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Projecting Immigrant Earnings: The Significance of Country of Origin

Harriet Orcutt Duleep and Mark C. Regets*

Division of Economic Research

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*Harriet Orcutt Duleep is a senior research associate of the Urban Institute and a visiting scholar at the Division of Economic Research, Social Security Administration. Mark Regets is a senior economist at the National Science Foundation. Correspondence should be addressed to the authors at the Division of Economic Research, Social Security Administration, 9th Floor, 500 E Street, SW, Washington, DC 20254-0001, or to Harriet Duleep, 4417 Yuma Street, NW., Washington, DC 20016, or Mark Regets, 8327 Second Avenue, Vienna, VA 22182.

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Abstract

This article asks whether information about immigrants beyond their age, education, and years since migration can be productively used to project their earnings. Although many factors could affect immigrant earnings, what is most useful for Social Security modelling purposes is relevant information that is readily available on a continuous basis. Country of origin is a good candidate as it is regularly and readily available from several administrative and survey data sources.

In this article, microdata samples from the 1960-1990 censuses are used to examine the relationship between country of origin and the earnings of immigrants. By following cohorts of immigrants over ten-year intervals, we learn how country of origin affects the initial earnings of immigrants and how the relationship between country of origin and immigrant earnings changes as immigrants live in the United States. The article also presents theoretical insights and empirical evidence about the underlying causes of the link between country of origin and immigrant earnings.

I. Introduction

The more accurately we can predict the current population's future earnings, the more accurately we can forecast the future financial status of Social Security. This article focusses on improving our ability to predict the earnings of an important and growing subgroup of the U.S. population—immigrants.[1]

In particular, we examine the relevance of country of origin to the U.S. earnings of immigrants. Does knowing an immigrant's country of origin provide useful information for predicting his or her future earnings, and what is the relationship between the source country of immigrants and their U.S. earnings profiles?

We first examine how country of origin is associated with the initial earnings of immigrants. We then examine how this relationship changes as immigrants live in the United States. Does country of origin exert a constant effect on immigrant earnings, or does this effect change with immigrant time in the United States? We also give some insight into what links country of origin to immigrant earnings.

All of these analyses provide information that could increase our ability to predict the future earnings of the current U.S. immigrant population. In the next section we discuss how research on the earnings of immigrants, or any other population subgroup, could be used to improve projections of the future financial status of Social Security.

II. Research on Population Subgroups, Immigrants, and Social Security

In order to project the earnings of individuals, research must first accurately describe

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[1]For a description of how immigrant earnings enter into the Social Security projections, refer to Duleep and Regets (1996). The treatment of immigrant emigration in the Social Security actuarial projections is described in Duleep (1994). For references on research analyzing the relationship of immigrant country of origin to immigrant earnings, refer to Duleep and Regets (1998).

the relationship between the earnings of individuals and variables that can be used as predictors. Predictors of individual earnings typically include human capital variables, such as years of schooling and work experience, but can also include past earnings behavior (e.g., Iams and Sandell, 1997), as well as the individual's cohort, time period, and geographic area.

Dynamic microsimulation models provide a vehicle for utilizing such research to project the earnings of individuals and their concomitant impact on contributions to and benefits from the Social Security system.[2] This approach uses data that contain a representative sample of the population of interest with information on individual characteristics, such as human capital variables and past work behavior, and, using these characteristics simulates behavior on a probabilistic basis over time of each individual in the sample. The simulations are based on the best information available concerning the relationship of the behavior in question to the selected characteristics.

A strength of this approach is its flexibility. By simulating at a micro level, all information relevant to the individual can be easily incorporated into the projections. Simulating behavior at the level of the individual, rather than of aggregates of individuals, also circumvents aggregation bias problems inherent in models based on aggregate trends.[3] Total and average values are estimated by simply summing over individual outcomes. This provides a straightforward method of utilizing microanalytic research to project aggregate values of interest.

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[2]Publications that present this modelling methodology include Orcutt (1957, 1960), Orcutt, Caldwell, and Wertheimer (1976), and Citro and Hanushek (1991).

[3]This is particularly important if, as is often the case, the underlying micro relationships are nonlinear; there is no known way of aggregating nonlinear relationships.

In addition to providing a vehicle to predict Social Security contributions and benefit expenditures of the current population, dynamic microsimulation modelling can be used to estimate the effects of proposed and actual policy changes on the financial status of the Social Security system (Burtless, 1994; Social Security Administration, 1995). The validity of such estimates will depend upon how accurately relevant behaviors of various population subgroups are modelled.

Existing microsimulation models with well-developed Old Age, Survivors, and Disability Insurance (OASDI) components, while they account for the numbers of immigrants, do not differentiate the labor force behavior and earnings of immigrants from the labor force behavior and earnings of natives (persons born in the United States) with similar demographic characteristics.[4] This would not be a limitation if immigrants and natives with similar measurable characteristics, such as age and years of schooling, were similar in their labor force behavior.

In previous research, Duleep and Regets (1996) examined whether the coefficients from earnings regressions estimated from the general U.S. population could be used to estimate immigrant earnings. That is, are the earnings of immigrants related to characteristics such as age and education in the same way as for persons born in the United States? Is the relationship between past and future earnings for immigrants similar to the relationship that has been found for U.S. natives?

Following cohorts of immigrant and native-born men across decennial censuses

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[4]Examples include the Dynamic Simulation of Income Model (or DYNASIM) maintained by the Urban Institute (Orcutt, Caldwell, and Wertheimer, 1976; Johnson, Wertheimer, and Zedlewski, 1983). For a description of DYNASIM's immigration component, refer to Orcutt, Caldwell, and Wertheimer, 1976, pp.181-190. Immigrants are not identified in DYNASIM2 (Johnson, Wertheimer, and Zedlewski, 1983).

(Duleep and Regets, 1996) and individual immigrants and natives over short periods of time (Duleep and Regets, 1997b) revealed that immigrant men start their U.S. lives with lower earnings and have faster earnings growth rates than their U.S.-born statistical twins.[5] The distinctly different earnings profiles of immigrant and U.S.-born men means that reliable estimates of how immigrants contribute to and benefit from the OASDI system necessitate separately modelling the earnings behavior of immigrants and natives in projections of individual earnings.

Having determined that the earnings of immigrants and natives must be separately modelled, this article takes the next step by asking whether additional information about immigrants beyond age, education, and years since migration can be productively used to project their earnings. Although many factors could affect immigrant earnings, what is most useful for Social Security modelling purposes is relevant information that is readily available on a continuous basis. Country of origin is a good candidate as it is regularly and readily available from several administrative and survey data sources.

