HUMAN CAPITAL INVESTMENT

Post-Migration Investment in Education by Immigrants in the United States

ALIYA HASHMI KHAN

Quaid-i-Azam University, Islamabad

The post-migration schooling investments by foreign-born men from all countries of origin are studied using two data sets. The results provide convincing evidence of the effect of human capital variables like pre-immigration schooling and age at migration as well as schooling cost and quality variables on years of schooling acquired after migration and current enrollment status. Strong results are obtained for greater post-migration schooling investments by refugees as compared to other foreign-born men. The effect of citizenship is also found to be significant.

I. INTRODUCTION

The economic progress and labor market adjustment of immigrants continues to be a topic of interest for academicians and policy makers in view of the constant flow of immigrants to the United States from all parts of the world. Keeping in mind the relationship between human capital accumulation and earnings, a study of post-migration investment in human capital is expected to add considerably to an understanding of the assimilation process of immigrants into the U.S. economy.

This study seeks to understand the determinants of post-migration investment in education and to explain post-migration schooling differentials among foreign-born men overall and by country of origin. The theoretical framework of the study is developed in the light of the human capital theory. Several hypotheses are generated from the model which are then empirically tested using Regression and Probit Analysis.

Two measures of post-migration investment in schooling are used as dependent variables, namely years of schooling obtained after migration and the enrollment status of the individual. Data from the 1976 Survey of Income and Education and the 1980 Census of U.S. Population are used for estimating the equations. The 1976 SIE includes a unique set of questions related to pre-immi-

gration schooling which is especially useful for this analysis. The 1980 Census does not have direct information on education prior to and after immigration but a variable for post-immigration schooling can be constructed. The Census, however, allows for a much larger sample size of foreign-born men. Besides focusing on the issue of post-migration investment in schooling among foreign-born men, the study explores the schooling investment and enrollment patterns for a pooled sample of the native-born and foreign-born men. The pooled sample also allows for a comparative analysis of schooling and enrollment differentials among the native and foreign-born men.

The second section lays out the theoretical model and hypotheses. The estimating equations are also developed in this section. The third and fourth sections discuss the results of the estimating equations. The summary and conclusions are given in the fifth section.

II. THE THEORETICAL MODEL OF INVESTMENT IN EDUCATION AND ESTIMATING EQUATIONS

The human capital theory was initially developed to explain the role and contribution of human resources in economic growth. The path-breaking work by Becker (1964) on developing the relations between earnings, rates of return, and amount invested in the context of human capital theory is a rich source for generating hypotheses for empirical testing. The investment framework that he employed to study the attributes of the costs and returns of investment in people lends itself very well for testing hypotheses related to different types of human capital investments like schooling, on-the-job training (general and specific) and migration.

In the context of migration, an important contribution of human capital theory has been the development of the human capital earnings function which is used to study the economic progress and labor market adjustment of different immigrant groups through an analysis of their earning patterns. Chiswick (1978a, 1979, 1983a, 1983b) has a detailed treatment of the application of the human capital earnings function in the study of the economic progress and labor market attainments of various racial/ethnic groups in the U.S.

The relationship between schooling, a form of investment in human capital and earnings has been found to be very significant in explaining variations among the native-born and foreign-born (Chiswick, 1978a). The partial effect of schooling on earnings is an important indicator of the ability to convert schooling into earnings. The lower coefficient of schooling for the foreign-born as compared to the native-born can plausibly be attributed to the effect of schooling obtained in the origin. If schooling obtained in the origin is very dissimilar to schooling in the destination, it will affect productivity in the labor market and for the same number of years of schooling, the ability to convert schooling into earnings might differ. It has also been suggested that differences in accumula-

tion of schooling after migration lead to differences in earnings observed in the labor market among various immigrant groups (Borjas, 1982).

The schooling that immigrants bring with them to the United States has been studied recently. Funkhouser and Trejo (1995) have analyzed changes over time in the schooling level of immigrants using pooled cross-sectional data from the Current Population Survey. Cohen, Zach and Chiswick (1997) used similar data to study the differential changes in the level and inequality of schooling across immigrant cohorts by region of origin.

Post-migration investment in schooling has been studied recently by Chiswick and Miller (1994) who analyze the acquisition of post-migration qualifications and their impact on labor market performance by immigrants in Australia. They find that pre-immigration factors like age on arrival, country of origin, pre-immigration occupation and pre-immigration qualifications have a major influence on acquisition of post-migration skills which in turn influences labor market performance.

For the foreign-born, total schooling acquired is composed of schooling obtained before migration (pre-immigration schooling) and schooling obtained after migration (post-immigration schooling). Since post-immigration schooling is conceivably a function of pre-immigration schooling, we will explicitly introduce pre-immigration schooling as an explanatory variable in the post-migration schooling equations, along with other determinants of post-migration schooling.

A. Theory and Hypotheses

The study of the economic progress of immigrants has revealed that the earning differentials between different immigrant generations follows consistent patterns within racial and ethnic groups. However, some immigrant groups are more successful in the economic sense as compared to others. One simple explanation could be that the differentials observed in the labor market arise from differentials in accumulation of human capital. Confining ourselves to investment in education, one could say that some groups invest more in formal education in terms of years of schooling in the destination as compared to other groups, which consequently, translates into higher earnings for them.

Given that post-migration investment differentials lead to differences in economic progress among foreign-born people from diverse racial/ethnic backgrounds it is important to identify the factors determining post-migration investment in education. A key factor used in studies of economic progress is the international transferability of skills (whether acquired in school or on the job) from the country of origin to the country of destination. With a few clarifications, the international transferability of skills also qualifies as the primary factor in the determination of differentials in post-migration investment in education among different immigrant groups.

The concept of transferability of skills is linked with the nature of schooling and training acquired in the country of origin. If schooling and on-the-job training in the country of origin are not heavily biased toward country-specific elements and have characteristics similar to those of schooling and on-the-job training in the country of destination, then immigrants from such countries will possess skills that are readily transferable from the origin to the destination.

We can think of the international transferability of skills acquired in school as having two dimensions for a given cohort of immigrants, namely the international transferability of skills from the origin to the destination within occupational and training categories and the occupational composition of the same cohort. As mentioned earlier, all schooling has some country specific elements and some that are internationally transferable. The relative importance of the two elements differs by the level and type of education, which in turn determines the pattern of economic progress in the destination and varies by the choice of destination.

Therefore, the more country-specific are the skills acquired in school, the lesser will be the international transferability of these skills within occupations. On the other hand, general skills acquired through schooling in the origin are readily transferable to the destination. Thus, the more general the skills acquired through schooling, the lesser will be the decline in the value of these skills upon migration.

The other dimension of the international transferability of skills deals with the occupational composition of a cohort of immigrants. Given two cohorts that are similar, the one composed of immigrants with readily transferable skills will achieve greater and more rapid economic success in the destination as compared to the cohort possessing skills that are specific to the country of origin.

The international transferability of skills acquired through schooling in the origin is relevant both for success in the U.S. labor market and for determination of the rate of return from post-migration investment in human capital, namely schooling and OJT. Given that international transferability of skills is a function of the similarities between the origin and the destination, we can say that an important similarity is that of the nature and quality of schooling. Countries that have a language, culture, customs, and technology similar to that of the destination would also tend to exhibit similarities in the nature and quality of schooling. Immigrants from such countries would have acquired skills in school that are readily transferable from the origin to the destination.

An important indicator of similarity between the origin and the destination is the language of the two countries. Using the criterion of English-speaking versus non-English speaking country as an index of transferability, we can classify immigrants according to country of origin. Immigrants can also be classified according to the motive for migration. If the migration decision is based primarily on economic motivation, then such migrants can be termed as "economic migrants." If political, ideological or social considerations play a major role in influencing the decision to migrate then these migrants can be classified as

"non-economic migrants." Another type of non-economic migrants would be "tied movers" who migrate on the basis of kinship ties. Spouses, parents, and siblings form the majority of tied movers.

If optimization of economic opportunities is the primary motivating factor for economic migrants, then, a cohort of such immigrants would tend to have a large proportion of people with highly transferable skills. On the other hand, a cohort of refugees would be likely to include a greater proportion of people with skills that have low international transferability.

The identification of migrants according to the motive for migration into categories like economic migrants, refugees, and other non-economic migrants is not an easy task. However, immigration history suggests that immigrant cohorts from some countries at certain points in time can be classified as being composed mainly of economic migrants or refugees. In the 1976 SIE, the Cubans and the Chinese are the two groups that signify major refugee movements. For the 1980 Census data, the Vietnamese can also be included along with the Chinese and Cubans in the category of refugees.

