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National origin and immigrant welfare recipiency

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This paper explores national origin differences in the welfare recipiency of immigrants to the United States. We develop an economic model of immigration which generates implications about how welfare utilization should vary according to characteristics of the country of origin. The empirical analysis reveals that a few source country characteristics explain over two-thirds of the variance of welfare recipiency rates across national origin groups, and changes in the average source country characteristics of the foreign-born population between 1970 and 1980 can account for most of the rise in immigrant welfare use that occurred over the decade.

1. Introduction

Immigration to the United States has surged over the past few decades, from about 2.5 million arrivals in the 1950s to over 6 million legal immigrants in the 1980s [U.S. Immigration and Naturalization Service (1990, p. 1)]. At the same time, dramatic shifts have occurred in the national origin composition of immigrant arrivals, with a huge decline in the fraction originating in Europe and Canada, and increased immigration from Asia and Latin America taking up the slack.

Both the increased size and changing origins of recent immigrant flows have raised concerns that these new immigrants disproportionately burden the U.S. welfare system. For this reason, most studies of immigrant welfare use have focused on making comparisons with natives [Blau (1984), Tienda and Jensen (1986), Jensen (1988)]. However, in a recent paper [Borjas and Trejo (1991)], we find that variation in welfare utilization across immigrant

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Table 1

Percentage of native and immigrant households receiving welfare, 1970 and 1980.

	All households		Male-headed households		Female-headed households	
Year	Natives	Immigrants	Natives	Immigrants	Natives	Immigrants
1970	6.1	5.9	3.7	4.5	14.8	10.4
1980	7.9	8.8	4.8	6.5	16.2	14.5

Source: Public use microdata samples of the 1970 and 1980 U.S. Censuses.

subgroups is sizable, so the results of comparing immigrant and native welfare recipiency depend upon which immigrant subgroup is studied and what controls are introduced for socioeconomic characteristics. In particular, recent immigrant cohorts use the welfare system more intensively than earlier cohorts, a finding that is consistent with other evidence pointing to a secular decline in the labor market success of immigrants.[1] In addition, our analysis reveals that immigrant welfare recipiency rates differ widely according to country of origin.

The changing composition of immigrant flows resulted in rising immigrant welfare dependency over the 1970s (see table 1).[2] For example, among male-headed households, immigrant welfare recipiency climbed by 2 percentage points, whereas the comparable increase for natives was only 1.1 percentage points. Differences in economic conditions and welfare eligibility requirements obviously affect comparisons between 1970 and 1980, but even after subtracting out the welfare growth experienced by natives, we still find that the relative recipiency rate of immigrants increased by just under a percentage point. A similar calculation shows that among female-headed households the welfare recipiency rate of immigrants increased by 2.7 percentage points relative to that of natives.

The purpose of the current paper is to explore in greater detail the national origin differences in immigrant welfare recipiency. Although our previous research documents the existence of these differences, little is known about why they occur. To gain an understanding of the observed dispersion, we construct a model of the immigration decision which incorporates the availability of welfare payment in the host country. The theoretical framework generates implications about how the welfare recipiency rate of immigrants should vary according to characteristics of the source country.

The empirical analysis, conducted on data from the 1980 U.S. Census,

[1]This evidence is summarized in Borjas (1990).

[2]See Borjas and Trejo (1991) for details on how the welfare recipiency rates in table 1 were calculated. That paper also uses Census data on the amount of public assistance income received by welfare households to estimate the cost of increased immigrant welfare recipiency. Conditional on receiving welfare, the average welfare incomes received by immigrant and native households are very similar [Blau (1984)].

generally confirms the usefulness of the theoretical model. The handful of source country characteristics suggested by the model explain a surprisingly large fraction of the variance of welfare recipiency rates across national origin groups. We also find that changes in the average source country characteristics of the foreign-born population between 1970 and 1980 can account for most of the increase in immigrant welfare recipiency that occurred over this period.

2. Theory

This section develops an economic model of immigration which illustrates how a welfare system in the host country can alter the size and skill composition of the immigrant flows attracted to that country. We extend the model of immigrant self-selection presented in Borjas (1987) by characterizing the U.S. welfare system as providing an income floor that 'insures' immigrants against poor labor market outcomes.[3]

Workers residing in the source country consider migrating to the United States. The (log) earnings potentially available to these workers in the two countries are

$$\log w_0 = \mu_0 + \eta v, \tag{1}$$

$$\log w_1 = \mu_1 + v, \tag{2}$$

where w_0 and w_1 denote earnings in the source country and in the United States, respectively. The parameter μ_0 is the population mean of the earnings distribution in the source country, while the parameter μ_1 is the mean earnings faced by this population in the United States if *all* persons in the source country were to immigrate. The continuous random variable v measures individual-specific deviations from mean earnings in the host country. We assume that v has a symmetric distribution with mean zero and finite variance. Note that the parameter μ_1 need not equal the mean earnings of U.S. natives, since the average skills of immigrants and natives may differ, even in the absence of selection biases. For the same reason, μ_1 is also likely to differ across national origin groups within the immigrant population.

Eqs. (1) and (2) imply that v determines individual earnings in each country, up to a factor of proportionality; thus, earnings are perfectly correlated across the two countries. As a result, the highest paid individual in the source country would retain his top spot in the earnings distribution if all members of the source country were to migrate to the United States. The factor-loading parameter η can be interpreted as the rate of return to skills in

[3]The model in Borjas (1987) is an adaptation of Roy's (1951) model of occupational choice.

the source country (relative to that in the United States), or alternatively as the ratio of the standard deviations of earnings in the source country and the United States.[4] If $\eta > 1$, the source country has a more unequal earnings distribution than the United States, while the opposite is true if $\eta < 1$.

