

THE POVERTY REDUCTION SUCCESS OF PUBLIC TRANSFERS FOR WORKING AGE IMMIGRANTS AND REFUGEES IN THE UNITED STATES

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Although there has been some research on the impacts of federal tax and transfer policies on poverty rates for immigrants, virtually no previous work investigates the most disadvantaged group of immigrants: refugees. We estimate probit models for three standard measures of poverty. We find that while immigrants and refugees in particular had much higher poverty rates in the early 1990s, the strong economic growth of the 1990s led to a convergence of those poverty rates by 2000. Our analysis demonstrates that the improvement was largely because of economic conditions and that welfare reform policies appear to have little differential impact on immigrants or refugees. We also find that refugees show a markedly greater response to local labor market conditions than other immigrants or native born. (JEL H3, I3, J1)

I. INTRODUCTION

The welfare reform bill of 1996 spurred significant research on immigrant use of public assistance in the United States (Borjas 2002; Lofstrom and Bean 2002; Haider et al. 2004). Provisions in the bill that limited the access of certain immigrants to federal benefits drove researchers to study the impact of the reform on immigrant participation. We extend this work by focusing on the consequences the reforms had on the economic welfare of immigrants relative to natives. Since the reforms exempt refugees from the participation restrictions, we isolate the reform impacts on refugees relative to both other immigrants and natives.

The foreign born comprise an increasing share of the U.S. population and account for more than 40% of the net population growth with roughly 10% of all new immigrants arriving with refugee status (U.S. Census Bureau and INS World Book). Refugees are admitted to the

United States through an entirely different process than economic immigrants. Although most immigrants must demonstrate an ability to support themselves or have a permanent resident or sponsor who will provide support, refugees are largely exempt from this requirement. On average, refugees arrive with less preparation, weaker English language skills, weaker informal networks, and few if any assets. Since the Personal Responsibility Work Opportunity Reconciliation Act (PRWORA) of 1996, immigrants in general have had diminished access to the welfare system. This paper investigates the impact of recent policy changes on poverty measures for families headed by working age immigrants and refugees relative to the native born. This sample is of particular interest to policy makers because it includes a higher proportion of families who have children and who use programs affected by PRWORA.

Although a number of authors examine program participation rates of immigrants, little

*The authors thank the University of Kentucky Center for Poverty Research, the USDA small grants program, and the Institute for Research on Poverty at the University of Wisconsin for financial support. We thank Lindsay T. Allen for research assistance. We thank Jim Ziliak and Aaron Yelowitz for comments on an earlier draft.

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ABBREVIATIONS

AFDC: Aid to Families with Dependent Children
CPS: Current Population Survey
EITC: Earned Income Tax Credit
LPR: Legal Permanent Resident
PRWORA: Personal Responsibility Work Opportunity Reconciliation Act
TANF: Temporary Assistance to Needy Families

work to date has examined the impact of such programs on actual poverty rates. The official poverty rate provides an important gauge of the degree of economic hardship facing families and individuals. From 1993 to 2001, the years surrounding the 1996 reforms, the official poverty rate in the United States decreased from 15.1% to 12.5%. Over the same time period, immigrant poverty fell from 23.0% to 17.2%. Poverty rates among new immigrants, and particularly among new refugee immigrants, are well above the national average. In the year 2000, 15.1% of refugees were poor compared with 13% for non-refugee immigrants and 10.5% for natives (Author's calculations, Current Population Survey [CPS]).

The economic status of refugees has largely been overlooked in the economics literature. Several authors have recognized that refugees have significantly higher program participation than non-refugee immigrants (Borjas and Hilton 1996; Fix and Passel 1999). Efforts to study refugees, however, have been limited because measures of refugee status are typically not available in large cross-sectional datasets. Although ad hoc rules have been used by Borjas (2001) and Passel and Clark (1998), such rules lead to substantial misclassification. We address this problem through a two-sample approach, similar to two-sample instrumental variables, which allows us to statistically identify refugee poverty separate from that of other immigrants.

Given the differential treatment of refugees under PRWORA, and the different circumstances under which most refugees emigrate, it is vital that policy makers understand the impact of policy on these increasingly important subpopulations. We find that although immigrants and refugees in particular had much higher poverty rates in the early 1990s, the strong economic growth throughout the decade led to a convergence of those poverty rates by 2000. All three groups (native born, refugees, and immigrants) saw declining poverty rates throughout the 1990s. Among those of working age, we find evidence that welfare reform had different impacts on non-refugee immigrants, refugees, and the native born. In many ways, refugees' experience with welfare reform may be more like natives than immigrants.

This paper continues with a brief description of antipoverty programs and the changes in certain of these programs because of PRWORA. The following section describes data and methodology. Section IV presents estimates of

statistical models of poverty that further isolate the effects of the economy from the effects of welfare reform.

II. PROGRAMS TO ALLEVIATE POVERTY

The growth in federal antipoverty programs is well documented (Scholz and Levine 2000; Moffitt 2002), and concern about the growth of programs and dependency on such programs was in large part responsible for the 1996 reforms. Antipoverty programs are typically categorized as either means-tested or social insurance programs. Means-tested programs are financed with general revenues and target cash or in-kind benefits to qualifying families who meet specified income and asset eligibility tests. The means-tested cash transfer programs include Temporary Assistance to Needy Families (TANF), Supplemental Security Income, and the Earned Income Tax Credit (EITC), and have the stated goal of increasing the consumption possibilities for low-income households.

We also look at the poverty reduction impact of three large in-kind programs, food stamps, free and reduced school lunches, and housing assistance. Although in-kind benefits do not count in official measures of poverty, the benefits paid by such programs are substantial. For example, the Food Stamp Program assisted more than 20 million people in 2002 at an annual cost of nearly \$22 billion. Housing assistance vouchers go to comparatively fewer households, yet benefits per household are quite large, averaging \$2,200 per year per household. Clearly such benefits play a large role in lifting the standard of living for recipients.

In contrast, social insurance programs are funded by workers and employers through dedicated trust funds with benefits available to all who meet the program requirements. We focus our analysis on the impact of social security (Old-Age and Survivors Insurance), disability insurance, unemployment insurance, and worker's compensation, all of which fall under the heading of social insurance programs. In 2000, the U.S. federal government spent roughly \$474 billion on the above programs combined (U.S. House of Representatives 2004).

