

Poverty, Food Insecurity, and Welfare Reform

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August 2003

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Abstract

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 made fundamental changes in the federal system of public assistance, and specifically limited the eligibility of immigrant households to receive many types of aid. Many states chose to protect their immigrant populations from the presumed adverse effects of welfare reform by offering state-funded assistance to these groups. I exploit these changes in eligibility rules to examine the link between welfare and poverty rates in the immigrant population. My empirical analysis documents that the welfare cutbacks did not increase poverty rates. The immigrant families most affected by welfare reform responded by substantially increasing their labor supply, thereby raising their family income and slightly lowering their poverty rate. In the targeted immigrant population, therefore, welfare does not reduce poverty; it may actually increase it. At the same time, however, the welfare cutbacks did increase food insecurity in the targeted immigrant households. The research thus indicates that poverty and food insecurity are measuring different aspects of a household's well being.

Poverty, Food Insecurity, and Welfare Reform

George J. Borjas*

I. Introduction

The rapid growth of the welfare state spawned a large literature examining the factors that determine whether families participate in public assistance programs, and investigating the programs' impact on various social and economic outcomes, such as labor supply, household income, and family structure.¹ Remarkably, little attention has been paid to the impact of welfare programs on a summary measure of the family's well being: the family's poverty status. Presumably, an important goal of the various programs in the welfare state is to reduce the poverty rate among disadvantaged households. Nevertheless, after a half century of experimentation with welfare programs and after thousands of empirical studies that examine many aspects of these programs, the answer to this question remains elusive.

The link between welfare and poverty is difficult to measure because a built-in spurious correlation precludes researchers from drawing credible inferences: the families that are most likely to be poor are also the families that are most likely to qualify for and participate in welfare programs. The impact of welfare on poverty could be identified through a randomized experiment wherein the government provides aid to some families and denies aid to a control group. Although such an idealized experiment does not exist, the huge changes in eligibility introduced by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) provide a great deal of exogenous variation that could, in principle, help address this important question.²

Although PRWORA changed eligibility rules for almost all households, some key changes were specifically targeted at immigrants. It is well known that immigrant participation in welfare programs rose rapidly in recent decades (Borjas and Hilton, 1996). This steep rise in immigrant welfare use motivated Congress to include a number of eligibility restrictions in the 1996 legislation. It turns out, however, that these restrictions could potentially affect only a subset of the immigrant population, depending on the family's state of residence, on whether the family entered the country as refugees, and on whether the foreign-born person was naturalized or not. As a result, the idiosyncratic changes in immigrant eligibility present a unique opportunity to examine the link between welfare and poverty.

The number of immigrants entering the United States grew rapidly in recent decades. During the 1950s, only 250,000 legal immigrants entered the country annually. By the 1990s, nearly 1 million persons entered the country legally each year and another 300,000 entered and

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¹ Moffitt (1992) gives a comprehensive review of the literature.

² A number of experiments vary some of the parameters in welfare programs to examine how these marginal changes affect poverty rates. These experimental studies suggest that welfare reforms reduce poverty when the reforms have a strong financial work incentive; see Bos et al (1999) and Miller et al (2000). Schoeni and Blank (2000) and Bitler, Gelbach, and Hoynes (2001) provide some econometric evidence that is consistent with these experimental findings, although Bitler, Gelbach, and Hoynes find that welfare leads to reductions in poverty in some specifications and to increases in poverty in others; see also Moffitt (1999) and Grogger (2003). Grogger, Karoly, and Klerman (2002, Chapter 8) summarize the evidence.

stayed in the country illegally.³ An increasing number of the new immigrants fall in the lower rungs of the skill and income distributions.⁴ As a result of these trends, there has been an increasing “foreignization” of poverty. In 1979, 9.7 percent of the poor lived in immigrant households (Camarota, 1999). By 1997, 21.6 percent of the poor lived in immigrant households.

This paper uses data drawn from the 1995-2001 Current Population Surveys to examine the impact of PRWORA on the poverty rate and family income of immigrant families. It turns out that the immigrants most adversely affected by welfare reform responded by significantly increasing their labor supply. In fact, the increase in labor earnings was large enough to more than offset the impact of the welfare cutbacks. The study, therefore, provides a surprising answer to the question posed in the title to this paper. Welfare does not reduce poverty; it may actually increase it.

These findings differ significantly from those obtained in my earlier work on the link between welfare reform and food insecurity (Borjas, 1993). In that paper, I examined the extent to which welfare programs reduce the probability that vulnerable households are food insecure, where food insecurity occurs when the household experiences food deprivation because of financial resource constraints.

As with poverty, the link between food insecurity and public assistance is difficult to analyze empirically because a “built-in” spurious correlation precludes researchers from drawing credible inferences about the sign and magnitude of the effect: the households that are most likely to be food insecure are also the households that are most likely to qualify for and participate in welfare programs. The identification of the impact of public assistance on food insecurity could be obtained through a randomized experiment wherein the government provides aid to some households and denies aid to a control group. Although such an idealized experiment does not exist in practice, the huge changes in program eligibility and benefits introduced by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) again provide a great deal of exogenous variation that could, in principle, help address this important question.

The evidence, indicates that there is more food insecurity among immigrant households than among native households. The data also indicate that food insecurity increased most during the 1994-98 period among the immigrants most adversely affected by the eligibility restrictions in welfare reform. In other words, those immigrants who became least eligible to receive public assistance (i.e., non-refugee, non-citizen households), and who lived in states that did not extend a state-funded safety net to the immigrant population experienced sizable increases in food insecurity, while food insecurity in other immigrant (or native) households either declined or remained stable. In fact, the evidence suggests that a 10 percentage point cut in the fraction of the population that receives public assistance leads to a 5 percentage point increase in the fraction of the population that is food insecure. The study, therefore, provides some evidence of a causal link between the availability of public assistance programs and the existence of food insecurity among targeted households.

The two sets of results, therefore, suggest that poverty and food insecurity are measuring very different aspects of a household’s economic well-being.

³ U.S. Immigration and Naturalization Service, 2000, pp. 18, 271.

⁴ Borjas (1999, p. 21) reports that the typical immigrant worker in 1960 earned 4 percent more than the average native worker. By 1998, the typical immigrant earned 23 percent less.

II. Welfare and Poverty: Framework and Data

The Census Bureau determines the poverty status of a family by comparing the family's pre-tax *cash* income with a poverty threshold that depends on family size and composition.⁵ All types of cash receipts, including public assistance, are included in the calculation of family income. Families (and all persons in those families) with cash incomes below the poverty threshold are considered poor.

A simple application of the neoclassical model of labor-leisure choice indicates that there is an ambiguous link between welfare and poverty. The two panels of Figure 1 illustrate the predicted impact of a generic welfare program on family income (and hence the poverty rate). In each panel, the family initially faces budget line FE in the labor market, and chooses the consumption basket at point P . The welfare program generates a new opportunity set, bounded by the budget line HG . This budget line is flatter than the one available in the labor market because welfare benefits typically drop off substantially as the family accumulates more labor earnings. As drawn, the representative family chooses to enroll in the welfare program and shifts to the consumption basket at point R .

The move from P to R can be decomposed into an income effect (P to Q) and a substitution effect (Q to R). Both the income and substitution effects imply that the welfare program induces a reduction in family labor supply (assuming leisure is a normal good). Note, however, that this behavioral response has an ambiguous effect on family income: The substitution effect reduces family income, while the income effect increases it. As a result, family income rises from I_0 to I_1 in the top panel of the figure, but falls in the bottom panel. Inspection of Figure 1 suggests that family income is more likely to decline when the compensated labor supply response to the implicit taxation of labor earnings is very elastic. Put differently, welfare programs may actually increase measured poverty rates if the substitution effect is relatively large.

The welfare reform legislation enacted in 1996 made fundamental changes in the federal system of public assistance. The overriding objective of the legislation was to move welfare recipients into work activities (i.e., moving families from point R back to point P in Figure 1). In addition to granting state governments a great deal of authority to set their own eligibility and benefit rules, the legislation mandates that most welfare recipients go to work after two years and imposes a five-year lifetime limit for receiving assistance.⁶ In addition to these universal changes in coverage and eligibility, PRWORA includes a number of provisions that specifically limit the extent to which immigrant households can receive public assistance. As signed by President Clinton, PRWORA contained two key provisions applying to legal immigrants who did not enter the country as refugees:

1. Most non-citizens who arrived in the country *before* August 22, 1996, the "pre-enactment" immigrants, were to be kicked off from the SSI, food stamp, and Medicaid rolls within a year. This provision of the legislation, however, was never fully enforced.

