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### **Poverty and Macroeconomic Performance Across Space, Race, and Family Structure**

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## **Poverty and Macroeconomic Performance Across Space, Race, and Family Structure**

### **Abstract**

Understanding the link between poverty and economic growth is of long-standing interest, but heretofore it has not received much attention within the context of the dramatic changes in recent business-cycle conditions and social policies. In this paper we use state-level panel data from the 1981–2000 waves of the Current Population Survey to examine the impacts of the macroeconomy and welfare reform on family poverty. We estimate models of before-tax and after-tax poverty rates and squared poverty gaps for all families, by family structure, and by race. Our results indicate that a strong macroeconomy at both the state and national levels reduces not only the number of families below poverty, but also the severity of poverty. The magnitude and source of these antipoverty effects, however, are not uniform across family structures and racial groups or necessarily over time. While the gains in poverty eradication are tempered by rising wage inequality, the extent of this offset also varies across demographic groups. We find limited evidence that (after-tax) poverty is lower among female-headed families and black families after the implementation of state-specific welfare reforms, both before and after passage of the 1996 Personal Responsibility and Work Opportunity Reconciliation Act. An auxiliary time series analysis suggests that the expansions in the federal Earned Income Tax Credit of the 1990s accounts for upwards of 50 percent of the reduction in after-tax income deprivation. Simulations indicate that female-headed families and families headed by a black person made substantial gains in the ‘War on Poverty’ in the 1990s due in large part to the growth in median wages.

Spectacular changes in the economic landscape over the past two decades substantially altered the opportunities for economic progress among low-income Americans. The economy underwent the deepest recession since the Great Depression, followed by the longest and third-longest expansions in the post-war period. The long periods of economic growth came with a cost, though, as income inequality surged (Katz and Autor 1999). Tax and welfare policies also changed dramatically, ranging from the Tax Reform Act of 1986 to the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA). Many in the policy and research communities have speculated as to the effects of these changes on the financial well being of low-income families, but heretofore the evidence has been scarce (Lichter and Crowley 2002). More generally, identifying the appropriate mix of policies for poverty reduction is of keen interest to policymakers. For example, are the most effective anti-poverty policies those that spur long-run economic growth, or those that are targeted specifically at low-income populations? Are the anti-poverty impacts of economic growth and social policies likely to be uniform across large and important subsets of the population such as across race or marital status? In this paper, we address these and related questions by using panel data over the 1980s and 1990s to examine the collective impacts of macroeconomic performance and social policy on a broad measure of family well being—the extent and depth of poverty in America.

Understanding the link between poverty and economic growth has garnered a great deal of research attention over the years (Anderson 1964; Aaron 1967; Blank 2000; Blank and Blinder 1986; Blank and Card 1993; Cain 1998; Cutler and Katz 1991; Freeman 2002; Gottschalk and Danziger 1985; Haveman and Schwabish 2000; Tobin 1994). This research, which typically relied on aggregate time-series data, established a strong, inverse association between economic growth and poverty rates in the 1960s and 1970s. However, this link was

apparently weakened during the 1980s when aggregate poverty rates did not fall nearly as much in response to economic growth as would have been expected. This was a troubling development because a large segment of the population was left anchored to the bottom during this much heralded expansion.

The tempering of the relationship between economic activity and poverty rates in the 1980s has been attributed to the substantial rise in income inequality (Blank and Card 1993).<sup>1</sup> Because official U.S. poverty lines are fixed in real terms, poverty rates are determined by both the shape and location of the income distribution. All else constant, a rising median reduces poverty while rising inequality exacerbates poverty. Thus, in the 1980s, it appears that the latter force partially offset the former. While rising income inequality likely attenuated poverty reduction in the 1980s, the aggregate link between poverty and the economy may have been spuriously weakened because the aggregate data mask important heterogeneity in the macroeconomy at the sub-national level. As an example, while the country as a whole prospered in the late 1980s, certain states experienced fairly severe recessions (e.g. the oil-producing Rocky Mountain states).

Much of the recent research on disadvantaged populations has focused on the effect of wholesale changes in social policies in the 1990s on various outcomes such as welfare caseloads, labor force behavior, consumption, and earnings (e.g., Meyer and Rosenbaum 2000; Meyer and Sullivan 2001; Moffitt 1999; Schoeni and Blank 2000; Ziliak, *et al.* 2000; Ziliak, *et al.* 2003). These changes in social policies include significant federal and state expansions in the Earned Income Tax Credit (EITC), state-level waivers from federal rules governing the Aid to Families with Dependent Children (AFDC) program, and federal overhaul of welfare as part of PRWORA. Collectively the intention of the EITC expansions and welfare reform was to make

work more attractive relative to welfare. Given the surge in labor force participation among single mothers, it appears the reforms had the desired effect, though the burgeoning economy was at least as important for these gains.

In the current paper we contribute both to the literature on the relationship between macroeconomic performance and poverty and to the literature on welfare reform. We deviate from the industry standard in the poverty-macroeconomy literature in three key ways. First, in lieu of aggregate time-series data we exploit the substantial heterogeneity in poverty and economic activity across states and over time.<sup>2</sup> Specifically, we assemble a twenty-year panel of states from the 1981–2000 waves of the Current Population Survey which, coupled with labor-force data from the Bureau of Labor Statistics, improves identification of the effects of the economy on poverty compared to time-series data. Second, rather than restricting focus on the poverty rate (i.e. the fraction of the population below the poverty threshold), we use a poverty index which permits us to portray not only the extent of poverty but also the depth of poverty via the so-called squared poverty gap. While the head count is an easily interpretable measure of poverty status, its use as a measure of impoverishment is limited because it treats all persons identically, whether they are \$1 or \$7,000 below the poverty line. The squared poverty gap does not suffer from this limitation and by using this measure we can address the effectiveness of economic growth in benefiting those lowest in the income distribution.

Third, the literature has typically defined poverty in terms of before-tax income; however, substantial changes in both federal and state income tax systems over the past two decades, notably expansions of federal and state EITCs, suggests that after-tax income relative to gross income likely paints a different portrait of poverty. The EITC was expanded at the federal level in 1986, 1990, and 1993 such that by 1996 the credit nearly reached the fourth decile of the

married-couple income distribution and approached 150 percent of the median for female-headed families (Ventry 2000). Thus, to capture these changes in the tax system we use four measures of poverty in our empirical models—poverty rates and squared poverty gaps based both on gross and net-of-tax income.

Aside from more precise identification of the business cycle, an additional advantage of state-level panel data is that it permits identification of the effect of state-level policy reforms on poverty, such as welfare reform, state-level EITC expansions, and state-level minimum-wage expansions. While the primary focus of welfare policymakers was to reduce welfare dependence and nonmarital fertility, and thus encourage work and marriage, presumably policymakers expected work and marriage to be better paths to economic self-sufficiency and poverty reduction. We are able to ascertain how well this intention was met through our exploitation of the differential timing of the waivers to AFDC policies and the implementation dates under the new rules contained in PRWORA.<sup>3</sup> Alongside the state-level changes to the welfare system, by the end of the 1990s nearly 20 percent of the states had refundable credits on top of the federal EITC. Likewise, state minimum wages increasingly deviated from the federal level, perhaps because the latter was fixed in nominal terms for much of the 1980s, such that upwards of 30 percent of states had minimum wages above the federal minimum over the past two decades.

Unlike much of the literature, we also conduct our analysis separately by family structure and race. This separation seems especially relevant insofar as the extent of poverty across household types differs widely in the U.S. and there is no reason to expect the macroeconomy to have the same effect on all categories.<sup>4</sup> Female-headed families are of particular interest both because of their high levels of poverty and because they have been the focus of the many recent changes in social policy. Likewise, families headed by a black person are of interest relative to

white families because several studies indicate that the labor-market outcomes of African-Americans are affected differentially by the business cycle (Bound and Holzer 1993; Clark and Summers 1979; Ziliak, Wilson, and Stone 1999).

Our results indicate that a strong macroeconomy at both the state and national levels reduces not only the number of families below poverty, but also the severity of poverty. The magnitude and source of these antipoverty effects, however, are not uniform across family structures and racial groups or necessarily over time. Over the 1980s and 1990s poverty amongst married-couple families and families headed by a white person responded both to changes in the unemployment rate and employment growth rate, but not changes in the median wage. On the other hand, it wasn't until the high-pressure economy of the 1990s that employment growth for female-heads surged and was reflected in lower poverty rates and gaps. Median wage growth is critical for progress against poverty among female-headed and black families. Overall the gains in poverty eradication are tempered by rising wage inequality, though the extent of this offset is less pronounced among female-headed families and black families. We find limited evidence that (after-tax) poverty is lower among female-headed families and black families after the implementation of state-specific welfare reforms both before and after passage of the 1996 Personal Responsibility and Work Opportunity Reconciliation Act. An auxiliary time series analysis suggests that the expansions in the federal Earned Income Tax Credit of the 1990s accounts for upwards of 50 percent of the reduction in after-tax deprivation.

## **BACKGROUND AND EMPIRICAL MODEL**

The adage 'A rising tide lifts all boats' suggests that poverty should be countercyclical insofar as economic growth should reduce poverty and thus prudent fiscal and monetary policies that spur



growth will shower benefits on all members of society. Evidence of such a countercyclical relationship seems apparent in Figure 1.<sup>5</sup> Family-level poverty (both before and after tax) surged in the early 1980s during the deep recession, and then fell with the long expansion in the mid and late 1980s, although as noted by Blank and Blinder (1986) and Cutler and Katz (1991), poverty reductions were less than expected. The unemployment rate rose with the 1990–91 recession, peaking in 1992, while poverty continued its upward climb for another year. In the 1990s, poverty paralleled the long decline in unemployment rates. Until the Tax Reform Act of 1986 poverty rates before and after taxes were coincident; however, after TRA86, and more dramatically after 1993, after-tax poverty rates diverged from their before-tax counterparts, suggesting a strong anti-poverty role for the EITC.<sup>6</sup>

[Figure 1 about here]

The changes in poverty and unemployment rates in Figure 1, while instructive, mask important heterogeneity at the sub-national level, heterogeneity that is likely to foster more accurate identification of the relationship between poverty and the economy. Indeed, Figure 2, which displays the average relationship between state poverty rates and state unemployment rates for 1980 to 1999, makes transparent these distinctions. Average poverty rates range from a high of 18.7 percent in Mississippi to a low of 5.3 percent in New Jersey and average unemployment rates range from 10.4 percent in West Virginia to 3.7 percent in Nebraska. The bivariate correlation between average state poverty rates and state unemployment rates in Figure 2 is 0.64, indicating strong links between macroeconomic performance and labor-market outcomes at the state level.

[Figure 2 about here]

More important for the purposes of the models we use in this paper, the differences across states in poverty and macroeconomic performance are not invariant over time. We highlight these trend differences in Figures 3 and 4, which show the twenty-year time series of poverty rates and unemployment rates of four large states from different regions of the country—California, Michigan, New York, and Texas. Figure 3 shows that Michigan experienced a sharp rise in poverty in the early 1980s recession that severely impacted the auto industry. This was followed by a quick recovery in the mid 1980s and a further large decline in poverty in the mid 1990s. This decline seemed to track unemployment fairly well as depicted in Figure 4. Texas, on the other hand, had a long secular increase in poverty through the 1980s until the mid 1990s. During this decline, poverty appears to not have tracked unemployment as closely as in Michigan. Relative to the other states, California took an additional year to recover from the early 1990s recession, and, like New York, its poverty rate remained fairly high until the end of the decade.

[Figures 3 and 4 about here]

The economic expansions of the past two decades depicted in the previous figures were notable not only for their length and breadth, but also for the surge in income inequality. As discussed in the introduction, when one defines poverty in an absolute rather than a relative sense, all else equal, a rise in inequality is likely to temper the anti-poverty effects of growth. Again, relying on cross-state over time differences from the four states in Figures 3 and 4 we present evidence of the rise in inequality in Figure 5, where we define inequality as the ratio of the 80<sup>th</sup> to 20<sup>th</sup> percentiles of income-to-needs distribution. As seen, New York, California, and Texas all exhibit a secular rise in 80-20 income-to-needs inequality. Michigan did not experience as significant a rise in inequality. One may therefore suspect a sharper drop in poverty due to a

decline in unemployment and this seems to be the case in Michigan where one finds the steepest reductions in poverty in each expansion.