Health care programs such as Medicare and Medicaid are notably missing from our list of antipoverty programs. Medicare, a social insurance type health insurance program targeted at elderly people, and Medicaid, a means-tested

health insurance program for the poor, grew significantly in both recipients and especially in cost in the 1990s. Although their value to the poor is significant, valuing these programs poses issues that we choose not to address. We similarly omit employer-provided health insurance. Our analysis places particular emphasis on the pre- and post-1996 periods. The PRWORA of 1996 abolished Aid to Families with Dependent Children (AFDC) and required each state to create a cash assistance program called TANF. Recipients receive primarily cash benefits that are taxed away as income increases. Although AFDC was an entitlement program, TANF was to be funded by fixed block grants from the federal government to subsidize state programs, thereby rescinding the guarantee of federal support for all qualifying recipients. A federal limit on lifetime participation is 60 months, and enforceable work requirements place real pressure on recipients to leave welfare through work or other means and on the states to encourage work while minimizing the welfare rolls. Between 1996 and 1999, the number of families on TANF decreased by more than 35%.

The PRWORA of 1996 not only changed the access to federal programs to natives by establishing time limits and work requirements, but also limited access to immigrants. Congressional concern over high and rising participation rates among the foreign born led to drastic changes in program eligibility (Fix and Tumlin 1997). Immigrants who arrived in the United States before 1996 but were not yet naturalized became "unqualified" for federal benefits. Immigrants arriving after August 1996 were also labeled unqualified. In contrast, refugees were largely spared by the PRWORA. Under the new law, refugees were given "qualified" status. Therefore, refugees, regardless of their arrival date, qualify for food stamps, TANF, and Medicaid. Refugees were given a 5-year exemption from Food Stamps and TANF rules, and a 7-year exemption from Medicaid rules that deny these benefits to other legal immigrants.

Mounting research documents the rapid decline in program participation among immigrants and refugees following PRWORA. Although economic expansion led to falling participation rates for all recipients, immigrant participation, and that of refugees in particular, fell at a faster rate (Fix and Passel 2002; Lofstrom and Bean 2003). The decline in participation among eligible immigrants has been labeled the chilling effect (Borjas 2002). Haider et al.

(2004) find that similar declines in immigrant use of federal programs after PRWORA are somewhat mitigated when the declining unemployment rates of the period are considered. If not fully replaced by private income or substitution by federal or state tax and transfer policies, such declines in participation would result in increased economic hardship among the foreign born.

Interest in the earnings and assimilation of immigrants has a long history in economics and policy analysis (Borjas 1987; Kossoudji 1989; Borjas 1990; Aguilar and Gustafsson 1991; Borjas 1994; Reitz 1998; Galster, Metzger, and Waite 1999; Card, DiNardo, and Estes 2000; Butcher and DiNardo 2002; Longva and Raaum 2002). However, only limited research on the poverty rates for immigrants exists (Lee 1994; Ley and Smith 1997; Clark 1998), and no investigation into poverty among refugees specifically. Most research on poverty among immigrants has focused on welfare program usage relative to the native born (Borjas and Trejo 1991; Trejo 1992; Borjas and Hilton 1996; Bean et al. 1997; Davies 1997; Borjas 1999; Hansen and Lofstrom 2000; Dodson 2001; Kaestner and Kaushal 2001; Borjas 2002). Previous research (Bollinger and Hagstrom 2008) has established that refugees have a significantly different experience with program usage than other immigrants. Furthermore, they find that inference about the state of non-refugee immigrants is biased when refugees are not treated separately.

III. DATA AND METHODOLOGY

The March Supplements of the CPS for 1994 through 2001 provide the primary data for this analysis. These data are used by the federal government to assess poverty rates and provide a long and well-accepted standard. The Annual Demographic Supplement contains information about family income for the previous calendar year (1993 through 2000). We begin the analysis with 1994, as this is the first year in which CPS contains detailed information on immigration year and country of origin. We exclude from our analysis households that are headed by a minor (under age 18), are non-family households (single individual households are included), or are households in which the head of the household is in the military. Given our focus on the benefits of federal policy, we exclude families whose head of household has less than a high school education and their country of origin

was Mexico or Central America. Although not perfect, this removes many potential illegal immigrants from the sample. As a robustness check, we have estimated models including these households, and we find that although poverty rates are somewhat higher, our general qualitative conclusions are supported. Similarly, we have estimated models excluding all households whose country of origin was Mexico or Central America and our general conclusions are still supported.

Basic descriptive statistics of the sample are provided in Tables 1 and 2. Table 1 provides the means of all variables for all years used in the analysis. It also provides means by immigration status (see discussion below for refugee methodology). The demographic characteristics of heads of households differ across native born, non-refugee immigrants, and refugee immigrants in two important ways: racial make up and education. First, refugees are much less likely to be black (of African Origin) than either native born or other immigrants. Both non-refugee immigrants and refugees are more likely to be of Hispanic origin (in spite of removing some Hispanics) than native born. It is difficult to classify immigrants as less well educated. It appears that there are important differences in the extremes. Both refugees and other immigrants are more likely than native born to have only an elementary school education. Nearly 12% of refugees have only an elementary school education, whereas less than 3% of native born are thus categorized. In contrast, around 33% of native born have a high school degree, but this is not markedly different than the 30% rate for non-refugee immigrants and only slightly higher than the 29% rate for refugees. Combining the highest levels of education (college degree, master's degree, and terminal degree), refugees and non-refugee immigrants both have slightly higher rates than native born. Thus, there seems to be a bimodal distribution of immigrants: the well educated and the very poorly educated. Table 2 presents the means for the sample of households whose private pre-tax and pre-transfer income is below the poverty line (henceforth, the "private income poor"; a more detailed explanation is given below). The private income poor are slightly younger, have more children, are more likely to have less than a high school education, and are more likely to be foreign born.