⁵ The poverty threshold does not vary across regions, but it is adjusted annually for inflation. As an example, the poverty threshold in 2001 for a four-person household with two related children was \$17,960. Fisher (1992) provides a detailed discussion of the construction and history of the poverty threshold.

⁶ Grogger, Karoly, and Klerman (2002) provide a very detailed review of the economic consequences of welfare reform; see also the studies in Blank and Haskins (2001).

2. Immigrants who entered the United States *after* August 22, 1996, the “post-enactment” immigrants, are prohibited from receiving most types of public assistance, including Medicaid. The ban is lifted when the immigrant becomes an American citizen.⁷

In contrast to these restrictions on the (legal) non-refugee, non-citizen population, the legislation did not restrict refugee participation in the various public assistance programs. In addition, the legislation continued to prohibit illegal immigrants from receiving most types of aid.

As noted above, the restrictions on welfare use by pre-enactment immigrants were never fully enforced. In particular, the balanced budget agreement reached in 1997 between President Clinton and the Republican-controlled Congress (combined with state actions discussed below) effectively repealed some of the most draconian aspects of the legislation.⁸ As a result, few of the pre-enactment immigrants were actually kicked off the welfare rolls. Moreover, only a relatively small fraction of the immigrant population in the United States arrived after 1996, so that few immigrants are actually barred from receiving assistance. It would seem, therefore, that PRWORA could not have had a large impact on welfare participation rates in the immigrant population. However, the evidence indicates that this is not the case (Fix and Passel, 1999; Borjas, 2001). The welfare participation rate declined in both immigrant and native households after 1996, but the decline was much steeper among immigrants. This finding has led some to conclude that “because comparatively few legal immigrants were ineligible for public benefits as of December 1997, it appears that the steeper declines in non-citizens’ than citizens’ use of welfare...owe more to the ‘*chilling effect*’ of welfare reform and other policy changes than they do to actual eligibility changes” (Fix and Passel, 1999, p. 8; emphasis added).

It is instructive to illustrate the nature of these trends. The Annual Demographic Files of the Current Population Surveys (CPS) provide detailed information on participation in various social assistance programs during the calendar year prior to the survey. I use the 1995-2001 March Supplements, which provide program participation data for the 1994-2000 calendar years, in the empirical analysis reported below.⁹ Because the focus of the paper is on the link between welfare and poverty, and because poverty is defined at the family level, the family is the unit of analysis. I restrict the study to families where the family head is at least 15 years old and does not reside in group quarters. A family will be classified as an immigrant family if the family head was born outside the United States and is either an alien or a naturalized citizen. All other families are classified as native families. In addition, an immigrant family will be classified as a citizen family or a non-citizen family based on the naturalization status of the family head.¹⁰

⁷ Post-enactment immigrants are also subject to stricter “deeming” regulations: The income and assets of the immigrant’s sponsor will be deemed to be part of the immigrant’s application for most types of public assistance for up to ten years. Primus (1996) presents a more detailed discussion of the immigrant provisions in PROWRA.

⁸ See U.S. General Accounting Office (1998) for a discussion of the various policy changes that occurred after the enactment of PRWORA at both the federal and state levels.

⁹ There seem to be some data problems with the foreign-born sample in the 1995 survey. In particular, the “official” person weights provided in this survey do not yield an accurate enumeration of the immigrant population in the United States. Passel (1996) gives a detailed discussion of this problem, and uses a complex algorithm to calculate revised weights for each person in the survey. I use the “Passel weights” in all calculations that involve the 1995 survey.

¹⁰ I also used the nativity and citizenship status of other family members to obtain alternative definitions of what constitutes a native or an immigrant family. For example, one can categorize the family as an “exclusively

Table 1 summarizes some of the key trends in program participation for the 1994-2000 period. As suggested by earlier research, the decline in welfare use during this period was steeper among immigrants. In particular, the fraction of native families receiving either cash benefits or food stamps fell from 11.2 to 7.3 percent between 1994 and 2000. In contrast, the fraction of immigrant families receiving similar benefits dropped by 6.3 percentage points over the same period (from 15.2 to 8.9 percent). Moreover, the decline in program participation was limited to non-citizens—precisely the group of foreign-born persons targeted by welfare reform. Their participation rate fell by 10.2 percentage points (from 18.5 to 8.3 percent). The evidence, therefore, suggests that welfare reform—at least at the national level—had a sizable chilling effect on immigrant participation in these welfare programs.

The second panel of Table 1 shows similar trends when the definition of welfare is expanded to include Medicaid. The proportion of native families receiving some type of assistance (defined as cash benefits, food stamps, or Medicaid) dropped by 2.7 percentage points. In contrast, the proportion of non-citizen families receiving some type of assistance dropped by 6.8 percentage points (from 23.7 to 16.9 percent).

Table 1 shows that this relative decline in welfare use in the immigrant population was *not* accompanied by a concurrent rise in the poverty rate. In fact, the fraction of poor families declined more for immigrants than for natives during the period. In particular, the poverty rate among natives fell from 14.6 percent in 1994 to 11.9 percent in 2000, a 2.7 percentage point drop. In contrast, the poverty rate among immigrants fell by 5.9 percentage points, from 23.7 to 17.8 percent. Finally, the data indicate that the poverty rate dropped most for non-citizen families (from 30.1 to 22.3 percent), presumably the group that would have been most adversely affected by the cutbacks in PROWRA.

As noted earlier, the Census definition of poverty status does not include the value of in-kind benefits when calculating family income. The CPS reports the dollar value of food stamps, Medicaid benefits, and housing assistance received by the family. It is instructive to determine the trends in an adjusted poverty measure that adds the dollar value of these in-kind benefits to family income, and then determines whether the family falls above or below the poverty threshold.¹¹ The bottom panel of Table 1 documents the trend in the adjusted poverty rate. The adjusted poverty rate is obviously lower than the official poverty rate, but the two statistics have similar trends. In particular, the adjusted poverty rate for native families dropped by only 1.8 percentage points between 1994 and 2000, as compared to a 2.7 percentage point drop experienced by immigrants, and a 6.1 percentage point drop experienced by non-citizens.

These aggregate trends, though suggestive, do not conclusively prove that welfare *increases* poverty (at least in the immigrant population). After all, the economy was booming in the late 1990s, and the trends in poverty rates may be capturing the differential impacts of the changing economy on the various groups, rather than any behavioral response on the part of immigrants. I will show below, however, that these nationwide trends confound systematic differences within the immigrant population, mainly because they ignore the fact that different

citizen” family if all family members are either native-born or naturalized citizens, and as an “exclusively non-citizen” family if all family members are non-citizens. The qualitative nature of the evidence presented in this paper is not affected by these alternative definitions, so I use the simpler classification in the empirical analysis reported here.

¹¹ The calculation of the adjusted poverty rate uses the Census convention of attributing the poverty status of the primary family to related subfamilies living in the same household. This calculation affects only a relatively small number of families.

states responded differently to the federal restrictions on immigrant welfare use. The various state responses help to identify the structural link between welfare and poverty.

III. State Responses to Welfare Reform

A key provision of PRWORA allows states to enact state-funded assistance programs specifically targeted to their immigrant populations if they wish to attenuate the presumed adverse impact of welfare reform on the foreign-born. Zimmermann and Tumlin (1999) have tabulated the various programs that states extended to immigrants after 1996. These programs include offering TANF, Medicaid, food assistance, and SSI to pre-enactment and/or post-enactment immigrants. As Table 2 shows, almost all states extended TANF and Medicaid to pre-enactment immigrants. A few states went beyond this “minimal” level of generosity and offered other programs to their immigrant populations. It is worth noting that many of the states with large concentrations of immigrants exceeded the minimal level of generosity. In fact, California, the state with a third of the immigrant population, was one of only two states that offered all eight possible programs to immigrants (the other state was Maine).

To show how the “chilling effect” of welfare reform on welfare participation depended on the decisions made by individual states, I pooled the 1994-95 calendar years of the March CPS to provide a snapshot of the population prior to welfare reform, and the 1998-2000 calendar years to provide the respective snapshot after welfare reform.¹² I then grouped states into two categories: “more generous” states (i.e., the states that offered immigrants at least three of the programs listed in Table 2), and “less generous” states (i.e., states that offered two or fewer programs to immigrants).¹³

The top panel of Table 3 summarizes the evidence for the most inclusive measure of welfare participation, which indicates if the family received cash benefits, food stamps, or Medicaid.¹⁴ The table clearly shows that the decisions made by some states to offer a state-funded safety net to their immigrant populations did not influence the trend in native welfare participation. For example, the fraction of native families receiving some type of assistance declined by 2 to 3 percentage points during the period, regardless of whether the state was generous to its immigrant population. However, the trends in immigrant welfare participation were sensitive to the state programs. The fraction of immigrants receiving some type of assistance fell by 3.2 percentage points in the more generous states and by 7.4 percentage points in the less generous states. Moreover, the decline in welfare participation was particularly acute among non-citizen families. The fraction of non-citizens receiving assistance fell by 5.6 percentage points in the more generous states and by almost 10 percentage points (from 22.1 to 11.3 percent) in the less generous states.