Information on the relationship of country of origin to immigrant earnings is useful not only for projecting the earnings of the current U.S. immigrant population, but also for alerting Social Security to potentially large changes in tax receipts and benefit expenditures with changes in the source-country composition of incoming immigrants. Such changes can come about as a result of the changing economic opportunities of immigrant source countries,

[5]Earlier work by Chiswick (1978, 1979) also showed that immigrant men had lower entry earnings but higher earnings growth rates than comparably aged and schooled native-born men. However, Borjas (1985, 1992) showed that the higher earnings growth rates measured by Chiswick reflected cross-sectional bias. Refer to Duleep and Regets (1992 and 1997a) for an analysis that resolves the apparently contradictory findings of Chiswick and Borjas and demonstrates how both Chiswick and Borjas were, in different ways, correct.

relative to the United States, and in response to changes in U.S. immigrant admission policies. The U.S. immigration experience before and after the 1965 Immigration Act is an example of such a change. In the years prior to 1965, a majority of U.S. immigrants came from Europe, whereas following 1965, a majority of U.S. immigrants have come from Asia or Central and South America.

In the same vein of alerting policy and program planners to potentially important changes in immigrant composition, we would also like to know what it is about country of origin that affects immigrants' earnings. Our capability to project immigrant earnings will be enhanced to the extent we can identify the relevant characteristics of source countries that lead to low or high immigrant earnings. If we learn, for instance, that a country's level of economic development relative to the United States is a key factor behind the association between country of origin and immigrant earnings, then this knowledge can be used to gauge the impact on U.S. immigrant earnings of changes in the relative economic status of various immigrant source countries.

In the sections that follow, we first examine whether the initial earnings of immigrants vary by country of origin. We then ask, does this association persist when we hold the age and years of schooling of immigrants constant? We suggest, and bring some empirical evidence to bear, that a key factor behind the effect of country of origin on immigrant earnings is the level of economic development of immigrant source countries relative to the United States. We also examine how the earnings of immigrants by country of origin change as immigrants live in the United States: Can we model the earnings effect of country of origin by simply inserting in our earnings estimations a categorical variable that affects the

level of an immigrant's earnings regardless of the number of years he has lived in the United States? Or, does the earnings effect of an immigrant's country of origin change as an immigrant lives in the United States?

To address these questions, we use public use microdata samples from the decennial censuses. To examine the relationship of country of origin to the earnings of recent immigrants, we first use data from the 1990 and 1980 decennial censuses. To check the stability of the relationships we find, we also use microdata samples from the 1970 and 1960 decennial censuses. The most recent year for which we have census information on immigrant earnings is 1989. All earnings data throughout the paper are given in 1989 dollars. The selection of source countries in several of the analyses that follow is chosen to insure adequate sample sizes for immigrant groups defined by age, education, and source country and to insure compatibility in source-country groupings across the 1960-1990 decennial censuses.[6] An important caveat is that the analyses are confined to immigrant men. Full evaluation of the relationship of immigrants to OASDI requires an analysis of immigrant

[6]For most of the analyses of this paper, some source countries were combined into multi-country groups. In Tables 4-7, a few countries were excluded from the analysis when there were fewer than 5 observations in any of four age-education categories in any of the four censuses and they could not easily be included in a multi-country group. (Age has two categories: 25-39, 40-54, where age is measured in the first year in which a cohort is followed; education has two categories: 1-12 years of schooling, greater than 12 years). The source-country/region selection is kept constant across all of the analyses in Tables 4-7 so that the results of these analyses would not be affected by changes in how the source countries/regions were defined. However, we also did a number of sensitivity tests and found very similar results regardless of how the source country/regions were defined. The source countries/regions used in the analyses of Tables 4-7, and shown in Figure 1, are: Africa, Britain, Canada, China/Taiwan, Cuba, Czechoslovakia, Germany, Greece, Hungary, India, Ireland, Islamic Southwest Asia, Italy, Jamaica, Japan, Korea, Mexico, Oceania, Other Asia, Other Central America, Other Communist Europe, Other Non-Communist Europe, Philippines, Poland, Portugal, South America, and Yugoslavia. The census-based codes that were used to create the multi-country groups in the preceding list are available from the authors. Divisions by region in the analyses presented in Tables 1-3 did not necessitate eliminating any source countries for sample size reasons.

women.[7]

III. Immigrant Initial Earnings and Country of Origin

Figure 1 shows the 1989 median earnings by country of origin of working-age immigrant men who entered the United States between 1985 and 1990.[8] What is immediately apparent from this graph is the enormous variation by country of origin in the earnings of immigrant men during their initial years in the United States. At the bottom end of the earnings scale are immigrants from a group of former Communist Bloc countries, whose 1989 median annual earnings fell below $5,000; at the top end are Japanese immigrant men with median 1989 annual earnings of $40,000.

Figure 1 also hints at a regional pattern in immigrant earnings: by and large, immigrant men from Europe have relatively high initial earnings, whereas immigrants from Asia and Central and South America have relatively low initial earnings. These regional

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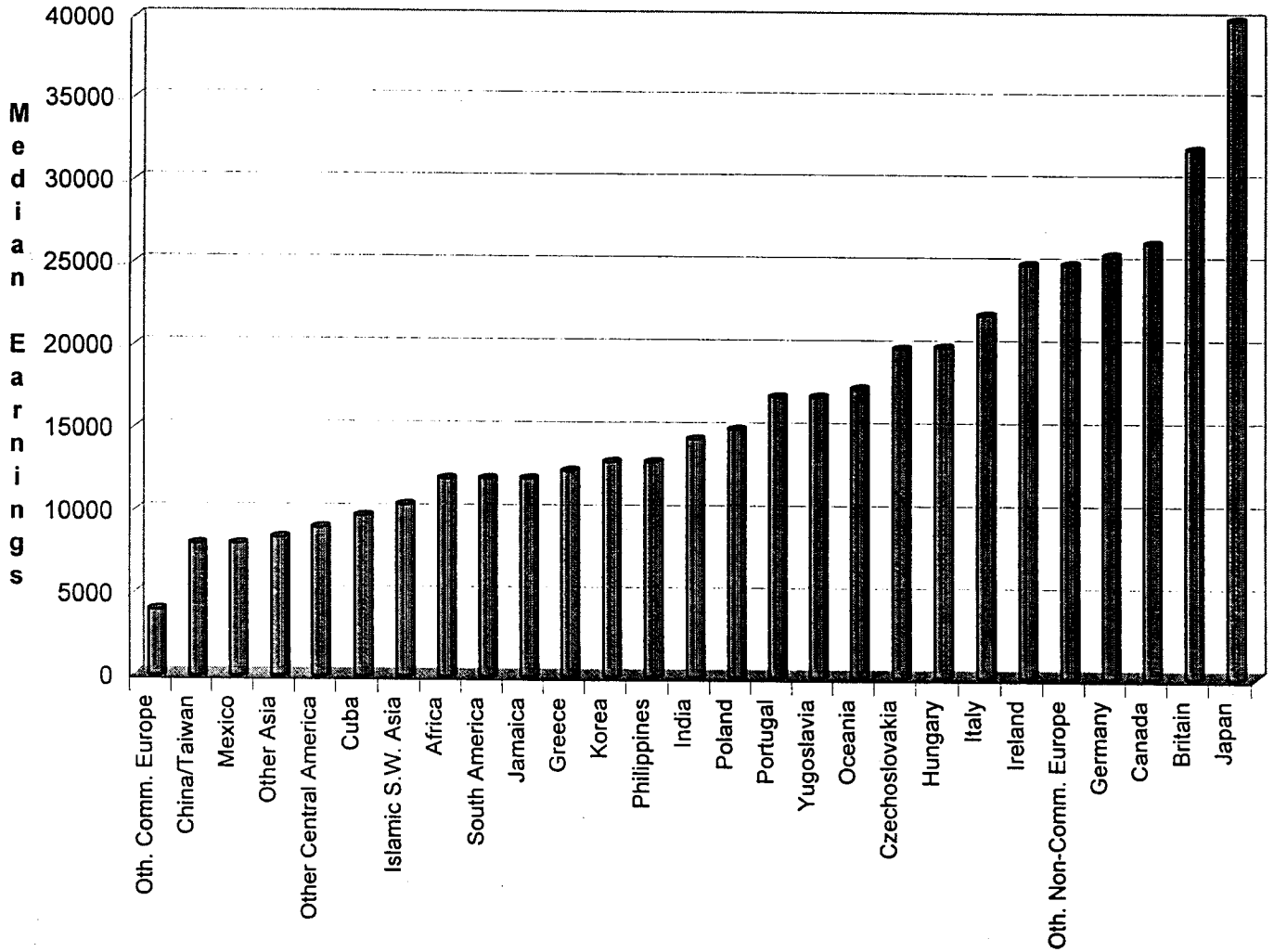
[7]This is particularly important because there is evidence that the labor force participation of immigrant women is relatively high in source-country groups where the initial earnings of immigrant men are relatively low (Duleep and Sanders, 1993). Other relevant studies include Beach and Worswick (1993), Duleep and Sanders (1994), Worswick (1996), Baker and Benjamin (1997), and Schoeni (1998).