A. Measures of Immigrant and Refugee Status

Beginning in 1994, the CPS asks detailed information about country of origin, year of immigration, and citizenship status of all respondents. The CPS provides five categories of immigrant status: Native, born in the United States; Native, born in Puerto Rico or United States outlying area; Native, born abroad of American parent or parents; Foreign born, U.S. citizen by naturalization; and Foreign born, not a citizen of the United States. We classify the last two categories (Foreign born) as immigrants and classify the first three categories as native born. The immigrant category contains both typical immigrants (hereafter, non-refugee immigrants) and refugees. Although the CPS contains detailed information on country of origin and year of immigration, it does not provide an indicator of refugee status.

Ideally, we are interested in averages (or proportions) broken up by immigrant status (native born, non-refugee immigrant, and refugee) or models of the form:

$$(1) \quad E[Y|X, I, R] = F(X\beta + I\delta + R\gamma),$$

where Y is some measure of poverty, X is a set of demographic or other variables of interest, I is an indicator for immigrant, and R is an indicator for refugee. In our specifications, all refugees are also immigrants. The coefficient γ measures the difference between refugees and immigrants, whereas the coefficient δ measures the difference between immigrants and native born. This specification is quite general. It allows for simple mean comparisons between groups where the function $F()$ would then be simply the identity function and no X variables would enter. This specification also allows estimation of more complicated models such as probit models of poverty status, where the function $F()$ is the standard normal cumulative distribution function, and we can include many covariates in the X vector. Using properties of conditional expectation, the above equation can be written as follows:

$$(2) \quad E[Y|X, I, R] = F(X\beta + I\delta + \gamma) \times \Pr(R = 1) \\ + F(X\beta + I\delta) \times \Pr(R = 0).$$

This specification no longer involves the unmeasured indicator for refugee status, R , directly, but only requires the probability that R is 1. In a linear model, this specification reduces to including the predicted refugee probability

TABLE 1
Means for Full Sample, 1994–2001

	All	Native	Immigrant	Refugees
Head of household				
Age	42.340	42.459	40.876	43.649
Female	0.380	0.381	0.374	0.351
Black	0.109	0.111	0.110	0.026
Native American	0.012	0.013	0.006	0.000
Elementary	0.036	0.030	0.086	0.120
Some high school	0.074	0.076	0.054	0.079
High school—no diploma	0.011	0.010	0.017	0.018
Some college	0.197	0.202	0.157	0.138
Associates degree	0.084	0.086	0.062	0.073
College graduate	0.177	0.175	0.193	0.171
Masters degree	0.064	0.063	0.075	0.072
Terminal degree	0.032	0.029	0.055	0.044
Married—spouse present	0.602	0.598	0.636	0.650
Veteran	0.161	0.175	0.034	0.025
Disabled	0.092	0.095	0.054	0.083
Spouse (when present)				
Age	41.988	42.181	40.011	42.453
Female	0.775	0.777	0.755	0.770
Black	0.060	0.060	0.075	0.020
Native American	0.010	0.011	0.006	0.002
Elementary	0.032	0.023	0.109	0.138
Some high school	0.064	0.063	0.075	0.072
High school—no diploma	0.009	0.008	0.019	0.013
Some college	0.182	0.188	0.136	0.114
Associates degree	0.090	0.093	0.067	0.072
College graduate	0.181	0.180	0.193	0.175
Masters degree	0.059	0.058	0.060	0.069
Terminal degree	0.022	0.021	0.038	0.034
Disabled	0.057	0.058	0.040	0.070
Household variables				
Multifamily household	0.064	0.061	0.093	0.077
Number of kids under 5	0.251	0.244	0.326	0.247
Number of kids 5–18	0.706	0.695	0.805	0.764
Counted household income	51774	52033	49852	47102
Local unemployment rate	5.017	4.926	5.850	5.759
Observations	293,075	263,656	25,189	4,230

and is statistically similar to instrumental variables. In non-linear models, the probability is built into the likelihood function and estimation is via Pseudo-Maximum Likelihood (Gourieroux, Monfort, and Trognon 1984). Our approach is similar to that of Cortes (2004) but differs in two respects. First, Cortes (2004) only uses information on year of immigration and country of origin. We include gender (there are substantial differences in refugee status by gender) and age. Most importantly, however, Cortes (2004), like many authors, uses an indicator for all immigrants from a refugee sending country. Hence, some economic immigrants are classified as refugees. As Bollinger and

Hagstrom (2008) demonstrate, this leads to attenuation bias because of measurement error. The procedure used by Bollinger and Hagstrom (2008), and here, leads to consistent estimates.

The *Immigrants Admitted to the United States* provides data for the years 1972 through 2000 (United States Department of Justice, Immigration and Naturalization, 1972–2000). The data constitute a census of all individuals applying for legal permanent resident (LPR) status during that particular year. In addition to measures of immigration year (when they first entered the United States) and country of origin, these data contain a limited number of demographic variables as well as information on

TABLE 2
Means for Private Income Poor Subsample, 1994–2001

	Full	Native	Immigrant	Refugee
Head of household				
Age	41.50148	41.67859	39.32061	44.78465
Female	0.597605	0.607284	0.537452	0.485543
Black	0.213637	0.226903	0.1383	0.024925
Native American	0.025769	0.028823	0.004846	0
Elementary	0.106508	0.095856	0.168585	0.250249
Some high school	0.188634	0.200392	0.100141	0.128614
High school—no diploma	0.021364	0.021181	0.022209	0.024925
Some college	0.177114	0.181617	0.154654	0.097707
Associates degree	0.051724	0.052221	0.049263	0.042871
College graduate	0.064091	0.057221	0.114274	0.10668
Masters degree	0.015614	0.012808	0.036342	0.031904
Terminal degree	0.006204	0.004599	0.017161	0.01994
Married—spouse present	0.295307	0.274878	0.429437	0.496511
Veteran	0.102352	0.114985	0.013123	0.008973
Disabled	0.318119	0.339199	0.152231	0.246261
Spouse (when present)				
Age	42.93095	43.73314	38.28162	44.01606
Female	0.735486	0.734598	0.737659	0.746988
Black	0.094194	0.100738	0.075694	0.02008
Native American	0.024091	0.028402	0.006112	0
Elementary	0.135304	0.110005	0.231782	0.315261
Some high school	0.195672	0.210314	0.131641	0.126506
High school—no diploma	0.018769	0.017162	0.029619	0.01004
Some college	0.1276	0.132315	0.117066	0.062249
Associates degree	0.044681	0.04565	0.037142	0.054217
College graduate	0.057707	0.046422	0.110014	0.098394
Masters degree	0.011555	0.008838	0.023037	0.026104
Terminal degree	0.006303	0.004462	0.015045	0.012048
Disabled	0.198473	0.218123	0.092149	0.192771
Household variables				
Multifamily household	0.103923	0.105361	0.096305	0.080758
Number of kids under 5	0.355862	0.347666	0.43933	0.29013
Number of kids 5–18	0.85581	0.833597	1.003028	1.067797
Counted household income	10,276.96	10,217.1	10,671.96	10,856.58
Local unemployment rate	5.40679	5.272059	6.358126	6.403988
Observations	48,353	42,397	4,953	1,003