The differential trends in welfare participation experienced by non-citizen families living in the less and more generous states are even larger when the sample is restricted to the non-refugee population. Although the CPS do not report the type of visa used by a particular

¹² Note that I do not use data from the 1996 and 1997 calendar years in the calculations. This helps to isolate the break in the time series that can presumably be attributed to PRWORA.

¹³ By this definition, 29 states are classified as “more generous.”

¹⁴ The sample sizes for the various groups are as follows. In the 1994-1995 pooled sample, there are 105,190 natives, 4,896 citizens, and 8,966 non-citizens. In the 1998-2000 pooled sample, there are 148,482 natives, 8,908 citizens, and 13,512 non-citizens.

immigrant to enter the country, one can approximate the refugee sample by using information on the national origin of the foreign-born because most refugees tend to originate in a small set of countries.¹⁵ I classified all persons residing in families where the family head originated in the main refugee-sending countries as refugees, while all other persons were classified as non-refugees. The non-citizen, non-refugees residing in the less generous states experienced an 11.0 percentage point decline in their welfare participation rate, as compared to the 4.6 percentage point drop for the non-citizen, non-refugees residing in the more generous states.

The second panel of Table 3 documents the impact of the state actions on the poverty rate of immigrants and natives. The poverty rate among native families fell by roughly the same amount in the two types of states. In the more generous states, the fraction of poor native families fell by 1.3 percentage points (from 13.2 to 11.9 percent), while in the less generous states the native poverty rate fell by 2.5 percentage points. However, the decisions made by states on whether to provide state-funded assistance to immigrants seem to have an impact on non-citizen families. The non-citizen poverty rate fell by 6.0 percentage points in the more generous states and by 9.9 percentage points in the less generous states. In short, the descriptive evidence suggests that poverty declined the most in those states where the welfare cuts were the deepest.

Finally, the bottom panel of Table 3 illustrates the trends in the adjusted poverty rate. The use of this measure of poverty attenuates the differences in poverty rates across the various groups over time. The non-citizen poverty rate, for example, dropped by 5 percentage points in the more generous states and by 7.4 percentage points in the less generous states. The inclusion of the value of in-kind benefits in the definition of family income, therefore, tends to stabilize the variation in the poverty rate over time.

It is instructive to use a simple regression model to formalize and extend these descriptive results. By controlling for various socioeconomic characteristics, the regression approach helps us determine if the differential trends in welfare participation and poverty observed between the more and less generous states arise because different types of immigrants tend to live in different states, or if the variation can be attributed to state-specific trends in economic activity or social conditions. To illustrate the basic methodology, pool the CPS data available for the calendar years 1994, 1995, 1998, 1999, and 2000 and consider the triple-difference linear probability model:

$$(1) \quad y_{ij} = X_{ij} \beta + \alpha_0 t_{ij} + \alpha_1 I_{ij} + \alpha_2 G_j + \gamma_0 (I_{ij} \times t_{ij}) + \gamma_1 (I_{ij} \times G_j) + \gamma_2 (G_j \times t_{ij}) + \theta (I_{ij} \times G_j \times t_{ij}) + \varepsilon_{ij},$$

where y_{ij} is a dummy variable indicating a particular type of socioeconomic outcome for family i in state j (such as receipt of public assistance or poverty status); X_{ij} is a vector of socioeconomic characteristics defined below; t_{ij} is a dummy variable set to unity if the observation refers to the post-PRWORA period (i.e., calendar years 1998 through 2000); I_{ij} is a vector of two dummy variables indicating if the family head is a naturalized citizen or a non-citizen (the left-out variable indicates if the family head is native-born); and G_j is a dummy variable indicating the state's generosity towards immigrants, set to unity if the state offered at least three of the assistance programs listed in Table 2.

¹⁵ The main refugee-sending countries over the 1970-95 period were: Afghanistan, Bulgaria, Cambodia, Cuba, Czechoslovakia, Ethiopia, Hungary, Laos, Poland, Romania, Thailand, the former U.S.S.R., and Vietnam.

For simplicity, the regression specification in (1) uses a three-way classification of the immigration status of the population (i.e., natives, citizens, and non-citizens). I account for the immigrant's refugee status as well as year of entry into the United States by including these characteristics as regressors in the vector X . The other socioeconomic characteristics included in the regression are: the family head's age, gender, race, and educational attainment, the number of persons in the family, as well as the number of children, elderly persons, and disabled persons in the family.¹⁶ The regression also includes the state's unemployment rate at time t , and the interaction of this unemployment rate with the dummy variables in the immigration vector I . These interactions control for the possibility that immigrant outcomes are more sensitive to aggregate economic variations than those of natives (as well as net out any potential correlation between the generosity variable, G , and the state unemployment rate). The coefficient vector θ in equation (1) measures the impact of the state-provided safety net on the *relative* trend in a particular outcome. In other words, it measures the extent to which the pre- and post-PRWORA change in an outcome differs between states that were less generous and states that were more generous.

Table 4 reports the triple-difference coefficient vector θ estimated from two different specifications of the model. The specification reported in column (1) includes only the variables in the vector X , while the specification reported in column (2) adds a vector of state fixed effects, and these fixed effects are interacted with the time dummy variable (t_i). The state-time interactions capture not only state-specific differences in welfare participation and poverty rates, but also state-specific changes in these variables (induced perhaps by varying economic and political conditions).

The first two columns of the table estimate the impact of the state policies on the relative change in welfare participation. In the most complete specification, the triple-difference coefficient for non-citizens is .055 (with a standard error of .016). The state policies towards immigrants in the aftermath of PRWORA, therefore, had a significant impact on (relative) welfare participation in the non-citizen population. Put differently, non-citizens residing in states that did not offer state-funded assistance programs to their immigrant populations experienced a significant decline in their welfare participation rates. In contrast, these programs had a smaller (and insignificant) impact on the relative welfare participation rate of citizens.

The next two columns of Table 4 report the triple-difference coefficients when the dependent variable is the family's poverty status. This coefficient for non-citizens is positive and significant. It takes on a value of .033 (.017) in the most complete specification. In other words, there is no evidence that the welfare cutbacks significantly increased the poverty rate in the targeted group of non-citizens. In contrast, the welfare cutbacks actually *reduced* poverty in the states that were the least generous and did not attempt to attenuate the presumed adverse impacts of PRWORA—even after adjusting for a vast array of family- and state-specific variables that might influence the trends in the poverty rate.

Finally, the last two columns of the table report the triple difference coefficients when the dependent variable is the adjusted poverty status of the family. The evidence does not suggest

¹⁶ Throughout the analysis, the variable indicating the person's age is defined as a vector of dummy variables indicating if the family head is 15-24, 25-34, 35-44, 45-54, 55-64, or at least 65 years old. Similarly, the variable measuring educational attainment is a vector of dummy variables indicating if the person is a high school dropout (less than 12 years), a high school graduate (12 years), has some college (13-15 years), or is a college graduate (at least 16 years). The year of arrival dummy variables indicate if the head of the family arrived after 1995, 1990-94, 1985-89, 1980-84, 1975-79, 1970-74, 1965-69, 1960-64, 1950-59, or before 1950.

any link between the availability of state-funded welfare programs for non-citizens and the adjusted poverty rate in this targeted population. The triple-difference coefficient is .017 (.016). The inclusion of the in-kind benefits in family income suggests that immigrant families living in the generous states become relatively better off—and hence reduces the possibility that welfare programs actually increase the poverty rate. Note, however, that even after including the value of in-kind benefits, there is no evidence that welfare reduces poverty. At best, the income and substitution effects cancel each other out, and welfare does not affect family income.

It is important to stress that the comparison between citizens, non-citizens, and natives conducted in the top panel of Table 4 may be contaminated by the potential endogeneity of the citizenship classification. After all, the immigrants most affected by welfare reform could neutralize many of the restrictions in the legislation by becoming naturalized. In fact, there was a rapid rise in the number of naturalization applications during the period (Wasem, 1998). In 1995, the INS received 960 thousand such petitions; in 1997, the INS received 1.4 million petitions (US Immigration and Naturalization Service, 1999, p. 172). This increase in the number of naturalization applications generated a huge backlog at the INS, further delaying the time it takes to become a naturalized citizen.