[Figure 5 about here]

Concomitant with the large changes in macroeconomic performance were dramatic changes in social policies, especially welfare reform. States began experimenting with their welfare programs in the early-1990s via waivers from federal regulations granted by the U.S. Department of Health and Human Services (DHSS). These waivers included time limits on benefit receipt, work requirements, and work incentives such as higher earnings disregards and liquid-asset limits. The impact of the waivers in accounting for the decline of welfare caseloads has been the subject of much recent debate, with estimates ranging from no effect to upwards of one-third (Blank 2001; Council of Economic Advisors 1997; Ziliak, *et al.* 2000). The waivers were codified into federal legislation with the passage of PRWORA. This eliminated the AFDC program and replaced it with a state block grant program known as Temporary Assistance for Needy Families (TANF). Under PRWORA, cash assistance is no longer an entitlement and aid is subject to a federal lifetime limit of 60 months (or shorter based on state discretion). PRWORA also changed the Food Stamp Program by ending the eligibility of some recipients and reducing average benefit levels.

This new legislation lead many advocates for the poor to conclude there might be a sharp increase in poverty, especially among female-headed families and families headed by a black person because both groups have higher rates of participation in assistance programs. In fact, though, poverty rates across family structure and race did not increase and in fact declined in the mid and late 1990s (Figure 6). The declines in poverty rates were especially large for female-headed families and families headed by a black person. In 1992, 46.7 percent of female-headed

families were poor. By 1999 this had fallen to 35 percent, a decline of over a quarter. For families headed by a black person, poverty rates fell from 29.7 percent to 20.0 percent, about a one-third decline. Importantly, Figure 6 reveals that federal tax policy reforms of the 1980s and 1990s reduced after-tax poverty rates among female heads more than other groups, both in terms of timing and scope, highlighting the increasing role of the tax system as a stabilization and redistribution tool relative to income transfers (Kniesner and Ziliak 2002).

[Figures 6 and 7 about here]

Because many female-headed families were directly affected by welfare reform we further examine whether poverty rates among this group differed between states with waivers and states without waivers. To do so, in Figure 7 we split the sample of female-headed families into those residing in states with a waiver between 1992 and 1996 and those in states without waivers. Because of reduced sample sizes in these across waiver-status groupings we present both unweighted poverty rates and weighted rates, where the weight is the relative frequency of female heads in the CPS in a given state-year and a given waiver status. Overall the time-series pattern of poverty among female heads living in waiver states is comparable to that in non waiver states. However in the 1990s the level of poverty is higher in non waiver states and the declines leading up to passage of PRWORA are not as sharp as among waiver states. Of course, these summary statistics do not imply that welfare reform lowered poverty because the macroeconomic forces affecting poverty overall were also likely affecting poverty among this demographic group. We now turn to the issue of identifying the effects of macroeconomic performance, welfare reform, and other policy changes on poverty.

## Empirical Model

Our objective is to relate a state-specific and time-varying measure of poverty to state-specific and time-varying indicators of macroeconomic performance and policy changes, while simultaneously controlling for other, less readily quantifiable, factors affecting poverty. This leads to the baseline econometric model for group  $j$  ( $j$  = all families, female-headed families, married families, white families, black families) in state  $s$  ( $s = 1, \dots, 51$ ) in time  $t$  ( $t = 1, \dots, 20$ ):

$$P_{\alpha,t}^{j,s} = \rho^j P_{\alpha,t-1}^{j,s} + \sum_{k=1}^K \beta_k^j E_{k,t}^s + \sum_{m=1}^M \gamma_m^j R_{m,t}^s + \lambda_t^j + \mu^{j,s} + \varphi^{j,s} t + \varepsilon_t^{j,s}, \quad (1)$$

where  $P_{\alpha}$  is the poverty measure,  $E_k$  reflects macroeconomic indicator  $k$ ,  $R_m$  reflects public policy indicator  $m$ ,  $\lambda_t$  captures aggregate time effects,  $\mu^s$  and  $\varphi^s t$  capture unobserved fixed and trending factors that are state specific, and  $\varepsilon_t^s$  is a random error term. We now describe the model in detail.

Of central import to this study is the measurement of poverty, i.e. the choice of  $\alpha$ . In response to the deficiencies associated with the head count, economists have constructed numerous axiomatically derived poverty measures (see, e.g., Sen 1976; Foster, Greer, and Thorbecke 1984; Atkinson 1987; and Kakwani 1980). Following Foster, Greer, and Thorbecke (1984), consider the following class of poverty indices for a given group  $j$

$$P_{\alpha}^s = \frac{1}{n_t^s} \sum_{q=1}^{Q_t^s} \left( \frac{z_t - y_t^q}{z_t} \right)^{\alpha}, \quad (2)$$

where  $n$  is the population,  $Q$  is the number of poor families,  $z$  is the family-size specific poverty threshold, and  $y$  is income. The index  $\alpha$ ,  $0 \leq \alpha \leq \infty$ , is known as the ‘‘poverty-aversion’’ index. As  $\alpha$  increases there is increasing weight given to the poorest households in the state at time  $t$ . When  $\alpha \rightarrow \infty$ , the Rawlsian state obtains whereby only the position of the poorest family matters.

We consider two variants of the poverty aversion index:  $\alpha = 0$ , which yields the head count ratio, more commonly known as the poverty rate, and  $\alpha = 2$ , which is often referred to as the squared poverty gap.<sup>7</sup> The squared poverty gap measure satisfies both the monotonicity axiom (i.e. all else equal, a reduction in the income of a poor family must increase the poverty measure) and the transfer axiom (i.e. all else equal, a pure transfer of income from a poor family to any other less poor family must raise the poverty measure). The head count satisfies neither axiom.<sup>8,9</sup> That it does not satisfy either of these important axioms is one of our reasons for also including the squared poverty gap in our analysis.

Aside from satisfying certain axiomatic criteria, our use of the squared poverty gap enables us to identify whether macroeconomic performance affects not only the extent of poverty but also the depth. It is possible that policies that spur economic growth ‘trickle down’ to low-income families at or just below the poverty threshold, but have little effect on the very poor. Moreover, because the squared poverty gap assigns weights to families depending on their income position (higher weights to lower-income families), we are able to assess a frequent criticism levied against welfare reform (Primus, *et al.* 1999). To these critics, welfare reform was successful at moving those close to the poverty line out of poverty but it was less successful at moving worse-off families out of poverty. Indeed, one of the incentives given to States as part of PRWORA was grant allocations based on the number of people leaving welfare for work. These allocations perhaps further encouraged States to concentrate on households closer to the poverty line who are likely to be more job ready. While the poverty rate cannot speak to this issue, the squared poverty gap can. To aid in the interpretation of regression coefficients all our poverty measures will be transformed into natural logs.

Turning now to the specification in equation (1), we include a lag in the dependent variable because poverty tends to persist at the household level (Sawhill 1988; Stevens 1999), and thus more aggregated measures are likely to respond only sluggishly to changing economic conditions. A further advantage of the dynamic specification is its ability to distinguish between the short-run (i.e.  $\beta_k$ ) and the long-run (i.e.  $\frac{\beta_k}{1-\rho}$ ) effects of the macroeconomy and social policies on poverty.<sup>10</sup> To portray the state of the macroeconomy we employ two common measures of the business cycle—state-level unemployment rates and per-capita employment growth rates. Both measures capture important features of labor-market opportunities among the disadvantaged; however, employment growth rates likely indicate the evolution of job vacancies over the business cycle and may better capture demand-side shocks to the labor market (Bartik 1991; Blanchard and Katz 1992). Its portrayal of demand-side shocks is one of the reasons for its use by the business-cycle dating committee at the National Bureau of Economic Research as the primary indicator of economic activity (Hall, *et al.* 2003).<sup>11</sup>

The unemployment rate and employment growth rate control for only a subset of state economic activity so we also consider the poverty impacts of median wages and wage inequality. These inequality measures likely capture additional cyclical as well as secular changes in the economy.<sup>12</sup> As emphasized in Gottschalk and Danziger (1985), and earlier by Anderson (1964), if the poverty threshold lies to the left of the mode of the income distribution, fewer and fewer families are removed from poverty as the distribution shifts out because the density of the distribution near the threshold diminishes. This is true even if, for any given poor household, the probability of leaving poverty is the same as when there were more poor households. The implication is that there is a nonlinear relationship between the center of the distribution and poverty, i.e. that poverty decreases at a decreasing rate as median income rises. Likewise, given

the fixed threshold, median preserving increases in the spread of the distribution likely lead to higher poverty rates. To portray these relationships we use a quadratic in median wages and the ratio of the 80<sup>th</sup> to the 20<sup>th</sup> percentiles of wages.<sup>13</sup> We use wages as opposed to earnings to avoid possible endogeneity with our poverty measures since poverty rates and gaps are nonlinear transformation of earnings and non labor-market income.

The first policy variable of our empirical model is the measurement of welfare reform. For our purposes we delineate the welfare-reform era into two periods, ‘waivers’ (1992–1996) and PRWORA (1996–1999). Moreover, for parsimony, we aggregate the state waiver programs into a single “any-waiver” indicator reflecting the fraction of the year the program is in operation. Based on program implementation dates assembled by DHHS, we can identify the waiver effect by exploiting the fact that some states did not receive waivers, and those that did receive waivers implemented them at different times. Likewise, states implemented their TANF programs at different times over a two-year period from the fall of 1996 to the summer of 1998.<sup>14</sup> As with the macroeconomy, poverty may respond sluggishly to the implementation of welfare reform and so our dynamic model admits this possible protracted response.<sup>15</sup>

Before welfare waivers were implemented, the primary policy lever states had at their disposal was the level of AFDC benefits. The effect of welfare benefits on poverty, however, is ambiguous ex ante. All else equal a higher benefit level mechanically raises income and as such may move some recipients over the poverty threshold and would move all recipients to a higher place in the income distribution. However more generous transfers may have a negative behavioral effect on labor supply, thereby lowering earnings and reducing the anti-poverty effectiveness of the benefits. To control for the consumption floor offered by welfare we include the natural log of the sum of the maximum AFDC benefit level and the resulting food stamp



allotment for a three-person family. Thus, the coefficient in the regression model will capture the net effect of these countervailing forces.

In the 1980s and 1990s states increasingly used other programs to combat poverty. One such program is a state EITC program, which in most states is proportional to the federal credit (Dickert-Conlin and Houser 2002). We control for the state EITC by specifying the variable as the log difference of the state maximum benefit level and the federal benefit level (equal to 0 for states with no supplemental EITC). Much like cash assistance, the effect of the EITC on after-tax poverty is ambiguous in theory. The refundable credit clearly raises after-tax income, holding before-tax income constant, but because over certain ranges (the so-called stationary range and the phase-out range) labor-supply is predicted to fall in the presence of the credit and so before-tax poverty may increase. Indeed, using various models, time periods, and samples, previous work has found mixed results as it pertains to changes in income and labor supply, two factors which affect the extent and depth of poverty. Some researchers have found positive impacts on labor supply and earnings; whereas, other research has found no impact, or in some cases negative effects of the EITC (Eissa and Liebman 1996; Meyer and Rosenbaum 2000; Neumark and Wascher 2001). Our model permits a direct assessment of state EITCs on before and after-tax poverty rates and gaps.

Our final policy variable is whether states choose to implement a minimum wage in excess of the federal minimum wage. If so, we use the log difference between the state and federal minimums. The minimum wage has two possible effects on poverty. In states with relatively higher minimum wages the incomes of its residents in the workplace may be higher, thereby lowering the extent of poverty. Conversely, states with higher minimum wages may have fewer employed workers due to the higher wage floor. The rather contentious empirical

and theoretical debate over whether either or both of these effects are important is an ongoing one (e.g. Card and Kreuger 1995; Neumark and Wascher 2001, 2002; Kim and Taylor 1995; Rebitzer and Taylor 1995). Another possible role for the minimum wage is its moderating effect on the extent of inequality. Lee (1999) finds that the falling real minimum wage was an important contributor to the rise of inequality in the 1980s. So, insofar as increasing inequality leads to increasing poverty, the minimum wage may also affect the extent of poverty through this indirect route. However, because we control for inequality in our model we are able to identify the direct effect of the state minimum wage on poverty.