refugee and asylee status. Because these data are a census, we can use them to calculate (as opposed to estimate) probabilities of being a refugee conditional on year of entry, gender, country of origin, and age. Because many immigrants and refugees do not apply for LPR status until some years after their initial entry into the United States, these data include individuals whose initial year of entry predates 1972. However, we do not have LPR data on immigrants who enter after 2000. For this reason, we restrict our primary analysis to the years 1993 through 2000 (using the March CPS cross-sectional data for years 1994 through 2001).

The data on legally admitted immigrants allow us to calculate the marginal proportion of refugees for each country by entry year and gender. Additionally, for country/entry year/gender groups with sufficient observations and variation in both refugee status and age at entry, we calculate probit models with age and age squared as explanatory variables. Hence, all country/entry year/gender groups have a marginal proportion. In addition, many (but not all) country time gender groups also have an intercept and slope coefficients from a probit model. It is important to note that these probit models were estimated separately on each country, year, and gender group, resulting in 1,788 separate models. This

effectively allows full interactions for age and age squared, gender, year of immigration, and country of origin.

After obtaining the marginal probabilities of being a refugee, the resulting probabilities and coefficients were matched to the CPS data based on gender, year of entry, and country of origin. For simple averages based on immigration status, the probabilities are used as weights. In linear regression models, the probabilities are instruments for the true variable *Refugee* and can simply be used as regressors. For non-linear models (such as probit), the probabilities are used to construct a likelihood function.

B. Poverty Measures

We base our analysis on several measures of poverty and antipoverty policy effectiveness. A family is classified as being poor when annual family income falls below the official family size adjusted poverty threshold (Y^{Pov}). We use the same thresholds throughout our analysis but focus on three separate measures of income: counted, private, and net income. Counted income, the income counted in official poverty statistics, includes all employment earnings, self-employment income, interest and realized returns on assets, and cash income from social insurance and means-tested cash transfers. Therefore, $\text{Poor}^{\text{Official}} = 1$ if $Y^{\text{Count}} < Y^{\text{Pov}}$, where Y^{Count} is a family's counted income.

Counted income does not include in-kind transfers such as food stamps or Medicaid, nor is it adjusted for taxes paid. In effect, it is a combination of private income and an incomplete sum of government transfers.

Following Ziliak (2003), we use two additional measures of income to measure the impact of policy on poverty status. Private income (Y^{Private}) includes all sources of earned income (wage and salary, self employment, and farm), investment income (interest, dividends, capital gains, and rents), and private transfers (alimony, child support, and private pensions). A family is said to be private income poor when their private income is less than the official poverty threshold. Therefore, $\text{Poor}^{\text{Private}} = 1$ if $Y^{\text{Private}} < Y^{\text{Pov}}$. The resulting private poverty rate, the proportion of families whose private income is below the poverty threshold, measures the ability of families to meet their basic needs through their private resources.

The second additional measure of income is total income net of all tax and transfer policy (Y^{Net}). Net income includes private income,

income from government transfers (welfare, unemployment, and social security), the value of in-kind transfers (food stamps, housing subsidies, and school lunch), and the impact of taxes (both the tax burden and an EITC credit eligibility). By definition, net income is the sum of private income and what we call policy income (Y^{Policy}), the sum of all tax and transfers. We say that a family is net income poor if its net income is less than the official poverty threshold for a family of that size. In notation, $\text{Poor}^{\text{Net}} = 1$ if $Y^{\text{Private}} + Y^{\text{Policy}} = Y^{\text{Net}} < Y^{\text{Pov}}$.

The net poverty rate, the proportion of families whose net income is below the poverty threshold, measures the ability of families to meet their basic needs with both private and public resources. Because it includes all policy income, the net poverty rate for families whose private income represents the proportion of families who were not raised above the poverty level by the sum of government policies.

C. Undocumented Immigrants

The issue of undocumented immigrants is difficult to address. Ideally, we would handle the problem using the same methodology as for refugees. Unfortunately, there is not an appropriate family- or individual-level dataset which contains a representative sample of all immigrants. Hence, the probability that an immigrant, drawn randomly, is undocumented cannot be obtained.

In the results presented here, we remove families whose head of household and spouse are from Central America or Mexico and have less than a high school education. Results of Ibarra and Lubotsky (2005) from Mexican Census data indicate that many undocumented immigrants meet these criteria, whereas legal immigrants tend to be better educated. Additionally, we have estimated our results using the full sample of all immigrants and a sample where all immigrants from Central America and Mexico have been discarded. The results reported here are robust to these sample differences. Other results are available from the authors by request.

IV. ESTIMATION OF MODELS OF POVERTY AND NEEDS

The data reveal three major stylized facts. First, for all three groups (native born, immigrants, and refugees) official and net poverty declined through the 1990s. Second, refugees were more likely to be poor before the late

TABLE 3
Means of Outcome Variables by Immigrant Status and Pre- and Post-welfare Reform, Full Sample