A simple solution to the endogeneity problem is to compare persons who differ in terms of how long they have resided in the United States, rather than in terms of their citizenship status. Immigrants have to live in the United States for five years before they can apply for naturalization, but the lags in the application process imply that it may take 8 years or more before an immigrant can become a naturalized citizen. In 2000, only 10.3 percent of the immigrants who have been in the country fewer than 10 years and 35.3 percent of those who have been in the country between 10 and 20 years are naturalized citizens. In contrast, the naturalization rate for those who have been in the country at least 20 years is 67.5 percent.

The middle panel of Table 4 re-estimates equation (1) by defining the immigrant groups in terms of how long the family head has resided in the United States, so that the vector I is now composed of two dummy variables indicating if the foreign-born family head has been in the United States fewer than or more than 10 years (the left out variable again indicates if the family head is native-born). The regression coefficients indicate that there is a sizable (although not very significant) difference in the triple-difference coefficients measuring relative welfare receipt for the “recent” and “earlier” arrivals. In particular, the coefficient is .061 (.018) for the recent immigrants (who are disproportionately more likely to be affected by PROWRA), and .027 (.017) for the earlier immigrants.¹⁷ As with the earlier classification of immigration status, the relative decline in welfare participation by recent arrivals living in the less generous states did not generate an increase in their poverty rates. In fact, the opposite happened; their poverty rates declined. The triple difference coefficient for the probability that the family is poor is .036 (with a standard error of .019) for the recent immigrants.

Finally, the endogeneity of the citizenship variable can also be avoided by simply contrasting the immigrant and native populations, so that the vector I in equation (1) would now contain a single variable indicating if the household is headed by an immigrant. The bottom panel of Table 4 reports that the triple difference coefficient is .044 (with a standard error of .013) for welfare participation, .012 (.013) for poverty status, and .001 (.013) for the adjusted poverty status. In short, the trends revealed by comparing the immigrant and native population are consistent with the previous findings (although the measured impacts are smaller because the comparison ignores the variation within the immigrant population).

¹⁷ The t-statistic testing for the difference between these two coefficients is 1.37.

There are a number of other sampling and conceptual issues that may cloud the interpretation of the evidence. For instance, it is possible that the clustering of immigrants into relatively few areas—and particularly into California—could drive much of the analysis. After all, a third of the immigrant population lives in California, a state that has relatively generous welfare benefits, experienced a particularly strong economic boom in the late 1990s, and was extremely generous to its immigrant population after PRWORA. As the first row of Table 5 shows, however, the nature of the evidence does not change when households residing in California are excluded from the study. The triple difference coefficient for non-citizens receiving some type of assistance is .062 (.016); and there is a weak positive relation between the availability of the state-funded programs and the poverty rates in immigrant families.

Similarly, it is important to determine if the variable measuring the state's generosity towards immigrants is isolating programs that specifically benefit immigrants or simply provides a general measure of the state's assistance to disadvantaged populations. The bottom two panels of Table 5 report the triple-difference coefficients that compare the trends between immigrant and female-headed native families, as well as between immigrant families and black native families, respectively. The coefficients estimated from these alternative specifications are generally consistent with the evidence discussed previously. Consider, for example, the comparison between immigrants and black families. The triple difference coefficient giving the relative difference between non-citizens and blacks is .043 (.026) when the dependent variable is receipt of some type of public assistance; -.001 (.025) when the dependent variable is poverty status; and -.005 (.025) when the dependent variable is the family's adjusted poverty status.

In sum, the evidence presented in this section strongly suggests that the state-funded programs helped to attenuate the decline in welfare participation among immigrant families. At the same time, however, these state-funded programs did not lower the poverty rate of the targeted families. If anything, the state-funded programs slightly increased the poverty rate in these families. This evidence is consistent with the theoretical model only if welfare programs generate strong substitution effects.¹⁸ I now turn to a discussion of this behavioral response.

IV. Family Income and Family Labor Supply

To fully capture the link between family income and labor supply, I restrict my study of the family's labor supply decision to a single variable that summarizes the work effort provided by the family: the total number of hours worked by all family members.¹⁹ The top panel of Table 6 summarizes the key trends in family labor supply before and after PRWORA, again classified according to the generosity of the state's welfare offer to immigrants. Consider initially the trends in labor supply experienced by native families. The total number of hours worked by native families was stable in both the less and more generous states. In the less generous states, the typical native family increased total hours of work by 39 hours, as contrasted to a 46-hour increase in the more generous states.

¹⁸ Krueger and Meyer (2002) argue that social insurance programs tend to induce very strong substitution effects, so that the typical elasticities estimated in the labor supply literature are not very useful in predicting the labor supply effects of these programs.

¹⁹ Note that this measure of labor supply captures behavioral responses along two distinct margins: each family member may choose to work a different number of hours as a result of PRWORA, or the legislation may have influenced family composition (which, in turn, affects labor supply). Although a separate investigation of the two channels of influence would be interesting, I am interested in the total impact of the various behavioral responses, since it is this total impact that determines the poverty rate.

In contrast, the labor supply of immigrant families—and particularly the labor supply of non-citizen families—was much more variable during the period. The typical immigrant family, for instance, increased its hours of work by about 200 hours in the more generous states and by 300 hours in the less generous states. Among non-citizens, the typical immigrant family increased total hours of work by about 200 hours in the more generous states and by nearly 400 hours in the less generous states. The descriptive evidence, therefore, suggests a substantial immigrant labor supply response to the welfare cutbacks.

This labor supply response inevitably had a sizable impact on family income. Among native families, family income increased by about \$5,000 or \$6,000 over the period, regardless of where the native families lived.²⁰ Among immigrants, family income also increased by the same amount regardless of where the native families lived (\$6,700 in the more generous states, and \$6,600 in the less generous states). It turns out, however, that the increase in the income of immigrant families can be attributed to very different sources, depending on where the immigrant family lives. Consider, in particular, the labor earnings of immigrant families. Labor earnings for the non-citizen families living in the less generous states increased by nearly \$9,000, as contrasted to a \$6,000 increase in the less generous states.

To investigate the extent to which these trends in labor supply and family income can be attributed to differences in socioeconomic characteristics among the groups or to state-specific trends in economic or social conditions, I re-estimate the regression model introduced in the last section using these measures of labor supply and family income as the dependent variable. Table 7 reports the triple-difference regression coefficient θ from various specifications of the model. The estimated coefficients consistently show that the labor supply of non-citizen families declined substantially in those states that were most generous with their immigrant populations in the aftermath of PRWORA, even after controlling for differences in a vast array of socioeconomic characteristics and state-specific factors. For example, the triple-difference coefficient measuring the impact of the state-funded programs on hours worked by non-citizen families is $-.129$ (with a standard error of $.062$), indicating that the presence of state-funded programs reduced the labor supply of non-citizen families by 129 hours a year, relative to the trend observed in both native and citizen families.

The results reported in Table 7 also show that family income for these non-citizen families declined substantially in the more generous states, with much of the decline directly attributable to a decline in labor earnings. The triple-difference regression coefficient for family income is -3.947 (2.107), while the triple-difference coefficient for family earnings is -3.549 (1.968).

The middle panel of Table 8 shows the same type of results when the immigrant groups are classified according to how long the family has resided in the United States (rather than citizenship status). In the most complete specification, the triple-difference coefficient for the most recent arrivals is $-.131$ ($.069$) in the hours of work regression; -4.664 (2.351) in the family income regression; and -3.857 (2.196) in the family earnings regression.

As before, it is useful to investigate if these results are sensitive to major specification changes. The top panel of Table 8 replicates the regression analysis on the sample of families that live outside California. Even after excluding California, non-citizen families living in the more generous states experienced a substantial decline in labor supply, family income, and labor earnings. Similarly, the bottom two panels of the table contrast the trends in the immigrant groups with native female-headed families or with black families, respectively. The evidence is

²⁰ All measures of family income are deflated to 2000 dollars using the CPI-U.

very consistent. Consider, for example, the comparison between non-citizens and black native families. Relative to blacks, non-citizens in the more generous states experienced a 142-hour decline in labor supply, a \$3,595 decline in family income, and a \$3,301 decline in labor earnings.

In sum, the reduced-form evidence summarized in Tables 7 and 8 strongly imply that the state-funded welfare programs targeted to immigrant families in the aftermath of PRWORA induced strong substitution effects. These substitution effects led to a sizable and statistically significant reduction in family labor supply. This labor supply response, in turn, greatly reduced the labor earnings and family income of the affected families.