For simplicity, we assume that welfare benefits are available only in the United States and not in the source country. The model can be generalized to allow for welfare systems in both the source and host countries. This extension, however, does not alter the basic insights discussed below, and we do not pursue it because the lack of data describing the characteristics of welfare systems in most source countries prevents us from testing additional implications of the more general model.[5]

The U.S. welfare system is parsimoniously represented by an income floor $\bar{w}$ (in logs) below which the income of U.S. residents is not allowed to fall.[6] We assume that the income floor is lower than mean U.S. earnings, so that $\bar{w} < \mu_1$. The potential U.S. income of immigrants then becomes:

$$\log y_1 = \begin{cases} \mu_1 + v, & \text{if} \quad v > \bar{w} - \mu_1, \quad (3a) \\ \bar{w}, & \text{if} \quad v \leqq \bar{w} - \mu_1, \quad (3b) \end{cases}$$

and income in the source country is $\log y_0 = \mu_0 + \eta v$. We assume that participants in the welfare system do not work, and we ignore the value they attach to nonmarket time.

Individuals in the source country migrate to the United States whenever $y_1 > y_0$, net of migration costs. Let migration costs, C, be a constant fraction of the individual's earnings in the source country (i.e. $C = \pi w_0$).[7] The index function representing the migration decision is given by

$$I = \log[y_1/(y_0 + C)] \approx \begin{cases} (\mu_1 - \mu_0 - \pi) + (1 - \eta)v, & \text{if} \quad v > \bar{w} - \mu_1, \quad (4a) \\ (\bar{w} - \mu_0 - \pi) - \eta v, & \text{if} \quad v \leqq \bar{w} - \mu_1. \quad (4b) \end{cases}$$

Migration occurs whenever $I > 0$. Eq. (4a) characterizes the migration decision for individuals who would have U.S. earnings above the income floor, so their decision depends only on a comparison of labor market opportunities across the two countries. Eq. (4b) models the migration

[4]The assumption that earnings are perfectly correlated across countries greatly simplifies the analysis. Throughout the paper we will interpret greater inequality in the distribution of earnings as representing a higher return to skills, but other interpretations are possible. In stochastic models, increased inequality could arise because 'luck' is a more important determinant of earnings, and in non-neoclassical models earnings may not reflect productivity.

[5]However, in footnote 17 below we do discuss the results of using a crude proxy for the generosity of source country welfare systems.

[6]For simplicity, we ignore issues related to funding of the welfare system.

[7]This assumption is reasonable if migration costs consist primarily of time costs.

decision for individuals who would qualify for participation in the U.S. welfare system. We assume that mean earnings in the country of origin exceed mean earnings in the country of destination (net of migration costs), hence $\Delta\mu \equiv \mu_0 - \mu_1 + \pi > 0$. Because v is symmetric around zero, this assumption ensures that the emigration rate from the source country is below 1/2. This restriction is consistent with observed immigration patterns to the United States.

Using (4), we can determine which types of workers migrate to the United States, as well as the propensity of immigrants to go on welfare. The emigration rate from the source country is given by

$$\Pr(I>0) = \Pr[(1-\eta)v > \Delta\mu \cap v > \bar{w} - \mu_1] + \Pr[v \leqq (\bar{w} - \mu_0 - \pi)/\eta \cap v \leqq \bar{w} - \mu_1]. \tag{5}$$

In order to determine the welfare recipiency rate of a cohort of immigrants, we consider two alternative cases. First, suppose that the rate of return to skills in the source country is lower than that in the United States ($\eta < 1$). The restriction that $\bar{w} < \mu_1 < \mu_0 + \pi$ implies that $\bar{w} < (\mu_0 + \pi - \eta\mu_1)/(1-\eta)$.[8] Eq. (5) then simplifies to

$$\Pr(I>0) = \Pr[v \leqq (\bar{w} - \mu_0 - \pi)/\eta] + \Pr[v > \Delta\mu/(1-\eta)]. \tag{6}$$

The conditional probability P that an immigrant receives welfare is

$$P = \frac{\Pr[v \leqq (\bar{w} - \mu_0 - \pi)/\eta]}{\Pr[v \leqq (\bar{w} - \mu_0 - \pi)/\eta] + \Pr[v > \Delta\mu/(1-\eta)]}. \tag{7}$$

The first term in (6) represents individuals who migrate to take advantage of the U.S. welfare system, while the second term consists of individuals who would migrate even in the absence of welfare. The conditional probability in (7) gives the ratio of welfare recipients to the total immigrant population. Fig. 1 illustrates the selection of immigrants in terms of the underlying distribution of skills when $\eta < 1$. If there were no income floor ($\bar{w} = -\infty$), immigrants would be positively selected (i.e. the average skills of immigrants would be higher than the population mean). The introduction of the income floor attracts persons in the lower tail of the skills distribution who would not have migrated otherwise. As a result, the positive selection induced by differences in the rate of return to skills between the source and host countries is diluted and perhaps even reversed.

[8]For $\eta < 1$, the assumption that $\bar{w} < \mu_1 < \mu_0 + \pi$ implies that $(1-\eta)\bar{w} < (1-\eta)\mu_1 < \mu_0 + \pi - \eta\mu_1$. The restriction on $\bar{w}$ follows immediately.

