Economic Conditions and Poverty:

A Comparison of the 1980s and 1990s

Gary A. Hoover
Department of Economics, Finance, and Legal Studies
University of Alabama

Geoffrey L. Wallace[*]
La Follette School of Public Affairs
University of Wisconsin

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[*] Please address correspondences to Geoffrey L. Wallace, University of Wisconsin, La Follette School of Public Affairs, Madison WI 53706.

Abstract

In this paper we use state level data on family poverty that covers the period 1980 to 2000 to pursue 2 objectives. Our first objective is to establish a benchmark for the relationship between poverty rates among various family types (all families, married couple families, female headed families, white families, and nonwhite families) and unemployment rates in the 1980s and 1990s. After establishing this benchmark, which suggests statistically significant differences in the responsiveness of family poverty to unemployment rates between the 1980s and 1990s and between family types, we examine the plausibility of several explanations for these differences. We find no evidence that differences in real wages levels, differences in unemployment rate levels, welfare reform, or EITC expansion played role in the changing relationship between poverty and unemployment rates. We do find evidence that changes in the relationship between family poverty and unemployment rates at the state level are related to increases in labor force participation and associated employment.

Introduction

Historically, robust economic growth has led to reductions in the poverty rate, but beginning with the writings of Anderson (1968) scholars began to worry that the poverty reducing effects of economic growth would lose their bite. Anderson's principle concern was that the effect of economic growth on poverty would diminish as poverty was increasingly concentrated among groups whose poverty status was not affected by increases in aggregate economic activity. A 1978 paper by Thornton et al. was the first to offer empirical support for Anderson's hypothesis by showing that estimates of the impact of GDP growth on the change in the poverty rate were higher in the period 1947 to 1963 than in the period 1964 to 1974. Although later work by Hirsch (1980) showed that the conclusions reached by Thornton et al. were sensitive to the specification they used, researchers and policy makers were alerted to the notion that a "rising tide 'might not' lift all boats."

By the end of the 1980s it was clear to all knowledgeable and forthright observers that robust economic growth was not in itself sufficient to raise the lot of the poorest Americans. Despite the fact that Gross Domestic Product (GDP) grew at an average annual rate in excess of 4 percent between 1983 and 1989 the poverty rate declined only modestly, and income for families in all but the highest quintiles stagnated. Researchers examining the relationship between macroeconomic conditions, earnings-income distribution, and poverty in the early 1990s concluded that the weakening relationship between growth and the poverty rate during the 1980s was primarily attributable to low rates of real wage growth among less-skilled workers (Blank 1993; Cutler and Katz 1991; Blank and Card 1993).[1]

It now appears fall in the wages of the least skilled workers during the 1980s was an anomaly. A recession that ended in 1991-1992 was followed by the largest economic expansion in recent history. During tail end of this expansion, which saw record low unemployment rates, the wages of all Americans, including those at the bottom of the skill distribution, increased. By the end of this expansion in 2001 the national poverty rate had fallen to 11.3 percent, its lowest level in nearly 30-years. Researchers making

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[1] Leading candidates for explanations of these slow rates of real wage growth among less skilled workers in the 1980s are a declines in the real value of the federal minimum wage (Lee 1999), a shift away from manufacturing and the resultant decline in the power of unions (Bluestone & Harrison 1986), and a reduced demand brought about by the adoption of new technologies (Bound & Johnson 1992; Krueger 1993), trade imbalances (Murphy & Welch 1991), or unexplained within sector shift (Katz and Murphy 1992).

comparisons between the response of poverty rates to aggregate measures of economic performance between the 1980s and 1990s have reached the conclusion that poverty rates where more responsive to economic conditions in the 1990s than in the prior decade (Haveman and Schwabish 2000, Freeman 2003).

In this paper we use state level data on family poverty that covers the period 1980 to 2000 to pursue 2 objectives. Our first objective is to establish a benchmark for the relationship between poverty rates among various family types (all families, married couple families, female headed families, white families, and nonwhite families) and unemployment rates in the 1980s and 1990s. We focus on the unemployment rate because it the most commonly used state level labor market indicator in studies examining linkages between labor market performance and economic characteristics of low income populations. After establishing this benchmark, which suggests significant differences in the responsiveness of family poverty to unemployment rates between the 1980s and 1990s, we examine the plausibility of several explanations for these differences. Our hypotheses for differences in the responsiveness of poverty between the 1980s and 1990s are rated to (1) differential levels of wages for workers near the bottom of the wage distribution, (2) differential unemployment rate levels across the two periods and (3) changes in policy environment (welfare reform and EITC expansion).

As noted we find that that family poverty rates are responsive to unemployment rates in both decades, but that, with the exception of female headed families and white families, they are more responsive in the 1990s than in the 1980s. We also find differences between family types with respect to the responsiveness of poverty rates to unemployment rate changes. Not surprisingly unemployment rate changes have a smaller effect on poverty rates among female headed and nonwhite families than they do among other family types.

In terms of the potential explanations for the causes of differential responses of poverty to unemployment rates across between the 1980s and 1990s, we find no evidence that these differences are related to differential wage or unemployment rate levels. Nor do we find evidence that welfare reform or EITC expansion played a strong role in accounting for these differences. Rather we conclude that differences in the responsiveness of family poverty to unemployment rates is due to a failure of the unemployment rate to account for increases in labor force participation and associated employment that occurred in the 1990s.

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The remainder of this paper proceeds in 5 sections. In the next section we develop our hypotheses for the increases responsiveness of poverty rates in the 1990s, relative to the preceding decade. We devote the third section of this paper to describing the data used in this analysis. The proceeding section outlines the methods we use in estimating the extent and determinants of the response of poverty to unemployment rates between the 1980s and 1990s. In the fifth section we present your results and in the sixth section we conclude.

Hypothesis for the Differential Responsiveness of Poverty to Unemployment Rates Between the 1980s and 1990s

In response to what appeared to be a shift in the historic relationship between aggregate measures of economic performance (unemployment rates and GDP growth) and poverty rates in the 1980s, researchers in the early 1990s began examining possible explanations for this shift (Blank 1993, Cutler and Katz 1991, Blank and Card 1993). This research offered evidence highlighting declines in real wages for less-skilled workers as the primary reason that poverty rates were not as responsive to unemployment rates (and other measures of aggregate economic performance) in the early 1980s than in earlier decades. This hypothesis appears entirely consistent with observed changes in the relationship between poverty and unemployment rates in the 1990s: If stagnant wage growth at the left tail of the wage distribution were responsible for the weak linkage between unemployment rates and poverty in the 1980s, it only makes sense that the robust wage growth of the 1990s would create a strong linkage between unemployment rates and poverty.

While wage growth near the bottom of the wage distribution offers a potentially compelling explanation for why poverty rates were more responsive to unemployment rates in the 1990s than in the previous decade, it is not the only force at work. During the 1990s there were several changes to the economic and policy environment which may have led to increases linkage between unemployment rates and poverty.

One other potential economic explanation for the increased responsiveness of poverty to unemployment rates during the 1990s, relative to the 1980s, is that unemployment rates where at significantly lower levels in the 1990s. The periods 1980 to 1989 and 1990 to 2000 correspond to trough-to-trough periods the unemployment rate series. During 1980 to 1989 period the average national

unemployment rate was 7.27 percent, while during the 1990 to 2000 period it was only 5.60 percent. There is evidence that the tight labor markets of the mid- to late-1990s, as reflected by the very low unemployment rates, might have led employers to increased hiring of workers traditional considered less desirable (Holzer et al. 2005) and that robust economic growth, as differentiated from typical economic growth, has an increased effect on poverty (Enders and Hoover 1993). Thus, the estimated increase in the responsiveness of poverty to unemployment rates in the 1990s may simply reflect nonlinearities in the relationship between the two measures, rather than a structural shift in the relationship between the two variables.

In addition to the changes in the economy noted above there were also significant changes to the policy environment in the 1990s which may have contributed to a strengthening of the relationship between poverty and unemployment rates in the 1990s. First, there were expansions in the Earned Income Tax Credit (EITC) beginning in 1991. In addition to the federal expansion of the EITC program 10 states adopted refundable earned income tax credits over the period 1990 to 2000. In most cases these credits were tied to the federal EITC so that expansion in the federal EITC would lead to expansion of the state programs.