IV. Food Insecurity

The previous section showed that state-level decisions to offer alternative programs to immigrants in the aftermath of PRWORA had a substantial impact on the probability that immigrant households received public aid. I now examine if these state choices also influenced food insecurity in the affected households.

The top panel of Table 9 summarizes some of the key trends in food insecurity before and after PRWORA. As before, these trends are presented separately by the level of the state's generosity, and by the immigration status of the household. Consider initially the trends in food insecurity rates experienced by native households. The fraction of native households that is food insecure declined by about 1 percentage point in both the less generous and more generous states. In contrast, the proportion of non-citizen households that is food insecure rose substantially in the less generous states (from 18.9 to 22.9 percent), but declined in the more generous states (from 22.7 to 20.6 percent). Similarly, the fraction of newly arrived immigrant households who are food insecure rose from 11.3 to 16.3 percent in the less generous states, but declined from 16.1 to 14.8 percent in the more generous states. In short, the states that extended public assistance to their immigrant populations after 1996 were able to arrest and reverse the rise in food insecurity that would likely have occurred had no actions been taken—both in absolute terms and relative to the trends in food insecurity experienced by the native population.

Table 9 also shows a similar rise in food insecurity among the less generous states even when the analysis is restricted to non-refugee households, or to households residing outside California. For example, the food insecurity rate for non-refugee, non-citizen households rose from 18.8 to 23.8 percent in the less generous states, but declined by 2.5 percentage points (from 23.0 to 20.5 percent) in the more generous states. Similarly, the data indicate that these trends cannot be explained by a “California effect.” The food insecurity rate of non-citizens living outside California rose by 4 percentage points if they lived in a less generous state, but declined by about 1 percentage point if they lived in a more generous state.

The evidence thus suggests that federal welfare reform—and the subsequent actions taken by individual states—concurrently affected participation in welfare programs and food insecurity in the targeted households. It may be the case that the observed increase in food insecurity can be attributed to the fact that the eligibility restrictions simply increased the number of poor immigrant households, so that the trends documented in the top panel of Table 9 reflect a “scale effect” in vulnerability to food insecurity. It turns out, however, that the eligibility restrictions associated with welfare reform also had a significant impact on the food insecurity of *poor* non-citizen households, so that households that were already vulnerable to food insecurity became even more vulnerable.

The simplest way to document this fact is to replicate the descriptive analysis in the sample of households that lies below the 185% threshold of the poverty line. The bottom panel

of Table 9 reports some of the key trends in the poverty sample. The differential trends in food insecurity among the various groups are quite similar to those observed in the entire population. For example, the fraction of poor native households that is food insecure was roughly constant in both the less generous and more generous states. In contrast, the fraction of poor non-citizen households that is food insecure rose by 3.5 percentage points in the less generous states, and remained constant in the more generous states. The impact of the various statutory changes was perhaps most evident on the sample of poor immigrant households that had just arrived in the United States. The food insecurity rate of these new arrivals increased by almost 9 percentage points (from 19.5 to 28.1 percent) if they chose to live in a less generous state, but rose by only 3 percentage points (from 25.3 to 28.4 percent) if they chose to live in a more generous state. In sum, the evidence clearly suggests that the various changes in welfare regulations had a substantial adverse impact on food insecurity among immigrant households at the bottom end of the income distribution.

To investigate the extent to which these trends can be explained by differences in socioeconomic characteristics among the groups or by state-specific trends in economic or social conditions, consider again the triple-difference regression model:

$$(2) \quad f_{ij} = X_{ij}\beta + \alpha_0 t_{ij} + \alpha_1 I_{ij} + \alpha_2 G_j \\ + \gamma_0 (I_{ij} \times t_{ij}) + \gamma_1 (I_{ij} \times G_j) + \gamma_2 (G_j \times t_{ij}) + \theta_f (I_{ij} \times G_j \times t_{ij}) + \varepsilon_{ij},$$

where f_{ij} is a dummy variable indicating if the household is food insecure. Note that the regression specification in (2) is identical to the one used in the previous section to quantify the impact of welfare reform on welfare participation rates. The coefficient θ_f , however, now measures the impact of the state-provided safety net on the relative trend in immigrant food insecurity.

Table 10 reports the relevant regression coefficients from alternative specifications of the model in equation (2). The key parameter of interest, the element of θ_f that refers to non-citizen households, is negative and statistically significant in almost all of the specifications. Consider initially, the regression results presented in the first row of the table, which uses the entire sample of households. The unadjusted estimate of θ_f is $-.073$ (with a standard error of $.023$). In other words, the pre- and post-PRWORA *relative* growth in the fraction of immigrant households that experienced food insecurity was 7 percentage points lower in the more generous states than in the less generous states. Put differently, the decisions taken by the more generous states to extend a state-funded safety net to immigrants greatly attenuated the impact of federal welfare reform on food insecurity. The remaining columns of the table show that this triple difference estimate of the impact remains the same when the regression adds a vector of variables that interacts state-of-residence fixed effects and time (t). These state-time interactions, of course, help control for any state specific differences in both the level and growth of food insecurity. The third column adds a vector of country of origin fixed effects to the model. The coefficient θ_f is now $-.063$ and significant, indicating that the various statutory changes increased food insecurity for the targeted households even within national origin groups. Finally, the fourth column includes the state/time fixed effects, the country of origin fixed effects, and a vector of variables describing various socioeconomic characteristics of the household. The coefficient θ_f is now $-.046$, with a standard error of $.023$.

The remaining rows of the top panel of Table 10 show that the key implication of the regression—that there was a substantial relative increase in food insecurity among non-citizen households living in the less generous states—is not sensitive to various sensitivity tests, such as

limiting the analysis to non-refugee households or excluding California from the sample. Similarly, the bottom panel of the panel of the table replicates the regressions in the sample of households that are poor or near-poor. For the most part, the analysis indicates that non-citizen poor households living in the less generous states had a relative increase in the likelihood of experiencing food insecurity in the post-PRWORA period (though the standard errors are relatively large).

Different Types of State-Funded Assistance

For simplicity, the analysis has aggregated all types of state-funded assistance into a single measure of the state's generosity. This measure indicates if the state offered at least three of the eight programs that states could have offered to their immigrant populations after 1996. It seems sensible to suspect that food insecurity may be more closely related to some particular types of programs than to others. After all, unless all types of aid are completely fungible, states that extended food assistance programs may have eased the potential adverse impact of PRWORA on food insecurity more than the states that offered non-food types of assistance. I now exploit some of the variation in the choices made by the states to examine if the trends in food insecurity are sensitive to the types of programs offered to the immigrant population.

Instead of using a single dummy variable to indicate the state's level of generosity towards immigrants, I now define a vector of dummy variables that indicate: (1) if the state offered only food assistance programs to its immigrant population; (2) if the state offered only non-food programs to its immigrant population (in particular, cash benefits and medical benefits); and (3) if the state offered both food and non-food programs to its immigrant population. I then re-estimated equation (2) using this alternative definition of the generosity index G . Table 11 summarizes the evidence. To simplify the exposition, I only report the estimated of the triple difference interaction term for the most complete specification of the model.

In general, the regression suggests that non-citizen households experienced relative increases in food insecurity *regardless* of the type of program that the state offered to its immigrant population. The point estimates would seem to indicate that offering non-food programs (perhaps because they may have a larger monetary value) have much larger effects on food insecurity. For example, the relative food insecurity rate declined by 3.4 percentage points if the state offered only food assistance, by 8.8 percentage points if the state offered only non-food assistance, and by 5.1 percentage points if the state offered both types of programs. As the last column of the table shows, however, one cannot typically reject the hypothesis that all types of state-funded program offered to the immigrant population had the same impact on the relative rate of change in food insecurity between 1994 and 1998. The data seem to indicate that what matters is that the state made some effort to limit the scope of the restrictions imposed by PRWORA. Any such reaction helped alleviate the potential impact of welfare reform on food insecurity in the targeted households.

V. Food Expenditures and Food Insecurity

One potential problem with the analysis presented in the previous section is that the measure of food insecurity is subjective. One could conjecture that much of the evidence summarizes a "voice" effect. Immigrants perhaps perceived that both PRWORA and the decisions made by the less-generous states treated them unfairly. They then began to voice their dissatisfaction, and complained that the statutory changes had all types of harmful effects, including an increase in food insecurity.

It is likely, however, that the correlations reported in Tables 7 and 11 measure an actual change in the household's opportunity set. The Food Security Supplements provide limited data on the "usual" weekly food expenditures made by the household. These data are problematic in one important way: the survey instrument differs dramatically in some years, and the screens used to identify the subsample of households that gets asked the battery of food expenditure questions also varies across surveys. These year-to-year differences in the survey instrument impede any type of analysis that would examine the trends in the household's food expenditures during the period in which welfare reform could have had a chilling effect on immigrant welfare use.