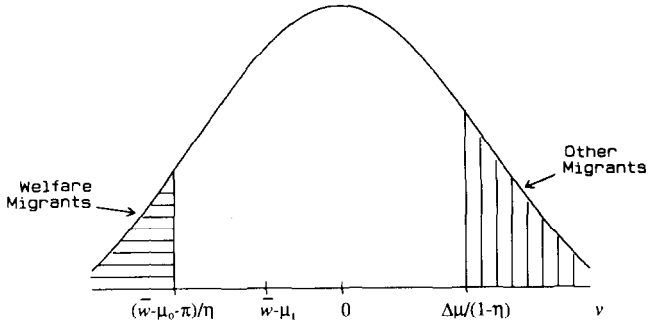

Fig. 1. Migration to the United States from countries with $\eta < 1$.

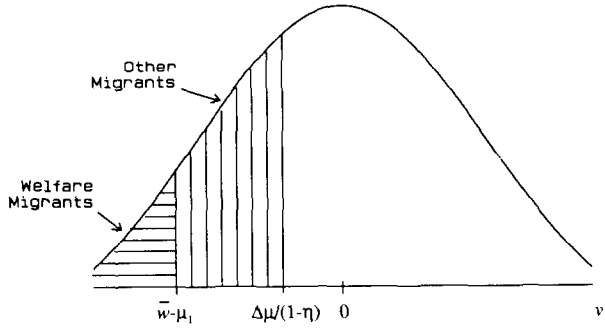

Fig. 2. Migration to the United States from countries with $\eta > 1$.

Consider now the case where $\eta > 1$, so that the source country has a higher payoff to skills than the United States. It can be shown that the restriction $\bar{w} < (\mu_0 + \pi - \eta\mu_1)/(1-\eta)$ ensures that not all immigrants become welfare recipients. The emigration rate is then given by

$$\Pr(I > 0) = \Pr[v \leqq \Delta\mu/(1-\eta)], \tag{8}$$

and the conditional probability of welfare receipt is

$$P = \frac{\Pr[v \leqq \bar{w} - \mu_1]}{\Pr[v \leqq \Delta\mu/(1-\eta)]}. \tag{9}$$

Fig. 2 illustrates this case. The restriction that not all immigrants are welfare recipients implies that the welfare system does not attract any additional immigrants. Workers originating in countries with relatively high payoffs to skills are negatively selected (they are less skilled, on average, than

the population), and would migrate to the United States regardless of the existence of a welfare system. The income floor, however, does affect the decision to work because some of the migrants will become welfare recipients upon arrival in the United States.

Several interesting questions can be conveniently analyzed within this framework.[9] For instance, how does the generosity of the U.S. welfare system affect immigrant welfare use? It is obvious from figs. 1 and 2 that increases in the income floor, $\bar{w}$, lead to higher rates of welfare recipiency, regardless of the value of η.

We can also determine how immigrant welfare utilization is affected by the parameters characterizing the earnings distribution in the source country. In particular, how does the welfare recipiency rate vary with source country income inequality? It turns out that this relationship is not monotonic.

Fig. 1 shows that for $\eta < 1$, an increase in η raises the number of immigrants who receive welfare and reduces the number of immigrants who do not, thus increasing the welfare recipiency rate. If $\eta > 1$, however, fig. 2 shows that an increase in η expands the size of the immigrant flow but does not change the number of immigrants who receive welfare, thereby reducing the recipiency rate. Hence, the relationship between immigrant welfare recipiency and η is increasing for $\eta < 1$ and decreasing for $\eta > 1$. Moreover, the welfare recipiency rate attains a maximum at $\eta = 1$, because persons originating in countries that are identical to the United States (in terms of the rate of return to skills) have no incentive to migrate except to become welfare recipients.

The intuition for the inverse-U relationship between welfare recipiency and η is straightforward. As noted above, all immigrants from a source country with $\eta = 1$ will receive welfare in the United States. However, as η moves away from unity in either direction, incentives arise for workers to migrate so as to take advantage of the earnings opportunities created by differences in the reward to skills across countries. Therefore, as η moves away from unity, the fraction of all immigrants who receive welfare declines.

The mean of the source country earnings distribution also influences immigrant welfare recipiency. It is likely, however, that changes in μ_0 affect the expected earnings of immigrants in the United States, μ_1. The skills of immigrants from high-income countries that closely resemble the United States in terms of industrialization and economic development tend to transfer more readily to the U.S. labor market, and therefore an increase in μ_0 leads to a corresponding increase in μ_1. Suppose that human capital acquired in the source country (as measured by μ_0) is perfectly general, so

[9]The comparative statics results discussed below can be verified by differentiation of the appropriate conditional probability [either eq. (7) or eq. (9)], but it is easier to derive these results by observing how the relevant areas in figs. 1 and 2 change.

that mean earnings in the United States increase at the same rate (i.e. $d\mu_1/d\mu_0 = 1$). Figs. 1 and 2 reveal that immigrant flows originating in high-income countries will have a lower welfare recipiency rate. The intuition is that immigrants from high-income countries have better earnings opportunities in the United States, and therefore their earnings are less likely to fall below the income floor that qualifies them for welfare. To the extent that human capital acquired in advanced economies is not perfectly transferable to the United States, this effect will be dampened.

Finally, consider the impact of an increase in migration costs. Obviously, fewer people will migrate to the United States. The predicted effect on immigrant welfare recipiency, however, depends on the level of η. Fig. 1 shows that for $\eta < 1$, an increase in π reduces the number of immigrants on welfare as well as the number of persons migrating in search of better labor market opportunities, and consequently the net effect on the welfare recipiency rate is ambiguous. For $\eta > 1$, fig. 2 shows that an increase in π raises the recipiency rate because the number of immigrants on welfare is not affected by changes in π.