Refundable tax credits are not counted as income the standard Census formula for determining poverty status so expansion of such credits ought not have a direct effect on poverty rate. That said, researchers have linked EITC expansions with increased employment and labor force participation among female heads (Ellwood 2000; Meyer and Rosenbaum 2000; Meyer and Rosenbaum 2001). As people in female-headed families make up a disproportionate share of the poor, increases in employment and labor force participation among this group may reduce poverty.[2] Furthermore, to the extent that the EITC expansion increased the attachment of female family heads to the labor market, it may also have had a substantial impact on the measured relationship between unemployment rates and poverty.

EITC expansion was not the only policy shift with potential effects on the relationship between unemployment rates and poverty. Beginning in the early 1990s the Department of Health and Human Services began granting waivers to states to run experimental welfare reform programs. These waivers generally took the time limits on benefit receipt, work requirements, changes in the formulas used to

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[2] In 2000 people in female headed families represented less than 14 percent of the US population, but made up nearly 35 percent of the nations poor..

compute benefit levels for working recipients, reductions in the number of recipients who are exempt from job training, and making it easier for states to sanction recipients for failing to comply with work or job training requirements. Efforts at welfare reform culminated in September of 1996 when President Clinton signed the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). This law replaced the Aid to Families with Dependent Children program (AFDC) with Temporary Assistance for Needy Families (TANF) block grants and mandated that states adopt minimum time limits for receipt and require recipients to work.

These reforms appear to have led to large reductions in welfare caseloads (Moffitt 1999; Wallace and Blank 2000) and, more importantly from the point of view of this analysis, increases in employment and labor force attachment and reductions in poverty among female family heads (Moffitt 1999, Blank and Schoeni 2000; Ellwood 2000; Meyer and Rosenbaum 2001; Gunderson and Zilliak 2004). As noted in the discussion of the effects of EITC expansion, any policy change which increases the attachment of female heads to the labor force, because of their disproportionate representation in the pool of poor family heads, may lead to a strengthening of the relationship between poverty and unemployment.

We have highlighted differential wages levels, differential employment levels, EITC expansion and welfare reform as potential explanations for changes in the responsiveness of poverty to unemployment rates between the 1980s and 1990s. In the remaining sections of this paper we describe the data and models used to evaluate these alternative conjectures and present our results.

Data

The data used in this paper come from the March CPS, the CPS Outgoing Rotation Group files (CPS ORG) files, and state-level data on unemployment rates, the timing of welfare reforms, and the creation of state EITC programs. The use of state-level data is particularly important in this analysis as many of the significant and identifiable policy changes occurred at the state level. For instance, without the use of state-level data is impossible to determine whether pre-PRWORA welfare reform waivers or state EITC creation had a role in strengthening the relationship between poverty and unemployment rates in the 1999s.

The March CPS is a large survey of about 50 thousand US households administered by the Census Bureau. Each March survey participants are asked about their background, living arrangements, and income over the prior calendar year. To form the sample that was used in the analysis that follows, we

computed poverty rates for each of the 50 states and the District of Columbia from 1980 to 2000 for five types of families; all families, married couple families, female-headed families, white families and nonwhite families.[3,4] Because the CPS was not constructed with the intent of providing reliable estimates of state poverty rates we then took a weighted moving average of these annual poverty rates over a 3 year period. So, for instance, the family poverty rate in Alabama in 1994 is a weighted average of the 1993, 1994, and 1995 poverty rates where the weights used were the number of census families in each year. Poverty rates were computed for several different types of families: all families, married couple families, female-headed families, while families, and nonwhite families. This poverty rate data was merged with data on state unemployment rates obtained from the Bureau of Labor Statistic and information on the timing of state welfare reforms obtained from the Department of Health and Human Services.

In computing our family poverty rates we are relaying on the official Census definition of poverty which determines a family's poverty status by comparing its total (pre-tax) family income to a threshold determined by the family's size and age composition. The poverty thresholds used in this measure were originally constructed in 1963-1964 as 3 times the US Department of Agricultures (USDA) "Thrifty Food Plan," reflecting the fact that at the time family food expenditures *were* typically 1/3 of family income. The "Thrifty Food Plan" defined by the USDA as the amount of food necessary meet the *temporary* nutritional needs of families when income was low. The poverty thresholds are indexed to inflation using the CPI-U (the consumer price index or all urban consumers). Other than annual indexing there have been very few changes in the poverty thresholds in the 30 plus years since they were created.[5]

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[3] For the period covered by this study the March CPS classifies all individuals as residing in a primary family, a unrelated subfamily, a related subfamily, or as being a nonfamily householder (primary individual) or an unrelated individual (living with a family). For families that contain related subfamilies the total family income, including income of any subfamily members, is used to determine the poverty status of all persons in the family unit. For families that contain unrelated subfamilies, the poverty status of primary family and subfamily members is determined separately on the basis of each families income, family size and composition. Thus, the universe of families used in the computing the state poverty rates are primary families (with or without included related subfamilies) and unrelated subfamilies. In 2000, the last year in which we collected data, approximately 71 percent of the poor and 83 percent of the population resided one of these family unit types.

[4] Several states with small nonwhite populations were excluded from the analysis of nonwhite family poverty rates. These states were Alaska, Idaho, Hawaii, Maine, Montana, New Hampshire, North Dakota, Rhode Island, South Dakota, Utah, Vermont and Wyoming.

[5] As originally constructed the poverty thresholds were lower female-headed families and families living on farms. During the period covered by this study (1980-2000) there were no changes in the way the thresholds were constructed or in the sources of income with which they are compared.

The official poverty rate can be criticized along a number of dimensions. The income sources used to compute poverty rates do not include in-kind transfers such as food stamps. Additionally, the official poverty rate is based on pre-tax income so does not reflect changes in the tax burden of the low-income families. For this reason important policy changes like EITC expansion do not have a direct effect on the official poverty rate. The official poverty rate is also one dimensional in that it provides an indication of how many families are below the thresholds, without giving any indication as to the depth of poverty. Lastly, the poverty thresholds have not been updated to reflect increasing standards of living or to adjust for the fact that food expenditures are currently a much smaller share of family expenditures.

We are aware of all of these shortcomings of the official poverty rate, but it is still used as the basis for determining eligibility for programs like public housing, food stamps and Medicaid, and is still the figure most often cited by the press, policy makers, and social scientist in determining the extent of poverty in the US. While consideration of alternative poverty rates is outside the scope of analysis for this paper, there are a number of recent papers that do a nice job off examining the relationship between the macroeconomy and alternative measures of poverty (Formby et al. 2001; Defina 2002; Gunderson and Ziliak 2004; Iceland et al. 2005)

One factor that has been shown to have a large effect on poverty is wages (hourly or weekly) for workers near the bottom of the wage distribution (Blank 1989; Blank and Card 1993). Unfortunately, information on wages is not available in the March CPS. To construct a regional hourly wage series we made use of data from the CPS ORG files. The basic monthly CPS is administered monthly around 50 US households. Each household in the CPS is interviewed continuously for 4 months, ignored for 8 months, and interviewed again for 4 months again. As part of the basic monthly CPS information on hours worked and earnings are not gathered, however this information is gathered for persons in households over the age of 14 that are rotating out of the CPS because they are in their 4'th or 8'th month of the survey. From this information on weekly wages and hours worked from the CPS ORG we computed the 25th percentile of hourly wages for full-time workers by state, year, sex, and race. Thse wage series was this price adjust to 2001 dollars using the CPI-U.

Figure 1 shows our tabulated national family poverty rate against the national unemployment rate and the 25th percentile of hourly wage distribution for the years 1980 to 2000.[6] Examining Figure 1 it is evident that there is a close relationship between the unemployment rate and poverty rate, with the two series tracking each other very closely over the entire period. What is also evident is that from Figure 1 is that wages at the 25th percentile of the hourly wage distribution do not appear to closely related to either the unemployment rate of the poverty rate in any simply way. Following the recession in the early 1980s wages at the 25th percentile of the wage distribution appeared as they were rebounding nicely until 1986, after which they started to decline despite robust growth in GDP and a falling unemployment rates. Wages at the 25th percentile of the wage distribution continued to decline until 1996, after which time they increased rapidly.