### **Identification Issues and the Role of Aggregate Economic and Policy Effects**

In equation (1) we have assumed that  $\varepsilon_t^s$  is an iid random error, and that with the inclusion of the lagged dependent variable on the right hand side the model is ‘dynamically complete’ in the sense that further lags are redundant (Wooldridge 2002, chapter 13.8).<sup>16</sup> Conditional on the observed regressors, aggregate time effects ( $\lambda_t$ ), state fixed effects ( $\mu^s$ ), and state trends ( $\varphi^s t$ ), the assumption of an iid random error implies that, (a) economic conditions vary exogenously across states, and (b) there are no remaining systematic differences between states in their policy choices such that reforms to welfare can be viewed as exogenous to a given state’s poverty rate. Under these assumptions least squares provides consistent estimates of the model parameters in equation (1).

In their study of the evolution of state labor markets Blanchard and Katz (1992) make a strong case in favor of assumption (a). They characterize states as producing different bundles of goods for sale on the national market under constant returns to scale technology with infinite long-run mobility of workers and firms. Because of product differentiation states face different shocks to labor demand and thus state-specific fluctuations. Under these assumptions and

controls for permanent and trending differences across states, our model permits identification of state business-cycle indicators such as unemployment and employment growth rates on poverty.

Some have raised the possibility that state applications for waivers from federal rules governing cash assistance programs were an endogenous function of the states caseload (e.g. Martini and Wiseman 1997). If true, and if this also applied to concerns over state poverty rates, then assumption (b) may not be valid. To our knowledge a complete statistical analysis of this potential endogeneity issue has not been carried out. However, a limited set of tests in Ziliak, *et al.* (2000) casts doubt on the endogeneity of waivers to AFDC caseloads. In the year leading up to the application for a waiver they found no statistical difference in caseloads between those states seeking a waiver and those states not applying for waivers. Likewise, in a separate study on the effects of welfare reform on household saving, Hurst and Ziliak (2002) found no evidence that states that expanded liquid asset limits for program eligibility had systematically higher or lower saving rates prior to welfare reform. The data in Figure 7 above indicate some raw differences in poverty rates across waiver and non waiver states, but these differences appear to be persistent, and perhaps trending, such that conditional on state fixed effects and state trends assumption (b) is likely valid.<sup>17</sup>

Up to this point we have been relatively silent on the role of aggregate economic activity and aggregate policy reforms on state-level poverty. The vector of time indicators ( $\lambda_t$ ) are intended to control for the aggregate influences common to all states and households in a given period but which vary over time. Examples include shocks to aggregate labor markets by innovations in workplace technology, shocks to aggregate growth, perhaps emanating from oil price shocks, or national reforms to the tax and transfer system. Most prominent among the

latter are the expansions to the federal EITC in the 1990s and the 1996 welfare reform. We attempt to capture some of these aggregate influences by means of an auxiliary regression.<sup>18</sup>

Specifically, let  $\hat{\lambda}_t$  be the vector of estimated time effects. These can be viewed as an aggregate poverty rate (and squared poverty gap) net of idiosyncratic state differences. We can then use this vector as the dependent variable in an auxiliary time-series regression on aggregate economic activity, trends, and policy reforms, or as

$$\hat{\lambda}_t = \omega_1 AggUn_t + \omega_2 \% \Delta RGDP_t + \omega_3 t + \omega_4 t * p90 + \omega_5 t * p93 + \omega_4 t * p96 + u_t. \quad (3)$$

In equation (3)  $AggUn_t$  represents the aggregate unemployment rate in a given year,  $\% \Delta RGDP_t$  represents the growth rate in real Gross Domestic Product,  $t$  reflects an aggregate trend in poverty,  $p90$  is an indicator that equals 1 for the 1990–1992 period (inclusive),  $p93$  is an indicator for the 1993–1995 period,  $p96$  is an indicator for the 1996–1999 period, and  $u_t$  is a random error that is heteroskedastic by construction (Saxonhouse 1976).

The specification in equation (3) is intended to capture the effect of the aggregate business cycle and aggregate trends on poverty. We include the unemployment rate and growth rate in real GDP as proxies for the business cycle as these are common to the time-series based poverty literature. Importantly we permit breaks in the aggregate trend in the hope of capturing reforms to national policies. Specifically the breaks are intended to capture that 1990 expansion in the federal EITC ( $p90$ ), the phase-in period of the 1993 expansion ( $p93$ ), and the period with full phase in of the credit ( $p96$ ). To the extent that there exists an aggregate effect of welfare reform on state-level poverty (e.g. via national media campaigns/coverage and statements by national politicians), interpretation of the latter two trend breaks is confounded because the welfare-waiver period overlaps with the phase-in period of the 1993 expansion and PRWORA overlaps with the post-1996 period. However, because we conduct our analysis with both before

and after-tax poverty we can examine the difference in estimated coefficients across models to better isolate the effect of the federal EITC on after-tax poverty. We recognize the pitfalls of identification off of time series data (which is why we are using state panel data for our primary empirical analysis), but we believe this two-step method will be informative about the separate effects of local and national activity and policy on poverty. Interpretation of the aggregate effects, though, merits caution.

## **DATA**

The data employed for estimating the impact of macroeconomic performance and welfare reform on poverty come primarily from the 1981–2000 waves (1980–1999 calendar years) of the Current Population Survey. For each wave we uniquely identify each state, and within each state we obtain data on total income and wages for all families, as well as by family structure (female-headed with children or married with children) and by race of the family head (white and black).<sup>19</sup> The measure of before-tax income we employ is the same as that used in the Census Bureau’s official poverty measure, which includes labor-market earnings, government and non-government cash transfers, and interest and dividends. In-kind transfers and capital gains are omitted from this definition. After-tax income is then calculated by netting out the family’s federal income tax liability and adding in the EITC.<sup>20</sup> Given gross and net family income, we construct the poverty rate and the squared poverty gap. The average hourly wage for the family head is found by taking the ratio of labor market earnings to annual hours of work for the sample of working persons. The poverty thresholds are adjusted annually by the Consumer Price Index-All Urban Consumers, while the wage data are deflated with the same price index.<sup>21</sup>

While it is possible to construct state-specific unemployment rates and growth rates in employment per capita directly from the CPS, to improve measurement we instead turn to the Local Area Unemployment Statistics produced by the Bureau of Labor Statistics for employment and unemployment data, and to the Census Bureau for the state population data.<sup>22</sup> For the labor force data, the BLS uses information from the CPS, the Current Employment Statistics survey, and the state-specific Unemployment Insurance claims data to refine state-level estimates of unemployment and employment over those obtained from the CPS alone. For the state population data, the Census Bureau imputes annual population figures from the decennial census based on births, deaths, and domestic and international migration.

There might be concerns about possible measurement error plaguing annual state-specific estimates of poverty, wages, and inequality in the CPS. This measurement error may bias our estimates of equation (1), especially for subpopulations such as female-headed or black families whose sample sizes are limited in some smaller states. (This is less of an issue for the state-level employment, unemployment, and population figures because of the rigorous refining they receive from the BLS and Census.) To alleviate these concerns, we construct three-year moving averages of all variables (except for the welfare-reform dummy variables), resulting in the loss of the two end points for each state's time series.<sup>23</sup> By using three-year moving averages, we are employing the same method used by the Census Bureau in its annual reports on the extent of poverty in the U.S. (Dalaker and Proctor 2000). In addition, for families headed by a black person, we limit our sample to state-years with more than 30 observations.

Our use of three-year moving averages necessitates a change to our lag structure of equation (1). Now, instead of the  $(t-1)$  lagged dependent variable in equation (1) we must use the  $(t-2)$  value. To see this notice that at time  $(t)$ , the three year moving average for  $P(t)$  is

$$\bar{P}_t = \frac{P_{t+1} + P_t + P_{t-1}}{3}; \text{ at time } (t-1), \bar{P}_{t-1} = \frac{P_t + P_{t-1} + P_{t-2}}{3}; \text{ and at time } (t-2), \bar{P}_{t-2} = \frac{P_{t-1} + P_{t-2} + P_{t-3}}{3}.$$

Under assumptions that  $\varepsilon_t$  is iid, then both  $\bar{P}_t$  and  $\bar{P}_{t-1}$  are endogenous to  $\varepsilon_t$  (because of the presence of  $P_t$ ), but  $\bar{P}_{t-2}$  is only predetermined. Hence, using the lag dependent variable at  $(t-2)$  still permits consistent estimation via Ordinary Least Squares.

## RESULTS

The figures above reveal substantial changes over time and across states in poverty, inequality, and economic activity in the period before and after welfare reform. We now investigate more formally the impact of macroeconomic performance and welfare reform on the (log of the) poverty rate and the squared poverty gap using both before-tax and after-tax income. Each regression is based on three-year moving averages, is weighted by the number of families in each state-year-group cell, and controls for year effects, state fixed effects, and state-specific trends. Each of the ensuing four tables contains two panels, an upper panel for the primary model results from equation (1) based on state panel data and a lower panel for the auxiliary model results based on the aggregate time series from equation (3).

### **The Macroeconomy, Social Policy, and the Extent of Poverty Across Families**

Table 1 presents weighted least squares estimates of before-tax poverty rate models for all families, and across family structure and race. With the exception of black families, the unemployment rate has a positive and statistically significant effect on before-tax poverty rates. For example, in the case of all families a one percentage point decrease in the unemployment rate leads to a 4.5 percent decline in the short-run poverty rate, for female-headed families the response is a 3.2 percent decline, and for married families the response is a 5.6 percent decline.

(The long-run effects are only slightly higher.) Growth in employment per capita also demonstrates a strong countercyclical effect on poverty; across all families a one percentage point increase in the growth rate of employment per capita leads to a 1.4 percent decline in poverty rates. Again, however, there are differences across family structure and race in the anti-poverty effectiveness of employment growth insofar as poverty rates among female-headed families and black families are fairly non-responsive to employment growth.

[Table 1 about here]

A fairly rapid adjustment to changing macroeconomic conditions is implied by the coefficient on the lagged dependent variable across the poverty measures. The elasticity of the current poverty rate to the previous rate ranges from 0.07 for female-headed and married-couple families to about 0.16 for black families. The implication is that poverty among black families is more persistent than among other demographic groups. This is consistent with the micro-level evidence in Rogers and Rogers (1992) where in a subset of families headed by a black person (poor single mothers without a high school degree) 70 percent were poor every year over a ten-year time horizon. Though, even for black families the persistence of poverty is quite low.<sup>24</sup>

A different story emerges when we use more secular measures of the macroeconomy; namely the median real wage and its square. The median wage has neither a sizable economic impact nor a statistically significant impact on poverty across all families, married-couple families or white families. Consider the case of all families. A possible reason for no effect of the median wage is because if someone worked 40 hours a week for an entire year, the median wage (\$13.64) would place them comfortably above the poverty line. Even the lowest median wage in a state over this time period (\$9.84) would place someone above the poverty line.<sup>25</sup> On the contrary, growth in real median wages does lead to substantial reductions in female-head



and black-family poverty. This is likely due to the lower median wages of these two demographic groups. When working for 40 hour hours a week, these wages place them at or below the poverty line.

If increases in median real wages are accompanied by increases in wage inequality, the estimates in Table 1 indicate that, in general, the benefits of economic growth are tempered by rising inequality. However, this dampening effect is much smaller for families headed by a single mother, and in fact are weakly beneficial for black families. The latter suggests that wages for high-wage women and high-wage blacks (in the respective female-head and black family wage distributions) were still low enough relative to the poverty threshold in the 1980s and 1990s that increases at the high end relative to the lower tail of the distribution does not put a significant drag on the benefits of wage growth.