In sum, the model of immigration developed here provides testable implications about how income maintenance programs alter the composition of immigrant flows. The framework suggests that the welfare recipiency rates of immigrant households will depend on characteristics of the earnings distribution in the country of origin.

3. Differences in welfare recipiency across countries of origin

We analyze welfare recipiency among immigrants to the United States using data drawn from the 1980 5/100 A file of the U.S. Census. Residents of group quarters and households headed by individuals under age 18 are excluded. Because we focus on variation across countries of origin, the sample is further restricted to include only households headed by immigrants from the 62 source countries that are adequately represented in the 1980 Census and for which the necessary data on source country characteristics are available. The immigrant households in our sample comprise about 90 percent of all immigrant households observed in the Census data.

The household is the unit of observation. If anyone in the household reported receiving public assistance income in the calendar year prior to the Census, then the household is a welfare recipient. The Census definition of public assistance income includes cash receipts under such programs as Aid to Families with Dependent Children (AFDC), Supplemental Security Income (which includes old-age assistance, aid to the blind, and aid to the permanently and totally disabled), and general assistance. Note that this definition specifically excludes social security income, unemployment insur-

ance benefits, permanent disability insurance payments, and in-kind benefits such as food stamps, medicare, and public housing.

We define the country of origin of an immigrant household to be the country of birth of the household head. Because family structure can determine welfare eligibility under some programs (most notably AFDC), male-headed and female-headed households are analyzed separately.[10] The final sample includes 189,323 male-headed households and 73,411 female-headed households.

Table 2 presents welfare recipiency rates for the 62 source countries in our sample. The unadjusted rates reported in the first and fourth columns are simply the percentage of immigrant households receiving welfare. Note the enormous diversity in welfare recipiency across countries of origin. For male-headed households, the rates range from as low as 1.3 percent for Morocco to as high as 14 percent for Cuba. Among European countries alone the range is from 2.4 percent (Belgium) to 11.8 percent (Spain). The unweighted mean of these welfare recipiency rates, which reflects the experience of a typical source country, is 5.1 percent for male-headed households, with a standard deviation of 2.7 percentage points. Weighting by the number of households from each country gives the experience of a typical immigrant household, and for male-headed households this yields a mean welfare recipiency rate of 6.1 percent.

Turning now to female-headed households, the sample of countries is reduced to 55 because we exclude countries with fewer than 100 observations. Welfare recipiency rates are substantially higher for households headed by females rather than males, which is not surprising given the acute incidence of poverty among female-headed households and the eligibility requirements of welfare programs such as AFDC. Accompanying this higher mean is wider variation across countries of origin. The unadjusted rates range from 3 percent for households whose female head was born in Taiwan to 41 percent for female-headed households from the Dominican Republic. The unweighted mean welfare recipiency rate is 13 percent with a standard deviation of 7.1 percentage points, and the corresponding weighted mean is 14 percent.[11]

Clearly, large differences across source countries exist in the propensity of

[10]It can be argued that family structure is endogenous and therefore by separating the samples we remove a potentially important source of variation in immigrant welfare behavior. In the present context, however, the welfare recipiency rates of male-headed and female-headed households from a given source country are very highly correlated, so results similar to those reported below are obtained when male-headed and female-headed households are aggregated. See Trejo (1992).

[11]The imigrant welfare recipiency rates for 1980 in table 1 are slightly different from the weighted means of the unadjusted rates reported in table 2. This is because the sample in table 1 includes all immigrant households, whereas the sample in table 2 only includes households from the 62 countries of origin that are listed there.

Table 2

Percentage of immigrant households receiving welfare, 1980, by country of origin.

Country	Male-headed households			Female-headed households		
	Unadjusted rate	Adjusted rate	Sample size	Unadjusted rate	Adjusted rate	Sample size
Europe						
Austria	4.4	5.6	2,319	10.2	12.2	1,766
Belgium	2.4	2.7	577	6.3	15.5	318
Czechoslovakia	5.0	5.3	2,069	7.0	7.9	1,137
Denmark	2.9	4.3	819	6.5	7.7	353
Finland	3.9	4.8	413	14.7	16.0	312
France	4.2	6.7	1,515	9.0	13.2	1,036
Germany	3.2	4.1	12,055	7.4	9.5	6,766
Greece	4.9	5.0	4,152	12.9	11.8	908
Hungary	4.8	5.3	2,858	9.3	11.2	1,458
Ireland	3.9	5.6	2,953	9.9	9.3	2,116
Italy	5.6	4.6	16,408	12.1	11.9	6,004
Netherlands	3.0	5.7	2,078	7.8	9.0	642
Norway	4.6	4.5	1,250	8.6	7.8	579
Poland	4.9	4.4	7,800	9.1	9.3	4,080
Portugal	5.7	5.1	2,966	21.1	18.7	508
Romania	6.3	7.5	1,298	11.5	12.9	480
Spain	11.8	7.9	1,258	19.8	15.7	334
Sweden	3.8	3.9	1,436	8.5	14.5	777
Switzerland	2.6	2.2	810	7.1	7.3	339
United Kingdom	3.2	5.8	9,518	9.2	13.5	5,650
USSR	7.4	7.5	8,665	12.1	15.5	4,959
Yugoslavia	4.6	4.7	3,069	11.2	11.1	920
Asia and Africa						
China	7.5	8.2	5,460	15.0	15.8	994
Egypt	4.7	13.8	919	15.3	23.4	131
Hong Kong	2.9	10.3	714	4.7	22.0	170
India	2.1	7.5	4,013	6.5	15.2	294
Indonesia	2.9	7.6	583	7.9	17.5	114
Iraq	11.3	15.0	494	–	–	–
Iran	1.7	3.3	2,221	6.8	13.7	336
Israel	3.8	7.3	1,254	9.6	15.0	219
Japan	3.2	5.5	2,540	9.0	12.9	1,266
Korea	5.3	18.1	2,954	8.7	21.4	781
Lebanon	4.9	5.3	856	12.9	11.1	224
Malaysia	7.1	24.6	126	–	–	–
Morocco	1.3	4.6	155	–	–	–
Pakistan	2.0	8.0	612	–	–	–
Philippines	10.2	8.8	6,418	12.2	21.8	1,681
South Africa	2.8	8.2	249	–	–	–
Taiwan	1.9	4.6	952	3.0	3.0	199
Thailand	2.3	14.1	525	4.6	29.1	218
Turkey	9.6	7.3	945	18.2	14.8	380