[8]The 1989 median earnings estimates for the 1985-90 cohort shown in Figure 1 are based on a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population Public Use 5% and 1% Public Use samples. Technical documentation may be found for the 1990 census data in Bureau of the Census (1992). The countries that are shown in Figure 1 are those that fit the sample selection criteria used in the analyses presented in Tables 4-7 (refer to note 6).

The 1985-1990 cohort of immigrant men are immigrants who report entering the United States in 1985 to April 1990, when the 1990 census was taken. Thus, the census-reported earnings for 1989 will reflect—for an unknown proportion of immigrants in the 1985-1990 cohort—earnings received prior to immigration. This could affect the results presented in this paper if there was a systematic relationship between the source-country groups and the timing of migration within the census intervals used in our analyses. A perusal of the Immigration and Naturalization Service annual records of immigrant admissions by country of origin suggests that there is not such a systematic bias.

Figure 1: Median 1989 U.S. Earnings of 1985-1990 Male Immigrants (Ages 25-54)



differences are illustrated in Table 1.[9] For both immigrants who entered the United States in 1975-1980 and immigrants who entered in 1985-1990, the initial earnings of European immigrant men far exceed the earnings of Asian and Central and South American immigrant men.[10,11]

Perhaps these differences simply reflect intergroup differences in age and education? If this were the case, then once education and age are taken into account, country of origin would not contribute additional explanatory value for predicting immigrant earnings. We could then conclude that country of origin is not a useful variable to include in models projecting immigrant earnings.

Differences in the schooling level of immigrants, however, cannot be an explanation for the large earnings differences shown in Table 1 since the education level of Asian immigrant men actually surpasses that of European immigrants. This point is more generally proven by the statistics shown in the fourth through eleventh rows of Table 1. We see that large earnings differences by region of origin persist within age and education groups. In fact, when we compare the earnings of Asian and Hispanic immigrant men to European men, we see that the earnings differences dividing by age and education are often as large as those

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[9]In the analysis shown in Table 1, immigrants in the census sample are divided by region of origin. The countries that are included in the Asia, Europe, and Central and South America regional classifications used to group individuals are listed, by region, in Appendix F of Bureau of the Census (1983) for the 1975-80 cohort and Appendix I of Bureau of the Census (1992) for the 1985-90 cohort. No individuals are dropped from the sample because of insufficient sample size for a particular country of origin, as is necessitated in the analyses presented in Tables 4-7.

[10]The earnings for the 1975-1980 cohort are 1979 earnings reported in the 1980 census; the earnings for the 1985-90 cohort are 1989 earnings reported in the 1990 census.

[11]Immigration from Asia, Central and South America, and Europe accounted for 94.5% of all U.S. legal immigration between 1981-1989 (Immigration and Naturalization Service, 1990, pp. 3-4).

Table 1: Entry Earnings by Region of Origin: Immigrant Men, 25-54, who entered the United States between 1975 and 1980 and between 1985 and 1990 (1989 Dollars)

	1975-80 Cohort 1979 Earnings			*1985-90 Cohort 1989 Earnings*		
	Immigrants from Asia	*Immigrants from Europe*	*Immigrants from Central/South America*	*Immigrants from Asia*	*Immigrants from Europe*	*Immigrants from Central/South America*
Ages 25-54, All Education Levels	12,240	18,826	10,107	10,954	18,500	9,000
Relative to European immigrants	.65	1.00	.54	.59	1.00	.49
By age and education						
25-39 years old; 1-12 years of school	9,887	15,690	9,684	10,000	15,000	8,600
Relative to European immigrants	.63	1.00	.62	.67	1.00	.57
25-39 years old; more than 12 years of school	12,553	23,531	11,299	11,633	20,000	12,000
Relative to European immigrants	.53	1.00	.48	.58	1.00	.60
40-54 years old; 1-12 years of school	9,417	15,690	9,417	6,728	12,000	8,000
Relative to European immigrants	.60	1.00	.60	.56	1.00	.66
40-54 years old; more than 12 years of school	17,258	29,019	15,964	16,000	30,000	14,604
Relative to European immigrants	.59	1.00	.55	.53	1.00	.49

Notes: Refer to note 9 for information on the source countries included in the above regions.

Estimates for the 1975-80 cohort are based on the 1980 Census of Population 5 percent "A" Public Use Sample. Estimates for the 1985-90 cohort are based on a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population Public Use 5% and 1% Public Use samples.

not dividing by age and education. For instance, for the 1985-1990 cohort of immigrant men, the overall Asian/European ratio of median entry earnings is .59; for men who are 40-54 years old in 1990 with 12 years of schooling or less, the Asian/European ratio is .56; and for men 40-54 with more than 12 years of schooling, the Asian/European ratio is .53.

IV. Immigrant Initial Earnings, Country of Origin, and Economic Development

What then explains the lower initial earnings of immigrant men from Asia and Central and South America versus immigrant men from Europe? A likely causal factor is the low level of economic development of Asia and Central and South America versus Europe.

Economic development could affect immigrant earnings by affecting how transferable immigrants skills are to the U.S. labor market. The more similar immigrants' skills are to U.S. natives', the more their U.S. earnings will resemble the earnings of U.S. natives with comparable levels of schooling and work experience. The less transferable the skills immigrants learned in their home country are to the U.S. labor market, the lower their U.S. earnings will be relative to U.S. natives with the same number of years of schooling and work experience.