We now turn to the variables depicting cross-state and time-series variation in social policies in Table 1. Families residing in states with supplemental EITCs, all else equal, have slightly higher before-tax poverty rates. This can occur if the EITC encourages some workers to reduce their labor supply, particularly married couples with two income earners (Eissa and Hoynes 1999). Note, though, that this effect is very small as the elasticities range from zero to 0.05. On the contrary, families residing in states with minimum wages above the federal minimum have lower poverty rates. This is consistent with Lee's (1999) finding of increased inequality in the 1980s due to the declining minimum wage. Our results indicate that conditional on wage inequality the higher the state minimum wage relative to the national level the lower the head count. Again, like the state EITC, these effects are small as the largest elasticity found among black families suggests a 10 percent increase in the state minimum lowers poverty by only 0.5 percent.

Welfare reform, as proxied by the indicators for pre-PRWORA welfare waivers and post-PRWORA TANF implementation, had little impact, positive or negative, on before-tax poverty rates. The possible exceptions are found in female-headed families and married-couple families. Poverty rates fell about 2.2 percent among female heads residing in states with welfare waivers, and then fell an additional 2 percent after passage of PRWORA. (Both these changes are statistically insignificant, however, at usual confidence levels.) Among married couples poverty rates rose upwards of 6 percent both before and after PRWORA (although the latter is statistically insignificant). This is a somewhat surprising finding with no ready explanation since less than 10 percent of the welfare caseload is comprised of two-parent families. The positive correlation between welfare reform and poverty for married couples may reflect changes in the composition of families headed by a married couple if some of the new rules state's adopted led more single women with children to become married. Since the implementation of the waivers there has been an increase in the number of teenage mothers getting married, a decline or leveling off of divorce rates, and a decline of unmarried childbearing especially among black families, which is consistent with this interpretation (Lichter and Crowley 2002; *New York Times* 2002). Whether these trends simply coincide with welfare reform, or are caused by the reforms, requires further investigation. Finally, among welfare policies under (partial) state control, a 10 percent increase in the maximum cash and food stamp benefit for a 3-person family leads from 4 to 9 percent higher poverty rates. This effect underscores the potential negative labor-supply consequences of welfare participation among the low-income population (Moffitt 1992).

Our model in equation (1) allows us to portray the state-level factors we think are especially important to an improved understanding of the determinants of poverty. As we argued above, changes at the national level in macroeconomic conditions and social policies presumably

also have a large impact. In the lower panel of Table 1 we report the estimates from equation (3). These estimates verify our assertion that aggregate macroeconomic conditions also matter at the more local level, although the effects are not as pronounced. Indeed, a lower aggregate unemployment rate leads to lower state poverty rates, but the effect is about one-third the magnitude of a change in unemployment at the state level. Likewise, growth in RGDP weakly translates into lower poverty rates for most demographic groups.

The auxiliary regression results also confirm the downward trend in before-tax poverty rates over the past two decades. This trend was not constant, however, especially in the mid-to-late 1990s. For example, female-headed family poverty rates fell 6 percent faster between 1993 and 1996 relative to the 1980s, and 9 percent faster after 1996. While the time-series analysis does not permit us to pinpoint the source of the decline, e.g. welfare reform, federal EITC expansions, or some other source, the results below based on after-tax poverty rates point to the EITC.

### **Accounting for Income Taxes**

In Table 2 we report results parallel to those in Table 1 except the dependent variable is now based on after-tax income. Overall the results based on the state panel data from equation (1) are little changed after netting out tax liabilities and adding in EITC credits. There are a few exceptions. Among female headed families the effect of PRWORA on after-tax poverty is about double the before-tax estimates, though it remains statistically insignificant at usual levels of significance. More notable are changes among black families. First, the increase in the persistence of poverty when we move from a before-tax to an after-tax measure tends to be substantially more pronounced among black families. This suggests the possible existence of racial differences in tax filing status (single parenthood is more heavily concentrated among this

group) and in tax deductions (say, lower rates of itemizing due to lower rates of owner-occupied housing) that tend to perpetuate after-tax poverty among black families. Second, after accounting for taxes we identify a strong antipoverty role for the macroeconomy as measured both by unemployment rates and employment growth more akin to other groups. In the before-tax models, both these effects were insignificant.

[Table 2 about here]

Particularly notable in the lower panel of Table 2 is that most of the coefficients on the 1990s trend-break variables are larger in absolute value than in the before-tax case. After-tax poverty tended to fall 1–2 percent faster than before-tax poverty between each of the 1990 to 1992 and 1993 to 1995 periods, and upwards of 8 percent faster after 1995 with the typical result being about 5 percent faster post 1995. This clearly points to a positive role for the federal EITC in eradicating poverty in America, though the actual magnitude is difficult to quantify. If the EITC entices non-workers to enter the labor force, or current workers to increase their hours of work, then we expect it to reduce before-tax poverty rates as found in Table 1. Absent any other influences, this would imply that after 1995 the EITC lowered poverty by 9 percent more than in the 1980s on average, and an additional 5 percent after taxes. However, there were other influences present such as welfare reform that likely account for some of the aggregate declines in poverty over the 1990s.

### **The Macroeconomy, Social Policy, and the Depth of Poverty Across Families**

In Table 3 we extend our previous analysis to estimate the effect of macroeconomic conditions and social policies on the depth of before-tax poverty as measured by the squared poverty gap. Similar to the poverty rate results in Table 1 the business cycle has a strong effect on the squared poverty gaps—a one percentage point decline in the unemployment rate leads to declines in the

squared poverty gap from a low of 3.2 percent for female-headed poverty to a high of 5.2 percent for white families. Importantly, while the business cycle did not affect before-tax poverty rates among black families, it does serve to improve the economic status of black families below the poverty line, especially those far below the poverty line. Likewise, growth in median wages lowers the depth of poverty for both female-headed families and black families, with only limited evidence of economic progress being hindered by increases in inequality for these groups. This weak effect of wage inequality is contrary to the results for the other demographic groups under consideration.

[Table 3 about here]

State supplemental EITCs have no effect on the depth of before-tax poverty. In light of Table 1 this suggests that the supplements are most likely affecting behavior near the poverty threshold. State mandated minimum wages, on the other hand, do improve the economic position of the disadvantaged, particularly among female-headed and white families.

Pre-PRWORA waivers had a strong antipoverty role among female heads and black families during the waiver period, reducing the squared poverty gaps by 12 percent among black families and 4 percent among female-headed families. The waivers adopted by states carried both carrot and stick—the carrots often included higher earnings disregards and higher asset limits, while the sticks often entailed time limits on benefits and benefit sanctions. Collectively these reforms trickled down into the lower tail of the income distribution to reduce the depths of poverty. On the other hand, during the PRWORA period the depth of poverty across all families increased by 7 percent (the result is statistically significant at the 10 percent level). This is primarily a result of the large 18 percent increase for married couples. As before, this variable is likely capturing a composition shift among married-couple families and not necessarily a causal

channel. This composition shift is also evident in the pre-PRWORA waivers where married families saw an increase in deprivation of 13 percent in states with waivers.

Lastly, contrary to the results for poverty rates, more generous welfare benefits appear to positively improve the financial well being of families most likely to qualify for cash assistance – female headed-families. One possible explanation for the differing results across poverty rates and squared poverty gaps is that low benefit states have more compressed income-to-benefit schedules. This may allow persons ex-ante closer to the poverty line to escape poverty in low benefit states. This more compressed scale, however, would not lead to larger decreases in poverty in low benefit states. For all families, though, higher welfare benefits still led to increases in the depth of poverty.

The lower panel of Table 3 reveals that aggregate business cycle and economic growth do in fact ‘lift all boats’ in that the squared poverty gaps fall with either or both a decline in aggregate unemployment or growth in RGDP. The benefits, though, are more pronounced among married-couple families and families headed by a white person. Similar to trends in poverty rates there is a marked break in the trend of squared poverty gaps during the 1990s, particularly among female headed and black families. In the mid 1990s the trend fell between 8 and 11 percent among these groups, and then an additional 14 and 24 percent, respectively, in the late 1990s. The period was clearly remarkable in terms of the scope of families affected by the economic expansion and social policy reforms (Katz and Krueger 1999).

[Table 4 here]

In Table 4 we repeat our examination of the determinants of squared poverty gaps with after-tax income rather than before-tax income. Overall the results are similar to those recorded in Table 3, though a few anomalous results appear. The unemployment rate has its expected

countercyclical effect of the depth of after-tax poverty for female-headed families and black families, but it is acyclical overall due to the perverse pro-cyclical effect for married families. Growth in employment per capita, however, continues to exert strong antipoverty influences on after-tax deprivation across families. Also, contrary to previous estimates, the state-funded EITC lowers after-tax squared poverty gaps for married couples, and weakly lowers poverty's depths for white families. The results in Table 4 indicate that PRWORA is strongly positively correlated with higher after-tax deprivation, although this is not true for female-headed and black families where the effect is insignificant. The channel underlying the higher after-tax poverty, which is again driven by married-couple families, clearly merits further investigation.

Finally, in the aggregate, the 1990s witnessed substantial reductions in economic deprivation as captured by the trend breaks in the time series. Summing the trend breaks indicates that the depths of after-tax poverty are nearly 50 percent lower for most groups under consideration. This should be compared with the before-tax situation in Table 3 where the declines are much more modest. This is partial evidence that the bulk of the improvement in economic status among America's poorest families is occurring through redistribution within the federal tax code, especially via the EITC.

### **Simulations**

Because median wages and wage inequality have a cyclical component and thus respond to changes in the unemployment rate and employment growth rate the interpretation of model estimates in Tables 1–4 containing the full set of macroeconomic indicators is muddled. To further interpret our results we simulate the impact of the macroeconomy on poverty rates and poverty gaps before and after taxes, and present the estimates in Table 5. We conduct the simulations for all families, and for those groups that have high concentrations of poverty –

female-headed families and black families. In row (1) in each of the upper and lower panels we list the predicted poverty rates and poverty gaps from our models with all of the variables at their average values. In rows (2) through (5) of each panel we simulate, using the coefficients from Tables 1–4, what would happen to the extent and depth of poverty if all states faced the unemployment rate, employment growth per-capita, median wage, and the 80-20 wage inequality at the levels observed in the trough of the 1980s recession (1982), the peak of the 1980s expansion (1989), the trough of the 1990s recession (1991), and the peak of the 1990s expansion (1999), holding the other variables at their mean levels. To aid in interpretation, we report the antilog of the dependent variables, i.e. the levels of the poverty rates and gaps.

[Table 5 here]

Our simulations from the 1980s are as one would expect—the values for the head count and squared poverty gap are higher than average for the trough in 1982 and lower than average for the peak in 1989. Across all measures, the recession of the early 1990s results in lower poverty than the trough of 1982, highlighting the severity of the 1980s recession. For example the predicted poverty rate for female-headed families and black families before and after taxes is nearly 5 percentage points higher in the early 1980s than the 1990s. However, despite the record expansion observed in the 1990s, our simulations of the peak of the 1990s expansion indicate poverty rates and gaps among all families is higher than under a simulation of the peak of the 1980s expansion, which reflects the continuing tempering influence of rising inequality on poverty reductions. Again, though, focusing on all families alone and ignoring subgroups paints a distorted picture. While families as a whole were not predicted to be as well off at the end of the 1990s, female-headed families and families headed by a black person are predicted to have made substantial gains in the ‘War on Poverty,’ both in terms of reducing the extent of poverty



as well as the depth. In large part this positive development is driven by the gains made in median wages among these two groups.

### **Alternative Specifications**

Much of the time-series research on the antipoverty effects of economic growth conducted during the 1980s and early 1990s focused on identifying changes over time in the strength of the relationship between the macroeconomy and poverty. Using time-series models Haveman and Schwabish (2000) found that the strength of the relationship between the macroeconomy and poverty fell in the 1980s relative to earlier decades, which is consistent with previous research. However, they found that poverty and the economy in the 1990s were more tightly linked. While no formal theoretical justification is provided for the chosen break point at 1990, we follow their conjecture that the 1990s were somehow different from the 1980s and allow the effect of the business cycle to differ across decades. We record the results of this specification check in Table 6 for the before-tax samples used in Table 5.