From the national data there are signs of an association between poverty rates, unemployment rates. What has yet to be determined is strength of this apparent association at the state level, how it might have changed across the business cycles of the 1980s and 1990s, and what factors may have led to these changes.

In order to make a comparison of the responsiveness of family poverty to unemployment rates between the 1980s and 1990s we need to specify a natural divide between the two periods. We have chosen to divide the data into two period of roughly equal length. The first period covers the years 1980 to 1989 and the second period covers 1990 to 2000. Both periods correspond to trough-to-trough periods in the national unemployment and poverty rates. The bounds of the second period are also noteworthy in that important policy changes such as EITC expansion and welfare reform are entirely contained in within them.

Methods

First order in the investigation of these research questions is the construction of an empirical model which will allow us to gauge the extent to which there has been a change the responsiveness of poverty rates to unemployment rates for a variety of family types across the two periods. To this end we use a fairly basic model that uses the natural log of the family poverty rate as the dependent variable, allows unemployment

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[6] Our national family poverty rate tracks the official Census Bureau national poverty rate very closely, suggesting that our tabulations should provide estimates of state poverty rates which are consistent with Census measures.

rates to enter the equation in the form of a distributed lag, and includes state fixed effects and time trends. More formally we estimate

$$\ln\left(poverty\ rate_{ijt}\right) = \alpha_o + \sum_{k=0}^{K} \beta_k \cdot urate_{it-k} + \sum_{k=0}^{K} \beta_K^{90s} \cdot urate_{it-k} \cdot I(t > 1990)$$

$$+ \eta \cdot wage25_{ijt} + \sum_{k=0}^{K} \phi_k^{waiver} \cdot waiver_{it-k} + \sum_{k=0}^{K} \phi_k^{TANF} \cdot TANF_{it-k} \quad (1)$$

$$+ \gamma' \cdot Z_{ijt} + \delta_t + \theta_i + \partial_i^1 \cdot t + \partial_i^2 \cdot t^2 + \varepsilon_{it}$$

where $poverty\ rate_{ijt}$ is the poverty rate in state i for family type j in year t, K is the number of lags of the state unemployment rate and welfare reform variables, $wage25_{ijt}$ is the 25th percentile of the wage distribution for the appropriate group.[7] The vector Z_{ijt} contains demographic variables including the percentage of family heads that have not completed high school, the percentage non-white family heads, the percentage elderly family heads, the percentage of families headed by females, and the average number of children less than 18. θ_i are state fixed effects, δ_t are year effects, $\partial_i^1 \cdot t + \partial_i^2 \cdot t^2$ are state specific time quadratic time trends, and ε_{it} is a random disturbance term. Because the dependent variable is in natural log form and the independent variables are in levels, the coefficients can be interpreted as marginal fractional changes.

In model (1) the long run, steady state, effect of the unemployment rate on the poverty rate in the 1980s is $\sum_{k=0}^{k} \beta_j$ and the difference between the long run effect of a unit change in the unemployment between the 1980s and 1998s is $\sum_{k=0}^{K} \beta_k^{90s}$. The long run effect of pre-PRWORA waiver and TANF implementation are $\sum_{k=0}^{k} \phi_k^{waiver}$ and $\sum_{k=0}^{k} \phi_k^{TANF}$.

Model (1) can conveniently be rewritten as

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[7] For all families and married couple families we use wage measures computed over the universe of all full-time workers. For female-headed families we use wage measures computed over the universe of all female full-time workers. The regressions for white and nonwhite families use wage measures computed over the universe of full-time while and nonwhite workers.

$$\ln\left(poverty\ rate_{it}\right) = \alpha_o + \beta \cdot urate_{it} + \beta^{90s} \cdot urate_{it} \cdot I(t > 1989)$$

$$+ \eta \cdot wage25_{ijt} + \phi^{waiver} \cdot waiver_{it} + \phi^{TANF} \cdot TANF_{it} + \gamma' \cdot Z_{ijt}$$

$$+ \sum_{k=1}^{K} \lambda_j \cdot \Delta urate_{it}^k + \sum_{k=1}^{K} \lambda_k^{90s} \cdot \Delta urate_{it}^k \cdot I(t > 1989) \qquad (2)$$

$$+ \sum_{k=1}^{K} \psi_k^{waiver} \cdot \Delta waiver_{it}^k + \sum_{k=1}^{K} \psi_k^{TANF} \cdot \Delta TANF_{it}^k$$

$$+ \delta_t + \theta_i + \partial_i^1 \cdot t + \partial_i^2 \cdot t^2 + \varepsilon_{it}$$

where $\Delta x_{it}^k = \left(x_{it} - x_{it-k}\right)$. In this form of the model the long run, steady state, effect of the unemployment rate on the poverty rate in the 1980s is β and difference between the long run effect of a unit change in the unemployment rate in the 1980s and 1990s is β^{90s}. The long run effect of waiver and TANF implementation is given by ϕ^{waiver} and ϕ^{TANF}.

Models (1) and (2) have the advantage of allowing for some dynamic and lagged effects without the inclusion of a lagged dependent variable. The inclusion of a lagged dependent variable in these specifications would be problematic. As shown by Nickell (1981), consistency of the parameter estimates in models with lagged dependent variables and fixed effects depends on the size of t. Because we are estimating our models over fairly short time periods (21 years) it is our determination that the inclusion of lagged dependent variables would not be appropriate.

One other important feature of the model is that it contains both state fixed effects and time trends. The state fixed effects are included to provide controls for unobserved state level factors that are correlated with poverty rates. These unobserved state level factors may reflect unobserved demographic differences, differences in behavior, or unobserved differences in the policy environments across states that affect poverty. Because we are estimating a relatively sparse model over 21-years, we also included state specific time trends. These time trends allow the unobserved factors captured by the state fixed effects to trend quadratically over time.

After documenting the changes in responsiveness of family poverty to unemployment rates using the model specified above, we then use a variety of alternative specifications to try and tease out the mechanisms surrounding these changes. Rather than outline these models in this section we choose to

proceed with the results of our base specification and save the discussion of alternative specifications for the next section.

Results

The estimates associated with model (2) are shown in Table 1. The version of model (2) shown in Table 1 includes 2-lags of the current state unemployment rate and the welfare reform variables. We tried including additional lags, but using an F-test we could not reject the hypothesis that the coefficients on the additional lag terms were zero. All regression results are weighted using the number of census families used in computing the poverty rate for each state-year.

Examining the results in Table 1 it is clear state level unemployment rates have large effect on poverty, but the magnitude of the effect varies across family types. For all families, married couple families, and white families a one unit decrease in the state unemployment rate in the 1980s is estimated decrease the family poverty rates by approximately 5 to 7 percent. Unemployment rate are estimated to have a notably smaller effect on poverty rates for female headed and nonwhite families. For these types of families a 1 unit decrease in the unemployment rate in the 1980s decrease poverty rates by an estimated 3 to 4 percent. This finding female headed and nonwhite family poverty rates to state unemployment rates is consistent with the findings of other recent studies (Gunderson and Ziliak 2004).

Whether or not there are statistically significant differences in the impact of state unemployment rates across the two decades also depends on family type. For all families, married couple families, and nonwhite families the effect of state unemployment rates on poverty rates are significantly higher in the 1990s than in the prior decade. These differences range from 25-percent higher for all families to 50-percent higher for nonwhite families. Somewhat surprising, in light of all the policy changes in the 1990s that affected the labor market attachment of female heads (EITC expansion and welfare reform), is the fact that the estimates of the responsiveness of female headed family poverty to unemployment rates in the 1990s is no higher than in the 1980s. Given that these policies do not seem to have affected the relationship between poverty and unemployment among female heads, it seems unlikely that they are responsible for the increases responsiveness of poverty to unemployment rates more generally.