	All		Native		Immigrant		Refugee	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Counted income (Y^{Count})	45,279.75 (38,664.43)	55,979.99 (54,824.17)	45,521.68 (38,437.87)	56,305.45 (54,585.09)	43,523.93 (41,400.87)	53,490.08 (57,028.55)	39,335.13 (36,274.50)	51,531.03 (55,016.94)
Net income (Y^{Net})	36,594.11 (27,672.84)	45,032.16 (38,616.26)	36,717.88 (27,421.68)	45,195.72 (38,375.45)	35,749.10 (30,340.83)	43,759.81 (40,625)	33,234.13 (27,657.29)	42,921.53 (40,339.27)
Private income (Y^{Net})	42,892.14 (39,117.56)	53,581.50 (55,274.15)	43,150.54 (38,886.98)	53,882.76 (55,053)	41,080.78 (41,798.05)	51,371.68 (57,298.72)	36,159.85 (37,253.44)	48,899.82 (55,586.65)
Policy income (Y^{Policy})	-6298.03 (16,801.95)	-8549.34 (20,761.67)	-6432.66 (16,718.79)	-8687.05 (20,717.61)	-5331.68 (17,782.89)	-7611.87 (21,382.59)	-2925.72 (15,843.42)	-5978.28 (19,262.00)
Poor								
Official	0.129 (0.335)	0.114 (0.318)	0.125 (0.330)	0.110 (0.313)	0.166 (0.372)	0.147 (0.354)	0.221 (0.415)	0.155 (0.362)
Net	0.120 (0.325)	0.101 (0.301)	0.116 (0.320)	0.098 (0.297)	0.156 (0.363)	0.129 (0.335)	0.201 (0.401)	0.135 (0.341)
Private	0.177 (0.382)	0.157 (0.364)	0.172 (0.377)	0.153 (0.360)	0.217 (0.412)	0.185 (0.388)	0.287 (0.453)	0.209 (0.406)
Removed								
Official	0.048 (0.214)	0.043 (0.204)	0.047 (0.213)	0.044 (0.204)	0.050 (0.219)	0.038 (0.191)	0.066 (0.249)	0.054 (0.226)
Net	0.063 (0.243)	0.059 (0.236)	0.062 (0.241)	0.059 (0.235)	0.070 (0.256)	0.060 (0.238)	0.094 (0.292)	0.079 (0.270)
Observations	115,187	177,888	104,458	159,198	9,193	15,996	1,536	2,694

Note: Authors' calculations using CPS 1994–2001.

1990s. However, poverty rates for the two immigrant groups converged during the study period, although immigrants in general are still more likely to be poor than the native born. Finally, among those defined as private income poor, refugees had the largest private income deficits, but the refugee deficit was trending toward that of other immigrants and natives in the later 1990s. Therefore, although the private income to poverty threshold ratio was lowest for refugees in the pre-reform era, by 1998 the private income to poverty ratio was equal to that of natives from 1998 to 2001. But to what degree was decreasing poverty and the increase in private income a policy push and to what degree was it driven by broader economic conditions?

First, we endeavor to separate out the impacts of economic conditions on poverty rates in general. This will allow us to isolate any impact that welfare reform may have had. Second, we will attempt to determine whether the differentials in poverty rates can be explained by observable demographic differences between the groups. In doing so, we separate immigrant effects from differences in human capital, location, and demographic differences, which may affect families' ability to respond to changing economic and policy environments. Finally, we will evaluate whether changes in welfare programs have significantly impacted the role those programs play in filling the poverty gap across these three groups. Concern also arises that differences across states may lead to different poverty rates. If immigrants or refugees are disproportionately in states with comparatively high (or low) poverty rates, this may bias aggregate estimates. For this reason, we include state level fixed effects in our specifications.

As described above, we estimate the following probit model with maximum likelihood:

$$(3) \quad E[Y|X, I, R] = F(X\beta + I\delta + \gamma) * \Pr(R = 1) \\ + F(X\beta + I\delta) * \Pr(R = 0) + \varepsilon,$$

where I represents immigrants, R represents refugees, and X is a vector of characteristics. One key X variable in our model is a *Post Reform* dummy variable that takes on the value of 1 for the years after 1996. We also include a *Waiver* indicator for states operating under Federal waivers before the reform period (Ziliak, Gundersen, and Figlio 2003). In addition to standard demographic variables, we include a quadratic time trend, state indicators (state

fixed effects), and local unemployment rates as proxies for local labor market demand.

Tables 4–6 examine private income poverty, official poverty, and net poverty, respectively, for our full sample of working age households. Private income is likely to be cyclical and be largely unaffected by welfare reform. Indeed, one might expect welfare reform to have a negative impact on poverty measures using private income if the reform induced households to secure higher private income.

The first column of results in Table 4 presents coefficients from a probit model for the household being in poverty using the private poverty measure. Explanatory variables include quadratic time trends, indicators for refugee and immigrant status, and interactions between immigrant status and the post reform time period. State level dummy variables were included as well, and their coefficients are available upon request. The *Post Reform* coefficient is positive and statistically significant. However, it is comparatively small, indicating only a 0.5% higher private income poverty rate. The coefficient becomes statistically insignificant when we account for changing labor market conditions and demographics in the second and third columns. We also note that in the first column, the coefficient on the time trend is negative although small. In the second column, the time trend is positive and the quadratic term enters negatively. However, in the full and preferred specifications, the time coefficients are insignificant: the combination of demographic and labor market controls completely explain the time trends and any post reform effect on private income poverty for native born.

The t results in this table also demonstrate the private income poverty rate differentials for immigrants and refugees. Immigrants have a higher poverty rate than natives in all three models. The coefficient on refugee measures the differential between refugees and other immigrant. Refugees have a higher private poverty rate than other immigrants. They are much poorer than native born. Using 1994 for a comparison (before welfare reform), the model implies that immigrants have a poverty rate that is 4.4% higher than native born, whereas refugees have a poverty rate that is 12.2% higher than native born and 7.7% higher than other immigrants.