[Table 6 here]

The results reported in Table 6 indicate that there is no evidence at the state level of a changed link between the unemployment rate and the poverty rate (or squared poverty gap) in the 1990s, regardless of sample split. There is, however, a substantially tighter link between employment growth and the depth of poverty in the 1990s relative to the 1980s. Indeed, compared to the pooled estimates in Table 3 the effect is at least twice as large in absolute value, and nearly three times larger in economic impact for black families. This suggests that the engines of employment growth in the 1990s dramatically improved the economic status of the impoverished. Likewise, and consistent with Haveman and Schwabish (2000), the time series

evidence reported in the lower panel of Table 6 indicates the reestablishment of some of the anti-poverty bite of the national economy in the 1990s.

This leads us to our final specification test. At the outset we discussed the reasons for why we chose to use data aggregated to the state level rather than to the national level. One broad justification is in the ability of state level data to identify the effect of various policy changes; an option not available with national-level data. Our ability to observe relevant important sub-national economic conditions is another justification our use of state-level data.

[Table 7 about here]

To explore the differences between state and national-level models, in Table 7, we have restricted our state-level model in equation (1) for all families to include only economic variables. In structure, it is akin to Table 1. In the lower panel of Table 7 we have specified the same model using national-level data. There are two primary insights one gains from using state-level data as opposed to when we use national-level data: (1) employment growth is only statistically significant in one of the specifications and (2) wage inequality is very poorly determined in the aggregate data. Insofar as we would expect these to be determinants of poverty, we believe this further demonstrates the advantages to using state-level data.

## **CONCLUSION**

We examined the impacts of macroeconomic performance and welfare reform on family poverty over the 1980s and 1990s. Using state-level panel data from the Current Population Survey, we estimated models of the before and after-tax poverty rate and the squared poverty gap for all families, and for subpopulations decomposed by family structure and by race. The dual advantages of state panel data over aggregate time-series data are improved identification of the

impact of macroeconomic performance on poverty and the ability to identify the effect of welfare reform on poverty. By examining poverty rates and poverty gaps we are able to assess the effects of economic activity and social policies on both the extent and the depth of poverty.

To summarize our findings we return to the issues raised in the introduction; namely, are policies that spur long-run economic growth effective anti-poverty tools? Alternatively, are transfer policies that are targeted specifically at the low-income population key to poverty reduction? Moreover, are the anti-poverty impacts of economic growth and social policies uniform across subsets of the population such as race or marital status; that is, does a ‘rising tide lift all boats’? Our results indicate that the answer to the first two questions is a resounding yes, while the answer to the third is a qualified no.

A strong macroeconomy at both the state and national levels reduces not only the number of families below poverty, but also the severity of poverty. The magnitude and source of these antipoverty effects, however, are not uniform across family structures and racial groups or necessarily over time. Over the 1980s and 1990s poverty amongst married-couple families and families headed by a white person tended to respond both to changes in the unemployment rate and employment growth rate, but not changes in the median wage. On the other hand, it wasn’t until the high-growth economy of the 1990s that employment growth for female-heads surged and was reflected in lower poverty rates and gaps. A further distinction is that the business cycle has a countercyclical effect on after-tax poverty rates and before- and after-tax poverty gaps amongst families headed by a black person, but no effect on before-tax poverty rates, though there is limited evidence of this link becoming stronger in the 1990s. What is clear is that growth in median wages over the past decade has substantially reduced the extent and depth of

poverty among female-headed and black families. Rising inequality, though, did temper the gains made against poverty overall, and especially among married couples and white families.

While the macroeconomy continues to have a major impact on poverty, there is an array of other programs with anti-poverty goals. The discussions surrounding the optimal mix of these policies are predicated on the implicit tradeoff between the efficiency and the equity of the policy. The EITC is a perfect case in point. The credit, which redistributes income to low-income workers and thus reduces after-tax income inequality, is believed to improve labor-market efficiency to the extent non-workers are drawn into the labor force. At the same time it reduces labor-market efficiency over part of the range of the credit because the subsidy and associated implicit tax rate lower the incentive to work. There is some evidence that in the aggregate the EITC reduces labor supply (Hoffman and Seidman 1988). So if it does not play a positive antipoverty role then support for the program will likely diminish. Our results, particularly those based on the auxiliary model, are suggestive that expansions in the federal EITC were a significant contributor to the declines in poverty over the past decade, especially in reducing after-tax deprivation. Likewise, while the potential disemployment effects of the minimum wage are well known, we find states with more generous minimum wages relative to the national level having lower poverty levels, though the effect is relatively small.

Assessing the contribution of welfare and welfare reform to the declines in poverty faces similar equity and efficiency considerations. We find that increasing the generosity of the maximum cash and food stamp benefit raises before-tax poverty rates, likely because of reduced work incentives, while at the same time mitigating economic deprivation amongst the target population of female-headed families. Many of the waivers adopted by states prior to PRWORA were intended to ‘make work (and welfare) pay,’ while others were simply designed to make

welfare unattractive, which may or may not induce a positive labor supply response. We find limited and mixed evidence that (after-tax) poverty is lower among female-headed families and black families after the implementation of welfare waivers and PRWORA. An area in need of further research is on understanding the increase in married-couple poverty after welfare reform.

Collectively our results indicate the potential synthesis between policies that foster economic growth and policies that redistribute income. Economic growth clearly reduces the depth of poverty in America. But, since this growth seems to reduce the number of black families who are poor only after accounting for income taxes and credits, this suggests a positive interaction between the economy and social policy. The U.S. witnessed such a period in the late 1990s when labor demand for low-skilled workers surged, possibly due to substantial gains in labor productivity (Ball and Moffitt 2002), while at the same time the EITC was expanded. Policies that foster further gains in labor productivity, coupled with a redistributive tax policy like the EITC, are likely to lead to additional victories in the War on Poverty.

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## ENDNOTES

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<sup>1</sup> We do not mean to imply economic growth always is accompanied by increases in inequality. The 20<sup>th</sup> Century also witnessed periods of wage compression (Goldin and Margo 1992).

<sup>2</sup> Others using less aggregated data to examine the issue of poverty and economic activity include Blank and Card (1993), who use data over the 1970s and 1980s by census region, and Freeman (2000), who uses state-level data for 1989–1998, though the state-level analysis is not the primary focus of his paper.

<sup>3</sup> Schoeni and Blank (2000) examine the impact of welfare reform on female-headed family poverty, but their study is not focused on the broader links of macroeconomic performance and poverty. Meyer and Sullivan (2001) examine the impact of broad-based tax and social policy changes on consumption expenditures among single mothers, while Mills, *et al.* (2001) use kernel density re-weighting methods to study the impact of the economy and welfare reform on single mothers using the 1993 and 1999 CPS.

<sup>4</sup> For a description of the differences between demographic groups see, e.g., Harris (1993).

<sup>5</sup> All data used in the ensuing figures are from the Current Population Survey as detailed below.

<sup>6</sup> In the official poverty rates compiled by the U.S. Census Bureau, a before-tax measure of income is used. Consistent with this, henceforth in the paper, “poverty” refers to measures using a before-tax measure of income and “after-tax poverty” refers to measures using after-tax measures of income.

<sup>7</sup> Strictly, when  $\alpha=2$ , it is the sum of squared normalized poverty gaps, and not the square of the poverty gap. In model estimation we will take the natural log of each poverty index, which will aid in interpreting several of the explanatory variables.

<sup>8</sup> In earlier versions we also considered  $\alpha=1$ , which yields the so-called poverty gap. This measure satisfies the monotonicity axiom but not the transfer axiom. Because the results were qualitatively the same as the squared poverty gap results shown below and because the transfer axiom is violated we omit tabulating the poverty gap estimates for ease of presentation.

<sup>9</sup> We should note that the poverty gap used in this paper has the property that when a family leaves poverty, holding all else constant, the poverty gap will decrease. This property does not hold under other measures, which also are sometimes called the “poverty gap”, including those published in the official U.S. poverty statistics (Dalaker and Proctor 2000).

<sup>10</sup> The dynamic fixed-effect model might suffer from the so-called Nickell (1981) bias; that is, the correlation between the lagged dependent variable and the fixed effects might bias the coefficient on the lagged dependent variable toward zero. However, this bias declines as the time-series dimension grows, and with  $T=20$  this bias is likely minimal. As a check, though, we estimated the dynamic model via instrumental variables, using a variety of instruments and techniques (i.e. fixed effects IV and first differences IV) with little change in the results.

<sup>11</sup> We also considered other measures of macroeconomic activity, including the growth rate in real Gross State Product (RGSP). After controlling for the unemployment rate and employment growth per capita, RGSP was statistically and economically insignificant and thus dropped from the analysis.

<sup>12</sup> Previous work has also analyzed the effect of inequality on other outcomes. For example, Oppenheimer, *et al.* (1997) looked at the effect of inequality on the career development and marriage timing of men.

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<sup>13</sup> Instead of the 80-20 measure of inequality we also ran models with the coefficient of variation with little change in the estimates. See Cowell (2000) for a detailed treatment of the measurement of inequality, Katz and Autor (1999) for an application of the 80-20 measure to U.S. earnings inequality, and Wu *et al.* (2002) for a study of government policies on alternative measures of the income distribution.

<sup>14</sup> We also considered models with disaggregated waiver variables, with little change in the key results. Some of these waiver policies such as time limits on benefits or work requirements for benefit receipt have obvious implications for current poverty, while others are less obvious such as responsibility-based waivers requiring that children receive regular health exams. In results not tabulated we found that time limits and earnings disregards decreased poverty while work requirements increased poverty. Our specification in equation (1) captures the net effect of these different policies.

<sup>15</sup> Bitler, *et al.* (2003) argue that in models such as in equation (1) with unrestricted time effects, the PRWORA effect is identified but is best interpreted as a 1997 effect since the bulk of states implemented welfare reform in that year. The waiver period in the mid 1990s offers more robust identification of welfare reform's effects because of greater cross-state heterogeneity in timing of program implementation.

<sup>16</sup> In results not tabulated we tested the assumption of dynamic completeness and found no evidence in favor of including further lags of the dependent variable or of including lags in economic conditions or policy variables. This is at odds with some of the recent welfare caseload literature (e.g. Ziliak, *et al.* 2000) and highlights the fact that poverty and welfare caseloads respond differently to the business cycle.

<sup>17</sup> In results not tabulated we estimated a model that treated the welfare waiver as endogenous to poverty rates. For instruments we used time-varying state political factors such as whether both houses in the state legislature are under Democrat or Republican control, and an indicator whether the governor was a Democrat. While these variables were good predictors of waiver status, the instrumental variables results did not differ significantly from the OLS results presented.

<sup>18</sup> Solon, Barsky, and Parker (1994) use a similar two-step model to identify the effect of the aggregate unemployment rate on the wages of men in the Panel Study of Income Dynamics.

<sup>19</sup> We focus on the family, which by CPS definition is a group of two or more persons related by birth, marriage, or adoption who live together. We limit our sample to families with positive incomes, which is likely to reduce measurement error if some low-income households underreport income in the CPS, a finding of Edin and Lein's (1997) in other contexts. Moreover, there is a discontinuity between households with negative and zero incomes and other households with incomes below the poverty line insofar as households with negative and zero incomes are much less likely to evidence correlates with poverty such as participation in food assistance programs (Wemmerus and Porter, 1996).

<sup>20</sup> Meyer and Sullivan (2002) argue that the CPS only captures about 75 percent of EITC receipts, which suggests a likely understatement of the actual magnitude of the program on poverty.

<sup>21</sup> Poverty thresholds are available at the URL: <http://www.census.gov/hhes/poverty/threshld.html>

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<sup>22</sup> Labor force data from the BLS are available at URL: <http://www.bls.gov/top20.html#LAUS> , while state population data are at URL: <http://www.census.gov/population/www/estimates/statepop.html> .

<sup>23</sup> In the descriptive analysis presented in Figures 1–7 we use annual data because it is either aggregated across all states or comes from relatively large states. Each state-year is weighted by the number of observations in the CPS for the respective cell.

<sup>24</sup> If we use the (t-1) poverty rate rather than the rate at (t-2) the coefficient increases to between 0.3 and 0.6 depending on subpopulation. Treating the (t-1) rate as endogenous and instrumenting with the (t-1) exogenous variables in the regression yields a coefficient on lagged poverty comparable to that reported in Table 1 but at a sizable loss in efficiency.