Table 2 (continued)

Country	Male-headed households			Female-headed households		
	Unadjusted rate	Adjusted rate	Sample size	Unadjusted rate	Adjusted rate	Sample size
Americas						
Argentina	4.5	6.4	1,151	13.2	16.3	265
Brazil	4.5	5.5	532	9.9	13.0	181
Canada	3.8	4.5	13,142	11.1	14.5	6,952
Chile	4.2	5.6	554	13.4	20.5	157
Colombia	6.3	10.9	1,957	15.8	23.0	673
Costa Rica	6.2	7.5	356	15.9	16.7	182
Cuba	14.0	12.5	9,876	31.7	29.4	2,882
Dominican Republic	12.8	13.5	1,734	41.0	27.2	1,473
Ecuador	5.8	6.7	1,187	30.2	32.0	364
El Salvador	6.6	16.2	1,058	14.9	14.6	496
Guatemala	5.6	9.7	771	17.7	30.9	317
Haiti	6.7	12.2	1,142	17.5	35.8	584
Honduras	8.6	12.2	441	19.3	17.2	244
Jamaica	4.9	7.1	2,229	12.1	14.8	1,616
Mexico	8.7	9.6	31,738	29.3	22.2	7,036
Panama	5.4	8.0	703	20.3	29.4	492
Peru	6.0	14.4	886	14.8	29.0	256
Trinidad and Tobago	5.1	2.3	806	15.1	15.6	542
Uruguay	2.7	10.3	223	–	–	–
Oceania						
Australia	2.2	2.0	404	8.4	13.6	250
New Zealand	3.8	−0.6	157	–	–	–
All countries						
Unweighted statistics						
Mean	5.1	7.6	62	13.0	16.6	55
Standard deviation	2.7	4.4	62	7.1	7.2	55

immigrants to receive public assistance. Are these differences in welfare utilization mainly due to differences in observable socioeconomic characteristics? To answer this question, we predict for each country of origin what the welfare recipiency rate would be if all immigrant households possessed the average characteristics in the sample. These 'adjusted' welfare recipiency rates are presented in the second and fifth columns of table 2.

The first step in this process is to estimate separate regressions for each source country in which the probability of welfare receipt is specified to be a function of household characteristics. The analysis is conducted separately for male-headed and female-headed households. The dependent variable is a dummy variable identifying those households that reported receiving public assistance income in the 1980 Census, and the independent variables describe the age, education, marital status, year of immigration, and English language proficiency of the household head, as well as the number of disabled

household members, the age composition of the household, and household size. The regressions are estimated by ordinary least squares.[12]

Using the estimated coefficients from these country-specific regressions, predicted welfare recipiency rates are calculated at the mean characteristics of the entire immigrant sample. The sample means are computed separately for male-headed and female-headed households. In this way the predicted or 'adjusted' recipiency rates hold constant observable household characteristics at their sample mean values, so that remaining differences in welfare recipiency across source countries reflect intercountry variation in unobservables that influence welfare use.

Although in some cases the adjusted welfare recipiency rates differ considerably from their unadjusted counterparts, the adjusted and unadjusted rates are highly correlated, with correlation coefficients of 0.46 for male-headed households and 0.60 for female-headed households. Moreover, the adjusted rates display roughly the same amount of variation across source countries as do the unadjusted rates. These comparisons need to be interpreted with some caution, however, because the variation in the adjusted welfare recipiency rates reflects prediction error as well as intrinsic differences between source countries. Nonetheless, differences in observable socioeconomic characteristics across households appear to account for little of the source country variation in immigrant welfare recipiency.

4. Source country characteristics and immigrant welfare recipiency

The theoretical model presented in section 2 suggests that source country characteristics can influence immigrant welfare recipiency in the host country. In order to assess the empirical importance of these effects, and also to explicitly test several implications of the model, we estimate the impact of source country characteristics on the welfare recipiency rates reported in table 2.

Table 3 presents summary statistics for variables describing immigrant countries of origin. The data on per capita gross national product (GNP) are for 1977, as reported in U.S. Arms Control and Disarmament Agency (1984). These figures are expressed in 1981 U.S. dollars. Income inequality is measured by the ratio of income accruing to the top 10 percent of households to the income of the bottom 20 percent. These data are compiled from World Bank (various years) and Jain (1975), and are for as close to

[12]OLS is employed here for computational convenience. A potential weakness of OLS predictions of binary outcomes is that they can fall outside the unit interval which is appropriate for probabilities. In our data, this occurs only for male-headed households from New Zealand, where an adjusted welfare recipiency rate of −0.6 percent is obtained. For the logit analysis conducted below we set this rate equal to 1 percent, which is below the adjusted or unadjusted rate observed for any other source country.