There are two possible routes through which the economic development of countries could affect the skill transferability of immigrants. Scholars have argued that differences in immigrant skill transferability arise from differences in the skills that are learned by people growing up and working in different source countries. Holding the level of human capital constant (e.g., holding years of schooling and work experience constant), immigrant skills are believed to be more transferable to the United States when immigrants originate from

economically developed countries because of the similarity between the home country and the United States in their educational systems, their industrial structures, and in the types of skills that are rewarded in the labor market. Immigrants coming from economically less developed countries may have less transferable skills to the United States (hence lower U.S. earnings) because the formal education and work experience in these countries are less applicable to the U.S. economy (Chiswick, 1979; Mincer and Ofek, 1982).

An additional explanation as to why immigrants from less-developed countries may have lower skill transferability is that limited opportunities in less-developed countries make it worthwhile for individuals to immigrate even when immigration entails substantial post-migration investments in new skills and credentials such as learning English, undertaking a U.S. degree program, or starting a business (Duleep and Regets, 1997d). Within a country of origin, skill transferability to the United States, at any particular point in time, will differ among individuals by occupational and educational background. In highly developed countries, which are more likely to have economic opportunities similar to those in the United States, there is great disincentive for individuals with less transferable training to migrate. However, a similarly trained individual in a lesser developed country may face much lower opportunity costs in a decision whether to migrate to the United States. Thus, there will be a greater tendency for persons without U.S.-transferable skills from less developed countries to migrate.[12]

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[12]For instance, consider two scientists, one from an economically developed country, the other from an economically underdeveloped country, who have the exact same training, but neither speaks English. Because both lack English proficiency, their training is not immediately transferable to the United States, and if they migrated to the United States, both would have lower initial U.S. earnings than a comparably trained native. However, the similarity in economic opportunities between the United States and the home country of the former make the costs associated with U.S. immigration, including learning English, inadvisable. The greater relative

These two explanations need not be viewed as competing explanations for differences in skills transferability across immigrant groups. Rather, the lower entry earnings of U.S. immigrants from economically less developed countries may reflect a lower level of U.S. skill transferability either because the kinds of skills acquired in less-developed countries are less useful to American employers than those acquired in advanced economies and/or because limited opportunities in less-developed countries may make it worthwhile for individuals to immigrate even when they lack U.S.-transferable skills. Differences among immigrant groups in the degree to which their skills are transferable to the United States may well reflect both factors.

If economic development, as opposed to a regional effect,[13] is responsible for the lower entry earnings of immigrant men from Asia and Central and South America, versus Europe, then we would expect to find that variation in the economic status of countries within these regions correlates with the earnings of immigrants in the United States. Indeed, economic development does appear to be relevant when we look within two of the regional aggregates of Table 1. In particular, within Asia, Japan's per adult Gross Domestic Product

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economic opportunities in the United States for the latter make it worthwhile for him to migrate, even though he will need to learn English and become reestablished. In this manner, the U.S. immigrants from the economically underdeveloped country will include a larger proportion of individuals lacking U.S.-specific skills than will be the case for the U.S. immigrants from the economically developed country.

An implication of this explanation is that it may not be the case that the skills learned and used in less developed countries are less applicable to the United States, but that economic conditions in those countries make it worthwhile for persons to immigrate even when they lack a particular set of skills that are immediately transferable; their equivalents in countries with opportunities similar to those of the United States would not find it worthwhile to immigrate. This explanation accommodates findings reported in Rivera-Batiz (1996) that the quality of schooling in some less economically developed countries is not necessarily inferior to that in the United States, and may be superior.

[13]By regional effect, we mean any factor associated with Asia or Central and South America versus Europe. For instance, Asian and Hispanic culture versus European culture.

(GDP) far exceeds the GDP of other major Asian immigrant source countries.[14] And, as shown in Table 2, Japanese immigrant men have much higher entry earnings, overall and within education/age categories, than do immigrant men from the other Asian countries.[15] Within Europe, the per adult GDP tends to be higher among Western European countries than it is among Eastern European countries.[16] And, as shown in Table 2, immigrant men from Western Europe have higher entry earnings than immigrant men from Eastern Europe.[17]

More generally, across all countries, there is a clear positive relationship between immigrant entry earnings and level of economic development as shown when we plot the median 1989 U.S. earnings of immigrant men who entered the United States in 1985-1990 against the 1987 per adult GDP of each source country as a percent of the U.S. per adult GDP (Figure 2).[18] When we regress the median 1989 entry earnings of immigrant men in the

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[14]The 1987 per adult (ages 15 and over) GDP for Japan is 71.8% of the equivalent U.S. measure. The comparable statistics for China, India, the Philippines, and Korea—all major Asian immigrant source countries to the United States—are 7.6%, 7.1%, 10.4%, and 31.1%, respectively (Heston and Summers,1991).

[15]Only individuals from the major Asian immigrant source countries—China, India, the Philippines, and Korea—are included in the other Asia category shown in Tables 2 and 3.

[16]For instance, the 1987 per adult (ages 15 and over) GDPs as percents of the U.S. per adult GDP for France, West Germany, the Netherlands, Sweden, and the United Kingdom are 73.7, 72.5, 67.8, 80.2, and 70.4, respectively. The 1987 per adult GDPs for Poland, Romania, USSR, and Yugoslavia are 26.0, 12.0, 43.1, and 30.1 percent of the U.S. per adult GDP (Heston and Summers,1991).

[17]Eastern Europe, in Tables 2 and 3, includes the former Soviet Union, Poland, Hungary, the former Czechoslovakia, the former East Germany, Bulgaria, Romania, the former Yugoslavia, and Albania. Western Europe, in Tables 2 and 3, includes all European countries, as classified in Appendix F of Bureau of the Census (1983) except for the aforementioned Eastern European countries. No individuals are dropped from the sample because of insufficient sample size for a particular country of origin, as is necessitated in the analyses presented in Tables 4-7.

[18]The observations in Figure 2 on U.S. median earnings for immigrant men and GDP per adult as a percent of U.S. GDP per adult are for the following countries: Argentina, Australia, Bangladesh, Bolivia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czechoslovakia, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, France, West Germany, Greece, Guatemala, Guyana, Haiti, Honduras, Hong Kong, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, The Republic of Korea, Laos, Malaysia, Mexico, Morocco, Myanmar, Netherlands, New Zealand, Nicaragua, Nigeria, Pakistan, Panama, Peru, Philippines,

Table 2: Variation within Source Regions—The entry earnings of immigrant men from Asia and Europe, 25-54, who entered the United States between 1975 and 1980
(1989 Dollars)