Wages at the 25th percentile of the hourly wage distribution have a moderate, but statistically significant, effect on family poverty for all but female headed families. For family types other than female

headed families, a 1 dollar increase in the wages at the 25th percentile of the hourly wage is estimated to decrease poverty rates by between 2.8 and 5.5 percent. A $1 change in the 25th percentile of hourly wages is a little less than a change of one standard deviation.

Turning to the welfare reform variables, waiver implementation has a statistically significant effect on poverty rates for female headed families and nonwhite families. Implementation of a pre-PRWORA waiver is estimated to reduce poverty rates among female headed families and nonwhite families by 4.3 and 7.1 percent respectively. As these family types were disproportionately represented in the welfare caseload these impacts are not surprising. It is also encouraging, for the point of view of model validity, that the pre-PRWORA waiver implementation does not appear to have affected the poverty rates of other family types. In contrast to waiver implementation, TANF implementation has comparatively large effects across a range of family types, some of which should not be affected by such reforms. We do not put much stock in these estimates there is not much variation between states in the timing of TANF implementation. All states implemented TANF in 1997 or in 1998. As we also include year effects in our models, the source of variation on which the TANF effects estimates are based is dubious.

For the most part the demographic controls have the anticipated effects. Increases in the average number of children per family, the percentage of heads with less than a high school degree, the percentage of female heads, and the percentage of nonwhite heads all have a positive and statistically significant effects where they are included. The fraction of elderly heads has a small, negative and statistically significant effect on poverty rates for female headed families and for white families. For other families the hypothesis that the percentage of elderly heads has no effect on poverty rates cannot be rejected using reasonable significance levels. The percent of families living in a central city has a small positive and statistically significant effect for nonwhite families, but the effect is small and not statistically significant for other family types.

In Table 2 we show estimates from an alternative specification which excludes the state specific quadratic time trends. As noted above we think that inclusion of these trends is important to provide controls for changing unobserved demographics, behaviors, and policies that may be correlated with poverty and the independent variables within states over the course of the 21-year period covered by our data. We show the show these estimates of this alternative specification because our findings concerning

degree of responsivenes, and differences in this responsiveness of family poverty rates to state unemployment rates between the 1980s and 1990s are sensitive to the inclusion of these trends.

In general, the impact of state unemployment rates on family poverty rates in the 1980s are larger in the models with the state time tends included. Estimated differences between the responsiveness of family poverty to unemployment rates between the 1980s and 1990s are also much smaller in the models with the time trends. Because of these smaller estimated differences between the effect of state unemployment rates in 1980s and 1990s, the effects of the unemployment rate on family poverty in the 1990s are smaller in the Table 1 specifications than in the Table 2 specifications

Estimates of the effects of changes in the 25th percentile of hourly wages and the demographic controls are pretty comparable across the Table 1 and Table 2 specifications, but estimates of the effects of welfare reform are not. In contrast to Table 1, where pre-PRWORA waiver implementation was estimated reduced poverty by a moderate amount among female headed and nonwhite families, estimates from the Table 2 specifications imply much larger effects across a broader spectrum of family types. For example, in Table 2 waiver implementation is estimated to reduce the poverty rate among married couple families by 10 percent. As married couple families were only tangentially affected by the implementation of pre-PRWORA waivers, this result is hard to reconcile and are one of the reasons we opted in favor of the Table 1 specification.

Having established a benchmark for the difference of the impact of state unemployment rates on poverty between the 1980s and 1990s we know turn to the question of whether these differences can be explained. At the outset of this analysis our principle hypotheses surrounding differences in the responsiveness of family poverty to unemployment rates were related declining wages near the bottom of the wage distribution in the 1980s, differential levels of unemployment rates between the 1980s at 1990s, welfare reform, and EITC expansion. In the rest of this section we use a variety of alternative specifications to explore assess the plausibility of these alternative hypotheses

Low Real Wage Levels

One hypothesis surrounding the differences in the responsiveness of family poverty to unemployment rates between the 1980s and 1990s is that they are related to real changes in wage levels near the bottom of the wage distribution. To determine what role changes in wages levels have had on the

relationship between poverty and unemployment rates we estimate a model in which our wage measure is interacted with the current and lagged state unemployment rates. This specification allows the sensitivity of the poverty rate to vary with the level of the 25th percentile of the wage distribution. All else equal, we would expect changes in the unemployment rate to have a more dramatic effect when wage levels are high. In other words, the availability of jobs in times of high wages is more important, in terms the effect of poverty, than the availability of jobs in times of low wages. If this is the case then unemployment rates would have had a smaller effect in the 1980s, when real wages levels for less-skilled workers were low. Formally, we estimate the model

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\begin{aligned}
\ln\left(poverty\ rate_{it}\right) &= \alpha_o + \beta \cdot urate_{it} + \beta^{90s} \cdot urate_{it} \cdot I(t>1989) \\
&+ \eta \cdot wage25_{ijt} + \varphi \cdot urate_{it} \cdot wage25_{ijt} + \phi^{waiver} \cdot waiver_{it} \\
&+ \phi^{TANF} \cdot TANF_{it} + \gamma' \cdot Z_{ijt} + \sum_{k=1}^{K} \lambda_j \cdot \Delta urate_{it}^{k} \\
&+ \sum_{k=1}^{K} \lambda_k^{90s} \cdot \Delta urate_{it}^{k} \cdot I(t>1989) + \sum_{k=1}^{K} \pi_j \cdot \Delta urate_{it}^{k} \cdot wage25_{ijt} \\
&+ \sum_{k=1}^{K} \psi_k^{waiver} \cdot \Delta waiver_{it}^{k} + \sum_{k=1}^{K} \psi_k^{TANF} \cdot \Delta TANF_{it}^{k} \\
&+ \delta_t + \theta_i + \partial_i^1 \cdot t + \partial_i^2 \cdot t^2 + \varepsilon_{it}
\end{aligned}
\tag{3}
$$

In this particular model the long run effect of a unity change in the unemployment rate in the 1990s $\beta + \eta \cdot wage25_{ijt}$ and the difference between the effect of a unit change in the unemployment rate in the 1980s and 1990s is β^{90s}.

The results of estimating model (3) across our 5 family types are shown in Table 3. Because our primary interest is in the impact economic and policy variables and the estimated coefficient on the demographic variables are very similar to those shown in Tables 1 and 2, we choose not to show the coefficients on the demographic variables in Table 3. Examining Table 3 it is clear that the differences between the responsiveness of family poverty rates to state unemployment rates persist, despite the inclusion of the wage – unemployment rate interaction terms. For all families, married couple families, and nonwhite families there are still statistically significant differences in the response of family poverty to a changes in the state unemployment rates across the two decades. Relative to the differences reported in our base specification, the differences reported in Table 3 are slightly lower, although not significantly so in the

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statistical sense. Based on this evidence it does not appear as though differences in the responsiveness of family poverty to unemployment rates between the 1980s and 1990s are related to wage levels.

For each family type the coefficient on the wage – unemployment rate interaction term is positive and for all families and married couple families this coefficient is statistically significant. This finding is consistent with our hypothesis that changes in the state unemployment rates have a larger effect when the wage rates are high. This positive sign on the wage – unemployment rate interaction term also means that changes in the 25th percentile of the hourly wage distribution have a larger effect when unemployment rates are high.