Nevertheless, the data can be used to ascertain if there exists a correlation between a household's reported food expenditures and the household's subjective level of food insecurity. Consider the regression model:²¹

$$(3) \quad \log E_{it} = X_{it} \beta + \phi f_{it} + \tau_{it} + \varepsilon_{it},$$

where E_{it} gives the household's usual weekly expenditures on food in survey year t ; X is a vector of socioeconomic characteristics; f is a dummy variable set to unity if the household is food insecure and zero otherwise; and τ is a fixed effect indicating the survey from which the observation was drawn.²²

The first row of Table 12 reports the regression coefficient ϕ estimated using alternative specifications for the regression model in (3). The evidence is unambiguous: There is a strong and negative correlation between reported food expenditures and the subjective measure of food insecurity. On aggregate, households that are food insecure spend approximately 20 percent less on food than households that are not food insecure. This correlation persists even after the regression controls for an extensive set of socioeconomic characteristics, including state fixed effects, country of origin fixed effects, and socioeconomic variables describing the age, income, age, and educational attainment of the household head, as well as household composition. In the most complete specification, reported in column (4) of the table, the data indicate that households that are food insecure spend around 5 percent less on food than households that are not.

One can also use the available data to determine if there exists a correlation between the subjective measures of food insecurity and a variable that measures if the household is spending "enough" on food to allow it to purchase a nutritious diet. The United States Department of Agriculture (USDA) defines a market basket that specifies the type and quantity of foods that people could consume at home to obtain a nutritious diet at a minimal cost. In fact, this "Thrifty Food Plan" serves as a national standard for a nutritious diet at a minimal cost and is used as the basis for food stamp allotments.²³ The cost of the thrifty food plan for a particular household member (as calculated by USDA) depends mainly on household composition, particularly the

²¹ Of course, the regression model in (3) does not represent a structural model between food expenditures and food insecurity. It is simply used as a way of easily summarizing the observed correlations between the two variables.

²² I use the data from all of the available Food Security Supplements between 1995 and 1999 to estimate equation (3). The mean level of food expenditures (in 1999 dollars) is \$94.1 for all households in the sample; \$93.1 for native households; and \$103.3 for immigrant households.

²³ See U.S. Department of Agriculture (1999) for a detailed description of the Thrifty Food Plan.

age and sex of the household members. I combine the information on the household's actual food expenditures with the cost of the thrifty food plan to define a dummy variable indicating if the household's expenditures are below those required to purchase the thrifty food plan. It would then be unlikely that the household is allocating sufficient resources to purchase a nutritious diet.²⁴

The second row of Table 12 shows that there is a strong positive correlation between the probability that the household is not spending a sufficient amount to purchase the thrifty food plan and the subjective measure of food insecurity. Households that are food insecure have a 20 percent higher probability of spending below the minimum required to purchase the thrifty food plan. Even after controlling for a vast array of differences in socioeconomic characteristics, food-insecure households still have a 6.4 percent higher probability of spending below the minimum required to buy the thrifty food plan.

In sum, the evidence indicates that the subjective measure of food insecurity contained in the Food Security Supplements is strongly correlated with both the actual level of food expenditures, and with the probability that the household is not spending "enough" on food.

VI. Summary

TO BE WRITTEN

²⁴ The mean probability that the household is not spending enough on food to purchase the Thrifty Food Plan is 30.3 percent for all households; 30.0 percent for native households; and 34.4 percent for immigrant households.

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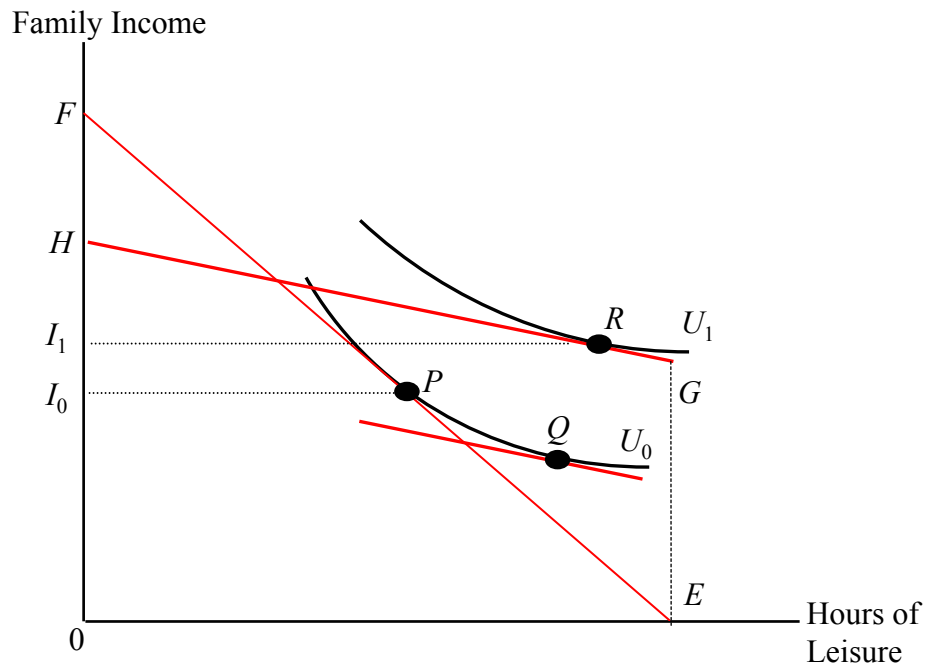
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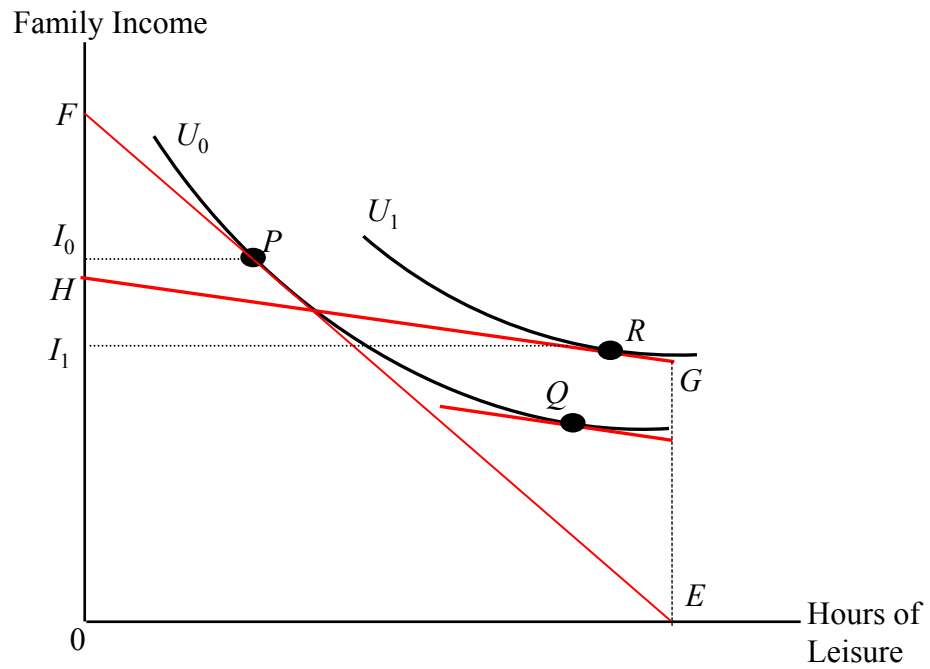
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Figure 1. Welfare, Labor Supply, and Family Income



(a) Welfare increases family income



(b) Welfare reduces family income

Table 1. Trends in Welfare Participation and Poverty Rates, 1994-2000

<u>Variable:</u>	<u>Calendar Year</u>						
	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Percent receiving cash benefits or food stamps:							
Natives	11.2	10.6	10.4	9.2	8.2	7.9	7.3
Immigrants	15.2	14.4	13.0	11.9	10.6	9.7	8.9
Citizens	9.1	9.8	9.7	9.8	9.4	9.1	9.8
Non-citizens	18.5	17.1	15.1	13.5	11.4	10.1	8.3
Percent receiving cash benefits, food stamps, or Medicaid:							
Natives	14.6	14.0	14.2	12.8	12.0	11.8	11.9
Immigrants	20.0	19.7	18.3	16.8	16.1	15.9	16.8
Citizens	13.3	13.9	14.2	14.2	14.3	13.9	16.6
Non-citizens	23.7	23.2	21.1	18.6	17.4	17.3	16.9
Poverty rate:							
Natives	14.6	13.7	13.8	13.5	13.0	12.4	11.9
Immigrants	23.7	24.2	23.0	22.5	21.4	18.9	17.8
Citizens	12.0	12.8	12.7	14.7	14.3	11.3	11.8
Non-citizens	30.1	30.9	30.0	28.2	26.3	24.4	22.3
Adjusted poverty rate:							
Natives	12.9	12.1	12.3	12.1	11.8	11.3	11.1
Immigrants	22.0	23.3	22.1	22.0	21.1	18.4	17.3
Citizens	11.0	12.1	11.9	14.2	14.0	10.9	10.8
Non-citizens	28.1	29.9	29.0	27.7	26.0	23.9	22.0

Source: All statistics are calculated from the 1995-2001 March Current Population Surveys.