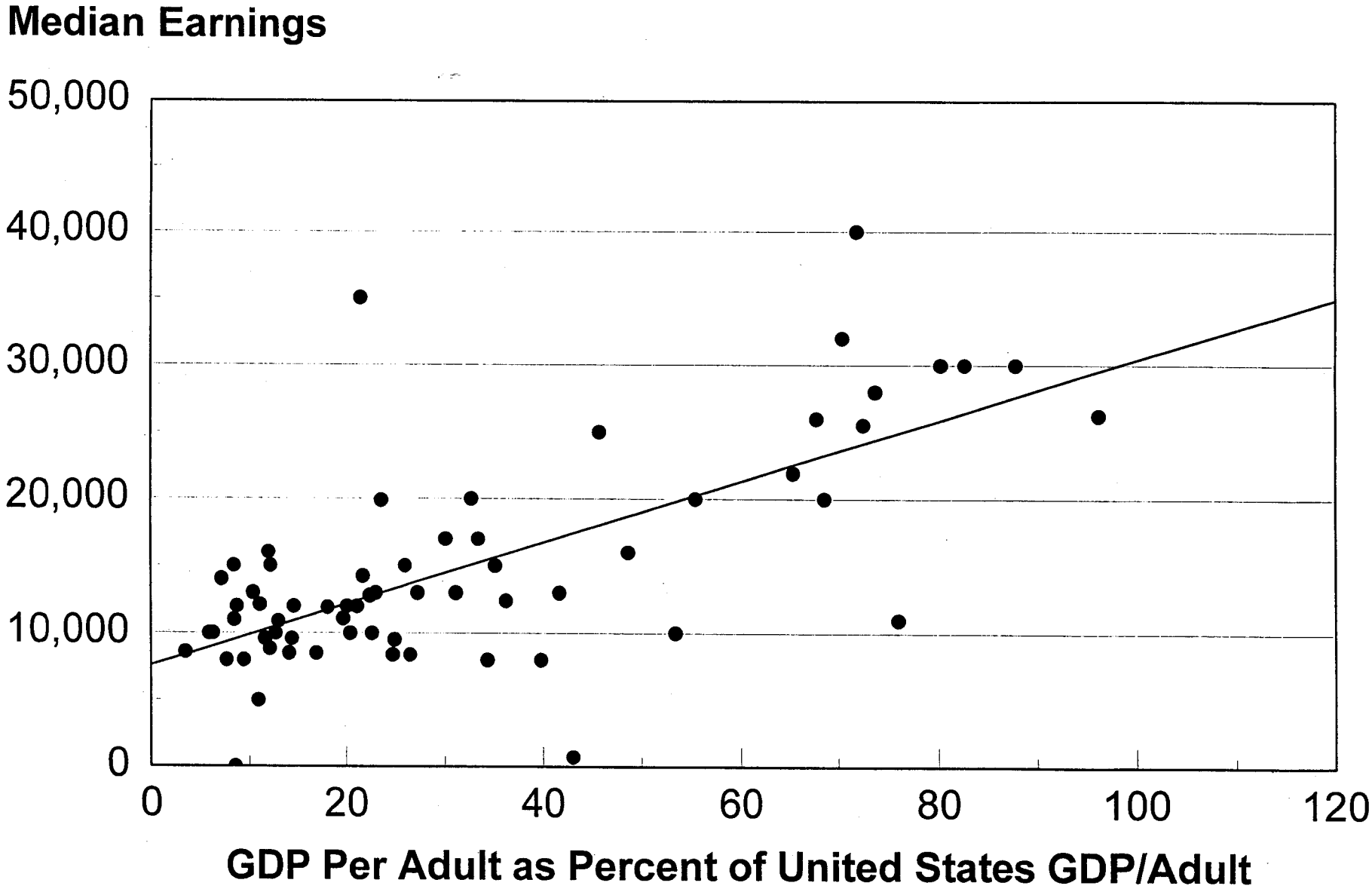
	Immigrants from Asia		*Immigrants from Europe*	
	Immigrants from Japan	*Immigrants from other Asia*	*Immigrants from Western Europe*	*Immigrants from Eastern Europe*
Ages 25-54, All Education Levels	28,727	14,300	20,280	13,523
By age and education				
25-39 years old; 1-12 years of school	20,280	12,678	17,476	12,307
25-39 years old; more than 12 years of school	25,779	15,212	25,348	15,212
40-54 years old; 1-12 years of school	20,280	11,834	17,746	11,834
40-54 years old; more than 12 years of school	54,405	16,902	46,338	16,767

Notes: Refer to notes 15 and 17 for information on the source countries included in the above regions.

Estimates based on the 1980 Census of Population 5 percent "A" Public Use Sample.

Figure 2: The Relationship Between GDP Per Adult and U.S. Median Earnings

1985-1990 Immigrants by Country of Origin



1985-1990 cohort on the source-country GDP measure, our estimated coefficient indicates that for each 10 percentage point change in the country-of-origin GDP per adult as a percent of the U.S. per adult GDP, the initial earnings of immigrant men increase 2,280 dollars.[19]

V. Immigrant Earnings Growth and Country of Origin: Theoretical Considerations

The preceding sections reveal an important association between the source countries of immigrants and their initial earnings in the United States. Accurately projecting the earnings of immigrants requires knowing whether and how these country-of-origin effects change as immigrants live in the United States.

Whether country-of-origin influences increase, decrease, or stay constant with time in the United States depends upon the underlying causes of country-of-origin effects. We have argued that level of economic development, which in turn affects the skill transferability of immigrants, is one factor underlying the country-of-origin effect on the initial earnings of immigrants. If—once we have adjusted for variation in the ages and schooling levels of immigrants—the initial differences in immigrant earnings by source country primarily reflect intergroup differences in immigrant skill transferability, then we would expect that as immigrants live in the United States the explanatory value of country of origin as a predictor

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Poland, Portugal, Romania, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria, Taiwan, Thailand, Trinidad and Tobago, Turkey, U.S.S.R., United Kingdom,Venezuela, and Yugoslavia. All countries for which we had information on the GDP per adult were included. Since we are not grouping observations by age and education, the sample selection criteria used in the analyses presented in Tables 4-7 (see note 6) did not affect the country selection. Median earnings for immigrant men in the 1985-90 cohort from the aforementioned 65 countries were estimated using a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population Public Use 5% and 1% Public Use samples. The statistics on GDP per adult as a percent of U.S. GDP per adult are from Heston and Summers (1991).

[19]The R^2 for this regression is .48.

of immigrant earnings would decrease. This is because we would expect immigrants with low skill transferability to invest more and experience higher earnings growth than immigrants with high skill transferability.

Theoretically, immigrants with less transferable skills should have a higher incentive to invest in U.S.-specific human capital than immigrants with highly transferable skills because the return to U.S.-specific human capital investment will often be higher for immigrants lacking U.S.-specific skills than for immigrants with highly transferable skills (Chiswick, 1978, 1979; Mincer and Ofek, 1982). In particular, the return to investment that restores the labor market value of source-country human capital will be much higher than the return to human capital investments in general. This is because restorative investments for immigrants lacking U.S.-specific skills, such as the ability to speak English, permit an immigrant to bring to the U.S. labor market skills learned in the home country that, without the ability to speak English, have little value.[20]

Immigrants initially lacking U.S.-specific skills will also invest more than immigrants with more immediately transferable skills because the opportunity cost of investment is lower (Duleep and Regets, 1997a). This investment could include activities such as learning English that restores the labor market value of the particular skills an immigrant learned in his home country, or it could be investment in the form of new training, including pursuing an entirely new field of work. Consider, for instance, an immigrant engineer who, because of

[20]The key concept here is complementarity. The return to investment in U.S.-specific human capital will generally be higher for low skill-transferability immigrants because for these immigrants the acquisition of U.S. skills may often complement home-country skills and make them more usable in the U.S. labor market. The complementarity boosts the return to any given investment. The simplest example of this is the increase in opportunity to use prior skills that usually accompanies an increase in English proficiency, but can also include learning U.S. practices or regulations in a field, or acquiring a professional license.

his highly transferable skills, immediately gains high-wage U.S. employment. Such an immigrant would be reluctant to undertake computer training or a MBA even if it would allow him to go into an ultimately more secure and better paid line of work because of the lost wages that such training would incur. The low opportunity cost for a similarly educated newly arrived immigrant who lacks the specific skills or credentials to initially gain a high-paying job might make pursuing further training an attractive option.