Based on the above discussion, we can classify the immigrants into three categories, namely the economic migrants from English-speaking countries, the economic migrants from non-English speaking countries and the refugees. In a two by two classification of transferability of skills (high versus low) by motive for migration (economic versus non-economic), the economic migrants from English-speaking countries would be in the high transferability and economic motive cell. The economic migrants from non-English speaking countries would be in the low transferability and economic motive cell. The refugees would fall in the low transferability and non-economic motive cell while the fourth cell would be empty because there have been no major refugee movements from English-speaking countries to the U.S. within the past several decades.

It has been mentioned earlier that the nature and quality of pre-immigration schooling obtained in the country of origin is related to the transferability of skills acquired through schooling in the origin and would, thereby, have an impact on decisions regarding post-migration investment in schooling. However, it is not easy to get quality measures for schooling acquired in the origin and at best we can use the concept of transferability of skills to the U.S. labor market for generation of hypotheses related to post-immigration investment in schooling. The basic idea is that the lower the transferability of skills acquired in school in the origin, the higher the payoff or rate of return from post-migration investment in schooling. This is because U.S. schooling increases the transferability of skills and makes them more relevant for the U.S. labor market.

Retaining the classification by country of origin into three categories (economic migrants from English-speaking countries, economic migrants from non-English speaking countries and refugees), the transferability of skills argument leads to the following hypotheses:

H1: *Economic migrants from non-English speaking countries would make greater investments in U.S. schooling as compared to economic migrants from English-speaking countries because their skills have lower transferability than the skills of the latter. The lower the transferability of skills, the higher the rate of return from investment that increases that transferability.*

H2: *The refugees from China, Cuba, and Vietnam would make greater investment in U.S. schooling as compared to all economic migrants because they have a higher payoff from increasing the transferability of skills relevant for the U.S. labor market as compared to the economic migrants.*

Another important factor affecting post-migration investment in schooling is the age of the migrant. The importance of age in connection with investment decision-making is well recognized. Viewing migration as an investment in human capital, it can be shown that the rate of return to migration falls with age. Migration is more profitable for younger migrants as compared to older migrants because:

1. The wage differential between the origin and the destination decreases as a result of OJT in the origin that is country specific,
2. The opportunity cost of migration increases with labor market experience in the country of origin, and
3. Younger migrants have a longer remaining working life in the destination to receive benefits.

In the light of these two effects we can expect that economic migrants would migrate at young ages and that a cohort of non-economic migrants like refugees and tied movers would be composed of people who are older than a cohort of economic migrants. Just as the return to migration goes down with age, we would also expect the return from post-migration investment in schooling to fall with age. It would be more profitable for younger migrants to invest in post-migration schooling as compared to older migrants.

H3: *Post-migration investment in U.S. schooling would fall with the age of the migrant and fall at an increasing rate.*

Besides transferability of skills and age of the migrant, another factor that influences post-migration investment in U.S. schooling is pre-immigration investment in schooling. The quantity and quality of pre-immigration schooling can influence post-migration investment in schooling in two offsetting ways. Years of schooling in the origin can be complementary to schooling in the destination, thereby increasing the return from further investments in schooling. This complementarily would arise if people who make large human capital investments in the origin (in terms of years of schooling) would continue to make large human capital investments in the U.S. on the basis of their possess-

ing greater worker and allocative skills (T.W. Schultz, 1975). We would, however, expect the positive effects of pre-immigration schooling to be more pronounced at lower levels of schooling and less intense at higher levels of pre-immigration schooling.

Pre-immigration schooling can also prove to be a substitute for schooling in the destination and discourage acquisition of post-migration schooling. This trade-off between origin and destination schooling would predict that the greater the investments in pre-immigration schooling, the more it will act as a substitute for U.S. schooling and consequently, the smaller will be the post-migration investment in schooling. It is an empirical question whether the complementarity effect is stronger than the substitution effect or vice-versa.

H4:   *If the complementary effect of pre-immigration schooling is stronger than the substitution effect, we would expect post-migration investment in schooling to increase with increases in pre-immigration schooling, but at a decreasing rate.*

It is also plausible that there would be differences in human capital investment in schooling if we look at the foreign-born as a group in comparison with the native-born. Even though the foreign-born population is not a homogeneous group and there are marked variations by country of origin, it is still meaningful to study investment in schooling differentials using a pooled sample of the foreign-born and native-born.

Going back to the transferability of skills argument, the foreign-born would have a higher payoff from investment in U.S. schooling as compared to the native-born. This reasoning holds because we can say that the foreign-born as a group have weaker labor market skills relative to the native-born (holding constant the years of schooling completed) and would have a higher payoff from an additional year of U.S. schooling because it makes their skills more productive by increasing their transferability.

H5:   *The foreign-born would invest more in schooling as compared to the native born of the same age.*

B.   The Estimating Equations

The first four hypotheses are related to the foreign-born population. The dependent variable in the estimating equation for these hypotheses is a measure of post-migration investment in schooling. Accumulated investment in U.S. schooling can be measured in two ways. One variable is years of schooling completed after migration. The other variable that reflects post-migration investment in schooling is the current enrollment status of the migrant. The current enrollment status is a dichotomous variable. We will use the Probit Model for empirical estimation when current enrollment status is the dependent variable.

The basic estimating equation representing the human capital investment function can be written out in the form:

years of post-migration schooling
or current enrollment status $= f(\mathbf{H}, \mathbf{G}, \mathbf{D}, \mathbf{R}, \mathbf{S}, \mathbf{C})$

$\mathbf{H}$ is a vector of human capital variables like age, age squared, years of schooling completed before migration and years of pre-immigration schooling squared. $\mathbf{G}$ is a vector of two geographic control variables for urban/rural residence and south/ non-south region of residence. $\mathbf{D}$ is a vector of the demographic control variable for marital status. Another vector $\mathbf{R}$ consists of two control variables for duration of residence in the U.S. namely, years since migration and years since migration squared. $\mathbf{S}$ is a vector of variables related to U.S. schooling. These include variables that affect the demand for education like the cost and quality measures of schooling[1]. Given the state of residence of a migrant, the direct cost measure (college expenses) and the quality measures (student quality and instructional quality) can be obtained for a representative educational institution in every state. This vector also includes a variable to control for the probability of being a foreign-born male on a student visa.[2] $\mathbf{C}$ is a vector of dummy variables representing country of origin. When the dependent variable is current enrollment status, the vector $\mathbf{H}$ will contain the total number of years of schooling in addition to the other human variables.

The hypothesis related to the comparison of investment in schooling by the foreign-born with the native-born will be tested using a pooled sample. The dependent variable for the regression equation will be the total years of schooling completed to date which includes schooling acquired in the origin by foreign-born men.[3] The dependent variable in the probit equation will be the current enrollment status. The current enrollment status, given age and prior education (in terms of years of schooling completed), will serve as an indicator of accumulated human capital investment in schooling for the pooled sample of the foreign-born and the native-born.

The estimating equation for the pooled sample will be specified as follows:

Total years of schooling completed
or current enrollment status $= f(\mathbf{H}, \mathbf{G}, \mathbf{D}, \mathbf{S}, \mathbf{F})$

$\mathbf{H}$ is the vector of human capital variables, $\mathbf{G}$ and $\mathbf{D}$ are vectors for geographic and demographic variables. $\mathbf{S}$ is the vector of variables related to the cost and quality of U.S. schooling while $\mathbf{F}$ is the vector of variables representing the foreign-born. It contains the foreign-birth dummy variable which is equal to one for the foreign-born and zero for the native-born. Besides this dichotomous variable, the vector F also contains interaction terms of the foreign-birth dummy variable with duration of residence variables (years since migration and years

since migration squared). Country of origin variables from all countries/country groups are also included in this vector for further analysis.

III.   EMPIRICAL ANALYSIS OF THE 1976 SURVEY OF INCOME AND EDUCATION

A.   Post-Migration Investment in Schooling by Foreign-born Men

The means and standard deviations of three education variables are presented in Table 1 by country/ country group for 4,028 foreign-born men aged 16 to 64 who were 15 years or older at the time of migration. The sample is restricted to men who were 15 years or more because we are primarily interested in studying patterns of investment in higher education.

The results of the estimating equations for the sample of foreign-born men are presented in Table 2. The dependent variable for the regression equation is EDPOST, the years of schooling obtained after migration and that for the probit equation is ENROLLED, the dichotomous variable for enrollment status.