<sup>25</sup> In an earlier version we used a quadratic in median earnings instead of the median wage and found a sizable and significant antipoverty role of earnings for all groups. Because of concerns over potential endogeneity of earnings with the poverty rate we use wages in the current version. However the earnings results highlight the relative heterogeneity and cyclicity of hours compared to wages.

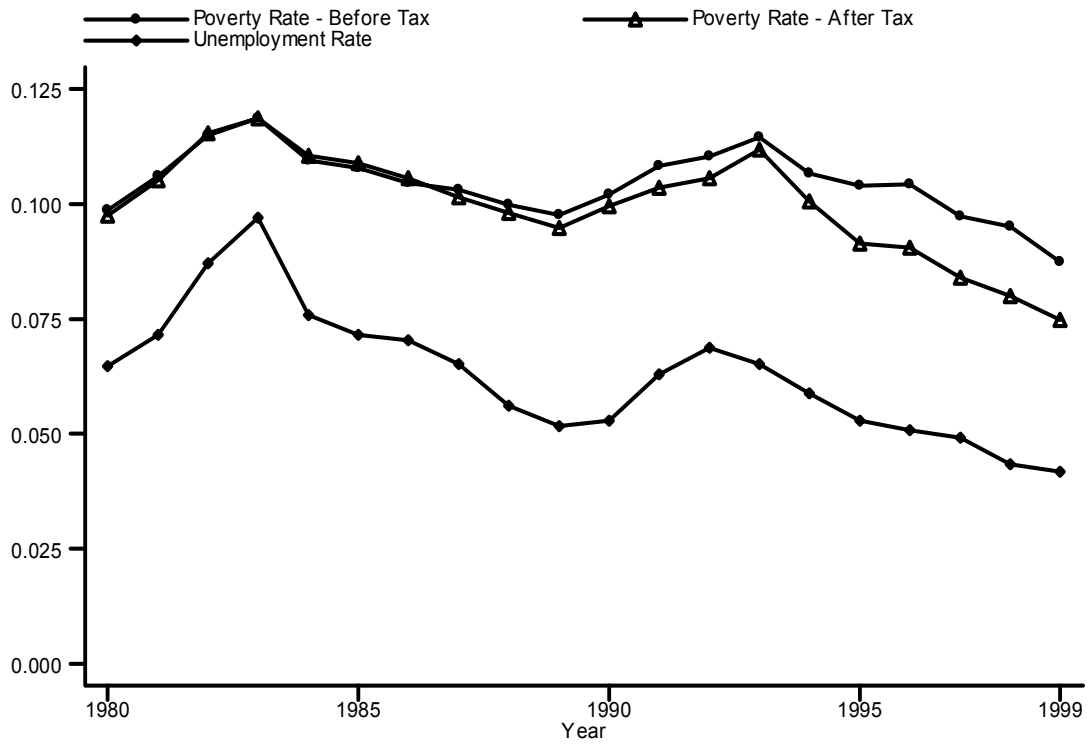


FIGURE 1. POVERTY RATES AND UNEMPLOYMENT RATES

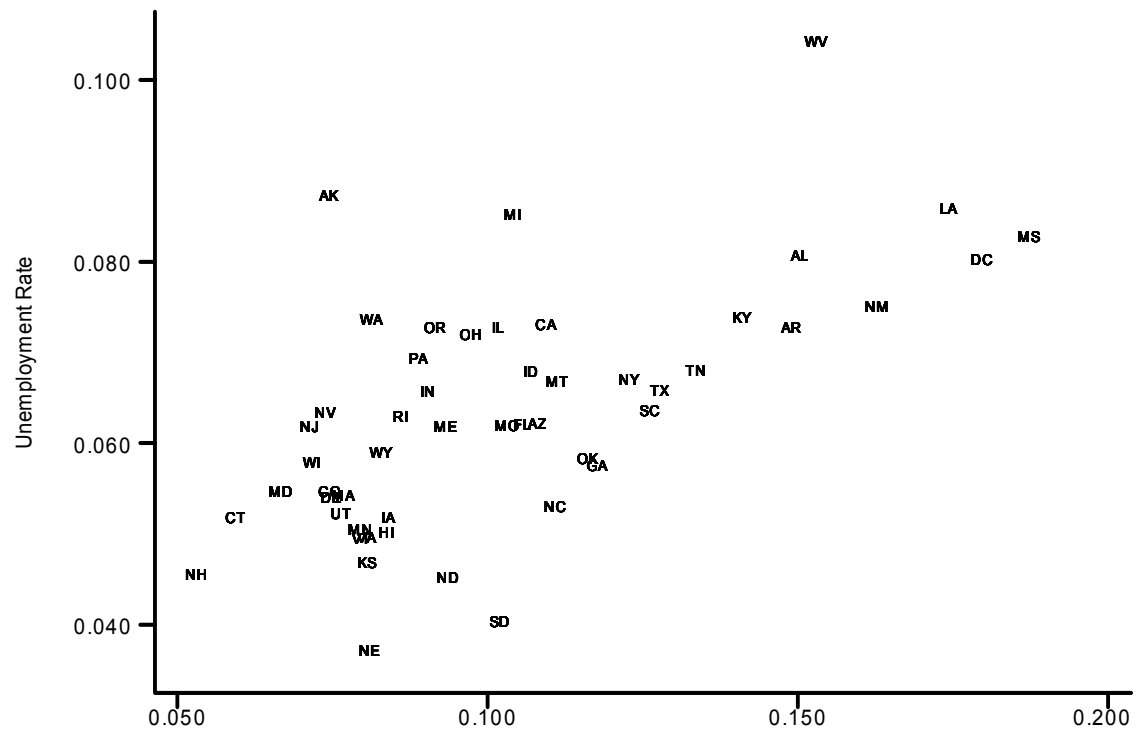


FIGURE 2. AVERAGE POVERTY AND UNEMPLOYMENT RATES BY STATE



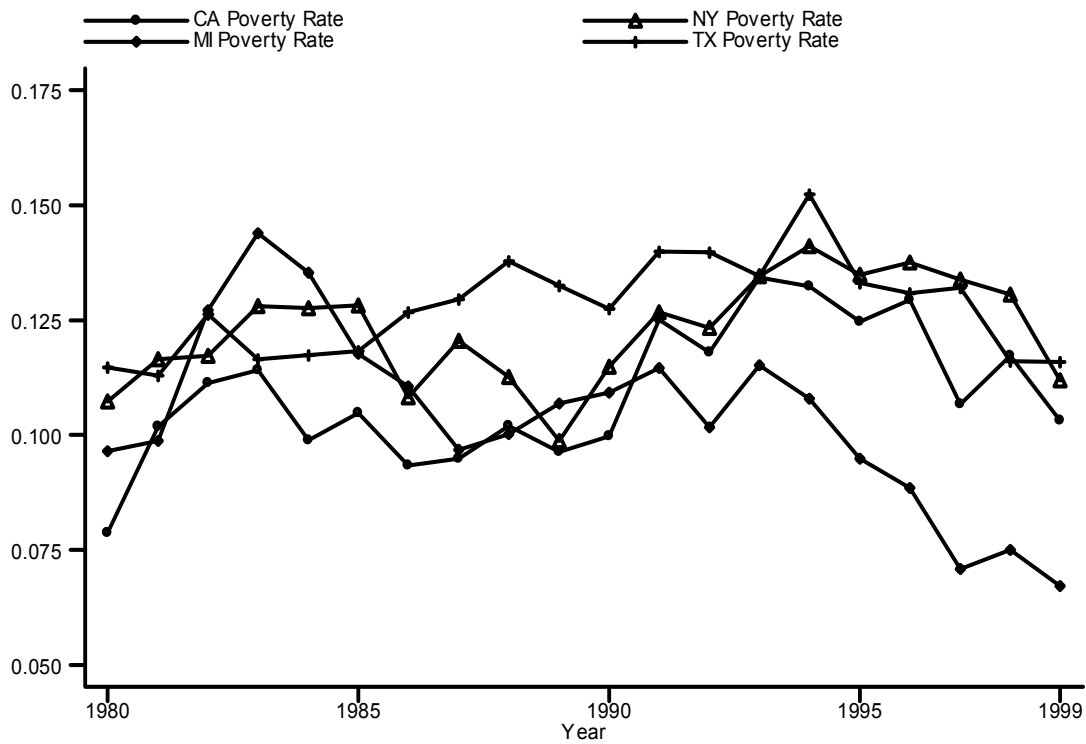


FIGURE 3. SPATIAL DIFFERENCES IN POVERTY RATES

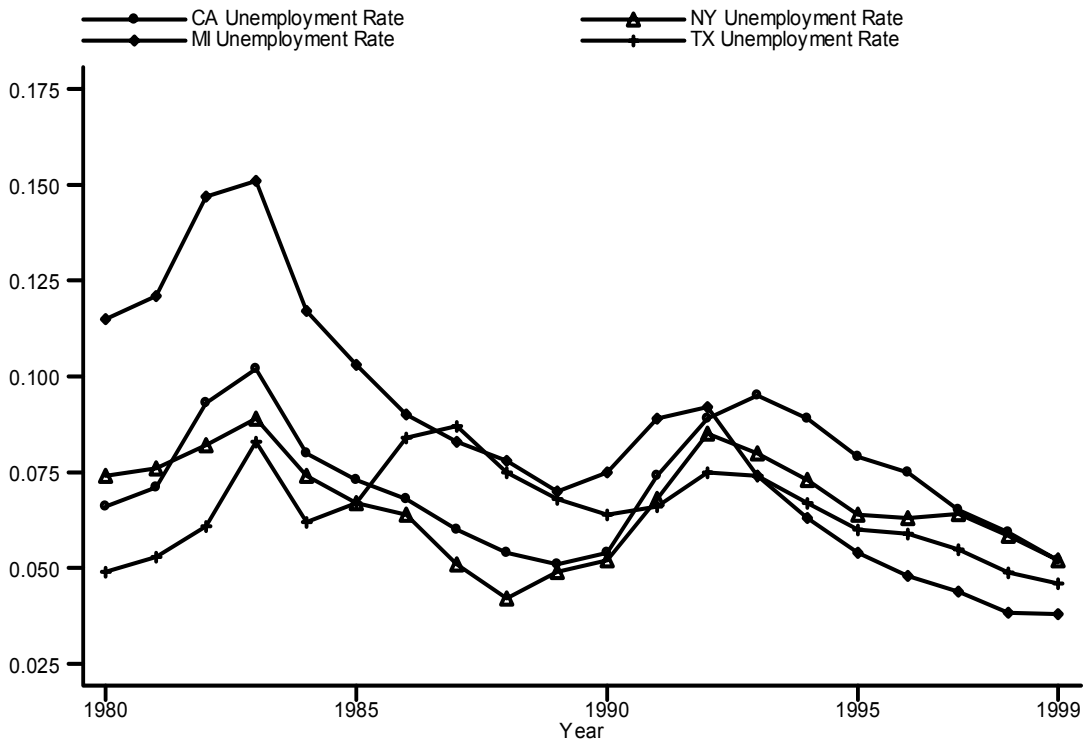


FIGURE 4. SPATIAL DIFFERENCES IN UNEMPLOYMENT RATES

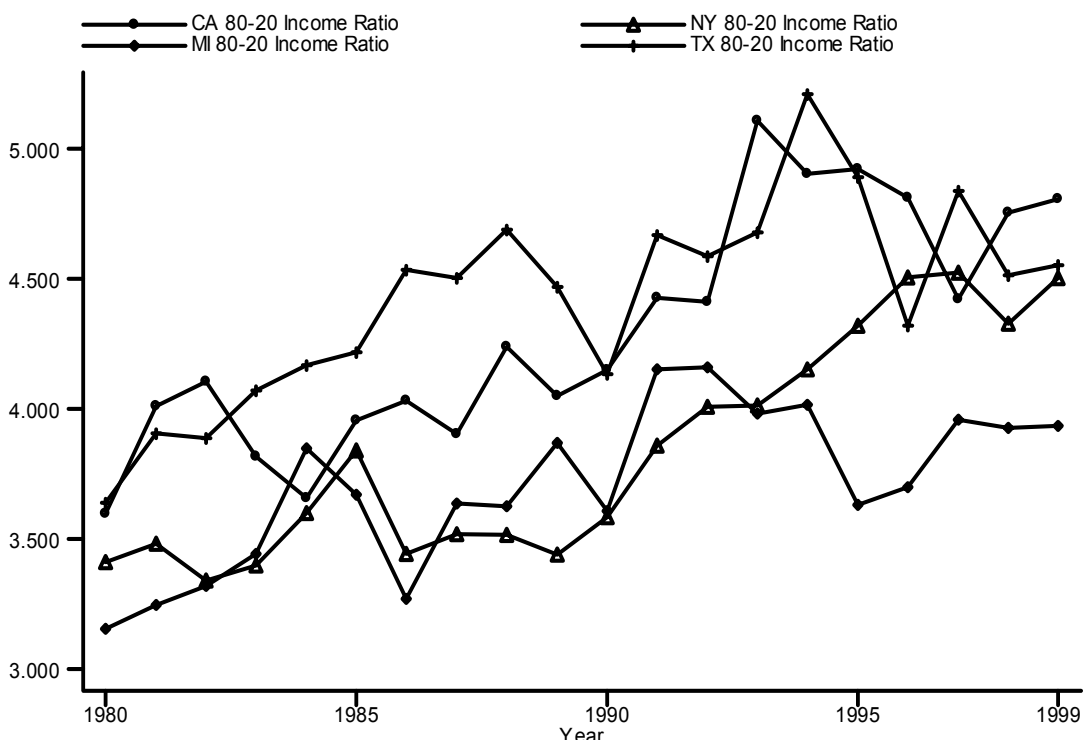


FIGURE 5: SPATIAL DIFFERENCES IN INCOME INEQUALITY

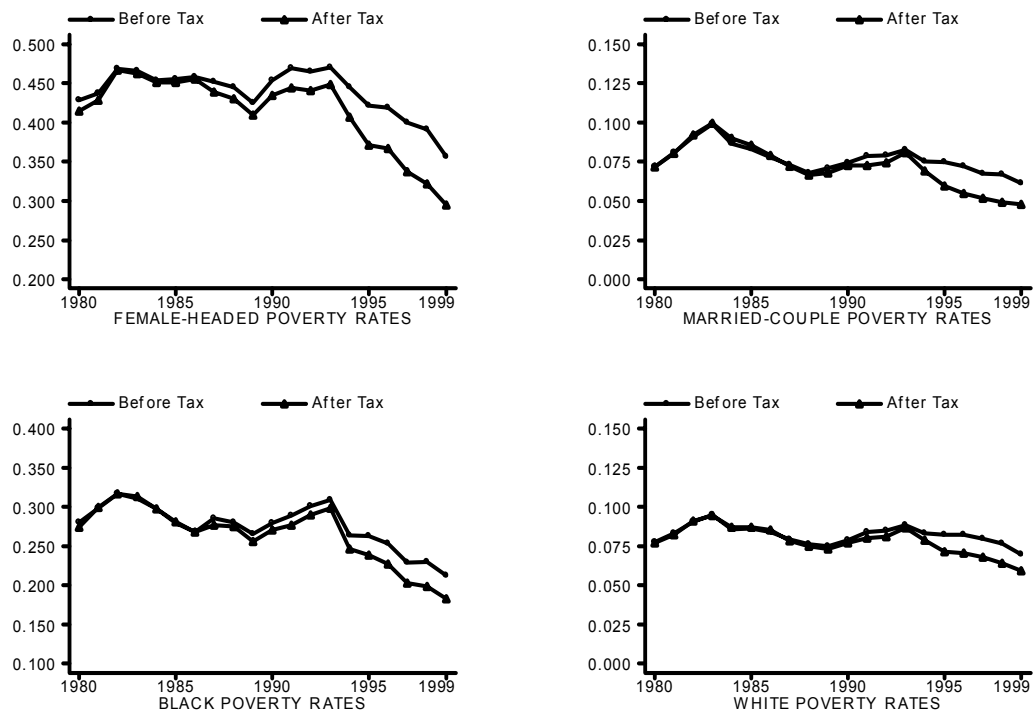


FIGURE 6. POVERTY RATES BY FAMILY STRUCTURE AND RACE

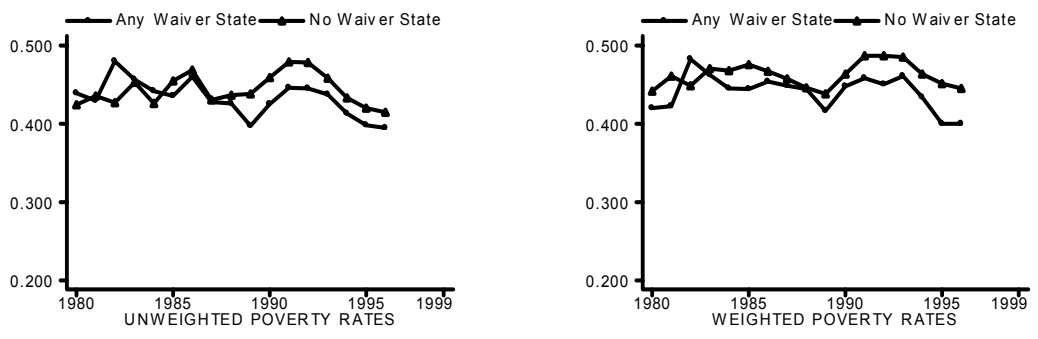


FIGURE 7: WEIGHTED AND UNWEIGHTED FEMALE HEAD POVERTY RATES BY WAIVER STATUS

TABLE 1: ESTIMATES OF THE IMPACT OF MACROECONOMIC PERFORMANCE AND SOCIAL POLICIES ON BEFORE-TAX POVERTY RATES

	All Families	Female-Headed Families	Married-Couple Families	White Families	Black Families
Poverty(t-2)	0.136 (0.040)	0.074 (0.040)	0.074 (0.038)	0.136 (0.048)	0.156 (0.063)
Unemployment Rate	0.045 (0.005)	0.032 (0.005)	0.056 (0.007)	0.048 (0.006)	0.013 (0.016)
Growth in Employment per Capita	-0.014 (0.004)	-0.003 (0.005)	-0.013 (0.007)	-0.012 (0.005)	-0.008 (0.011)
Median Wage	-0.060 (0.053)	-0.174 (0.043)	0.024 (0.076)	-0.062 (0.058)	-0.335 (0.056)
Median Wage Squared	-0.000 (0.002)	0.006 (0.002)	-0.004 (0.002)	-0.000 (0.002)	0.012 (0.003)
Ratio of 80th to 20th Wages	0.268 (0.032)	0.028 (0.012)	0.317 (0.053)	0.306 (0.040)	-0.025 (0.011)
Log of State-Federal EITC	0.035 (0.017)	0.023 (0.015)	0.044 (0.030)	-0.005 (0.021)	0.052 (0.030)
Log of State-Federal Minimum Wage	-0.027 (0.011)	-0.015 (0.011)	-0.030 (0.025)	-0.040 (0.010)	-0.056 (0.025)
Pre-PRWORA Waiver	0.006 (0.014)	-0.022 (0.018)	0.067 (0.027)	0.020 (0.020)	0.000 (0.035)
Post-PRWORA Waiver	0.009 (0.026)	-0.020 (0.031)	0.059 (0.058)	-0.010 (0.034)	-0.017 (0.062)
Log max AFDC/FSP benefit	0.371 (0.160)	0.543 (0.194)	0.446 (0.256)	0.374 (0.191)	0.877 (0.572)
Impact on Year Fixed Effects					
Aggregate Unemployment	0.014 (0.003)	0.013 (0.003)	0.023 (0.006)	0.015 (0.002)	0.009 (0.009)
Real GDP Growth	-0.007 (0.003)	-0.008 (0.002)	-0.004 (0.007)	-0.007 (0.003)	0.002 (0.007)
Trend	-0.013 (0.002)	-0.006 (0.002)	-0.036 (0.004)	-0.014 (0.001)	-0.026 (0.005)
Year Trend*Post 1990	-0.033 (0.014)	-0.022 (0.012)	-0.004 (0.032)	-0.033 (0.013)	0.035 (0.032)
Year Trend*Post 1992	-0.056 (0.020)	-0.059 (0.020)	-0.059 (0.038)	-0.052 (0.011)	0.001 (0.053)
Year Trend*Post 1995	-0.093 (0.028)	-0.087 (0.024)	-0.122 (0.051)	-0.056 (0.016)	-0.088 (0.073)