In summary, holding level of human capital constant, higher rates of immigrant human capital investment will occur for immigrants with low skill transferability than for immigrants with high skill transferability because: (1) The return to investment in U.S.-specific human capital will generally be higher for low skill-transferability immigrants. (2) There is a lower opportunity cost of human capital investments when initial U.S. earnings opportunities are low.[21] Higher rates of investment translate into higher rates of earnings growth for immigrants with initially low levels of skill transferability relative to immigrants with initially high skill transferability. The differential earnings growth rates of low- and high-skill transferability immigrants will cause their earnings to converge with time in the United States.

VI. Immigrant Earnings Growth and Country of Origin: Empirical Evidence

If skill transferability is an important reason behind the variation in immigrant entry earnings, then we would expect that, holding level of human capital constant (e.g., years of schooling and work experience), the earnings growth rate of immigrant groups with low entry

[21]Refer to Duleep and Regets (1997a) for a formal model that incorporates these concepts as well as other relevant theoretical concepts. Refer to Duleep and Regets (1997c) for a summary of empirical studies consistent with the predictions of the theoretical model.

earnings would exceed the earnings growth rate of immigrant groups with high entry earnings.

For illustrative purposes, we revisit the within source region groups presented in Table 2. Using microdata samples from the 1980 and 1990 decennial censuses, we measure the ten-year growth rate in annual earnings for each group. As shown in Table 3, there is a clear inverse relationship within regions between the entry earnings of groups and their subsequent earnings growth rates, despite the very broad controls we have used for years of schooling and age.

More generally, the skill-transferability hypothesis as an explanation for country-of-origin differences in immigrant initial earnings yields three empirically testable implications: (1) Earnings-related characteristics other than country of origin, such as years of schooling and experience, should become better predictors of levels of immigrant earnings as time in the United States increases because U.S.-specific skills acquired by immigrants lacking such skills enables them to obtain earnings consistent with their source-country human capital. (2) The importance of country of origin as a determinant of immigrant earnings should fade as time of residence in the United States increases. (3) The earnings of demographically comparable immigrants, regardless of origin, should converge over time.

To determine the nature of the relationship between immigrant time in the United States and country-of-origin effects on immigrant earnings we used the Public Use Microdata Samples from the 1980 and 1990 censuses to estimate two log earnings regressions for the 1975-1980 entry cohort of immigrant men.[22] The first earnings regression, referred to as the

[22]We used the 1980 Census of Population 5 percent "A" Public Use Sample and a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population Public Use 5% and 1% Public Use samples. Technical documentation may be found for these data sets in Bureau of the Census (1983 and 1992).

Table 3: Variation within Source Regions: Entry Earnings and 10-Year Real Earnings Growth Rates[a] of Age-Education Cohorts for Immigrant Men from Asia and Europe, ages 25-54 in 1980, who entered the United States between 1975 and 1980
(1980 and 1990 censuses, 1989 Dollars, deflated by Personal Consumption Deflator)

	Immigrants from Asia				*Immigrants from Europe*			
	Immigrants from Japan		*Immigrants from other Asia*		*Immigrants from Western Europe*		*Immigrants from Eastern Europe*	
	Entry Earnings	Ten-Year Earnings Growth	Entry Earnings	Ten-Year Earnings Growth	Entry Earnings	Ten-Year Earnings Growth	Entry Earnings	Ten-Year Earnings Growth
Ages 25-54, All Education Levels	28,727	5.0	14,300	95.8	20,280	28.2	13,523	107.0
25-39 years old; 1-12 years of school	20,280	28.0	12,678	54.2	17,476	37.3	12,307	99.1
25-39 years old; more than 12 years of school	25,779	39.6	15,212	130.1	25,348	57.0	15,212	125.7
40-54 years old; 1-12 years of school	20,280	8.5	11,834	19.1	17,746	1.4	11,834	77.4
40-54 years old; more than 12 years of school	54,405	—[b]	16,902	42.0	46,338	—[b]	16,767	67.0

[a]The ten-year earnings growth rate is the change in real median earnings from 1979 to 1989 as a percent of the 1979 entry earnings.

[b]The measured earnings growth in these cells is negative, undoubtedly as the result of emigration.

Notes: Refer to notes 15 and 17 for information on the source countries included in the above regions.

Estimates based on the 1980 Census of Population 5 percent "A" Public Use Sample, and a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population Public Use 5% and 1% Public Use samples.

human capital model, includes as regressors level of schooling[23] and age and age squared (as proxies for years of work experience and experience squared).[24]

The second earnings regression added to the human capital model a set of dummy variables denoting an individual immigrant's country or region of origin, both alone and interacted with the education and experience variables.[25] Including interactions with education and experience allows country of origin to add explanatory power through country-of-origin differences in the value of education and experience, as well as through differences in the regression intercept.

This pair of earnings regressions was first estimated using the 1980 census for the cohort of immigrant men, aged 25-54, who had in 1980 been in the United States 0-5 years. Using the 1990 decennial census, we then estimated the same pair of earnings equations for the same cohort but for ten years later. This permitted us to compare the extent to which

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[23]Although the 1980 census data have years of schooling, information on schooling achievement in the 1990 data is in categories, often corresponding to completed degrees. To maintain conformity in the explanatory variable definitions across censuses, we included five dummy variables for schooling categories in both the 1980 and 1990 earnings regressions. With the 1990 census data, the dummy variables used were for 9-11 years, high school degree, some college (including two-year degrees), Bachelor's degree, and graduate degree. The corresponding dummy variables used for the 1980 census data were 9-11 years, 12 years, 13-15 years, 16-17 years, and 18 years or more. The excluded variable in both specifications is eighth grade or less. A key difference between the 1980 and 1990 census definitions that causes problems in comparability is that the 1990 census definition measures successful completion of various schooling levels whereas the 1980 definition measures years of completed schooling per se. For instance, persons who reported 17 years of schooling on the 1980 census may have completed either a bachelor's degree or a master's degree. Using a sample from the Current Population Survey that answered both the new and old census education questions, Jaeger (1997) found that 17 years of schooling was most consistent with completion of only a bachelor's degree.