Table 3

Characteristics of immigrant source countries.

Variable	Minimum value	Maximum value	Unweighted Mean	Unweighted Standard deviation	Weighted Mean	Weighted Standard deviation
Per capita GNP	196.00	14,238.00	4,284.13	3,837.78	5,185.46	3,561.55
log(per capita GNP)	5.28	9.56	7.84	1.15	8.21	0.98
Income inequality	2.10	31.44	8.98	7.83	7.10	5.68
Income inequality squared	4.41	988.75	140.99	238.70	82.24	147.81
Distance from U.S.	0.23	8.99	4.21	2.28	3.34	2.09
Percent refugee	0	0.93	0.07	0.17	0.11	0.26

Notes: Data are for the 62 countries listed in table 2. The statistics presented in the last two columns are weighted by the total number of immigrant households from each country reported in the 1980 Census. Per capita GNP is for 1977 and is reported in 1981 U.S. dollars. Income inequality is measured by the ratio of income accruing to the top 10 percent of households to the income of the bottom 20 percent. It is for as close to 1972 as available. Distance from the United States is defined as the number of miles (in thousands) between the country's capital and the nearest U.S. gateway (Los Angeles, Miami, or New York). Percent refugee represents the fraction of all legal immigrants admitted between 1975 and 1980 who were refugees or asylees. See text for data sources.

1972 as available. Distance from the United States is defined as the number of miles (in thousands) between the country's capital and the nearest U.S. gateway (Los Angeles, Miami, or New York), as reported by Fitzpatrick and Madlin (1986). The percent refugee variable represents the fraction of all legal immigrants admitted between 1975 and 1980 who were refugees or asylees. This is computed using data reported in U.S. Immigration and Naturalization Service (1986).[13]

The per capita GNP and income inequality variables described the source country income distribution. For comparison purposes, the U.S. values of these variables are $12,315 for per capita GNP and 5.9 for income inequality. Distance from the United States is intended to proxy for migration costs. The refugee variable captures two factors expected to raise welfare utilization. First, refugees qualify for a number of relocation assistance programs unavailable to other immigrants.[14] Second, because many refugees migrate

[13]Prior to 1981, data are not available on the actual number of refugees admitted in each year. Consequently, the percent refugee variable uses for its numerator the number of refugees and asylees granted lawful permanent resident status.

[14]See U.S. Department of Health and Human Services (1989) for a description of these programs. Between 1981 and 1987 about $600 million per year (in 1988 dollars) were appropriated for refugee assistance, which is roughly $7,000 per refugee admitted during this period. These expenditures funded the provision of cash and medical assistance, as well as English language training and employment-related services. Only cash payments to refugees would be counted as welfare income in the Census data analyzed here. As of September 1988, over half of all refugees who had arrived in the United States during the previous two years were receiving some form of cash assistance.

Table 4

The effects of source country characteristics on immigrant welfare recipiency: grouped logit estimates.

	Male-headed households		Female-headed households	
	Unadjusted rate	Adjusted rate	Unadjusted rate	Adjusted rate
log(per capita GNP)	−0.206	−0.265	−0.255	−0.256
	(0.050)	(0.049)	(0.072)	(0.053)
Income inequality	0.118	0.069	0.144	0.045
	(0.027)	(0.027)	(0.033)	(0.026)
Income inequality squared	−0.0037	−0.0020	−0.0045	−0.0011
	(0.0009)	(0.0009)	(0.0010)	(0.0008)
Distance from U.S.	−0.025	−0.025	−0.136	−0.067
	(0.024)	(0.025)	(0.030)	(0.022)
Percent refugee	1.253	0.689	0.906	0.548
	(0.198)	(0.208)	(0.242)	(0.181)
Intercept	−1.683	−0.737	−0.022	0.354
	(0.540)	(0.531)	(0.759)	(0.570)
R^2	0.683	0.570	0.753	0.701
Sample size	62	62	55	55

Notes: Standard errors are in parentheses. The dependent variable is $\log[P/(1-P)]$, where P represents the country-specific immigrant welfare recipiency rates listed in table 2.

for political rather than economic reasons and are forced to leave much of their wealth behind, they tend to be poorer when they first arrive in the United States.

Because the dependent variables to be analyzed are proportions with a valid range of 0 to 1, we employ the logit specification for grouped data [Maddala (1983, pp. 29–30)]:

$$\log[P_i/(1-P_i)] = X_i\beta + \varepsilon_i, \tag{10}$$

where P represents the welfare recipiency rates listed in table 2, X is a vector of source country characteristics, β is a vector of coefficients, and i indexes country of origin. The error terms ε_i are heteroskedastic with variances proportional to the reciprocal of $N_iP_i(1-P_i)$, where N_i is the sample size for country i. Therefore eq. (10) is estimated by weighted least squares.[15]

Table 4 reports the resulting logit coefficients. These coefficients give the marginal effect of source country characteristics on the log odds ratio of welfare recipiency. To calculate the impact of a unit change in a particular

[15]For the regressions which use adjusted welfare recipiency rates, an alternative approach is to construct weights from the standard errors of the predicted rates. Because the prediction errors are highly correlated with sample size, this approach yields results similar to those reported below.

source country characteristic on the welfare recipiency rate itself, multiply the corresponding logit coefficient by $P(1-P)$. Using the mean rates of welfare recipiency in our sample yields adjustment factors of around 0.06 for male-headed households and 0.12 for female-headed households.