The pre-immigration schooling variable has a significant effect on years of schooling obtained after migration. The coefficients of EDUCPRE and EDPRESQR reveal that the relationship between pre and post-immigration schooling is non-linear, the depressing effect being smaller, the higher the level of pre-immigration schooling. This suggests that pre-immigration schooling up to the Ph.D. and professional degree level is more of a substitute than a complement for U.S. schooling.[4]

In the probit equation, an additional human capital variable EDUCREC, the years of schooling completed is also included. Other things the same, the coefficient of EDUCREC implies that an additional year of schooling raises the probability of enrollment. The coefficient of the pre-immigration schooling variable EDUCPRE is not significant. However, the coefficient of EDPRESQR is significant and has a negative sign. The probability of post-migration enrollment increases with post-migration schooling and decreases with pre-immigration schooling.

There are three concepts of age involved in the regression and probit equations for the foreign-born, namely, the current age of the foreign-born male, the age at the time of migration, and the years since migration. Since all the three variables are collinear, given any two of them in the equations, the effect of the third can be calculated. We have the variables AGE and AGESQR for the current age of the migrant and the variables YSM and YSMSQR for the years since migration in the estimating equations. Holding years since migration constant, the coefficients of the age variables AGE and AGESQR measure the effect of age at migration on EDPOST and ENROLLED.

The negative effect of age at migration on post-migration investment in schooling is not very significant when EDPOST is the dependent variable even

Table 1. **Means and Standard Deviations of Education Variables by Country of Origin for the Sample of Foreign Born Men from the 1976 SIE[a,b]**

Country	EDUCPRE	EDPOST	ENROLL	Sample Size
CHINA	10.96	2.45	0.26	137
	(5.25)[c]	(3.44)	(0.44)	(3.40)[d]
EASTASIA	13.93	1.71	0.24	102
	(4.05)	(2.54)	(0.43)	(2.53)
PHILIPPI	10.63	1.44	0.09	228
	(4.88)	(2.41)	(0.28)	(5.66)
VIETNAM	12.84	0.75	0.54	68
	(2.81)	(1.52)	(0.50)	(1.69)
ENGSPKDV	8.39	3.92	0.06	555
	(6.06)	(4.91)	(0.24)	(13.78)
WESTEURO	10.91	2.74	0.10	251
	(5.14)	(3.99)	(0.30)	(6.23)
SOUEURO	8.41	1.87	0.04	478
	(4.03)	(3.57)	(0.19)	(11.87)
EASTEURO	8.91	2.90	0.08	141
	(5.45)	(4.17)	(0.27)	(3.50)
MEXICO	5.72	1.22	0.07	392
	(3.78)	(2.99)	(0.25)	(9.73)
CUBA	10.27	1.05	0.07	161
	(4.61)	(2.27)	(0.25)	(4.00)
PROUSTER	8.25	1.09	0.10	267
	(3.85)	(2.74)	(0.30)	(6.63)
CESOAMER	10.85	1.49		177
	(4.01)	(2.65)		(4.39)
OTHSPAN	9.74	1.13		68
	(4.04)	(2.24)		(1.69)
BLACK	11.40	1.46		126
	(3.56)	(2.38)		(3.13)
OTHER	11.96	2.17		877
	(4.79)	(3.27)		(21.77)
TOTAL	9.59	2.09		4,028
	(5.21)	(3.55)		(100)

Notes: a. Source: U.S. Dept. of Commerce, Bureau of Census, Survey of Income and Education, microdata file, (computer tape), 1976.
b. Variable dictionary for Table 1 is in Appendix A.
c. Standard deviations for EDUCPRE, EDPOST and ENROLL are given in parantheses.
d. Denotes percent foreign-born.

though the negative signs of AGE and AGESQR are in accordance with our hypothesis.[5] The coefficients of AGE and AGESQR are significant when the enrollment status variable ENROLL is used as the dependent variable. The signs of the coefficients reveal that the probability of post-migration enrollment decreases with age at migration but at a decreasing rate. In other words, the negative effect of age at migration is sharpest among young adults and then tapers off.

Duration of residence is also seen to have a significant effect on post-migration schooling and probability of enrollment. Evaluating the coefficients of the

Table 2.   **Regression and Probit Analysis of the Sample of Foreign Born Men from the 1976 SIE[a,b]**

Variable	Regression Analysis Dependent Variable: EDPOST		Probit Analysis Dependent Variable: ENROLL	
	B	**T-value**	**B**	**T-value**
EDUCREC			0.1266	10.701
EDUCPRE	−0.7859	−28.905	0.0236	0.891
EDPRESQR	0.0245	19.091	−0.0030	−2.627
AGE	−0.0294	−1.065	−0.1004	−4.863
AGESQR	−0.0006	−1.930	0.0008	3.180
YSM	0.0306	2.145	−0.0606	−5.536
YSMSQR	0.0020	6.238	0.0009	3.277
SOUTHEQ1	0.6129	4.217	0.1479	1.502
BIGMETRO	0.0618	0.620	−0.0814	−1.098
NOTMSP	0.0092	0.087	0.1850	2.546
COEXRES	−0.0006	−2.208	−0.0005	−2.535
COEXNRES	0.0002	2.104	0.0001	1.732
PROBFSTU	1.1541	0.997	−2.5447	−2.542
AVFACSAL	−5.9173E-6	−0.275	0.2341E-5	−0.148
AVESAT	0.0029	3.277	0.0001	0.161
CHINA	−0.0930	−0.309	0.7249	3.299
EASTASIA	0.2575	0.871	0.1116	0.585
PHILIPPI	−0.6798	−1.872	−0.9357	−3.059
VIETNAM	−0.5762	−1.191	−0.0777	−0.222
WESTEURO	0.1104	0.517	0.1766	1.010
SOUEURO	−1.2519	−3.534	−0.7819	−2.434
EASTEURO	−0.0074	−0.017	−0.2243	−0.602
MEXICO	−2.8945	−11.607	−0.3869	−1.800
CUBA	−0.4936	−1.062	−0.8160	−2.043
PROUSTER	−1.3975	−2.982	−0.6607	−1.649
CESOAMER	−0.4994	−2.303	0.3086	2.375
OTHSPAN	−1.4974	−4.556	−0.5437	−1.879
BLACK	−0.4038	−1.615	0.5778	3.973
OTHER	0.0536	0.353	0.2694	2.201
CONSTANT	5.6638	3.996	1.1507	1.906

Notes: Number of observations: 4,208
Adjusted R^2: .4692
Std. Error: 2.5872
Benchmark – Foreign-born men from England and Canada
a. Sources: (1) U.S. Dept. of Commerce, Bureau of Census, Survey of Income and Education, microdata file (computer tape), 1976. (2) Open Doors, 1975/76. (3) Digest of Education Statistics, 1980. (4) AUUP Bulletin, August 1978. (5) State SAT Scores, 1976 through 1985.
b. Variable Dictionary for Table 2 is in Appendix A.

duration of residence variables YSM and YSMSQR for different values of the years since migration variable YSM, we find that as time spent in the U.S. increases, the stock of investment in U.S. schooling by foreign-born men increases and the probability of enrollment (a flow concept) decreases.

The direct costs of U.S. schooling have significant partial effects on years of schooling obtained after migration. The coefficient of COEXRES is negative,

which means that as tuition and fees for in-state students increases at the major state university in the state, the amount of schooling demanded decreases. Thus the negative sign of COEXRES shows that the demand for U.S. schooling varies inversely with price of schooling. The probability of post-migration enrollment is also seen to vary inversely with the cost of U.S. schooling.

In the economics of education literature, college expenditures per student are sometimes used as a quality measure, the reasoning being that colleges which charge high tuition provide a high quality education. If the tuition and fees for out-of-state students is less subsidized by the state and reflects more accurately the quality of education provided at the largest university in each state the positive coefficient of COEXNRES implies that the demand for U.S. schooling by the foreign-born responds in a positive manner to quality of U.S. college education. The probit equation results for COEXNRES also provide evidence for the above mentioned quality effect. These findings are further confirmed by the positive coefficient of the student quality measure AVESAT in the regression equation. The instructional quality measure AVFACSAL is not significant in either of the equations.

For both dependent variables EDPOST and ENROLLED, the results do not provide evidence that immigrants from all the non-English speaking countries invest more in post-migration schooling than migrants from the English-speaking-developed countries. However, the results are consistent for both equations that foreign-born men from the Philippines, South Europe (Greece, Italy, and Portugal), Mexico and other Spanish countries invest less in U.S. schooling than foreign-born men from England and Canada, other variables the same.