[24]Human capital regressions typically include years of work experience and years of work experience squared as explanatory variables. When information on years of work experience is not available, age minus years of schooling minus 6 is typically used as a proxy for years of work experience. For the 1980-1990 analysis, age rather than the variable age minus years of schooling minus 6 was used since schooling achievement in the earning regression for both the 1980 and 1990 census data is in multi-year categories rather than individual years of schooling to accommodate the 1990 census schooling information (see note 23).

[25]The region/country variables are listed in note 6.

adding country of origin increased the explanatory value of the earnings regression at time of entry and 10 years later as measured by R-squared.

The results from this analysis are shown in Table 4. We see that the R^2 for the human capital model increases with the passage of ten years, consistent with the hypothesis that schooling and experience will become better predictors of immigrant earnings with time in the United States as U.S.-specific skills acquired by immigrants lacking such skills enables them to obtain earnings consistent with their human capital. Concomitantly, as can be seen from the fourth and fifth columns, both the absolute and relative gain in R^2 from adding country of origin is dramatically smaller ten years after our initial observations.[26] This suggests that the importance of country of origin as a determinant of immigrant earnings for a given cohort decreases with immigrant time in the United States.[27]

We would also expect the earnings of immigrants, divided by their country of origin, to converge. To test this, we examined the degree of dispersion in the median earnings of immigrants by country of origin within age/education cells for the 1975-1980 cohort in 1980 and again ten years later. Median earnings were measured within education and age subsets for 27 countries, cell sample sizes permitting.[28] We chose the coefficient of variation, defined in this case as $\sigma/|\bar{x}_{med}|$ (the standard deviation of median earnings divided by the

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[26]The reduction in explanatory power of the country-of-origin variables with time in the United States is statistically significant.

[27]Sensitivity analyses in Duleep and Regets (1998) suggest that this result, and the results in the following tables, are not due to immigrant emigration.

[28]The education categories are: 1-12 years and 13 or more years for the 1980 census data and, for the 1990 census data, high school completion or less and greater than high school completion. The age categories are: 25-39 and 40-54 for the 1975-80 entry cohort with the 1980 census data, and 35-49 and 50-64 for the same cohort ten years later with the 1990 census data. The regions/countries are listed in note 6.

Table 4: Change in the Explanatory Power of Country of Origin
for the 1975-80 Cohort of Immigrant Men as Time in U.S. Increases

(Bootstrap standard errors for R-squared in parentheses)

Entry Cohort, Census year	R^2 for human capital model	R^2 for human capital model with country-of-origin variables	Change in R^2 from adding country-of-origin variables	Percentage change in R^2 from adding country-of-origin variables
1975-80 cohort in 1980	.0881 (.0032)	.1577 (.0042)	.0690	79.0
1975-80 cohort in 1990	.2120 (.0047)	.2519 (.0052)	.0399	18.8

Notes: The measure of explanatory power shown above is the adjusted R^2, which eliminates the dependence of the goodness of fit measure on the number of explanatory variables in the model. In any event, using the relatively large sample sizes from the decennial census public use files, both R-squared and adjusted R-squared produce very similar results.

The human capital model is the regression of individual log(earnings) on age, age squared, and education. In the second model, shown in the second data column, region/country dummies and region/country interactions with education and age are included. The set of region/country groups used in this analysis are listed in note 6.

Estimates based on the 1980 Census of Population 5 percent "A" Public Use Sample, and a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population Public Use 5% and 1% Public Use samples.

mean of median earnings), as our measure of dispersion since this measures dispersion in the median earnings observations across source countries in relation to the mean of median earnings, which changed in both real and nominal terms over the 1980's.[29]

As shown in Table 5, all four cohort comparisons delineated by age and education show reductions in the coefficient of variation (CV) after ten years.[30]

The above analyses demonstrate that the importance of country of origin as a predictor of immigrant earnings diminishes with immigrant time in the United States and that the earnings of immigrants of similar age and education but from different source countries converge. These results suggest that in projections of immigrant earnings the effect of country of origin cannot be accurately captured by simply inserting a categorical variable that uniformly raises or lowers the level of an immigrant's earnings regardless of the number of years he has lived in the United States. Rather, the earnings effect of country of origin varies with years of U.S. residence.

The usefulness of this result for immigrant earnings projections depends upon its stability: Would we find the same result in a different time period? To examine the stability of our result, we replicated the analyses shown in Tables 4 and 5 for two other immigrant cohorts—immigrant men who entered the United States between 1965 and 1970

[29]Estimates of standard errors for our estimates of the coefficient of variation follow the technique in Kakwani (1990). In computing the coefficient of variation, each median earnings observation was weighted by the number of individuals in the age/education/country-of-origin category in the starting period.

[30]The reductions in the coefficient of variation with more time in the United States are statistically significant.

Table 5: Changes in the Dispersion of Median Earnings Across Country of Origin
for the 1975-80 Cohort of Immigrant Men as Time in U.S. Increases
(Coefficients of Variation in Percentages)
(Weighted by Initial Cohort Size)
(Standard Errors of CV in Parentheses)

Entry Cohort, Census year	25-39 years old in 1980; 1-12 years of school	25-39 years old in 1980; more than 12 years of school	40-54 years old in 1980; 1-12 years of school	40-54 years old in 1980; more than 12 years of school
1975-80 cohort in 1980	34.6 (.0348)	55.1 (.0343)	52.1 (.0500)	57.6 (.0182)
1975-80 cohort in 1990	26.4 (.0187)	23.1 (.0127)	28.6 (.0190)	32.5 (.0300)
Change in CV	-8.2	-32.0	-23.5	-25.1
Percentage Change in CV	-23.7	-58.1	-45.1	-43.6

Notes: The Coefficient of Variation is a measure of dispersion defined here as $\sigma/|\bar{x}_{med}|$ or the standard deviation of the distribution of median earnings divided by the mean of the distribution of median earnings. The set of region/country groups used in this analysis are listed in note 6.

Estimates based on the 1980 Census of Population 5 percent "A" Public Use Sample, and a 6 percent microdata sample created by combining and reweighting the 1990 Census of Population Public Use 5% and 1% Public Use samples.

and those who entered the United States between 1955 and 1960.[31]

Table 6 compares for each cohort the extent to which adding country of origin increases the explanatory value of the earnings regression at time of entry and 10 years later as measured by R-squared. The results confirm our previous findings. We see that for both the 1955-1960 and the 1965-1970 cohorts the R^2 for the human capital regression increases with the passage of ten years, consistent with the hypothesis that schooling and experience become better predictors of immigrant earnings with time in the United States as U.S.-specific skills acquired by immigrants lacking such skills enables them to obtain earnings consistent with their source-country human capital. At the same time, both the absolute and relative gain in R^2 from adding country of origin is dramatically smaller ten years after our initial observations for each cohort.[32]

Table 7 examines whether earnings convergence occurs across immigrant source-country groups. Confirming what we found earlier, all of the 8 cohort comparisons delineated by age and education show reductions in the coefficient of variation (CV) after ten years.[33]

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[31]The analyses presented in Tables 6 and 7 use the country-of-origin groups listed in note 6. In these analyses education is measured by years of schooling instead of by five categorical variables, as was necessitated by the 1990 census data in the analysis of the 1980 and 1990 census data (see note 23). Since education does not need to be measured in categories, we use in the 1960-1980 analyses the more conventional proxy for years of experience, age minus years of schooling minus 6. The data that we used in these analyses are the 1980 5 percent "A" Public Use Sample, the 1970 1 percent State Public Use Sample based on the 5% questionnaire, and the 1960 1 percent Public Use Sample. Technical documentation may be found for these data sets in Bureau of the Census (1983, 1977, and 1975). The 1960 census did not collect information on year of immigration. However, information on place of residence in 1955 allows us to identify immigrants who had entered the United States between 1955 and 1960.