To get some sense of how including the wage – unemployment rate interaction terms affect our estimates of the sensitivity of family poverty to state unemployment rates and wages we calculated the impact of a one point increase in the unemployment rate and a one dollar increase in the 25th percentile of hourly wages evaluated at the average state unemployment rate and the average of 25th percentile of hourly wages over the 1980-2000 period. These calculations are shown in Table 4. Relative to the estimates shown in our base, Table 1 specification, the estimations of the long run 1980s unemployment coefficients in Table 4 are slightly lower and the coefficients on the 25th percentile of hourly wages are slightly higher

Differential Unemployment Rate Levels

Another hypothesis concerning the increased responsiveness of poverty to unemployment rates in the 1990s relates to the fact that unemployment rates were substantially lower in the 1990s than in the 1980s. To examine this hypothesis we allow the state unemployment rates to have differential effects on the poverty depending on their level. More precisely, we create interactions between the state unemployment rate variable and indicators of the unemployment rate level. Letting $urate^h$ denote the high unemployment rate threshold and $urate^l$ denote a low unemployment rate threshold, we estimate the following model

$$\ln\left(poverty\ rate_{it}\right) = \alpha_o + \beta \cdot urate_{it} + \beta^{90s} \cdot urate_{it} \cdot I(t > 1989)$$

$$+ \beta^l \cdot urate_{it} \cdot I\left(urate_{it} < urate^l\right)$$

$$+ \beta^h \cdot urate_{it} \cdot I\left(urate_{it} > urate^h\right)$$

$$+ \eta \cdot wage25_{ijt} + \phi^{waiver} \cdot waiver_{it} + \phi^{TANF} \cdot TANF_{it} + \gamma' \cdot Z_{ijt}$$

$$+ \sum_{k=1}^{K} \lambda_j \cdot \left(urate_{it-j} - urate_{it}\right)$$

$$+ \sum_{k=1}^{K} \lambda_k^{90s} \cdot \left(urate_{it-j} - urate_{it}\right) \cdot I(t > 1989)$$

$$+ \sum_{k=1}^{K} \lambda_k^l \cdot \left(urate_{it-j} - urate_{it}\right) \cdot I(urate_{it-j} < urate^l)$$

$$+ \sum_{k=1}^{K} \lambda_k^h \cdot \left(urate_{it-j} - urate_{it}\right) \cdot I(urate_{it-j} > urate^h)$$

$$+ \sum_{k=1}^{K} \psi_k^{waiver} \cdot \Delta waiver_{it}^k + \sum_{k=1}^{K} \psi_k^{TANF} \cdot \Delta TANF_{it}^k$$

$$+ \delta_t + \theta_i + \partial_i^1 \cdot t + \partial_i^2 \cdot t^2 + \varepsilon_{it}. \qquad (4)$$

In this model the 1980s the long run effect of a unit change in the state unemployment rate is β if the unemployment rate is between $urate^l$ and $urate^h$, $\beta + \beta^l$ if the unemployment rate is smaller than $urate^l$, and $\beta + \beta^h$ if the unemployment rate is greater than $urate^h$. In 1990s long run effect is β^{90s} plus whatever the 1980s long run effect is.

After some experimentation we chose to use the 20th and 80th percentile of the state level unemployment rate series as the low and high unemployment thresholds. These percentiles correspond to unemployment rates of 4.5 and 7.8. During the 1980s unemployment rates in only 9 percent of state years were below 4.5 percent while during the 1990s 28 percent of state years were below this the low unemployment rate threshold.

In the 1980s unemployment rates in 36 percent of state-years were above the 7.8 high unemployment rate threshold. For the latter period the comparable figure is merely 9 percent.

The results of estimating model (4) across our 5 family types using 4.5 and 7.8 percent low and high unemployment rate thresholds are shown in Table 5. The estimates of the impact of a of a long run response of state poverty rates to a 1-percentage point change in the unemployment rate shown in Table 5 are very similar to those shown in our base specification. Additionally, the coefficients unemployment rate

– unemployment level interactions are, for the most part small, and not statistically distinguishable from zero. We tried a number of different formulations of the thresholds in alternative specifications (not shown) and in each case the coefficients were small and not significantly different from zero. The only coefficients in Table 5 that are appreciable different from those in Table 1 are the coefficients on the 25th percentile of hourly wages. For all families and married couple families the coefficients in Table 5 are higher than those in Table 1, while for white and nonwhite families they are smaller.

Welfare Reform and EITC Expansion

The model (1) estimates suggested that there was not differential of the responsiveness of female headed family poverty between the 1980s and 1990s. As female headed families should have been affected by welfare reform and EITC expansion to a greater extent than other family types, it seems unlikely that these policy shifts would be the cause of the change in the family poverty unemployment rate relationship in aggregate. None-the-less, we estimated a number of models that attempted to highlight the contribution of welfare reform and EITC expansion in altering the relationship between family poverty and unemployment and found no evidence that either welfare reform or EITC expansion played a role.

The first set of models we estimated were based on the Table 1 specification, but, in addition to the Table 1 variables, include unemployment rate – waiver implementation and unemployment rate – TANF interaction variables and interactions between lagged welfare reform indicators and lagged unemployment rates. These variables allow for an unemployment rate changes to have different long run effects depending upon whether there are welfare reform measures in place.

The results of estimating this model across our 5 family types is shown in Table 6. In this Table 6 specification there is no substantial change in the relationship between unemployment rates and family poverty from the benchmark established in the Table 1 specification. Additionally, the coefficients on the unemployment – rate interaction terms are very close to zero and not statistically significant. The coefficients on the unemployment rate – TANF interaction variables are negative and, in most cases, statistically significant. As noted above however, the potential sources of variation available to identify coefficients on the TANF variable and TANF interaction terms are dubious so we do not put much stock in these estimates.

Determining the extent to which welfare reform affected the relationship between poverty and unemployment rates at the state level is pretty straightforward, but determining the extent to which federal EITC expansion affected this relationship is not. The feature that makes federal EITC expansion so much more difficult to get a handle on is that it occurred nationwide. As such the only source of variation in federal EITC expansion is over time. As we have included year effects in our model, it is impossible to determine the impact of federal EITC expansion the relationship between poverty and unemployment rates by simply estimating a variation of model (1).

One possibility would be to identify a control group and to use female headed families with children as the experimental group. Using this design we could obtain estimates of β^{90s} for both groups and use the differences in these coefficient estimates between groups as estimate of the impact of EITC expansion on the relationship between female headed family poverty and EITC expansion. The problem with this approach is that there does not appear to be an appropriate control group. In studies of the effect EITC on labor supply female heads with and without children have been used as experimental and control groups (Meyer and Rosenbaum 2001), but these groups do not seem appropriate for our analysis in part because of sample size limitations.

Short of being able to identify an appropriate control group, the best that we can do is to try to identify whether state EITC programs have had an impact on the relationship between family poverty and unemployment rates. Between 1986 and 2000 12 states established refundable tax credits similar to the federal EITC. In most states these programs are based on a percentage the federal EITC. In terms of size, the programs range from 4 to 43 percent of the federal credit. Because the state programs are tied to the federal EITC program, expansion of the federal EITC also leads to expansion of state EITC programs.

To identify whether the creation and expansion of state EITC programs had an effect on the relationship between family poverty and unemployment rates we interact a state EITC program indicator with the unemployment rate. Interactions between 2-lags unemployment rates and state EITC indicators are also included. The state EITC programs vary a great deal in generosity and it would be ideal to account for these differences in some way. Unfortunately, there is no easy way to characterize the programs as the generosity of some of the state programs vary with the number of children and family income. For

example, the credit in Wisconsin is only 4% for families with one child, but is 43% for families with 3 or more children.

The results of estimating this specification with unemployment rate – EITC interaction models included are shown in Table 7. The results are not promising. The unemployment rate, wage, and waiver effects reported in Table 7 are very similar to those in our base, Table 1, specification. What is troubling about the results in Table 7 are that all the coefficients on the unemployment rate – state EITC indicator interaction variables are negative and, for 4 out of 5 family types, statistically significant. While it is conceivable that state EITC programs reduce labor force involvement of married women, we would generally expect that they would increase labor force involvement among female heads, and that this increase in labor force attachment would lead to an increased sensitivity of family poverty to state unemployment rates. We find no evidence of this.

Part of the difficult in determining whether the creation and expansion of state EITC programs had an effect on the relationship between family poverty and unemployment rates is that only a handful of states created EITC programs prior to 1997. Most states EITC programs were created after 1997. Because we have year effects, TANF indicators and state time trends in our specification and these variables are collinear with respect to the state EITC indicators the estimates in Table 7 are suspect. Evidence of this comes from comparing the estimates of the TANF coefficients from Table 1 to those shown in Table 7. Whereas the TANF coefficients in Table 1 were negative, large in magnitude and statistically significant, the TANF coefficients in Table 7 are generally smaller and not statistically significant at standard confidence levels.