Table 2. State-Funded Assistance to Immigrants After 1996

State	Pre-enactment immigrants				Post-enactment immigrants			
	TANF	Medicaid	Food Assistance	SSI	TANF	Medicaid	Food Assistance	SSI
Alabama	No	Yes	No	No	No	No	No	No
Alaska	Yes	Yes	No	No	No	No	No	No
Arizona	Yes	Yes	No	No	No	No	No	No
Arkansas	Yes	Yes	No	No	No	No	No	No
California	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Colorado	Yes	Yes	No	No	No	No	Yes	No
Connecticut	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Delaware	Yes	Yes	No	No	No	Yes	No	No
District of Columbia	Yes	Yes	No	No	No	No	No	No
Florida	Yes	Yes	Yes	No	No	No	No	No
Georgia	Yes	Yes	No	No	Yes	No	No	No
Hawaii	Yes	Yes	No	No	Yes	Yes	No	No
Idaho	Yes	Yes	No	No	No	No	No	No
Illinois	Yes	Yes	Yes	Yes	No	Yes	No	No
Indiana	Yes	Yes	No	No	No	No	No	No
Iowa	Yes	Yes	No	No	No	No	No	No
Kansas	Yes	Yes	No	No	No	No	No	No
Kentucky	Yes	Yes	No	No	No	No	No	No
Louisiana	Yes	Yes	No	No	No	No	No	No
Maine	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Maryland	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Massachusetts	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Michigan	Yes	Yes	No	No	No	No	No	No
Minnesota	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Mississippi	Yes	Yes	No	No	No	No	No	No
Missouri	Yes	Yes	Yes	No	Yes	No	No	No
Montana	Yes	Yes	No	No	No	No	No	No
Nebraska	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Nevada	Yes	Yes	No	No	No	No	No	No
New Hampshire	Yes	Yes	No	Yes	No	No	No	No
New Jersey	Yes	Yes	Yes	No	No	No	No	No
New Mexico	Yes	Yes	No	No	No	No	No	No
New York	Yes	Yes	Yes	No	No	No	No	No
North Carolina	Yes	Yes	No	No	No	No	No	No
North Dakota	Yes	Yes	No	No	No	No	No	No
Ohio	Yes	Yes	Yes	No	No	No	No	No
Oklahoma	Yes	Yes	No	No	No	No	No	No
Oregon	Yes	Yes	No	Yes	Yes	No	No	Yes
Pennsylvania	Yes	Yes	No	No	Yes	Yes	No	No
Rhode Island	Yes	Yes	Yes	No	Yes	Yes	No	No
South Carolina	Yes	Yes	No	No	No	No	No	No
South Dakota	Yes	Yes	No	No	No	No	No	No
Tennessee	Yes	Yes	No	No	Yes	No	No	No
Texas	Yes	Yes	Yes	No	No	No	No	No
Utah	Yes	Yes	No	No	Yes	No	No	No
Vermont	Yes	Yes	No	No	Yes	No	No	No
Virginia	Yes	Yes	No	No	No	Yes	No	No
Washington	Yes	Yes	Yes	No	Yes	Yes	Yes	No
West Virginia	Yes	Yes	No	No	No	No	No	No
Wisconsin	Yes	Yes	Yes	No	Yes	No	Yes	No
Wyoming	Yes	No	No	No	Yes	No	No	No
States offering program	50	50	17	5	19	14	10	3

Source: Zimmermann and Tumlin (1999, Table 5). The state-funded programs for post-enactment immigrants are offered during the (federal) five-year bar following the time of entry into the United States.

Table 3. Trends in Welfare Receipt and Poverty Rates, by Type of State

	More generous states		Less generous states	
	<u>Pre-1996</u>	<u>Post-1996</u>	<u>Pre-1996</u>	<u>Post-1996</u>
<u>Welfare participation rate</u>				
Natives	13.7	11.5	15.8	12.9
Immigrants	20.0	16.8	18.9	11.5
Citizens	13.5	15.3	14.4	11.9
Non-citizens	23.6	18.0	22.1	11.3
Non-citizen, non-refugee	21.7	17.1	21.9	10.9
<u>Poverty rate:</u>				
Natives	13.2	11.9	16.4	13.9
Immigrants	23.7	19.1	26.4	21.3
Citizens	12.4	12.3	12.6	13.1
Non-citizens	30.0	24.0	36.2	26.3
Non-citizen, non-refugee	29.2	24.0	35.8	27.2
<u>Adjusted poverty rate:</u>				
Natives	11.7	10.9	14.6	12.9
Immigrants	22.5	18.6	24.3	21.0
Citizens	11.6	11.7	11.3	12.7
Non-citizens	28.6	23.6	33.6	26.2
Non-citizen, non-refugee	28.1	23.7	32.7	27.1

Notes: The pre-1996 statistics are calculated from the pooled 1995 and 1996 March Current Population Surveys; the post-1996 statistics are calculated from the pooled 1999, 2000, and 2001 March Current Population Surveys. The welfare participation rate gives the proportion of families that received cash benefits, food stamps, or Medicaid.

**Table 4. Impact of Welfare Reform on Welfare Participation and Poverty Status,
Triple Difference Estimates**

Groups compared:	Receive some type of assistance		Poverty status		Adjusted poverty status	
	(1)	(2)	(1)	(2)	(1)	(2)
By citizenship status:						
1. Citizens relative to natives	.036 (.020)	.031 (.020)	-.008 (.020)	-.008 (.020)	-.013 (.020)	-.014 (.020)
2. Non-citizens relative to natives	.059 (.016)	.055 (.016)	.034 (.016)	.033 (.017)	.019 (.016)	.017 (.016)
By years since migration						
1. New immigrants relative to natives	.032 (.017)	.027 (.017)	-.007 (.017)	-.009 (.018)	-.011 (.017)	-.013 (.017)
2. Earlier immigrants relative to natives	.064 (.018)	.061 (.018)	.037 (.018)	.036 (.019)	.018 (.018)	.017 (.018)
Immigrants relative to natives	.048 (.013)	.044 (.013)	.014 (.013)	.012 (.013)	.003 (.013)	.001 (.013)
Controls for state fixed effects, with interactions	No	Yes	No	Yes	No	Yes

Notes: Standard errors are reported in parentheses. The regressions have 289,949 observations. All regressions control for the age, race, gender, and educational attainment of the family head; the total number of persons, children, elderly persons, and disabled persons in the family; a vector of dummy variables indicating the family's year of arrival in the United States (if immigrant); a dummy variable indicating if the family head is a refugee; the state's unemployment rate in the particular survey year, and interactions between the unemployment rate and the vector of dummy variables indicating the family's immigration status (e.g., native, citizen, or non-citizen). The "state fixed effects, with interactions" include a vector of state fixed effects, and these fixed effects are interacted with the dummy variable indicating if the observation was drawn from the post-1996 period.