The foreign student variable PROBFSTU is highly collinear with the set of country variables. When it is entered along with all the country of origin variables in the regression equation, its coefficient is insignificant. However, the coefficient of PROBFSTU becomes significant when the regression is estimated without the country variables ($b = 3.58$, $t = 12.3$) or with the refugee country variables only ($b = 3.99$, $t = 12.4$)

Table 3 gives the results of regression and probit equations which are estimated with only two country variables representing the refugee population from China and Cuba. These equations are estimated to test the hypothesis that refugees are expected to invest more in post-migration schooling than other migrants because they have less transferable skills. The benchmark for these equations is the group of foreign-born men from all countries except China and Cuba. The coefficient for China is not significant but the coefficient of Cuba is significant and it implies that the Cubans invest in more years of schooling than foreign-born men from all countries except China and Cuba. This is a stronger result than Borjas (1982) because Cubans are compared to immigrants from all countries of origin as opposed to just other Hispanic immigrants.

Table 3 also gives the results for regression and probit equations which are estimated with the combined country variable for China and Cuba represented by REFUGEE. The coefficient of REFUGEE is positive and significant in the

Table 3. **Coefficients of Refugee Country Variables from Regression Analysis and Probit Analysis of the Sample of Foreign-born Men from the 1976 SIE[a]**

Variable	Regression Analysis[b] Dependent Variable: EDPOST		Probit Analysis[c] Dependent Variable: ENROLL	
	B	T-value	B	T-value
CHINA[d]	−0.0861	−0.350	0.1693	1.143
CUBA	0.8921	3.771	−0.1388	−0.727
REFUGEE[e]	0.4212	2.552	0.0469	0.421
REFUGEE[f]	0.4177	2.569	0.0215	0.192

Notes: a. Variable Dictionary for Table 3 is in Appendix A.
　　　b. Variables held constant are EDUCPRE, EDPRESQR, AGE, AGESQR, YSM, YSMSQR, SOUTHEQl, BIGMETRO, NOTMSP, COEXRES, COEXNRES, PROBFSTU, AVFACSAL, and AVESAT.
　　　c. Variables held constant are EDUCREC, EDUCPRE, EDPRESQR, AGE, AGESQR, YSM, YSMSQR, SOUTHEQl, BIGMETRO, NOTMSP, COEXRES, COEXNRES, PROBFSTU, AVFACSAL, and AVESAT.
　　　d. Benchmark is foreign-born men from all countries except China and Cuba.
　　　e. Benchmark is foreign-born men from all countries except China and Cuba.
　　　f. Benchmark is foreign-born men from all non-English-speaking countries except China and Cuba.

regression equation and reveals that the refugees from China and Cuba acquire more years of schooling when compared to foreign-born men from all countries. This differential in schooling also holds when Chinese and Cuban refugees are compared with foreign-born men from all non-English-speaking countries. This result confirms that our finding about refugees is not due to an English language proficiency distinction but is based on the distinction of economic versus non-economic motives for migration. The enrollment equations do not give significant results for either the separate country variables for the two refugee countries or the combined refugee country variable suggesting that refugees invest more in years of post-migration schooling but are not more likely to be enrolled in school.

B.   Investment in Schooling by Native-born and Foreign-born Men

The results for the regression and probit equations for the pooled sample of 129, 238 native and foreign-born men are given in Table 4. The dependent variables are the years of schooling completed, EDUCREC and the enrollment status variable, ENROLL. The explanatory variables are the same as in the equations for the foreign-born with additional variables for foreign-birth represented by FOR, YSMFOR and YSMSQFOR.

The partial effect of the human capital variable age is given by evaluating the coefficients of AGE and AGESQR. Both coefficients are highly significant in the regression equation and reveal that schooling acquired increases with age but at a decreasing rate. In other words, the accumulation of human capital in the form of formal schooling becomes less intense at older ages. The age variable in the estimating equation picks up two effects. One is that a cohort acquires more education as it ages and the other is that younger cohorts have a

Table 4. **Regression and Probit Analysis of the Pooled Sample of Native-born and Foreign-born Men from the 1976 SIE[a,b]**

Varaible	Regression Analysis Dependent Variable: EDUCREC		Probit Analysis Dependent Variable: ENROLL	
	B	T-value	B	T-value
EDUCREC			0.1173	60.771
AGE	0.2611	61.928	−0.2559	−91.318
AGESQR	−0.0038	−74.116	0.0026	74.124
SOUTHEQ1	−0.4980	−13.074	−0.0718	−3.165
BIGMETRO	0.5464	31.094	0.0700	6.830
NOTMSP	−0.4010	−17.994	0.2537	20.307
COEXRES	−0.0005	−10.959	−0.0001	−5.715
COEXNRES	0.0003	15.858	0.6554E-4	5.284
AVFACSAL	−0.4219E-4	11.879	−0.1565E-5	−0.755
AVESAT	0.0023	17.592	−0.1385E-6	−0.001
FOR	−1.1225	−11.345	0.4022	7.558
YSMFOR	−0.0393	−2.972	−0.0184	−2.092
YSMSQFOR	0.0017	5.686	0.5518E-5	0.023
CONSTANT	5.2190	25.158	2.5362	20.811

Notes: Adjusted R2: .0925
Std. Error: 2.9712
Number of Observations: 129,238
Benchmark - Native-born Men
a. Sources: (1) U.S. Dept. of Commerce, Bureau of Census, Survey of Income and Education, microdata file (computer tape), 1976. (2) Digest of Education Statistics, 1980. (3) AUUP Bulletin, August 1978. (5) State SAT Scores, 1976 through 1985.
b. Variable Dictionary for Table 4 is in the Appendix A.

higher schooling-age profile than older cohorts because of the secular rise in schooling. The enrollment equation indicates that the probability of enrollment decreases with age but at a decreasing rate.

The negative coefficient of the schooling cost variable COEXRES in the regression equation reveals the inverse relationship between the amount of schooling demanded and the price of schooling while the positive coefficient of COEXNRES provides evidence that the amount of schooling demanded responds positively to the quality of instruction. This quality effect is further strengthened by significantly positive coefficients of the measures of instructional quality (AVFACSAL) and student quality (AVESAT). The effects of COEXRES and COEXNRES are also significant in the probit equation.

An additional human capital variable EDUCREC is also included in the probit equations. The effect of EDUCREC on ENROLL shows that the probability of enrollment in school goes up for every year of schooling completed when age is held constant. That is, at any age, those most recently enrolled (higher EDUCREC) are more likely to be currently enrolled in school.

Keeping other things constant, the effect of foreign-birth on total investment in schooling and enrollment status is given by evaluating the coefficients of FOR, YSMFOR and YSMSQFOR in both the estimating equations.[6]

The partial effect of foreign-birth on EDUCREC evaluated for different values for YSM reveals one year less schooling than the native born among new immigrants, and that the total schooling differential for the foreign-born increases in magnitude with time spent in the U.S. until about 10 years, after which it starts narrowing. This may reflect the decline in immigrant schooling among the cohorts that came to the US in the 1970's (Cohen, Zach and Chiswick, 1997).

In the probit equation, it is seen that recent immigrants have a higher enrollment rate. As duration of residence in the U.S. increases, the effect of foreign-birth on the probability of enrollment decreases and at about 20 years in the U.S. the foreign-born are as likely to be enrolled in school as the native-born.

A further analysis of the differentials in schooling among the native-born and foreign-born is carried out by estimating the regression and probit equations with country/country group variables for all countries of origin. The benchmark is native-born men so that the coefficient of each country variable gives the differential in schooling and probability of enrollment between the foreign-born men from that country/country group and all native-born men. Coefficients of country variables from the regression and probit equations are presented in Table 5.

Holding everything else constant, we find that foreign-born men from East Asia (Korea and Japan), and West Europe (France, Germany, and Scandinavia) acquire more schooling than native-born men. The foreign-born men from the

Table 5. **Coefficients of Country Varaibles from Regression Analysis and Probit Analysis of the Pooled Sample of Native-born and Foreign-born Men from the 1976 SIE[a]**

	Regression Analysis[b] Dependent Variable: EDUCREC		Probit Analysis[c] Dependent Variable: ENROLL	
Varaible	B	T-value	B	T-value
ENGSPKDV	−0.2088	−1.248	0.2598	2.275
CHINA	0.3671	1.398	0.5906	4.087
EASTASIA	2.3695	7.995	0.2294	1.443
PHILLIPI	−0.6952	−3.303	−0.1530	−1.066
VIETNAM	0.1851	0.518	0.9051	5.462
WESTEURO	0.6592	2.963	0.5502	3.919
SOUEURO	−4.1911	−25.283	0.1226	0.891
EASTEURO	−0.5157	−1.849	0.6427	3.340
MEXICO	5.9995	−35.194	0.2542	2.141
CUBA	−1.6319	−6.469	0.3068	1.622
PROUSTER	−3.6328	−17.368	0.4335	3.244
OTHER	0.4613	3.804	0.4840	7.189

Notes: a. Variable Dictionary for Table 5 is in the Appendix A.
  b. Variables held constant are AGE, AGESQR, SOUTHEQ1, BIGMETRO, NOTMSP, COEXRES, COEX-NRES, AVFACSAL, AVESAT, YSMFOR, and YSMSQFOR.
  c. Variables held constant are EDUCREC, AGE, AGESQR, SOUTHEQ1, BIGMETRO, NOTMSP, COEXRES, COEXNRES, AVFACSAL, AVESAT, YSMFOR, and YSMSQFOR.

country group Other also acquire more schooling than the native-born.[7] The foreign-born men from the Philippines, South Europe (Greece, Italy, and Portugal, East Europe (Poland and Russia), Mexico, Cuba, Puerto Rico, and other U.S. Territories invest less in total schooling as compared to native-born men.