Other Potential Explanations

Thus fare we have not been able to attribute any of the change in responsiveness of family poverty to unemployment between the 1980s and 1990s to changes in real wage levels, differences in unemployment levels, welfare reform, or EITC expansion. In this subsection we address whether there are other potential explanations for the changing relationship between family poverty and unemployment. In thinking about other potential explanations for the changing relationship between family poverty and unemployment rates, it is useful to think about what other changes have occurred in the labor market that

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are relevant to the poor and near poor, that might not be captured by changes in state unemployment rates and wages, as well as what other measures of labor market performance are available at the state level.

An obvious candidate for an alternative measure of labor market performance is the employment rate, defined as the 100 times the ratio of employed persons to the working age (ages 15-64) population. Formally, the employment rate is defined as

$$erate = \frac{(employed)}{(population \ 15 \ to \ 64)}$$

If we divide the numerator and the denominator by the size of the labor force $(labor \ force)$ we get

$$erate = \frac{(employed) \Big/ (labor \ force)}{(population \ 15 \ to \ 64) \Big/ (labor \ force)} \tag{5}$$

Note that the numerator of (5) is nothing more than $1 - urate$ and that the denominator is simply the inverse of the labor force participation rate. We can rewrite (5) to reflect these observations

$$erate = \frac{1 - urate}{\left(\dfrac{1}{LFPF}\right)} \tag{6}$$

where $LFPR$ is the labor force participation rate. Examining equations (6) it is clear that the employment rate is not only reflective of changes in the unemployment rate, but also of changes in the labor force participation rate. More specifically falling unemployment rates would lead to increasing employment rates, holding the labor force participation rate constant, and increasing labor force participation rates would lead to increases in the employment rate, holding the unemployment rate constant. Assuming that the labor force participation rate is constant the responsiveness of family poverty to unemployment and employment rates in the 1980s and 1990s should be very similar. Whether or not there are differences in the responsiveness of family poverty to unemployment and employment and family poverty rates depends on trends in labor force participation.

Figure 2 plots US unemployment, employment, and labor force participation rates for the 1980 to 2000 period. Examining Figure 2 it is clear that changes in the unemployment rate do not completely reflect changes in the employment rate, as labor force participation rates increased steadily between 1980

and 1999. Between 1980 and 2000 the labor force participation rate increased by 10 percent. This increase in the labor force participation rate, along with a low and decreasing unemployment rate after 1992 was responsible for a 13 percent increase in the employment rate over the 1980 to 1999 period.

One additional labor market based explanation could account for differences in the responsiveness of family poverty to unemployment rates between the 1980s and 1990s is that unemployment rates do not accurately characterize the state of the labor market because they do not contain any information on labor force participation rates. If this is true then substituting state employment rates into our Table 1 specification in place of unemployment rates should reduce the magnitude and significance of the β^{90s} coefficients.

In Table 8 we show our the results of estimating our Table 1 specification with state employment rates substituted in place of state unemployment rates. In Table 8 the long run employment rate coefficients are all negative and statistically significant. The long run effects of a one point increase in the employment rate range from a 2.4 percent reduction in poverty among female headed families to a 5.5 percent reduction in poverty among married couple families. Most importantly, from the point of view of this analysis, estimates of coefficients that reflect differences in the responsiveness of family poverty to unemployment rates between the 1980s and 1990s, are all small and not statistically distinguishable from zero at standard confidence levels. The wage effects reported in Table 8 are very similar those reported in Table 1, as are the coefficients on demographic variables (not shown), and the welfare reform variables, with the exception of the waiver implementation coefficient for nonwhite families. This coefficient is much larger in the Table 8 specification than in the Table 1 specification.

Based on the Table 8 results we do find evidence that increases in labor force participation and associated employment, which are not accounted for by the unemployment rate, are critical in the differential responsiveness of family poverty to unemployment rates between the 1980s and 1990s. What these results suggest is that employment rates, rather than the more commonly used unemployment rates, do a better job of accounting for the long run relationship between poverty and labor markets at the state level.

Conclusions

In this paper we used state level data on poverty family rates to document the relationship between poverty rates and labor market conditions between 1980 an 2000. Our estimates indicate that family poverty rates are responsive to across the entire period, but that for all families, married couple families, and nonwhite families they are more responsive to unemployment rates in the 1990s. There are also differences in the relationship between poverty rates and unemployment rates across family types. Not surprisingly, poverty rates among married couple families and white families are more responsive to unemployment rates than poverty rates among nonwhite families and female headed families.

In additional to documenting the relationship between family poverty rates and unemployment rates in the 1980s and 1990s we also systematically explore possible explanations for the differential responsive of poverty to unemployment rates in the two decades. These explanations include differential in real wages levels at the bottom of the wages distribution between decades, differential unemployment rate levels between the decades, welfare reform, EITC expansion, and growth in labor force participation and employment. We find no evidence that differences in real wages levels, differences in unemployment rate levels, welfare reform, or EITC expansion played role in the changing relationship between poverty and unemployment rates. We do find evidence that changes in the relationship between family poverty and unemployment rates at the state level are related to increases in labor force participation and associated employment.

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Table 1
The Determinants of Family Poverty (Robust Standard Errors in Parentheses)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Unemployment Rate Coefficient (1980s)	0.0519**	0.0664**	0.0328**	0.0603**	0.0339**
	(0.0042)	(0.0066)	(0.0041)	(0.0049)	(0.0058)
Change in Long Run Unemployment Rate Coefficient (1980s to 1990s)	0.0147**	0.0258**	0.0096	0.0014	0.0377**
	(0.0054)	(0.0088)	(0.0058)	(0.0063)	(0.0098)
25th Percentile of Hourly Wages	-0.0279*	-0.0553**	0.0028	-0.0512**	-0.0417**
	(0.0145)	(0.0207)	(0.0137)	(0.0150)	(0.0113)
Long Run Waiver Implemented (=1)	-0.0281	-0.0388	-0.0431**	0.0019	-0.0707**
	(0.0182)	(0.0297)	(0.0206)	(0.0225)	(0.0327)
Long Run TANF Implemented (=1)	-0.1015**	-0.1071	-0.1789**	-0.1224**	-0.0915
	(0.0459)	(0.0723)	(0.0570)	(0.0553)	(0.0759)
Number of Children Less than 18	0.1908**	0.3834**	0.1512**	0.2644**	0.1753**
	(0.0619)	(0.0857)	(0.0297)	(0.0774)	(0.0356)
% Heads with No High School Diploma	0.0085**	0.0112**	0.0043**	0.0087**	0.0046**
	(0.0018)	(0.0027)	(0.0008)	(0.0021)	(0.0009)
% Female Heads	0.0150**	___	___	0.0155**	0.0072**
	(0.0020)			(0.0025)	(0.0009)
% Nonwhite Heads	0.0056**	0.0048	0.0019**	___	___
	(0.0020)	(0.0032)	(0.0007)		
% Elderly Heads	-0.0028	0.0017	-0.0052**	-0.0068**	0.0009
	(0.0023)	(0.0029)	(0.0012)	(0.0025)	(0.0016)
% Families Living in Central City	0.0012	-0.0020	0.0006	-0.0016	0.0014*
	(0.0012)	(0.0020)	(0.0006)	(0.0014)	(0.0008)
State Fixed Effects	Included	Included	Included	Included	Included
State Time Trends (quadratic)	Included	Included	Included	Included	Included
Year Effects	Included	Included	Included	Included	Included
R-Squared (Not Adjusted)	0.9543	0.9492	0.8977	0.9455	0.9410