The coefficients for the variables that capture the interaction between immigrant or refugee status and the post reform era are negative. The coefficient on the interaction with immigrants is

TABLE 4
 Probit Estimation Results for Dependent Variable Private Poor Using Full Sample

	Basic Model	Adding Labor Market	Adding Full Demographics ^a	Adding Pre-Reform Post Effect
Time trend	-0.0253*** (0.00793)	0.0261*** (0.00810)	0.002 (0.00957)	0.003 (0.00958)
Time trend squared	-0.000143 (0.000732)	-0.00282*** (0.000738)	-0.00102 (0.000872)	-0.00102 (0.000872)
Local unemployment		0.0608*** (0.00198)	0.0463*** (0.00234)	0.0464*** (0.00234)
Immigrant	0.160*** (0.0188)	0.175*** (0.0330)	0.410*** (0.0380)	0.424*** (0.0399)
Post reform	0.0279** (0.0131)	-0.00392 (0.0132)	0.00370 (0.0156)	0.00160 (0.0157)
Immigrant × post reform	-0.0358* (0.0206)	-0.0218 (0.0215)	-0.0107 (0.0246)	-0.0281 (0.0284)
Waiver	-0.000735 (0.00954)	-0.0125 (0.00958)	-0.0188* (0.0114)	-0.0190* (0.0114)
Immigrant × waiver	-0.0384 (0.0237)	-0.0191 (0.0240)	0.106*** (0.0272)	0.0788** (0.0349)
Immigrant × waiver × post				0.0602 (0.0501)
Immigrant × local unemployment		-0.00739* (0.00410)	-0.0264*** (0.00466)	-0.0268*** (0.00468)
Refugee	0.240*** (0.0544)	-0.0242 (0.125)	-0.231 (0.161)	-0.213 (0.164)
Refugee × post reform	-0.192*** (0.0739)	-0.107 (0.0814)	-0.195* (0.0998)	-0.224** (0.110)
Refugee × waiver	0.389*** (0.0871)	0.401*** (0.0887)	-0.00261 (0.108)	-0.0581 (0.133)
Refugee × waiver × post				0.178 (0.221)
Refugee × local unemployment		0.0340** (0.0160)	0.0799*** (0.0201)	0.0794*** (0.0201)
Observations	293,075	293,075	293,075	293,075

Notes: All models include state fixed effects and quadratic time trend.

^aDemographics include Head of the Household, Spouse, and Household variables of Table 2.

*** $p < .01$; ** $p < .05$; * $p < .1$.

only statistically significant in the first column. The coefficient on the interaction with refugees is statistically significant in the first and third columns. This suggests that the 1996 welfare reform act may have induced some refugee households to seek additional sources of private income. This finding assumes that the business cycle impacts are fully accounted for by the time variables included in the specification.

The second column of results in Table 4 examines the effects of the business cycle more closely by including the local unemployment rate. When a metropolitan statistical area (MSA) is identified for the household, the unemployment rate for that MSA is included, and when only state is identified, the state unemployment rate is used. The large coefficient on unemployment for our working age sample

reflects their high reliance upon labor market income. The unemployment rate generally captures important aspects of the business cycle beyond what is already accounted for by the time trend variables. The coefficients in column 2 indicate that a 1% point decline in the local unemployment rate would reduce the poverty rate by 1.4% points (using 1994 as the base year, and unemployment rates of 5% and 4%).

The interactions of the unemployment rate with both immigrant and refugee status begin to tell an important story. The immigrant interaction with unemployment is negative and statistically different from that of natives, whereas the refugee coefficient for this interaction is positive, significant, and greater in magnitude than the immigrant-unemployment coefficient. Hence, compared with the native born

TABLE 5
 Probit Estimation Results for Dependent Variable Officially Poor (Counted Income less than Poverty Threshold) Using Full Sample

	Basic Model	Adding Labor Market	Adding Full Demographics ^a	Adding Pre-Reform Post Effect
Time trend	-0.0176** (0.00861)	0.0336*** (0.00878)	0.0150 (0.0103)	0.0157 (0.0103)
Time trend squared	-0.000840 (0.000796)	-0.00348*** (0.000802)	-0.00184** (0.000936)	-0.00184** (0.000936)
Local unemployment		0.0600*** (0.00211)	0.0448*** (0.00247)	0.0449*** (0.00247)
Immigrant	0.182*** (0.0200)	0.150*** (0.0349)	0.337*** (0.0399)	0.351*** (0.0418)
Post reform	0.0215 (0.0142)	-0.0125 (0.0143)	-0.00662 (0.0167)	-0.00919 (0.0168)
Immigrant × post reform	-0.00595 (0.0219)	0.0194 (0.0229)	0.0307 (0.0259)	0.0126 (0.0299)
Waiver	0.00298 (0.0104)	-0.00837 (0.0105)	-0.00908 (0.0123)	-0.00927 (0.0123)
Immigrant × waiver	-0.0449* (0.0253)	-0.0311 (0.0258)	0.0888*** (0.0289)	0.0602 (0.0372)
Immigrant × waiver × post				0.0630 (0.0530)
Immigrant × local unemployment		-0.000375 (0.00429)	-0.0176*** (0.00484)	-0.0179*** (0.00485)
Refugee	0.217*** (0.0572)	-0.132 (0.134)	-0.438** (0.170)	-0.406** (0.173)
Refugee × post reform	-0.225*** (0.0784)	-0.116 (0.0866)	-0.163 (0.103)	-0.220* (0.113)
Refugee × waiver	0.415*** (0.0907)	0.416*** (0.0930)	-0.0501 (0.111)	-0.156 (0.137)
Refugee × waiver × post				0.329 (0.225)
Refugee × local unemployment		0.0457*** (0.0170)	0.112*** (0.0211)	0.112*** (0.0211)
Observations	293,075	293,075	293,075	293,075

Notes: Standard errors in parentheses. All models include state fixed effects and quadratic time trend.

^aDemographics include the Head of Household, Spouse, and Household variables from Table 2.

*** $p < 0.01$; ** $p < 0.05$; * $p < .1$.

(the immigrant and refugee coefficients must be added), refugees are much more sensitive to changes in the unemployment rate. Non-refugee immigrant poverty is less responsive than native poverty to changing unemployment rates. Indeed, a 1% point decline in unemployment rates results in a 2.6% point decline in poverty for refugees. The importance of the unemployment rate effect is highlighted by the change in relative poverty rates between native born and refugees when the unemployment rate changes. Again, using 1994 as a base year, at a 5% unemployment rate, refugees have a 7.6% higher private poverty rate than native born. At a 4% unemployment rate, that difference falls to 6.4%.