The results of the probit equation show that the foreign-born men from English-speaking developed countries (England and Canada), China, Vietnam, West Europe, East Europe, Mexico, Puerto Rico and other U.S. Territories, and Other countries are more likely to be enrolled than native-born men.

IV. EMPIRICAL ANALYSIS OF THE 1980 CENSUS OF POPULATION DATA

A. Post-Migration Investment in Schooling by Foreign-born Men

The means and standard deviations of three education variables are presented in Table 6 by country/country group for 35,260 foreign-born men aged 18 to 64 who were 15 years or older at the time of migration.[8] The results of the estimating equations for the sample of foreign-born men are given in Table 7. The dependent variable for the regression equation is EDPOSTIM, the years of schooling obtained after migration and that for the probit equation is ENROLLED, the dichotomous variable for enrollment status. The 1980 Census does not provide direct information on the years of schooling obtained in the origin and the years of schooling acquired after migration. An algorithm is used to estimate the number of years of pre-immigration schooling (EDPREIM) by assuming continuous enrollment in school from age 6 to age at migration or the age at completion of schooling, whichever comes first. The years of post-migration schooling (EDPOSTIM) are then calculated as a residual by subtracting EDPREIM from EDPOSTIM, with negative values assigned the value of zero. The same algorithm was used for the 1976 SIE to estimate years of pre-immigration schooling (EDUCPRE) and then the years of post-migration schooling (EDPOST) were calculated. The results of the 1976 regression equation with the algorithm are reported in (Hashmi 1987b).

Looking at the results, we find that pre-immigration schooling has a significant effect on years of schooling obtained after migration as well as the current enrollment status of the migrant. The coefficients of EDPREIM and EDPRIMSQ reveal that the relationship of pre-immigration schooling with EDPOSTIM and ENROLLED is non-linear. Both post-migration schooling and the probability of enrollment increases with pre-immigration schooling but at a decreasing rate. An additional human capital variable EDUC representing total years of schooling is included in the probit equations. Other things the same, the coefficient of EDUC implies that an additional year of schooling raises the probability of being enrolled in school.

Table 6. **Means and Standard Deviations of Education Variables by Country of Origin for the Sample of Foreign-born Men from the 1980 Census[a,b]**

Country	EDPREIM	EDPOSTIM	ENROLLED	Sample Size
CHINA	13.30	0.56	0.20	1,415
	(5.06)[c]	(1.54)	(0.40)	(4.01)[d]
EASTASIA	14.68	0.25	0.19	1,060
	(3.24)	(0.96)	(0.39)	(3.01)
SOEAASIA	14.28	0.40	0.25	4,354
	(4.06)	(1.16)	(0.43)	(12.35)
MIDEAST	12.94	0.44	0.31	1,137
	(4.13)	(1.29)	(0.46)	(3.22)
ENGSPDEV	13.07	0.39	0.06	2,782
	(3.93)	(1.23)	(0.24)	(7.89)
NOWEEURO	12.95	0.46	0.06	2,444
	(3.61)	(1.40)	(0.24)	(6.93)
SOUEURO	9.31	0.24	0.04	3,666
	(4.36)	(1.04)	(0.19)	(10.40)
EASTEURO	12.06	0.36	0.04	2,201
	(4.07)	(1.29)	(0.20)	(6.24)
MEXICO	6.97	0.10	0.04	7,005
	(4.09)	(0.60)	(0.19)	(19.87)
CESOAMER	11.92	0.28	0.16	2,783
	(4.03)	(0.96)	(0.36)	(7.89)
CUBA	10.82	0.30	0.03	1,637
	(4.38)	(1.18)	(1.18)	(4.64)
CARIB	10.62	0.22	0.11	989
	(4.21)	(0.92)	(0.31)	(2.80)
BWINDIES	11.39	0.25	0.12	972
	(3.26)	(0.97)	(0.32)	(2.76)
AFRICA	15.20	0.40	0.42	866
	(3.32)	(1.16)	(0.49)	(2.46)
OTHER	10.93	0.35	0.11	1,949
	(4.80)	(1.19)	(0.32)	(5.53)
TOTAL	11.22	0.30	0.22	35,260
	(4.80)	(1.09)	(0.31)	(100)

Notes: [a]Source: U.S. Dept. of Commerce. Bureau of Census. Census of Population and Housing: 1980, microdata file, (computer tape), 1982.
[b]Variable dictionary for Table 6 is in Appendix B.
[c]Standard deviations for EDPREIM, EDPOSTIM and ENROLLED are given in parantheses.
[d]Denotes percent foreign-born.

The negative effect of age at migration on post-migration investment in schooling is also observed for both dependent variables. Duration of residence in the United States also appears to be an important explanatory variable in the regression and probit equations for the foreign-born; a longer duration raises years of schooling completed in the U.S. and lowers the enrollment rate.

The variable representing the probability of being a foreign student PROBFSTU is significant in both estimating equations and the sign of the coefficients suggests that post-migration investment in schooling, as well as the

Table 7.   **Regression and Probit Analysis of the Sample Mean of the Sample Mean of Foreign-born Men from the 1980 Census**[a,b]

Variable	Regression Analysis Dependent Variable: EPOSTIM		Probit Analysis Dependent Variable: ENROLLED	
	B	T-value	B	T-value
EDUC			0.1592	18.171
EDPREIM	0.0532	11.912	0.3192	12.202
EDPREIMSQ	–0.0021	–10.822	–0.0119	–14.347
AGE	–0.0436	–12.046	–0.1751	–22.163
AGESQ	0.0001	3.231	0.0017	17.685
YSM	0.0583	30.140	–0.0384	–8.283
YSMSQ	–0.0004	–9.612	0.0006	4.975
SOUTHEQ1	0.0517	2.045	0.0034	0.074
RURALEQ1	0.0145	0.654	–0.1334	–2.407
MARRSP	–0.0725	–5.154	–0.3634	–13.586
COEXRES	–0.3286E-4	–0.857	–0.0001	–1.506
COEXNRES	0.2853E-4	2.317	0.2905E-4	1.174
PROBFSTU	0.2334	4.468	0.4985	5.985
AVFACSAL	1.8797E-7	0.042	–0.2448E-4	–2.836
AVESAT	0.1896E-4	0.105	0.0010	3.028
AFRICA	0.1458	3.530	0.9313	13.609
MEXICO	–0.1299	–3.911	0.2826	4.035
CESOAMER	0.0262	0.829	0.6012	9.576
BWINDIES	0.0759	1.753	0.6116	7.154
CUBA	0.1924	4.812	0.3874	4.154
CARIB	0.0855	1.829	0.7242	8.016
CHINA	0.3883	11.167	0.5814	8.702
EASTASIA	0.1441	3.691	0.4085	5.769
SOEAASIA	0.2278	7.679	0.6172	10.809
MIDEAST	0.1941	5.045	0.7983	11.503
NOWEEURO	0.0415	1.415	0.1822	2.621
SOUEURO	0.0294	0.868	0.3368	4.331
EASTEURO	0.1504	3.835	0.2234	2.611
OTHER	0.1147	2.823	0.4723	6.163
CONSTANT	0.7868	2.668	–1.9858	–3.441

Notes: Number of Observations 35,260
Adjusted R^2: .1204
Std. Error: 1.0282
Bechmark – Foreign-born men from United Kingdom, Canada, Australia, and New Zealand
a. Sources: (1) U.S. Dept. of Commerce, Bureau of Census, Census of Population and Housing: 1980 microdata file (computer tape), 1982. (2) Open Doors 1978/79. (3) Digest of Education Statistics, 1980. (4) AUUP Bulletin, August 1978. (5) State SAT Scores, 1976 through 1985.
b. Variable Dictionary for Table 7 is in Appendix B.

probability of being enrolled in school, goes up with the probability of being on a foreign-student visa.