** Statistically significant at the 0.05 level
* Statistically significant at the 0.10 level

Table 2
The Determinants of Family Poverty: Alternative Specifications without State Time Trends (Robust Standard Errors in Parentheses)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Employment Rate Coefficient (1980s)	0.0451**	0.0615**	0.0330**	0.0481**	0.0365**
	(0.0032)	(0.0053)	(0.0030)	(0.0039)	(0.0048
Change in Long Run Employment Rate Coefficient (1980s to 1990s)	0.0352**	0.0623**	0.0153**	0.0404**	0.0300**
	(0.0048)	(0.0081)	(0.0048)	(0.0058)	(0.0083)
25th Percentile of Hourly Wages	-0.0349**	-0.0569**	-0.0142	-0.0471**	-0.0542**
	(0.0105)	(0.0173)	(0.0110)	(0.0115)	(0.0111)
Waiver Implemented (=1)	-0.0623**	-0.1000**	-0.0610**	-0.0232	-0.1467**
	(0.0196)	(0.0298)	(0.0186)	(0.0223)	(0.0350)
TANF Implemented (=1)	0.0703**	0.1093	0.0054	0.1288**	-0.0386
	(0.0572)	(0.1020)	(0.0554)	(0.0691)	(0.1192)
Number of Children Less Than 18	0.2202**	0.4544**	0.1616**	0.3456**	0.1896**
	(0.0628)	(0.0903)	(0.0309)	(0.0748)	(0.0488)
% Heads with No High School Diploma	0.0100**	0.0151**	0.0056**	0.0083**	0.0051**
	(0.0015)	(0.0025)	(0.0008)	(0.0019)	(0.0010)
% Elderly Heads	-0.0015	0.0049**	-0.0057**	-0.0028	0.0010
	(0.0024)	(0.0032)	(0.0012)	(0.0026)	(0.0018)
% Nonwhite Heads	0.0049**	0.0075**	0.0025**		
	(0.0020)	(0.0034)	(0.0007)		
% Female Heads	0.0201**			0.0188**	0.0112**
	(0.0020)			(0.0026)	(0.0011)
% Families Living in Central City	0.0007	-0.0018	0.0018**	0.0000	0.0010
	(0.0007)	(0.0012)	(0.0005)	(0.0008)	(0.0007)
State Fixed Effects	___	___	___	___	___
State Time Trends (quadratic)	___	___	___	___	___
Year Effects	Included	Included	Included	Included	Included
R-Squared (Not Adjusted)	0.9192	0.9026	0.8390	0.9009	0.8858

** Statistically significant at the 0.05 level
* Statistically significant at the 0.10 level

Table 3
The Determinants of Family Poverty: Alternative Specification with Unemployment Rate – Wage Interaction Terms
(Robust Standard Errors in Parenthesis)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Unemployment Rate Coefficient (1980s)	-0.0153	-0.0136	0.0107	0.0215	0.0136
	(0.0252)	(0.0353)	(0.0251)	(0.0305)	(0.0225)
Change in Long Run Unemployment Rate Coefficient (1980s to 1990s)	0.0137**	0.0244**	0.0076	0.0008	0.0353**
	(0.0054)	(0.0088)	(0.0060)	(0.0063)	(0.0101)
25th Percentile of Hourly Wages	-0.0722**	-0.1083**	-0.0123	-0.0759**	-0.0564**
	(0.0216)	(0.0321)	(0.0216)	(0.0254)	(0.0213)
Long Run Unemployment Rate 25th Percentile Wage Interaction	0.0069**	0.0082**	0.0025	0.0038	0.0024
	(0.0027)	(0.0035)	(0.0029)	(0.0031)	(0.0027)
Waiver Implemented (=1)	-0.0262**	-0.0365	-0.0435**	0.0039	-0.0725**
	(0.0188)	(0.0305)	(0.0205)	(0.0228)	(0.0333)
TANF Implemented (=1)	-0.1004**	-0.1059	-0.1820**	-0.1226**	-0.0972
	(0.0480)	(0.0753)	(0.0569)	(0.0564)	(0.0772)
Demographic Controls	Included	Included	Included	Included	Included
State Fixed Effects	Included	Included	Included	Included	Included
State Time Trends (quadratic)	Included	Included	Included	Included	Included
Year Effects	Included	Included	Included	Included	Included
R-Squared (Not Adjusted)	0.9549	0.9497	0.8981	0.9458	0.9358

** Statistically significant at the 0.05 level
 * Statistically significant at the 0.10 level

Table 4
Long Run Effects of Changes in Unemployment Rates and Wages Implied by Table 3 Coefficients
(Robust Standard Errors in Parenthesis)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Effect of a Unit Change In the Unemployment (Evaluated at the Average 25th Percentile of Hourly Wages)	0.0495** (0.0041)	0.0635** (0.0066)	0.0321** (0.0042)	0.0588** (0.0049)	0.0335** (0.0058)
Change in Long Run Unemployment Rate Coefficient (1980s to 1990s)	0.0137** (0.0054)	0.0244** (0.0088)	0.0076 (0.0060)	0.0008 (0.0063)	0.0353** (0.0101)
Long Run Effect of a Dollar Increase in the 25th Percentile of Hourly Wages (Evaluated at the Average Unemployment Rate)	-0.0301** (0.0144)	-0.0583** (0.0209)	0.0031 (0.0138)	-0.0524** (0.0151)	-0.0414** (0.0115)
Average Unemployment Rate (1980-2000)	6.1141	6.1141	6.3099	6.1141	6.3099
Average 25th Percentile of Hourly Wages (1980-2000)	8.4772	9.7140	8.3686	9.7140	8.3686

** Statistically significant at the 0.05 level
* Statistically significant at the 0.10 level

Table 5
The Determinants of Family Poverty: Alternative Specification with Unemployment Rate – Unemployment Rate Level Interaction Terms (Robust Standard Errors in Parenthesis)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Unemployment Rate Coefficient (1980s)	0.0558**	0.0635**	0.0397**	0.0656**	0.0323**
	(0.0067)	(0.0096)	(0.0062)	(0.0074)	(0.0105)
Change in Long Run Unemployment Rate Coefficient (1980s to 1990s)	0.0142**	0.0287**	0.0072	0.0005	0.0380**
	(0.0057)	(0.0091)	(0.0059)	(0.0065)	(0.0101)
Change in Long Run Unemployment Rate Coefficient with High Unemployment Rate (Unemployment Rate>7.8)	-0.0031	-0.0012	-0.0034	-0.0040	0.0004
	(0.0025)	(0.0034)	(0.0023)	(0.0027)	(0.0042)
Change in Long Run Unemployment Rate Coefficient with High Unemployment Rate (Unemployment Rate<4.5)	-0.0066	-0.0142**	0.0008	-0.0064	-0.0037
	(0.0045)	(0.0068)	(0.0045)	(0.0053)	(0.0072)
25th Percentile of Hourly Wages	-0.0173	-0.0389*	0.0086	-0.0380**	-0.0401**
	(0.0151)	(0.0210)	(0.0141)	(0.0156)	(0.0114)
Waiver Implemented (=1)	-0.0179	-0.0288	-0.0371*	0.0141	-0.0713**
	(0.0198)	(0.0310)	(0.0211)	(0.0239)	(0.0348)
TANF Implemented (=1)	-0.0824*	-0.0874	-0.1650**	-0.0963*	-0.1021
	(0.0502)	(0.0763)	(0.0588)	(0.0580)	(0.0840)
Demographic Controls	Included	Included	Included	Included	Included
State Fixed Effects	Included	Included	Included	Included	Included
State Time Trends (quadratic)	Included	Included	Included	Included	Included
Year Effects	Included	Included	Included	Included	Included
R-Squared (Not Adjuted)	0.9549	0.9497	0.8981	0.9458	0.9358

** Statistically significant at the 0.05 level
* Statistically significant at the 0.10 level

Table 6

The Determinants of Family Poverty: Alternative Specification with Unemployment Rate – Welfare Reform Interaction Terms (Robust Standard Errors in Parentheses)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Unemployment Rate Coefficient (1980s)	0.0530[**]	0.0674[**]	0.0343[**]	0.0614[**]	0.0348[**]
	(0.0044)	(0.0068)	(0.0043)	(0.0050)	(0.0059)
Change in Long Run Unemployment Rate Coefficient (1980s to 1990s)	0.0100	0.0241[**]	0.0042	0.0008	0.0273[**]
	(0.0062)	(0.0101)	(0.0068)	(0.0074)	(0.0108)
Waiver-Unemployment Rate Interaction	0.0019	-0.0006	-0.0010	-0.0019	0.0060
	(0.0091)	(0.0168)	(0.0113)	(0.0105)	(0.0161)
TANF – Unemployment Rate Interaction	-0.0405[*]	-0.0359	-0.0498[**]	-0.0191	-0.0788[**]
	(0.0229)	(0.0383)	(0.0230)	(0.0285)	(0.0368)
25th Percentile of Hourly Wages	-0.0293[**]	-0.0548[**]	0.0019	-0.0533[**]	-0.0392[**]
	(0.0146)	(0.0212)	(0.0138)	(0.0151)	(0.0115)
Waiver Implemented (=1)	-0.0480	-0.0444	-0.0424	0.0078	-0.1177
	(0.0625)	(0.1223)	(0.0777)	(0.0750)	(0.1160)
TANF Implemented (=1)	0.0755	0.0968	0.0489	-0.0591	0.2825
	(0.1348)	(0.2333)	(0.1390)	(0.1704)	(0.2118)
Demographic Controls	Included	Included	Included	Included	Included
State Fixed Effects	Included	Included	Included	Included	Included
State Time Trends (quadratic)	Included	Included	Included	Included	Included
Year Effects	Included	Included	Included	Included	Included
R-Squared (Not Adjusted)	0.9547	0.9494	0.8986	0.9457	0.9370