NOTE: Robust standard errors are in parentheses. All regressions, based on three-year moving averages of Current Population Survey data from 1980-1999 for all 50 states and the District of Columbia, are weighted by the number of families in each state and control for year effects, state-specific fixed effects, and state-specific trends. For all families the average cell size is 792.565 and the interquartile range is 289, for female-headed families the mean cell size is 78.016 and the interquartile range is 30, for married couples the mean cell size is 304.618 and the interquartile range is 139.5, for white families the mean cell size is 690.228 and the interquartile range is 251.5, and for black families the mean cell size is 139.28 and interquartile range is 111.

TABLE 2: ESTIMATES OF THE IMPACT OF MACROECONOMIC PERFORMANCE AND SOCIAL POLICIES ON AFTER-TAX POVERTY RATES

	All Families	Female-Headed Families	Married-Couple Families	White Families	Black Families
Poverty(t-2)	0.127 (0.040)	0.073 (0.044)	0.105 (0.041)	0.153 (0.044)	0.251 (0.040)
Unemployment Rate	0.044 (0.005)	0.035 (0.006)	0.044 (0.007)	0.044 (0.006)	0.046 (0.005)
Growth in Employment per Capita	-0.015 (0.004)	-0.004 (0.005)	-0.018 (0.007)	-0.015 (0.005)	-0.011 (0.005)
Median Wage	-0.070 (0.053)	-0.164 (0.048)	0.081 (0.085)	-0.017 (0.056)	-0.007 (0.007)
Median Wage Squared	0.000 (0.002)	0.006 (0.003)	-0.005 (0.003)	-0.002 (0.002)	-0.000 (0.000)
Ratio of 80th to 20th Wages	0.251 (0.033)	0.049 (0.013)	0.310 (0.054)	0.302 (0.042)	-0.005 (0.004)
Log of State-Federal EITC	0.031 (0.017)	0.024 (0.019)	0.004 (0.037)	-0.014 (0.022)	0.068 (0.015)
Log of State-Federal Minimum Wage	-0.025 (0.011)	-0.018 (0.012)	-0.034 (0.025)	-0.037 (0.010)	-0.022 (0.013)
Pre-PRWORA Waiver	0.014 (0.017)	-0.021 (0.020)	0.077 (0.032)	0.025 (0.023)	0.007 (0.019)
Post-PRWORA Waiver	0.023 (0.028)	-0.052 (0.034)	0.112 (0.073)	-0.002 (0.039)	-0.025 (0.026)
Log max AFDC/FSP benefit	0.378 (0.162)	0.340 (0.202)	0.454 (0.274)	0.367 (0.195)	0.249 (0.173)
Impact on Year Fixed Effects					
Aggregate Unemployment	0.022 (0.005)	0.018 (0.005)	0.039 (0.011)	0.024 (0.004)	0.011 (0.005)
Real GDP Growth	-0.010 (0.004)	-0.011 (0.003)	-0.008 (0.008)	-0.011 (0.003)	-0.005 (0.003)
Trend	-0.018 (0.003)	-0.009 (0.003)	-0.054 (0.007)	-0.021 (0.003)	-0.009 (0.003)
Year Trend*Post 1990	-0.041 (0.018)	-0.031 (0.017)	0.004 (0.042)	-0.042 (0.015)	0.012 (0.016)
Year Trend*Post 1992	-0.067 (0.035)	-0.083 (0.033)	-0.038 (0.072)	-0.064 (0.029)	0.003 (0.033)
Year Trend*Post 1995	-0.147 (0.044)	-0.136 (0.037)	-0.204 (0.094)	-0.109 (0.037)	-0.080 (0.042)

NOTE: Robust standard errors are in parentheses. All regressions, based on three-year moving averages of Current Population Survey data from 1980-1999 for all 50 states and the District of Columbia, are weighted by the number of families in each state and control for year effects, state-specific fixed effects, and state-specific trends. For all families the average cell size is 792.565 and the interquartile range is 289, for female-headed families the mean cell size is 78.016 and the interquartile range is 30, for married couples the mean cell size is 304.618 and the interquartile range is 139.5, for white families the mean cell size is 690.228 and the interquartile range is 251.5, and for black families the mean cell size is 139.28 and interquartile range is 111.