The effect of citizenship on post-migration investment in schooling is also studied by introducing a dichotomous variable ALIEN in both estimating equations which takes on the value of one if the person is not a citizen and the value

of zero if the person is a naturalized citizen. The coefficient of ALIEN reveals that, controlling for the probability of being a foreign student, an alien acquires less schooling (b = -0.025, t-ratio = -1.8), but is more likely to be currently enrolled (b = 0.056, t-ratio = 1.8) than a naturalized citizen. The significant results for PROBFSTU and ALIEN suggest that foreign student visa status and citizenship status are important determinants of the demand for U.S. schooling.[9]

Focusing on the country coefficients, we find that other things the same, foreign-born men from the country/country group AFRICA, CUBA, CHINA, EASTASIA, SOEASIA, MIDEAST, EASTEURO and OTHER acquire more years of post-migration schooling than foreign-born men from United Kingdom, Canada, Australia, and New Zealand, the English-speaking-developed countries.[10] Foreign-born men from all countries of origin are also more likely to be currently enrolled in school when compared to foreign-born men from English-speaking developed countries. These results provide strong evidence in favor of the hypothesis that foreign-born men from non-English-speaking countries invest more in post-migration schooling than foreign-born men from English-speaking-developed countries.

A detailed analysis of the post-migration schooling investments of refugees was also done to shed more light on earlier results from the 1976 SIE. Table 8 gives the results of the regression and probit equations which were estimated with only three country variables representing the refugee population from Cuba, China Vietnam. The benchmark for these equations is the group of foreign-born men from all countries except Cuba, China and Vietnam. Foreign-born men from Cuba and China invest in more years of post-migration school-

Table 8.   Coefficients of Refugee Country Variables from Regression Analysis and Probit Analysis of the Sample of Foreign-born Men from the 1980 Census[a]

Variable	Regression Analysis[b] Dependent Varaible: EDUC		Probit Analysis[c] Dependent Variable: ENROLLED	
	B	T-value	B	T-value
CUBA[d]	0.1408	4.961	-0.0657	-0.876
CHINA	0.3205	11.109	0.1005	2.079
VIETNAM	-0.0069	-0.168	0.3439	5.750
REFUGEE[e]	0.1861	10.075	0.1395	4.112
REFUGEE[f]	0.1712	9.287	0.0976	2.863

Note: a. Variable dictionary for Table 8 is in Appendix B.

b. Variables held constant are EDPREIM, EDPRIMSQ, AGE, AGESQ, YSM, YSMSQ, SOUTHEQ1, RURALEQ1, MARRSP, COEXRES, COEXNRES, PROBFSTU, AVFACSAL, and AVESAT.

c. Variables held constant are EDUC, EDPREIM, EDPRIMSQ, AGE, AGESQ, YSM, YSMSQ, SOUTHEQ1, RURALEQ1, MARRSP, COEXRES, COEXNRES, PROBFSTU, AVFACSAL, and AVESAT.

d. Benchmark is foreign-born men from all countries except Cuba, China, and Vietnam.

e. Benchmark is foreign-born men from all countries except Cuba, China, and Vietnam.

f. Benchmark is all foreign-born men from all non-English-speaking countries except Cuba, China, and Vietnam.

ing while the foreign-born men from China and Vietnam are more likely to be currently enrolled in school than foreign-born men from all other countries except the three refugee countries. These findings provide support for the hypothesis that refugees have less transferable skills than economic migrants and would therefore have a higher payoff from investment in post-migration schooling. This result is further strengthened by the significant coefficient of the combined refugee country variable REFUGEE in both estimating equations.

In order to test whether our results are actually portraying the investment differentials between refugees and economic migrants and not the differentials between English-speaking and non-English-speaking countries, the foreign-born men from English-speaking-developed countries are excluded from the sample. The bench-mark of the REFUGEE variable in these equations is the foreign-born men from all non-English-speaking non-refugee countries. The results indicate that refugees from Cuba, China and Vietnam invest more in post-migration schooling and are more likely to be currently enrolled in school when compared to economic migrants from non-English-speaking countries (see Table 8).

C.   Investment in Schooling by Native-born and Foreign-born Men

The results for the regression and probit equations for the pooled sample of 65,995 native and foreign-born men aged 18 to 64 are given in Table 9. The dependent variables are the years of schooling completed EDUC and the current enrollment status variable ENROLLED. The explanatory variables are same as used in the 1976 SIE equations for the pooled sample.

The coefficients of the human capital variable age are highly significant in both equations and suggest that investment in schooling rises with age but at a decreasing rate while the probability of enrollment decreases with age at a decreasing rate. As for the 1976 SIE, the negative effect of age in the cross-section is due to the effect of the secular rise in schooling (older cohorts have less schooling) more than offsetting the rise in scholling with age as a cohort ages (longitudinal effect).

The schooling cost variable COEXRES has an inverse relation with EDUC in the regression equation which shows that the demand for schooling varies inversely with changes in the price of schooling. The positive coefficient of COEXNRES shows the same quality effect on the demand for schooling which was observed for the pooled sample as well as the sample of foreign-born men in the 1976 SIE data set. The positive significant coefficient of the instructional quality variable AVFACSAL gives further evidence in favor of the quality effect of schooling on investment in schooling in a pooled sample. None of the schooling cost and quality variables seem to affect the probability of enrollment.

Other things the same, the effect of foreign-birth on investment in schooling and enrollment status is given by evaluating the coefficients of FOR, YSMFOR and YSMSQFOR. The pattern in the regression equation shows that the school-

Table 9. **Regression and Probit Analysis of the Pooled Sample of Native-born and Foreign-born Men from the 1980 Census[a,b]**

Variable	Regression Analysis Dependent Varaible: EDUC		Probit Analysis Dependent Variable: ENROLLED	
	B	T-value	B	T-value
AGE	0.2135	32.769	0.2117	60.646
AGESQ	−0.0032	−39.183	−0.2653	−50.298
SOUTHEQ1	−0.6512	−15.805	0.0027	41.328
RURALEQ1	−1.0539	−36.362	0.0133	0.493
MARRSP	0.3624	11.996	−0.2100	−9.773
COEXRES	−0.0004	−6.708	−0.3311	−16.800
COEXNRES	0.0002	5.534	−0.5422E-4	−1.133
AVFACSAL	0.1705E-4	2.460	−0.1087E-4	−0.571
AVESAT	−0.0007	−2.691	0.2469E-5	0.534
FOR	−1.7324	−16.007	−0.4746E-5	−0.027
YSMFOR	−0.0313	−1.963	0.5184	10.246
YSMSQFOR	0.0016	4.142	−0.0180	−3.598
CONSTANT	10.2938	24.446	1.2428	4.392

Notes: Number of Observations 65,995
Adjusted R^2: .0871
Std. Error: 3.1870
Benchmark - Native-born men
a. Sources: (1) U.S. Dept. of Commerce, Bureau of Census, Census of Population and Housing: 1980, microdata file, (computer tape), 1982. (2) Digest of Education Statistics, 1980. (3) AAUP Bulletin, August 1978. (4) State SAT Scores, 1976 through 1985.
b. Variable Dictionary for Table 9 in Appendix B.

ing differential for the foreign-born increases with duration of residence in the U.S.for the first 10 years, after which it starts narrowing down and the foreign-born approach the native-born in terms of schooling investments. For the probit equation it is seen that with the passage of years in the U.S., the differential in enrollment decreases and the enrollment probability for the foreign-born approaches that of the native-born.[11]

A further analysis of the differentials in schooling among the native-born and the foreign-born is presented in Table 10 which gives the country/ country group variable coefficients for the regression and probit equations which are estimated with the country/country group variables representing all countries of origin along with the set of explanatory variables consisting of the human capital, geographic, marital status, and schooling cost and quality variables. The bench-mark for both equations is native-born men so that the coefficient of each country variable gives the differential in schooling and current enrollment status between the foreign-born men from that country/country group and all native-born men.

Holding everything else constant, it is found that the foreign-born men from the English-speaking developed countries, Africa, East Asia, South and South Asia, and Philippines acquire more schooling than all native-born men.

