post*Enrolled*Changed Jobs	0.333** (0.140)	0.060 (0.166)	0.146 (0.224)
Hours Worked Per Week	0.012*** (0.002)	0.013*** (0.002)	0.013*** (0.002)
Dummy for Six Months	0.099*** (0.035)	0.104*** (0.035)	0.104*** (0.034)
Twelve Months	0.147*** (0.036)	0.161*** (0.036)	0.161*** (0.035)
Constant	9.283*** (0.091)	9.274*** (0.091)	9.273*** (0.091)
Observations	1543	1543	1543
Number of individuals	699	699	699
R-squared	0.07	0.07	0.07

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

^a When tested jointly, the main effects for changing jobs and post*enrolled and the three-way interaction significantly differ from zero at the 5% level.