Overall explanatory power is quite good.[16] Among male-headed households, the source country characteristics account for almost 70 percent of the variance of unadjusted welfare recipiency rates across countries of origin. These variables also explain 57 percent of the variance of the adjusted rates, which represents the variation that remains after controlling for observable household characteristics. The R^2 statistics are even higher for female-headed households. Of course, the variable percent refugee is included for reasons not directly pertaining to the theoretical model, but explanatory power remains high when this variable is excluded (R^2 statistics ranging from 0.46 to 0.68).

Turning to the individual coefficients, per capita GNP in the country of origin has a negative and statistically significant effect on immigrant welfare recipiency. The effect is also quite large in economic terms: evaluated at the sample mean rates of welfare use, a doubling of source country GNP reduces welfare recipiency by 1.2 to 1.6 percentage points for male-headed households and by over 3 percentage points for female-headed households. These results are consistent with the theoretical model if immigrants from high GNP countries enjoy expanded earnings opportunities in the United States.[17]

As predicted by the theoretical model, immigrant welfare recipiency first rises and then falls with source country income inequality. However, the turning point occurs at a level of income inequality well beyond the U.S. value of 5.9 suggested by the model. For example, the regression using the unadjusted welfare recipiency rates of male-headed households yields an estimated turning point of 16 with a standard error of 1.5.[18] The corresponding regression for female-headed households produces a turning point of 15.8 with a standard error of 1.3. Controlling for household characteristics

[16]The reported R^2 statistic is that proposed by Buse (1973) for use with weighted least squares.

[17]The estimated effect of per capita GNP may also reflect the relative generosity of source country welfare systems. As a very crude proxy for welfare benefits in the country of origin, we used the data reported in U.S. Arms Control and Disarmament Agency (1984) to compute per capita expenditures by the central government for nonmilitary purposes. This variable is very highly correlated with per capita GNP (a correlation coefficient of 0.90), and when added to the regressions in table 4 it wipes out the effect of per capita GNP, but does not change the pattern of coefficients on the other variables.

[18]The turning point is computed as $-b_1/2b_2$, where b_1 is the estimated coefficient of income inequality and b_2 is the estimated coefficient of squared income inequality. The standard error of the turning point is computed using a first-order approximation to this nonlinear function of the estimated coefficients (i.e. the 'delta method').

dramatically reduces (in absolute value) the coefficients of both income inequality and squared income inequality. This implies a flatter, less concave relationship between welfare utilization and source country income inequality. As a result, turning point estimates from the adjusted rate regressions are less precise than those from the unadjusted rate regressions, but the estimated turning points themselves are similar.[19]

The impact of distance is consistently negative, although in the regressions for male-headed households these coefficients are not statistically significant. Among female-headed households, the unadjusted welfare recipiency rate falls by about 1.6 percentage points for each additional thousand miles of distance between the source country and the United States. The analogous effect on the adjusted rate is a reduction of four-fifths of a percentage point. If distance from the United States is a good proxy for migration costs, the theoretical model predicts that welfare recipiency should be increasing in distance for immigrants from countries with greater income inequality than the United States, whereas the theoretical relationship is ambiguous for immigrants from countries with less income inequality than the United States. Regressions which allowed the effect of distance to vary with income inequality failed to find any evidence of a positive correlation between welfare recipiency and distance, even among high-inequality countries, so this implication of the theory is rejected.

Finally, as expected, refugees are much more likely to receive welfare than other immigrants. Refugee status raises unadjusted welfare recipiency rates by 7.5 percentage points for male-headed households and by 10.9 percentage points for female-headed households. The effects of refugee status on adjusted rates are smaller but still substantial: an increase in welfare utilization of 4.1 percentage points for male-headed households and 6.6 percentage points for female-headed households.[20]

[19]The adjusted rate regressions imply turning point estimates of 17.4 with a standard error of 2.7 for male-headed households, and 21.3 with a standard error of 5.5 for female-headed households. As an alternative to the quadratic specification for the effect of income inequality used in table 4, we also estimated regressions in which income inequality has only a linear effect but this effect is allowed to differ for low-inequality and high-inequality countries. These regressions confirm the results of the quadratic specification: immigrant welfare recipiency is first rising and then falling in source country income inequality, but the turning point occurs at a level of income inequality much higher than the U.S. value.

[20]Because immigrants from low-GNP, high-inequality countries tend to be members of minority groups, an alternative interpretation of the results in table 4 is that discrimination reduces the labor market opportunities of these immigrants and forces more of them onto welfare. The close correspondence between national origin and racial/ethnic affiliation makes it difficult to distinguish the effects of source country characteristics from those of race. Regressions which add variables measuring the racial composition of immigrant households from each country of origin (percent black, percent Asian, and percent Hispanic) produce a pattern of source country effects qualitatively similar to what is reported in table 4, but the effects are smaller in magnitude and less precisely estimated.

5. Accounting for the increase in immigrant welfare recipiency

The previous section provides evidence of a strong cross-sectional relationship between immigrant welfare recipiency and source country characteristics. In order to gauge the predictive power of this relationship, we now examine how much of the rise in immigrant welfare utilization that occurred over the 1970s (documented in table 1 above) can be accounted for by changes in source country characteristics.