Table 10. **Coefficients of Country Varaibles from Regression Analysis and Probit Analysis of the Pooled Sample of Native-born and Foreign-born Men form the 1980 Census**[a]

Variable	Regression Analysis[b] Dependent Variable: EDUC		Probit Analysis[c] Dependent Variable: ENROLL	
	B	T-value	B	T-value
ENGSPDEV	0.7488	3.402	−0.1997	−1.087
AFRICA	2.4772	7.246	0.9496	5.795
MEXICO	−6.7415	−45.2167	0.3662	3.082
CESOAMER	−1.4393	−6.928	0.5994	4.836
BWINDIES	−2.0526	−6.283	0.3326	1.279
CUBA	−1.4516	−5.230	−0.1309	−0.451
CARIB	−2.1935	−6.628	0.7850	3.849
CHINA	0.3927	1.505	0.4777	3.106
EASTASIA	1.5170	4.631	0.4787	2.720
SOEASIA	2.3620	10.651	0.3651	3.120
VIETNAM	−0.4912	−1.302	0.6978	3.657
PHILIPPI	0.5318	1.738	0.5272	3.132
MIDEAST	−0.1581	−0.473	0.1194	6.778
NOWEEURO	0.1818	0.762	0.3602	2.162
SOUEURO	−3.0650	−15.165	0.1532	0.873
EATEURO	−0.4583	−1.859	0.0979	0.497
OTHER	−2.2579	−9.232	0.3535	2.151

Notes: a. Variable Dictionary for Table 10 is in Appendix B.
 b. Variables held constant are AGE, AGESQ, SOUTHEQ1, RURALEQ1, MARRSP, COEXRES, COEX-NRES, AVFACSAL, AVESAT, YSMFOR, AND YSMSQFOR.
 c. Varaibles held constant are EDUC, AGE, AGESQ, SOUTHEQ1, RURALEQ1, MARRSP, COEXRES, COEXNRES, AVFACSAL, AVESAT, YSMFOR, AND YSMSQFOR.

The differential is greatest for the Africans. The foreign-born men from Mexico, Central and South America, British West Indies, other Caribbean countries Cuba, South Europe, and East Europe invest less in schooling as compared to native-born men, the differential being greatest for Mexicans. The results of the probit equation show that the foreign-born men from Africa, Mexico, Central and South America, other Caribbean countries, China, East Asia, Vietnam, Philippines, Middle East, and North West Europe are more likely to be currently enrolled in school than native-born men.

V. SUMMARY AND CONCLUSION

This study is one of the first attempts in the literature towards developing and testing hypotheses related exclusively to post-migration investments in schooling. The analysis is more exhaustive than the earlier ones, one of which focused exclusively on the children of immigrants (T.P. Schultz, 1981), another on a limited analysis foreign-born Hispanic men (Borjas, 1982) and still another on post-

migration educational qualifications in Australia (Chiswick and Miller 1994). As such, the findings of this study take us far beyond the existing literature. Not only do we look at post-migration schooling investments of foreign-born men from all countries of origin, we also study the impact of determinants other than merely the standard human capital and socioeconomic variables that were previously used. The new explanatory variables introduced in this study measure the cost and quality of U.S. schooling, as well as the probability of being a foreign student and citizenship status. The two dependent variables under study are years of schooling completed after migration and the current school enrollment status.

The study uses two data sets, namely the 1976 Survey of Income and Education (SIE) and the 1980 Census of Population. A sample of foreign-born adult men and a pooled sample of native-born and foreign-born men is taken from each data set for empirical anlysis.

Both data sets support the refugee hypothesis and show that the foreign-born Cubans invest more in years of post-migration schooling than foreign-born men who are not refugees. The 1980 Census results also show that the foreign-born Chinese acquire more schooling and that the Chinese and Vietnamese men are more likely to be enrolled in school than economic migrants from all other countries.

The hypothesis regarding the negative effect of age at migration on post-migration investments is supported by the empirical analysis in both data sets. The human capital variable age at migration is an important factor in influencing years of post-migration schooling and current enrollment status. The effect of the other human capital variable, pre-immigration schooling, is also found to be significant in both data sets, the estimated relationship being non-linear.

The variables for the cost and quality of schooling appear to affect the demand for U.S. schooling in a significant manner for both samples. Post-migration schooling and school enrollment rates are higher in states in which the public university has a lower tuition charge and in states in which the quality of schooling is higher. These are important variables for the analysis of the demand for schooling among the foreign born.

It is also found that foreign student status and naturalization status influence years of schooling acquired after migration and current enrollment status, a result that is more clearly evidenced in the 1980 Census sample than in the 1976 SIE sample. The naturalized citizens acquire more schooling and are more likely to be currently enrolled in school. Prior to this study, citizenship status had been studied only in the context of earnings functions of foreign-born men (Chiswick, 1978a). The analysis from this study confirm the importance of including a citizenship variable in studies of post-migration schooling.

APPENDIX A
VARIABLE DICTIONARY FOR THE 1976 SIE

Variable Code	Description
EDUCREC	Highest grade attended.
EDUCPRE	Years of education prior to immigration.
EDPRESQR	EDUCPRE squared.
EDPOST	Years of education after immigration = (EDUCREC – EDUCPRE)
ENROLL	Dichotomous variable equal to unity for a person who was enrolled in school in 1976; 0 otherwise.
AGE	Age in years.
AGESQR	Age squared.
YSM	Years since migration.
YSMSQR	Years since migration squared.
SOUTHEQ1	Dichotomous variable equal to unity for a person living in a Southern state; 0 otherwise.
BIGMETRO	Dichotomous variable equal to unity for a person living in a metropolitan area; 0 otherwise.
NOTMSP	Dichotomous variable equal to unity for married spouse absent, never married, widowed, divorced or separated; 0 otherwise.
COEXRES	Basic student charges (tuition and required fees) per academic year for in-state students in a public university.
COEXNRES	Basic student charges (tuition and required fees) per academic year for out-of-state students in a public university.
PROBFSTU	Probability of being a foreign student by country of birth.
AVFACSAL	Average faculty salary by country of birth.
AVESAT	Average SAT scores (verbal + mathematical) by state.
CHINA	Dichotomous variable equal to unity if country of birth is China; 0 otherwise.
EASTASIA	Dichotomous variable equal to unity if country of birth is Japan or Korea; 0 otherwise.
PHILIPPI	Dichotomous variable equal to unity if country of birth is Philippines; 0 otherwise.
VIETNAM	Dichotomous variable equal to unity if country of birth is Vietnam; 0 otherwise.
ENGSPKDV	Dichotomous variable equal to unity if country of birth is Canada or England; 0 otherwise.

WESTEURO   Dichotomous variable equal to unity if country of birth is France or Germany or Scandinavia; 0 otherwise.

SOUEURO   Dichotomous variable equal to unity if country of birth is Greece or Italy or Portugal; 0 otherwise.

EASTEURO   Dichotomous variable equal to unity if country of birth is Poland or Russia; 0 otherwise.

MEXICO   Dichotomous variable equal to unity if country of birth is Mexico; 0 otherwise.

CUBA   Dichotomous variable equal to unity if country of birth is Cuba; 0 otherwise.

PROUSTER   Dichotomous variable equal to unity if country of birth is Puerto Rico or other U.S. Territories; 0 otherwise

CESOAMER   Dichotomous variable equal to unity if country of birth is Other and ethnicity/race is Other Spanish; 0 otherwise.

BLACK   Dichotomous variable equal to unity if country of birth is Other and ethnicity/race is Black; 0 otherwise.

OTHER   Dichotomous variable equal to unity if country of birth is Other and ethnicity/race is not Central/South American or Other Spanish or Black; 0 otherwise.

REFUGEE   Dichotomous variable equal to unity if country of birth is China or Cuba; 0 otherwise.

FOR   Foreign-born

YSMFOR   YSM * FOR

YSMSQRFOR   YSMSQR*FOR

APPENDIX B
VARIABLE DICTIONARY FOR THE 1980 CENSUS

Variable Code   **Description**

EDUC   Highest year of school attended (20 categories).

EDPREIM   Years of education prior to immigration (computed).

EDPRIMSQ   EDPREIM squared.

EDPOSTIM   Years of education after immigration = (EDUC - EDPREIM)

ENROLLED   Dichotomous variable equal to unity for a person who was enrolled in a public, church-related or other private school in 1980; 0 otherwise.

AGE   Age in years.

AGESQR   Age squared.

YSM   Years since migration.

YSMSQR   Years since migration squared.

RURALEQ1   Dichotomous variable equal to unity for a person living in a rural area; 0 otherwise.

SOUTHEQ1   Dichotomous variable equal to unity for a person living in a Southern state; 0 otherwise.

MARRSP   Dichotomous variable equal to unity for married spouse present; 0 otherwise.

COEXRES   Basic student charges (tuition and required fees) per academic year for in-state students in a public university.

COEXNRES   Basic student charges (tuition and required fees) per academic year for out-of-state students in a public university.

PROBFSTU   Probability of being a foreign student by country of birth.

AVFACSAL   Average faculty salary by country of birth.

AVESAT   Average SAT scores (verbal + mathematical) by state.

ALIEN   Dichotomous variable equal to unity if a person is not a citizen; 0 otherwise.

AFRICA   Dichotomous variable equal to unity if place of birth is Africa; 0 otherwise.