The third column presents estimates of the same coefficients when a full set of demographic

control variables is included (age, education dummy variables, race, and gender of both the head of the household and the spouse when present, it also includes measures of family size and number of children; full results are available from the authors). As with the second column, the unemployment rate is positive and highly significant. We also note that the coefficient on the interaction between immigrant and unemployment continues to be negative and significant, whereas the coefficient on the interaction between refugee and unemployment is large, positive, and significant. The coefficient on immigrant demonstrates that even after controlling for the business cycle and demographic composition, immigrants in general are more likely to be poor. Apart from their differential response to unemployment

TABLE 6
 Probit Estimation Results for Dependent Variable Net Poverty, Full Sample

	Basic Model	Adding Labor Market	Adding Full Demographics ^a	Adding Pre-Reform Post Effect
Time trend	-0.0553*** (0.00879)	-0.00798 (0.00897)	-0.0400*** (0.0102)	-0.0397*** (0.0102)
Time trend squared	0.00266*** (0.000814)	0.000207 (0.000820)	0.00302*** (0.000935)	0.00302*** (0.000935)
Local unemployment		0.0559*** (0.00216)	0.0406*** (0.00249)	0.0407*** (0.00249)
Immigrant	0.195*** (0.0203)	0.195*** (0.0357)	0.354*** (0.0401)	0.361*** (0.0419)
Post reform	0.0336** (0.0146)	0.00329 (0.0147)	0.0130 (0.0168)	0.0117 (0.0169)
Immigrant × post reform	-0.0309 (0.0224)	-0.0146 (0.0234)	-0.00429 (0.0260)	-0.0131 (0.0298)
Waiver	0.00365 (0.0107)	-0.00721 (0.0107)	-0.00683 (0.0123)	-0.00693 (0.0123)
Immigrant × waiver	-0.0712*** (0.0261)	-0.0547** (0.0265)	0.0500* (0.0291)	0.0361 (0.0369)
Immigrant × waiver × post				0.0318 (0.0538)
Immigrant × local unemployment		-0.00461 (0.00440)	-0.0180*** (0.00491)	-0.0181*** (0.00492)
Refugee	0.189*** (0.0584)	-0.0785 (0.135)	-0.223 (0.158)	-0.203 (0.161)
Refugee × post reform	-0.185** (0.0805)	-0.101 (0.0883)	-0.153 (0.101)	-0.184* (0.111)
Refugee × waiver	0.344*** (0.0936)	0.346*** (0.0955)	-0.0700 (0.112)	-0.124 (0.136)
Refugee × waiver × post				0.174 (0.229)
Refugee × local unemployment		0.0346** (0.0171)	0.0694*** (0.0199)	0.0688*** (0.0199)
Observations	48,353	48,353	48,353	48,353

Notes: Standard errors in parentheses. All models include state fixed effects and quadratic time trend.

^aDemographics include the Head of Household, Spouse, and Household variables from Table 2.

*** $p < .01$; ** $p < .05$; * $p < .1$.

(i.e., controlling for business cycle effects), the refugee coefficient indicates no statistical difference between refugees and other immigrants in the pre-reform era. As the business cycle differentially affects refugees compared with immigrants and native born, private poverty rates will differ. The implication here is that it is this difference in response to the business cycle which drives the changing difference in poverty rates.

As one might expect, welfare reform appears to have little impact on poverty rates based on private sources of income. The coefficients on *Post Reform* are small, not significant, and vary in sign. The interaction between post reform and immigrants is negative and not significant, but the *Refugee × Post Reform* coefficient is negative and weakly statistically significant, suggesting that only refugees may have seen private income poverty reductions during this period.

It is possible that this decrease represents a behavioral response to welfare reform. The other possibility is that we have not fully controlled for differences in response to the economic conditions of the period. Clearly, as one would expect, the policy clearly did not result in an increase in private poor poverty for refugees or any other group. It should be noted that the coefficient is only measured imprecisely and only significant at the 10% level.

The coefficient on waivers has a pattern similar to that of the post reform era. Some states obtained Federal waivers and instituted programs, similar to those adopted after reform, before the welfare reform (Borjas 2004). Like the post reform period, the impact of waivers on private poverty is small, negative, and weakly significant in the third column. The interaction of waivers with the immigrant indicator becomes

positive and significant, although comparatively small, when both demographic and labor market variables are included. The Refugee waiver interaction is positive in the first two columns, but becomes nearly zero when demographics are included. It appears that waiver programs are associated with a slightly lower poverty rate among natives, a small widening of the native-immigrant poverty difference, and little impact on the difference between immigrants and refugees. It may be that waiver programs were instituted in states with these characteristics, or this may represent a behavioral response to the programs.

To test the hypothesis that welfare reforms may have different effects in states that had enacted pre-reform waiver policies, we introduce *Immigrant* \times *Waiver* \times *Post* and *Refugee* \times *Waiver* \times *Post* interactions into our model. The estimation results for these models are found in the fourth column of results in Tables 4–6. In each case, we find that immigrants and refugees in waiver states had no different response to reform policies than immigrants and refugees in non-waiver states. Moreover, the previously discussed pattern of results is stable and unaffected by the additional interaction variables. As such, we do not present marginal effects for such models below.

We turn next to the official measure of poverty, which includes private income and cash transfers but ignores taxes and in-kind transfers. The probit results are reported in Table 5. The patterns of coefficients are very similar to the results in Table 4, indicating that it is the private income sources which dominate the process. The basic model finds no impact of policy on natives or immigrants but a large negative impact of reform on the official poverty level of refugees. In some contrast to the private poverty model, the negative coefficient on the refugee post reform indicator loses its significance when the demographic variables are added.

The pattern for the waiver programs is similar to that found in the private poverty model. The waivers appear to have no relationship with native poverty rates, but may be associated with a slightly higher differential between native and all immigrants. Although the waivers are associated with higher poverty for refugees, relative to immigrants, in the first two models, inclusion of demographic characteristics appears to eliminate this differential. Again, we conclude that although waiver programs might be associated

with some immigrant poverty levels, there is no strong effect.

While welfare reform may have no strong effect, immigrant status proves to have strong and differential impacts on official poverty levels. In the fully specified model, the immigrant coefficient is large, positive, and statistically significant. At the same time, in the full model, the refugee coefficient is negative and larger in magnitude than the immigrant coefficient. Assuming no unemployment, refugees would appear to benefit so much from cash transfers as to lower their poverty levels below that of immigrants and natives. However, the refugee unemployment interaction term is positive and strong, indicating that refugee poverty rates are procyclically responsive to unemployment. Falling unemployment, rather than changes in welfare policy, explains the falling poverty rates in the post reform period.