The source country composition of the foreign-born population changed significantly between 1970 and 1980, and we can use our estimates to predict how these changes should have affected welfare recipiency. To a first-order approximation, changes in immigrant welfare utilization can be predicted from the following equation:

$$\Delta P = \sum_j \beta_j P(1-P)\Delta X_j, \tag{11}$$

where P is the immigrant welfare recipiency rate, the X_j are characteristics of the country of origin, and the β_j are the corresponding logit coefficients from the unadjusted rate regressions reported in table 4.[21] The ΔX_j represent mean changes across all immigrant households. For the characteristics of a country that remained roughly constant (relative to other countries) over the decade (i.e. per capita GNP, income inequality, and distance from the United States), the ΔX_j are calculated by weighting the fixed vector of characteristics differently in 1970 and 1980 according to the source country composition of the immigrant stock in each year.[22] For the percent refugee variable, ΔX_j is calculated from U.S. Immigration and Naturalization Service (1986) as the change between the periods 1965–1970 and 1975–1980 in the fraction of all legal immigrants admitted who were refugees or asylees. Eq. (11) is evaluated at the 1970 values of P: 0.045 for male-headed households and 0.104 for female-headed households.

Table 5 decomposes the predicted change in unadjusted welfare recipiency rates into components due to mean changes in each of the source country

[21]The X_j in eq. (11) are simply the elements of the vector X in eq. (10). An exact measure of ΔP can be computed by evaluating the nonlinear function for P at the two different X vectors and taking the difference between these predicted welfare recipiency rates, and such a calculation yields predictions quite close to those produced by eq. (11). The advantage of using a first-order approximation is that this facilitates a decomposition of the total change into the portions due to each of the individual source country characteristics.

[22]The 1970 and 1980 U.S. Censuses were used to calculate the source country composition of the immigrant stock in each year. These calculations were done separately for male-headed and female-headed households. Because the country of birth codes are not as detailed in the 1970 Census, only 54 of the 62 countries in our sample can be identified in both Censuses, and therefore only these countries were used in the calculations. This has a trivial effect on the results, however, since over 98 percent of the immigrant households in our sample originate from these 54 countries.

Table 5

Predicted effects of 1970–80 changes in source country characteristics on immigrant welfare recipiency.

	Male-headed households		Female-headed households	
Variable	ΔX	ΔP	ΔX	ΔP
log(per capita GNP)	−0.354	0.0031	−0.263	0.0062
Income inequality	1.693	0.0086	1.477	0.0198
Income inequality squared	34.341	−0.0055	32.467	−0.0136
Distance from U.S.	−0.141	0.0002	−0.233	0.0030
Percent refugee	0.058	0.0031	0.058	0.0049
Total predicted ΔP		0.0095		0.0203
Total actual ΔP (relative to natives)		0.0090		0.0270

Notes: P denotes the immigrant welfare recipiency rate. Predicted changes are computed as $\Delta P = \beta P(1-P)\Delta X$, where X is a particular source country characteristic and β is the corresponding logit coefficient from the unadjusted rate regressions in table 4. This expression is evaluated at the 1970 values of P: 0.045 for make-headed households and 0.104 for female-headed households.

characteristics.[23] Note that between 1970 and 1980 all of the characteristics changed in a way that tended to raise immigrant welfare use: per capita GNP and distance from the United States declined, whereas income inequality and percent refugee increased. For male-headed households, the changes in per capita GNP, income inequality (combining the effects of the linear and squared terms), and percent refugee contributed equally to the rise in welfare recipiency: each factor produced a 0.31 percentage point increase. The effect of the change in source country proximity was trivial, primarily because this variable was found to be very weakly related to welfare utilization in the regressions for male-headed households. Summing these effects yields a total predicted increase in immigrant welfare recipiency of 0.95 percentage points. This is remarkably close to the 0.90 percentage point increase which table 1 indicates actually occurred over the decade (after netting out the rise in native welfare recipiency which is assumed to reflect changes in economic and institutional factors that affect immigrants and natives equally).

A similar pattern emerges for female-headed households, except that in this case the increased proximity of immigrant source countries also contributes to the rise in welfare recipiency. The total predicted increase of just over two percentage points accounts for three-quarters of the actual increase relative to natives. By themselves, changes in a few source country characteristics can explain all of the increase in welfare recipiency that occurred between 1970 and 1980 among male-headed immigrant households, and most of the

[23]The predicted changes are based on the unadjusted rate regressions so that the results can be directly compared with the actual change in immigrant welfare recipiency which occurred over the decade. Nonetheless, predictions based on the adjusted rate regressions are similar.

increase that occurred among female-headed immigrant households. Note that this success in explaining the pattern of immigrant welfare utilization over time has been achieved with predictions based on estimates from cross-section data.

6. Conclusion

This paper has presented a theoretical and empirical analysis of differences in welfare recipiency among the national origin groups that make up the immigrant population in the United States. The theoretical model is based on the hypothesis that potential migrants consider all economic benefits – including those associated with a welfare system in the destination country – when making their immigration decision. This framework suggests that characteristics of the country of origin should influence the propensity of U.S. immigrants to receive welfare.

The model is implemented empirically using detailed data on immigrant welfare utilization by country of origin from the 1980 U.S. Census. We first document the wide variation in welfare recipiency rates across immigrant source countries, and show that most of this variation remains even after controlling for observable socioeconomic characteristics. We then estimate the effects of source country characteristics on immigrant welfare recipiency in order to test implications of the theoretical model. A small number of source country characteristics explain over two-thirds of the variance of welfare recipiency rates across national origin groups, and the pattern of source country effects confirms some of the theoretical implications. Finally, we use the estimates to demonstrate that changes in the average source country characteristics of the foreign-born population between 1970 and 1980 can account for most of the increase in immigrant welfare recipiency that occurred over the decade.

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