MEXICO   Dichotomous variable equal to unity if place of birth is Mexico; 0 otherwise.

CESOAMER   Dichotomous variable equal to unity if place of birth is South America or Central America; 0 otherwise.

BWINDIES   Dichotomous variable equal to unity if place of birth is British West Indies; 0 otherwise.

CUBA   Dichotomous variable equal to unity if place of birth is Cuba; 0 otherwise.

CARIB   Dichotomous variable equal to unity if place of birth is Other Caribbean; 0 otherwise.

CHINA   Dichotomous variable equal to unity if place of birth is China; 0 otherwise.

EASTASIA   Dichotomous variable equal to unity if place of birth is China or Japan or Korea or other East Asia; 0 otherwise.

SOEAASIA   Dichotomous variable equal to unity if place of birth is India or other South Asia or Vietnam or Philippines or other Southeast Asia; 0 otherwise.

VIETNAM   Dichotomous variable equal to unity if place of birth is Vietnam; 0 otherwise.

PHILIPPI   Dichotomous variable equal to unity if place of birth is Philippines; 0 otherwise.

MIDEAST   Dichotomous variable equal to unity if place of birth is Middle East; 0 otherwise.

ENGSPDEV   Dichotomous variable equal to unity if place of birth is United Kingdom, Canada, Australia or New Zealand; 0 otherwise.

NOWEEURO   Dichotomous variable equal to unity if place of birth is Northern Europe or Western Europe; 0 otherwise.

SOUEURO   Dichotomous variable equal to unity if place of birth is Southern Europe; 0 otherwise.

EASTEURO   Dichotomous variable equal to unity if place of birth is Eastern
            Europe or Russia; 0 otherwise.
OTHER   Dichotomous variable equal to unity if place of birth is other
            North America or Oceania or other; 0 otherwise.
REFUGEE   Dichotomous variable equal to unity if place of birth is Cuba,
            China or Vietnam; 0 otherwise.
FOR   Foreign-born
YSMFOR   YSM * FOR
YSMSQRFOR   YSMSQR*FOR

NOTES

*Direct all correspondence to: Aliya Hashmi Khan, Quaid-I-Azam University, Department of Economics, Islamabad, Pakistan.

1. Given the perceived importance of the effect of cost and quality of schooling on the demand for education, variables measuring the cost and quality of U.S. schooling are included for the first time in a study of post-migration investment in schooling. Cost and quality measures were also asked in the Chiswick and Koutroumanes (1996) analyses of the demand for private schooling, at the primary and secondary levels. Earlier, Solmon (1973) used measures of college quality in earnings function analysis.

2. The 1976 SIE data set does not distinguish between foreign-born men who are citizens of the U.S. and those who are not. The 1980 census distinguishes between naturalized citizens and foreign-born men who are not citizens. The citizenship variable is thus explicitly introduced in the 1980 Census equations while a foreign-student probability variable is constructed for the 1976 SIE equations to control for the citizenship effect. The construction of PROBFSTU is discussed in detail in Hashmi (1987b).

3. It should be noted that the pooled sample of native and foreign-born men includes those who are currently enrolled in school.

4. A strong effect of pre-immigration schooling is also found for a sample of foreign-born men from Mexico, Puerto Rico, and Cuba (Hashmi, 1987a). Schooling up to the secondary level (12 years) is found to have a depressing effect (substitution) effect on the acquisition of U.S. schooling, while post-secondary schooling in the origin acts as a complement to U.S. schooling.

5. An F-test was performed to test whether the variables AGE and AGESQR are significant as a set. The F-ratio was found to be greater than the critical value at the 5% level, which confirms the joint significance of the age variables.

6. When the regression and probit equations are estimated with the foreign-birth variable FOR without the interaction terms for duration of residence, YSMFOR and YSMSQFOR, the results reveal that foreign-born men invest in fewer years of schooling ($b = -1.004$, t-raito $= -21.5$), but are more likely to be enrolled in school ($b = 0.22$, t-ratio $= 7.3$) than native-born men, other things being the same.

7. The country group "Other" contains foreign-born men from all countries of origin except the ones in the twenty country categories listed in the SIE questionnaire.

8. The number of foreign-born men in this sample is different from the number in the pooled sample because the sample of foreign-born is a 1-in-100 sample created

from the original "C" sample. The pooled sample is a 1-in-100 simple random sample created from the original 1% "C" sample, that is, it is a 1 in 10,000 sample.

9. Since the introduction of the variable ALIEN does not affect any of the other variables in the two estimating equations, the results of the regression and probit equations with ALIEN are not reported in this paper for the sake of symmetry of comparison of the 1980 Census results with the 1976 SIE results. For detailed results see Hashmi (1987b).

10. The coefficient of Mexico is negative which indicates that if the sample of foreign-born Mexicans is comprised of a large number of illegal aliens who do not envision a long-term association with the U.S. labor market and expect to return after improving their economic status or being apprehended then they would refrain from making too many U.S. specific investments, of which schooling is one.

11. The effect of foreign-birth on investment in schooling and probability of enrollment is also studied separately by estimating the equations without the years since migration variables, YSMFOR and YSMSQFOR. The coefficients reveal that a foreign-born male acquires fewer years of total schooling ($b = -1.66$, t-ratio $= -29.5$), but is more likely to be currently enrolled in school ($b = 0.39$, t-ratio $= 10.5$) than a native-born male. This is the same result as for the 1976 SIE data set.

REFERENCES

Becker, Gary S. 1964. *Human Capital*. New York: National Bureau of Economic Research.

Borjas, George. 1982. "The Earnings of Male Hispanic Immigrants in the United States," *Industrial and Labor Relations Review, 35*(3): 343-353.

Chiswick, Barry R. 1978a. "The Effect of Americanization on the Earnings of Foreign-born Men," *Journal of Political Economy, 86*(5): 897-922.

_____. 1978b. "A Longitudinal Analysis of the Occupational Mobility of Immigrants." Pp. 20-27 in *Proceedings of the 30th Annual Winter Meeting, Industrial Relations Association*, edited by Barbara D. Denis. Madison, WI: I.R.R.A.

_____. 1979. "The Economic Progress of Immigrants: Some Apparently Universal Patterns." Pp. 359-399 in *Contemporary Economic Problems*, edited by William Fellner. Washington, D.C.: American Enterprise Institute.

_____. 1983a. "An Analysis of the Earnings and Employment of Asian-American Men," *Journal of Labor Economics, 1*(2): 197-214.

_____. 1983b. "The Earnings and Human Capital of American Jews," *Journal of Human Resources, 18*(3): 313-336.

Chiswick, Barry R. and Paul W. Miller. 1994. "The Determinants of Post-Immigration Investments in Education," *Economics of Education Review, 13*(2): 163-177.

Chiswick, Barry R. and Stella Koutroumanes. 1996. "An Econometric Analysis of the Demand for Private Schooling." Pp. 209-238 in *Research in Labor Economics*, Vol 15, edited by Solomon W. Polachek. Greenwich, CT: JAI Press.

Cohen, Yinon, Tzippi Zach and Barry R. Chiswick. 1997. "The Educational Attainment of Immigrants: Changes Over Time," *Quarterly Review of Economics and Finance, 37*(Special): 229-243.

Funkhouser, Edward and Stephen J. Trejo. 1995. "The Labor Market Skills of Recent Immigrants: Evidence from the CPS," *Industrial and Labor Relations Review, 48*(4): 792-811.

Hashmi, Aliya. 1987a. *Analysis of Post-Migration Investments in Education: Immigrants to the United States from Mexico, Puerto Rico, and Cuba.* Paper Presented at the 31st Annual Meeting of the Comparitive and International Education Society, Arlington, Virginia.

_____. 1987b. *Post-Migration Investment in Education by Immigrants in the United States.* Unpublished Ph.D. Dissertation, University of Illinois at Chicago.

Schultz, T. Paul. 1981. "The Schooling and Health of Children of Immigrants and Natives." Pp. 267-329 in *Select Commission on Immigration and Refugee Policy and the National Interest,* Appendix D, *Papers on Legal Immigrants in the United States.* Washington, D.C.

Schultz, Theodore W. 1975. "The Value of the Ability to Deal with Disequilibria," *Journal of Economic Literature, 13*(3): 827-845.

Solmon, Lewis C. 1973. "The Definition and Impact of College Quality." Pp. 77-105 in *Does College Matter? Some Evidence on the Impact of Higher Education,* edited by Lewis C. Solmon and Paul J. Taubman. New York: Academic Press.

Solmon, Lewis C. and Paul Wachtel. 1975. "The Effects on Income of Type of College Attended," *Sociology of Education, 48*(1): 75-90.