[32]For both the 1955-59 and 1965-69 cohorts, the reduction in explanatory power of the country-of-origin variables with time in the United States is statistically significant.

[33]The reductions in the coefficient of variation with time in the United States are statistically significant.

Table 6: Change in the Explanatory Power of Country of Origin
for the 1955-60 and 1965-70 Cohorts of Immigrant Men as Time in U.S. Increases
(Bootstrap standard errors for R-squared in parentheses)

Entry Cohort, Census year	R^2 for human capital model	R^2 for human capital model with country-of-origin variables	Change in R^2 from adding country-of-origin variables	Percentage change in R^2 from adding country-of-origin variables
1955-60 cohort in 1960	.1144 (.0131)	.2731 (.0188)	.1587	138.7
1955-60 cohort in 1970	.1594 (.0095)	.2202 (.0099)	.0608	38.1
1965-70 cohort in 1970	.0805 (.0086)	.1540 (.0123)	.0735	91.3
1965-70 cohort in 1980	.1662 (.0055)	.2029 (.0058)	.0367	22.1

Notes: The measure of explanatory power shown above is the adjusted R^2. The human capital model is the regression of individual log(earnings) on experience, experience squared, and education. In the second model, region/country dummies and region/country interactions with education and experience are included. The set of region/country groups used in this analysis are listed in note 6.

Estimates based on the 1980 5 percent "A" Public Use Sample, the 1970 1 percent State Public Use Sample based on the 5% questionnaire, and the 1960 1 percent Public Use Sample. Technical documentation may be found for these data sets in Bureau of the Census (1983, 1977, and 1975).

Table 7: Changes in the Dispersion of Median Earnings Across Country of Origin
(Coefficients of Variation in Percentages)
(Weighted by Initial Cohort Size)
(Standard Errors of CV in Parentheses)

Entry Cohort, Census year	25-39 years old in 1960; 1-12 years of school	25-39 years old in 1960; more than 12 years of school	40-54 years old in 1960; 1-12 years of school	40-54 years old in 1960; more than 12 years of school
1955-60 cohort in 1960	46.6 (2.641)	37.2 (2.590)	39.0 (3.130)	39.3 (3.210)
1955-60 cohort in 1970	21.1 (0.894)	17.5 (2.047)	24.9 (1.778)	18.3 (2.731)
Change in CV	-25.5	-19.7	-14.1	-21.0
Percentage Change in CV	-54.7	-52.9	-36.1	-53.4
Entry Cohort, Census year	25-39 years old in 1970; 1-12 years of school	25-39 years old in 1970; more than 12 years of school	40-54 years old in 1970; 1-12 years of school	40-54 years old in 1970; more than 12 years of school
1965-70 cohort in 1970	28.9 (1.459)	34.7 (1.993)	30.6 (2.233)	39.6 (1.695)
1965-70 cohort in 1980	25.3 (1.280)	18.4 (1.128)	24.3 (2.018)	29.5 (1.258)
Change in CV	-3.6	-16.3	-6.3	-10.1
Percentage Change in CV	-12.5	-47.0	-20.6	-25.5

Notes: The set of region/country groups used in this analysis are listed in note 6.

Estimates based on the 1980 5 percent "A" Public Use Sample, the 1970 1 percent State Public Use Sample based on the 5% questionnaire, and the 1960 1 percent Public Use Sample. Technical documentation may be found for these data sets in Bureau of the Census (1983, 1977, and 1975).

VII. Conclusion

Ideally—given readily available information from the decennial Census, Current Population Survey, and administrative records on the characteristics of immigrants such as their age, gender, years since migration, education, country of origin, and admission status—we would like to predict immigrant contributions to and benefits from the OASDI system for the current immigrant population. Projections could be updated on an annual basis by inputting into the model information on the characteristics of each year's incoming immigrants. The more precisely we can project the earnings of various population subgroups, the better we will be able to forecast the financial status of Social Security. Such an enhancement of the treatment of immigrants (and other subgroups) in the projection methodology is eminently feasible as information on relevant characteristics is available through several regularly updated data sources. Information on immigrant earnings profiles is also key for projecting the effect of various proposals to change the treatment of immigrants under Social Security (e.g., Gustman and Steinmeier, 1998).

Previous research determined that holding constant variables normally included in projections of individual earnings (years of schooling and experience) immigrants and natives have distinctly different earnings profiles requiring separate treatment in projections of individual earnings. Having determined that the earnings of immigrants and natives must be separately modelled, this article takes the next step by asking whether additional information about immigrants beyond age, education, and years since migration can be productively used to project their earnings.

We explore the effect of one potential determinant of immigrant earnings—country of

origin. We find evidence of strong country-of-origin effects on the initial earnings of U.S. immigrants. These effects appear to be correlated with the economic development of the source country: the more similar the source country is to the United States, in terms of its level of economic development, the higher the initial earnings of their immigrants. We also examine how the effect of country of origin on immigrant earnings changes with time in the United States. We find a decrease in the explanatory power with time in the United States of country-of-origin variables in earnings regressions estimated across individuals in specific year-of-entry immigrant cohorts. This result suggests that as immigrants stay in the United States, the importance of country of origin for explaining earnings decreases. A second analysis reveals a decrease with time in the United States in the dispersion of individual earnings across country of origin within various age/education/year-of-entry cohorts. This result suggests that the earnings of demographically comparable immigrants, regardless of origin, tend to converge over time.[34] These results imply that in projections of immigrant earnings the effect of country of origin cannot be accurately captured by simply inserting a categorical variable that uniformly raises or lowers the level of an immigrant's earnings regardless of the number of years he has lived in the United States. Rather, the earnings effect of country of origin diminishes with years of U.S. residence.

Both the country-of-origin effects on immigrant initial earnings and their

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[34]In addition to emigration (see note 27), two alternative explanations for this paper's results should be considered. (1) They may reflect income distribution changes that differentially affect immigrants beginning with high versus low earnings. However, the fact that we find the same results for three different time periods suggests that the earnings convergence is not the consequence of a particular set of income distribution changes. (2) It may be that the earnings convergence we find does not reflect a decrease in the earnings effect of country of origin on immigrant earnings but instead reflects a process that occurs over a ten-year period for any set of individuals, foreign born or native born. However, Duleep and Regets (1998) reach the same conclusion in an analysis in which immigrant earnings dispersion over a ten-year period is measured relative to that of U.S.-born men.

transformation with time in the United States detailed in this paper are important pieces of information in our efforts to more accurately model immigrant earnings.

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