Table 6 examines poverty after all taxes, cash, and non-cash transfers are included in the income measure. The pattern of coefficients is similar again to those in Tables 4 and 5. Again, there is little evidence that the reform period had any impact on net income poverty for any group. The coefficient on the refugee post reform is nearly the same magnitude in the third column as in the previous two tables and insignificant. The positive *Immigrant* effect on poverty remains, and the only significant way that refugee effects differ from those of other immigrants is in their response to unemployment rates. As was true for the private poor results, at a given unemployment rate, refugees have a higher probability of being net poor, but the differential between refugees and native born decreases as the unemployment rate decreases. As in our example for the private poor results above, we consider how the drop from a 5% to a 4% unemployment rate would affect the differential using the simple model in column 2. With a 5% unemployment rate, refugees have a 7% higher net poverty rate than native born; when the unemployment rate falls to 4%, the differential falls to 5.7%. As unemployment rates fell throughout the sample period, refugee poverty declined at a faster rate than that of either natives or immigrants. Comparing the results across all three tables, we note that the patterns of coefficients are remarkably similar. This suggests two important facts. First, although taxes and transfers may reduce poverty, it is a simple intercept shift, as one would expect. Second, it is the labor market and

the demographic characteristics which are the largest determinants of private income poverty.

A. Probability of Being Removed from Poverty: Removed-Official and Removed-Net

To isolate the impact of policy on the pre-policy poor, Table 7 reports the results for the subsample of the private income poor. Specifically, we estimate probit models with the dependent variables *Removed-Official* and *Removed-Net*, based on the official income and net income measures, respectively. The dependent variable takes on the value of one if the household was pre-policy income poor and was post-policy income not poor and is zero otherwise. We estimate the model on the subsample of those who were in poverty based on only private income sources. The goal is to determine whether welfare reforms had a differential effect on raising households above the poverty line and whether this impact varied by immigrant status.

As we note earlier, there is a possibility that the reforms had a behavioral impact on private poverty, although the evidence is weak. It is also possible that, given changes in the economy, the type of family in the private poor category is different after reform. Hence, the results here may not reflect only the impact of welfare reform. However, we point out that our results in Table 4 suggest that at most there was a modest behavioral impact, and that our model largely accounts for both the characteristics of the poor and the economic changes of the period.

We present the full model controlling for both demographic and labor market effects. The coefficients on both immigrants and refugees in both models are statistically insignificant. This suggests that, controlling for demographic characteristics, the poverty programs largely treated immigrants and refugees equivalently to native born before reform. Welfare reform seems to reduce the probability that all immigrants escape poverty via policy income. Although the coefficient on refugees interacted with post reform is insignificant, it does largely offset the overall immigrant effect. However, these post reform differences become small and insignificant when net income poverty is considered. The net income measure includes two programs, the Earned Income Tax Credit and Food Stamps. Clearly, these programs have important policy effects on differentials between immigrants and native born. Overall, it appears that welfare reform had no strong differential effect of moving the private poor out of poverty. Again, we

TABLE 7
Probit Estimation Results for Indicator of Removed from Poverty, Private Income Poor Sample

	Removed-Official Poverty	Removed-Net Poverty
Time	-0.0389** (0.0186)	-0.0529*** (0.0171)
Time squared	0.00209 (0.00170)	0.00512*** (0.00157)
Local unemployment rate	-0.0151*** (0.00461)	0.0122*** (0.00415)
Immigrant	0.126 (0.0832)	0.0348 (0.0717)
Post reform	0.0314 (0.0305)	0.0262 (0.0280)
Immigrant × post reform	-0.146*** (0.0554)	0.0665 (0.0496)
Waiver	-0.0235 (0.0224)	0.00938 (0.0207)
Immigrant × waiver	0.00925 (0.0680)	0.00675 (0.0624)
Immigrant × waiver × post	-0.0108 (0.101)	-0.118 (0.0909)
Immigrant × local unemployment	-0.0224** (0.0101)	0.00371 (0.00841)
Refugee	0.361 (0.292)	0.0267 (0.237)
Refugee × post reform	0.231 (0.204)	-0.173 (0.180)
Refugee × Waiver	0.334 (0.243)	-0.126 (0.211)
Refugee × waiver × post	-0.604 (0.416)	0.366 (0.350)
Refugee × local unemployment	-0.100*** (0.0368)	0.0162 (0.0286)
Observations	48,353	48,353

Notes: Standard errors in parentheses. Models include state fixed effects and quadratic time trend and full demographics.

*** $p < .01$; ** $p < .05$; * $p < .1$.

do note that these results assume that there were no major differences in the private poor population pre- and post-welfare reform that are not captured by the demographic or local economic conditions.

V. CONCLUSIONS

We draw three basic conclusions from these results regarding poverty trends, policy effectiveness, and the difference between immigrants and refugees. Immigrants in general are more likely to be poor than their native born counterparts, even when labor market and demographic differences are taken into account. However,

differences between refugees and other immigrants are largely because of responsiveness to local labor market conditions and differences in demographic characteristics. Over the time period of the study, falling unemployment rates account for a majority of the drop in poverty levels for refugees in particular. This finding is difficult to qualify as more or less desirable. On the positive side, it does imply that good economic conditions offer opportunities to populations who are less fortunate (especially refugees). For immigrants and refugees who view emigration to the United States as a mechanism to obtain better economic opportunities, this finding is good news. However, the recent downturn in the economy would suggest that the convergence seen in the 1990s has largely been erased. The higher unemployment rates, and perhaps specifically in industries such as services which heavily employ refugees, are likely to have resulted in much higher poverty rates for this group than other immigrants or native born.

Second, the 1996 welfare reforms appear to have no effect on the probability of poverty for any group, regardless of the measure used. Nor is there much evidence for any substantial difference in the post reform between immigrants, refugees, and native born. Indeed, even when differences are measured in how well the programs moved these groups out of poverty, there appears to be no substantial differential impact of welfare reform.

Finally, the study reveals several important findings regarding the difference between refugees and immigrants. Holding labor market conditions and demographic characteristics constant, refugees are somewhat less likely to be officially poor. Perhaps most striking, though, they are far more responsive to changes in unemployment than non-refugee immigrants or native born. Although rising unemployment rates have a smaller poverty inducing effect for immigrants than natives, refugee poverty increases relative to both immigrants and natives.

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