[**] Statistically significant at the 0.05 level
[*] Statistically significant at the 0.10 level

Table 7
The Determinants of Family Poverty: Alternative Specification with Unemployment Rate – State EITC Indicator Interaction Terms (Robust Standard Errors in Parentheses)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Unemployment Rate Coefficient (1980s)	0.0548**	0.0679**	0.0369**	0.0651**	0.0318**
	(0.0043)	(0.0068)	(0.0042)	(0.0049)	(0.0060)
Change in Long Run Unemployment Rate Coefficient (1980s to 1990s)	0.0143**	0.0263**	0.0082	0.0024	0.0341**
	(0.0054)	(0.0089)	(0.0059)	(0.0063)	(0.0099)
25th Percentile of Hourly Wages	-0.0246*	-0.0535**	0.0029	-0.0462**	-0.0364**
	(0.0145)	(0.0210)	(0.0136)	(0.0148)	(0.0113)
Long Run Unemployment Rate State EITC Indicator Interaction	-0.0324**	-0.0177	-0.0487**	-0.0508**	0.0236
	(0.0109)	(0.0166)	(0.0109)	(0.0170)	(0.0207)
State EITC Program (=1)	0.1651**	0.1333	0.1776**	0.3380**	-0.3326*
	(0.0757)	(0.1187)	(0.0782)	(0.1058)	(0.1853)
Waiver Implemented (=1)	-0.0273	-0.0374	-0.0480**	0.0007	-0.0560
	(0.0184)	(0.0309)	(0.0209)	(0.0230)	(0.0343)
TANF Implemented (=1)	-0.0478	-0.1036	-0.1114	-0.0710	0.0119
	(0.0548)	(0.0957)	(0.0613)	(0.0722)	(0.0963)
Demographic Controls	Included	Included	Included	Included	Included
State Fixed Effects	Included	Included	Included	Included	Included
State Time Trends (quadratic)	Included	Included	Included	Included	Included
Year Effects	Included	Included	Included	Included	Included
R-Squared (Not Adjusted)	0.9551	0.9494	0.9005	0.9471	0.9367

** Statistically significant at the 0.05 level
* Statistically significant at the 0.10 level

Table 8
The Determinants of Family Poverty: Alternative Specification with Employment Rates Used in Place of Unemployment Rates (Robust Standard Errors in Parenthesis)

	All Families (N=1,071)	Married Couple Families (N=1,071)	Female Headed Families (N=1,071)	White Families (N=1,071)	Nonwhite Families (N=819)
Long Run Employment Rate Coefficient (1980s)	-0.0399**	-0.0546**	-0.0240**	-0.0410**	-0.0317**
	(0.0040)	(0.0058)	(0.0040)	(0.0046)	(0.0061)
Change in Long Run Employment Rate Coefficient (1980s to 1990s)	-0.0007	-0.0058	0.0017	-0.0006	0.0004
	(0.0026)	(0.0037)	(0.0025)	(0.0028)	(0.0041)
25th Percentile of Hourly Wages	-0.0302**	-0.0580**	0.0105	-0.0453**	-0.0421**
	(0.0147)	(0.0213)	(0.0141)	(0.0154)	(0.0117)
Waiver Implemented (=1)	-0.0315	-0.0566*	-0.0424**	-0.0100	-0.0517
	(0.0198)	(0.0326)	(0.0203)	(0.0228)	(0.0364)
TANF Implemented (=1)	-0.0929**	-0.1039	-0.1798**	-0.1147**	-0.0733
	(0.0563)	(0.0842)	(0.0556)	(0.0622)	(0.0953)
Demographic Controls	Included	Included	Included	Included	Included
State Fixed Effects	Included	Included	Included	Included	Included
State Time Trends (quadratic)	Included	Included	Included	Included	Included
Year Effects	Included	Included	Included	Included	Included
R-Squared (Not Adjusted)	0.9489	0.9464	0.8926	0.9401	0.9320

** Statistically significant at the 0.05 level
* Statistically significant at the 0.10 level

Figure 1

Family Poverty Rate, Unemployment Rate, and 25th Percentile of Hourly Wages
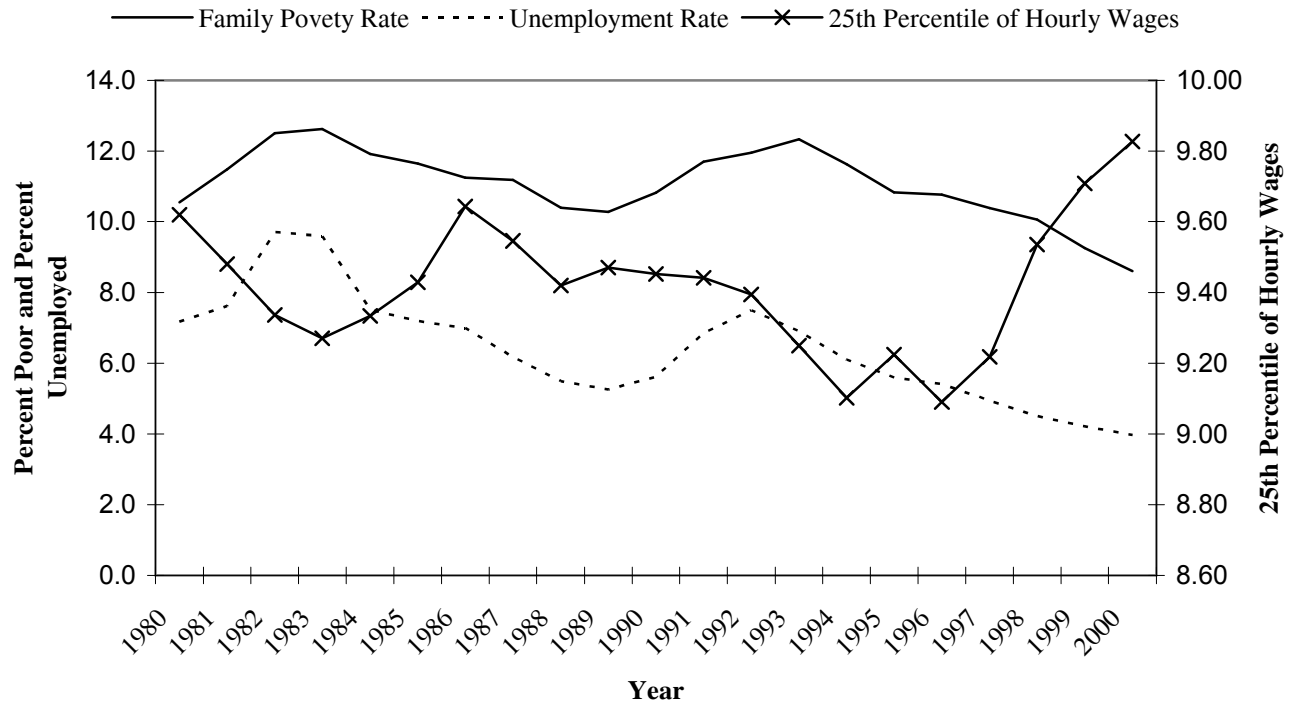
Figure 2

National Employment Rate, Labor Force Participation Rate and Unemployment Rate