**Table 5. Sensitivity of Impact of Welfare Reform to Specification Changes,
Triple-Difference Estimates**

<u>Groups compared:</u>	Receives assistance		Poverty status		Adjusted poverty status	
	(1)	(2)	(1)	(2)	(1)	(2)
Families living outside California						
1. Citizens relative to natives	.034 (.019)	.029 (.019)	-.009 (.020)	-.011 (.020)	-.016 (.020)	-.018 (.020)
2. Non-citizens relative to natives	.065 (.016)	.062 (.016)	.023 (.016)	.022 (.017)	.005 (.016)	.004 (.016)
Using native single female-headed families as baseline						
1. Citizens relative to women	.024 (.023)	.016 (.023)	-.022 (.025)	-.026 (.025)	-.025 (.025)	-.031 (.025)
2. Non-citizens relative to women	.058 (.019)	.054 (.020)	.019 (.021)	.016 (.021)	.008 (.020)	.006 (.021)
Using native black families as baseline						
1. Citizens relative to blacks	.017 (.025)	.002 (.027)	-.028 (.026)	-.040 (.028)	-.029 (.026)	-.042 (.028)
2. Non-citizens relative to blacks	.049 (.022)	.036 (.025)	.014 (.022)	-.001 (.025)	.005 (.022)	-.005 (.025)
Controls for state fixed effects, with interactions	No	Yes	No	Yes	No	Yes

Notes: Standard errors are reported in parentheses. The regressions estimated in the sample of families living outside California have 263,414 observations; the regressions estimated with single female-headed households as the baseline have 116,757 observations; and the regressions estimated with black families as the baseline have 63,481 observations. All regressions control for the age, race, gender, and educational attainment of the family head; the total number of persons, children, elderly persons, and disabled persons in the family; a vector of dummy variables indicating the family's year of arrival in the United States (if immigrant); a dummy variable indicating if the family head is a refugee; the state's unemployment rate in the particular survey year, and interactions between the unemployment rate and the vector of dummy variables indicating the family's immigration status (e.g., native, citizen, or non-citizen). The "state fixed effects, with interactions" include a vector of state fixed effects, and these fixed effects are interacted with the dummy variable indicating if the observation was drawn from the post-1996 period.

Table 6. Trends in Family Labor Supply and Family Income, by Type of State

	More generous states		Less generous states	
	<u>Pre-1996</u>	<u>Post-1996</u>	<u>Pre-1996</u>	<u>Post-1996</u>
<u>Total hours worked by family (in 1000s)</u>				
Natives	2.206	2.252	2.184	2.223
Immigrants	2.217	2.430	2.124	2.403
Citizens	2.316	2.504	2.304	2.479
Non-citizens	2.162	2.375	1.996	2.356
Non-citizen, non-refugee	2.222	2.400	2.033	2.311
<u>Family income (in 1000s)</u>				
Natives	45.284	51.017	39.567	44.077
Immigrants	37.705	44.325	36.039	42.621
Citizens	50.594	55.795	49.205	53.939
Non-citizens	30.546	35.876	26.718	35.620
Non-citizen, non-refugee	31.013	36.192	26.973	34.930
<u>Family earnings (in 1000s)</u>				
Natives	36.086	41.168	31.255	35.130
Immigrants	31.610	38.403	30.195	36.679
Citizens	40.768	46.540	39.058	43.487
Non-citizens	26.524	32.410	23.921	32.464
Non-citizen, non-refugee	27.346	32.906	24.294	31.714

Notes: The pre-1996 statistics are calculated from the pooled 1995 and 1996 March Current Population Surveys; the post-1996 statistics are calculated from the pooled 1999, 2000, and 2001 March Current Population Surveys.

**Table 7. Impact of Welfare Reform on Family Labor Supply and Family Income, Triple Difference Estimates
(All dependent variables measured in 1000s)**

Groups compared:	Total hours of work		Family income		Family earnings	
	(1)	(2)	(1)	(2)	(1)	(2)
By citizenship status:						
1. Citizens relative to natives	.020 (.075)	.015 (.075)	-2.857 (2.528)	-2.539 (2.534)	-.491 (2.360)	-.128 (2.366)
2. Non-citizens relative to natives	-.145 (.061)	-.129 (.062)	-4.581 (2.084)	-3.947 (2.107)	-4.133 (1.946)	-3.549 (1.968)
By years since migration						
1. New immigrants relative to natives	-.007 (.065)	.001 (.066)	-1.796 (2.220)	-1.409 (2.237)	-.162 (2.072)	.288 (2.089)
2. Earlier immigrants relative to natives	-.137 (.069)	-.131 (.069)	-5.304 (2.340)	-4.664 (2.351)	-4.394 (2.185)	-3.857 (2.196)
Immigrants relative to natives	-.068 (.048)	-.060 (.049)	-3.546 (1.627)	-3.045 (1.651)	-2.319 (1.519)	-1.833 (1.541)
Controls for state fixed effects, with interactions	No	Yes	No	Yes	No	Yes

Notes: Standard errors are reported in parentheses. The regressions have 289,949 observations. All regressions control for the age, race, gender, and educational attainment of the family head; the total number of persons, children, elderly persons, and disabled persons in the family; a vector of dummy variables indicating the family's year of arrival in the United States (if immigrant); a dummy variable indicating if the family head is a refugee; the state's unemployment rate in the particular survey year, and interactions between the unemployment rate and the vector of dummy variables indicating the family's immigration status (e.g., native, citizen, or non-citizen). The "state fixed effects, with interactions" include a vector of state fixed effects, and these fixed effects are interacted with the dummy variable indicating if the observation was drawn from the post-1996 period.

**Table 8. Sensitivity of Impact of Welfare Reform on Family Labor Supply and Family Income, Triple Difference Estimates
(All dependent variables measured in 1000s)**

<u>Groups compared:</u>	Total hours of work		Family income		Family earnings	
	(1)	(2)	(1)	(2)	(1)	(2)
Families living outside California						
1. Citizens relative to natives	.027 (.074)	.017 (.075)	-1.253 (2.493)	-.698 (2.498)	.798 (2.324)	1.407 (2.330)
2. Non-citizens relative to natives	-.165 (.062)	-.157 (.062)	-4.398 (2.068)	-3.782 (2.089)	-4.255 (1.928)	-3.616 (1.948)
Using native single female-headed families as baseline						
1. Citizens relative to women	.038 (.069)	.039 (.070)	-1.426 (1.869)	-.585 (1.892)	.461 (1.741)	1.318 (1.764)
2. Non-citizens relative to women	-.102 (.058)	-.100 (.060)	-3.695 (1.555)	-2.833 (1.608)	-3.048 (1.450)	-2.306 (1.499)
Using native black families as baseline						
1. Citizens relative to blacks	.022 (.086)	.014 (.092)	1.256 (2.368)	-1.223 (2.536)	.657 (2.266)	.424 (2.428)
2. Non-citizens relative to blacks	-.129 (.073)	-.142 (.084)	-3.787 (2.004)	-3.595 (2.299)	-3.082 (1.917)	-3.301 (2.200)
Controls for state fixed effects, with interactions	No	Yes	No	Yes	No	Yes

Notes: Standard errors are reported in parentheses. The regressions estimated in the sample of families living outside California have 263,414 observations; the regressions estimated with single female-headed households as the baseline have 116,757 observations; and the regressions estimated with black families as the baseline have 63,481 observations. All regressions control for the age, race, gender, and educational attainment of the family head; the total number of persons, children, elderly persons, and disabled persons in the family; a vector of dummy variables indicating the family's year of arrival in the United States (if immigrant); a dummy variable indicating if the family head is a refugee; the state's unemployment rate in the particular survey year, and interactions between the unemployment rate and the vector of dummy variables indicating the family's immigration status (e.g., native, citizen, or non-citizen). The "state fixed effects, with interactions" include a vector of state fixed effects, and these fixed effects are interacted with the dummy variable indicating if the observation was drawn from the post-1996 period.

Table 9. Instrumental Variable Estimates of Receipt of Welfare

<u>Methodology:</u>	Dependent variable				
	<u>Poverty status</u>	<u>Adjusted poverty status</u>	<u>Annual hours worked (in 1000s)</u>	<u>Family income (in 1000s)</u>	<u>Family earnings (in 1000s)</u>
1. OLS	.218 (.002)	.140 (.002)	-.631 (.007)	-10.317 (.240)	-11.617 (.223)
2. IV, using citizenship status	.449 (.280)	.189 (.272)	-1.876 (1.084)	-73.749 (39.232)	-54.413 (34.844)
3. IV, using years since migration	.436 (.280)	.147 (.273)	-1.784 (1.082)	-72.407 (39.278)	-50.803 (34.712)
4. IV, using only immigration status	.274 (.288)	.020 (.289)	-1.363 (1.106)	-68.729 (40.759)	-41.369 (35.669)

Notes: Standard errors are reported in parentheses. The regressions have 289,949 observations. All regressions control for the age, race, gender, and educational attainment of the family head; the total number of persons, children, elderly persons, and disabled persons in the family; a vector of dummy variables indicating the family's year of arrival in the United States (if immigrant); a dummy variable indicating if the family head is a refugee; the state's unemployment rate in the particular survey year, and interactions between the unemployment rate and the vector of dummy variables indicating the family's immigration status (e.g., native, citizen, or non-citizen). All regressions include a vector of state fixed effects, and these fixed effects are interacted with the dummy variable indicating if the observation was drawn from the post-1996 period.