TABLE 3: ESTIMATES OF THE IMPACT OF MACROECONOMIC PERFORMANCE AND SOCIAL POLICIES ON BEFORE-TAX SQUARED POVERTY GAPS

	All Families	Female-Headed Families	Married-Couple Families	White Families	Black Families
Poverty(t-2)	0.128 (0.039)	-0.011 (0.039)	0.104 (0.041)	0.107 (0.052)	0.126 (0.068)
Unemployment Rate	0.044 (0.007)	0.034 (0.006)	0.051 (0.014)	0.052 (0.008)	0.042 (0.014)
Growth in Employment per Capita	-0.018 (0.006)	-0.006 (0.006)	-0.027 (0.012)	-0.017 (0.008)	-0.021 (0.013)
Median Wage	-0.016 (0.074)	-0.166 (0.060)	0.326 (0.101)	-0.013 (0.068)	-0.350 (0.060)
Median Wage Squared	-0.001 (0.002)	0.007 (0.003)	-0.012 (0.003)	-0.001 (0.002)	0.012 (0.003)
Ratio of 80th to 20th Wages	0.323 (0.049)	0.080 (0.018)	0.388 (0.072)	0.404 (0.056)	0.020 (0.018)
Log of State-Federal EITC	0.024 (0.024)	0.003 (0.025)	0.004 (0.051)	-0.024 (0.028)	0.024 (0.046)
Log of State-Federal Minimum Wage	-0.036 (0.013)	-0.025 (0.013)	-0.008 (0.027)	-0.053 (0.015)	-0.007 (0.023)
Pre-PRWORA Waiver	0.027 (0.025)	-0.043 (0.026)	0.133 (0.042)	0.067 (0.032)	-0.124 (0.050)
Post-PRWORA Waiver	0.067 (0.039)	-0.062 (0.049)	0.186 (0.085)	0.038 (0.054)	-0.018 (0.089)
Log max AFDC/FSP benefit	0.608 (0.240)	-0.479 (0.267)	0.946 (0.437)	0.832 (0.280)	-0.411 (0.526)
Impact on Year Fixed Effects					
Aggregate Unemployment	0.017 (0.006)	0.009 (0.006)	0.018 (0.006)	0.017 (0.004)	0.015 (0.014)
Real GDP Growth	-0.004 (0.003)	-0.004 (0.004)	0.009 (0.005)	-0.003 (0.004)	-0.012 (0.009)
Trend	-0.022 (0.004)	-0.006 (0.003)	-0.050 (0.004)	-0.027 (0.002)	0.001 (0.008)
Year Trend*Post 1990	0.015 (0.021)	-0.010 (0.017)	0.092 (0.024)	-0.011 (0.022)	-0.061 (0.045)
Year Trend*Post 1992	-0.016 (0.035)	-0.084 (0.038)	0.090 (0.031)	-0.068 (0.024)	-0.113 (0.078)
Year Trend*Post 1995	-0.075 (0.057)	-0.135 (0.044)	-0.019 (0.051)	-0.073 (0.032)	-0.238 (0.125)

NOTE: Robust standard errors are in parentheses. All regressions, based on three-year moving averages of Current Population Survey data from 1980-1999 for all 50 states and the District of Columbia, are weighted by the number of families in each state and control for year effects, state-specific fixed effects, and state-specific trends. For all families the average cell size is 792.565 and the interquartile range is 289, for female-headed families the mean cell size is 78.016 and the interquartile range is 30, for married couples the mean cell size is 304.618 and the interquartile range is 139.5, for white families the mean cell size is 690.228 and the interquartile range is 251.5, and for black families the mean cell size is 139.28 and interquartile range is 111.



TABLE 4: ESTIMATES OF THE IMPACT OF MACROECONOMIC PERFORMANCE AND SOCIAL POLICIES ON AFTER-TAX SQUARED POVERTY GAPS

	All Families	Female-Headed Families	Married-Couple Families	White Families	Black Families
Poverty(t-2)	0.170 (0.058)	0.017 (0.051)	0.146 (0.053)	0.119 (0.063)	0.131 (0.084)
Unemployment Rate	0.009 (0.014)	0.035 (0.008)	-0.060 (0.027)	-0.010 (0.017)	0.052 (0.017)
Growth in Employment per Capita	-0.037 (0.012)	-0.009 (0.007)	-0.067 (0.025)	-0.049 (0.015)	-0.039 (0.016)
Median Wage	-0.150 (0.166)	-0.137 (0.070)	0.294 (0.207)	-0.018 (0.143)	-0.275 (0.076)
Median Wage Squared	0.006 (0.006)	0.006 (0.004)	-0.008 (0.007)	-0.001 (0.004)	0.009 (0.003)
Ratio of 80th to 20th Wages	0.086 (0.103)	0.079 (0.021)	0.170 (0.110)	0.302 (0.129)	0.024 (0.023)
Log of State-Federal EITC	-0.068 (0.063)	0.058 (0.044)	-0.407 (0.138)	-0.111 (0.087)	0.037 (0.053)
Log of State-Federal Minimum Wage	-0.006 (0.027)	-0.032 (0.021)	0.049 (0.059)	0.010 (0.030)	0.001 (0.024)
Pre-PRWORA Waiver	0.204 (0.073)	0.009 (0.044)	0.305 (0.143)	0.237 (0.095)	-0.073 (0.091)
Post-PRWORA Waiver	0.382 (0.118)	-0.044 (0.063)	0.876 (0.208)	0.387 (0.147)	0.136 (0.137)
Log max AFDC/FSP benefit	0.773 (0.565)	-0.459 (0.297)	1.031 (0.991)	1.176 (0.677)	-0.423 (0.598)
Impact on Year Fixed Effects					
Aggregate Unemployment	0.070 (0.025)	0.014 (0.008)	0.101 (0.045)	0.092 (0.025)	0.032 (0.023)
Real GDP Growth	-0.045 (0.020)	-0.007 (0.006)	-0.043 (0.032)	-0.056 (0.020)	-0.025 (0.015)
Trend	-0.028 (0.013)	-0.009 (0.005)	-0.084 (0.025)	-0.044 (0.013)	0.000 (0.014)
Year Trend*Post 1990	-0.139 (0.068)	-0.016 (0.024)	-0.044 (0.137)	-0.248 (0.067)	-0.101 (0.073)
Year Trend*Post 1992	0.081 (0.124)	-0.100 (0.056)	0.340 (0.225)	0.039 (0.128)	-0.129 (0.128)
Year Trend*Post 1995	-0.473 (0.179)	-0.225 (0.063)	-0.752 (0.379)	-0.585 (0.176)	-0.381 (0.218)

NOTE: Robust standard errors are in parentheses. All regressions, based on three-year moving averages of Current Population Survey data from 1980-1999 for all 50 states and the District of Columbia, are weighted by the number of families in each state and control for year effects, state-specific fixed effects, and state-specific trends. For all families the average cell size is 792.565 and the interquartile range is 289, for female-headed families the mean cell size is 78.016 and the interquartile range is 30, for married couples the mean cell size is 304.618 and the interquartile range is 139.5, for white families the mean cell size is 690.228 and the interquartile range is 251.5, and for black families the mean cell size is 139.28 and interquartile range is 111.

TABLE 5. SIMULATIONS OF THE IMPACT OF MACROECONOMIC PERFORMANCE ON BEFORE AND AFTER-TAX POVERTY RATES AND SQUARED POVERTY GAPS FOR SELECTED FAMILIES

	Before Taxes			After Taxes		
	All Families	Female Headed Families	Black Families	All Families	Female Headed Families	Black Families
	Head Count					
Average Levels	9.752	42.105	25.393	9.233	39.031	24.092
Values from Trough of the 1980s Recession	10.673	46.044	32.184	10.166	42.852	30.546
Values from Peak of the 1980s Expansion	9.293	41.059	24.705	8.870	38.273	23.613
Values from Trough of the 1990s Recession	10.072	42.548	27.260	9.613	39.650	26.028
Values from Peak of the 1990s Expansion	9.579	39.175	24.361	9.140	36.469	23.269
	Squared Poverty Gaps					
Average Levels	2.241	11.672	6.582	2.481	10.887	6.367
Values from Trough of the 1980s Recession	2.519	12.899	8.120	2.841	12.162	7.571
Values from Peak of the 1980s Expansion	2.203	11.789	6.600	2.772	11.120	6.320
Values from Trough of the 1990s Recession	2.354	12.134	7.412	2.785	11.441	7.138
Values from Peak of the 1990s Expansion	2.249	11.297	6.582	2.752	10.675	6.257

NOTE: All results are multiplied by 100. Simulations are based on results from the models in Tables 1-4. The troughs of the 1980s and 1990s recessions are taken to be 1982 and 1991, respectively, while the peaks of the expansions are 1989 and 1999, respectively.

TABLE 6: TESTS FOR PRE AND POST 1990 DIFFERENCES IN THE EFFECT OF THE BUSINESS CYCLE ON BEFORE-TAX POVERTY RATES AND SQUARED POVERTY GAPS FOR SELECTED FAMILIES

	All Families		Female Headed Families		Black Families	
	Poverty Rate	Squared Poverty Gap	Poverty Rate	Squared Poverty Gap	Poverty Rate	Squared Poverty Gap
Unemployment Rate	0.044 (0.005)	0.043 (0.007)	0.034 (0.006)	0.035 (0.007)	0.007 (0.017)	0.036 (0.016)
Unemployment Rate After 1990	0.002 (0.006)	0.001 (0.009)	-0.010 (0.007)	-0.010 (0.009)	0.019 (0.019)	0.018 (0.022)
Growth in Employment per Capita	-0.010 (0.006)	0.001 (0.009)	0.004 (0.007)	0.013 (0.009)	0.002 (0.018)	0.019 (0.017)
Employment Growth Rate After 1990	-0.006 (0.008)	-0.033 (0.011)	-0.012 (0.010)	-0.034 (0.012)	-0.015 (0.021)	-0.067 (0.023)
Impact on Year Fixed Effects						
Aggregate Unemployment	0.010 (0.003)	0.008 (0.004)	0.009 (0.002)	-0.001 (0.003)	-0.006 (0.005)	-0.012 (0.007)
Aggregate Unemployment After 1990	0.014 (0.015)	0.031 (0.022)	0.023 (0.017)	0.043 (0.029)	0.064 (0.022)	0.083 (0.039)
Real GDP Growth	-0.002 (0.002)	0.002 (0.002)	-0.007 (0.002)	0.001 (0.002)	0.016 (0.004)	0.006 (0.005)
Real GDP Growth After 1990	-0.013 (0.008)	-0.020 (0.011)	-0.009 (0.009)	-0.022 (0.013)	-0.047 (0.011)	-0.059 (0.020)

NOTE: Robust standard errors are in parentheses. All regressions, based on three-year moving averages of Current Population Survey data from 1980-1999 for all 50 states and the District of Columbia, are weighted by the number of families in each state and control for year effects, state-specific fixed effects, and state-specific trends. For all families the average cell size is 792.565 and the interquartile range is 289, for female-headed families the mean cell size is 78.016 and the interquartile range is 30, and for black families the mean cell size is 139.28 and interquartile range is 111.

TABLE 7: ESTIMATES OF THE IMPACT OF MACROECONOMIC PERFORMANCE AND SOCIAL POLICIES ON BEFORE- AND AFTER-TAX POVERTY: A COMPARISON OF STATE AND NATIONAL LEVEL DATA FOR ALL FAMILIES

	State Variables			
	Before Taxes		After Taxes	
	Head Count	Squared Poverty Gap	Head Count	Squared Poverty Gap
Poverty(t-2)	0.130 (0.039)	0.122 (0.039)	0.117 (0.040)	0.199 (0.059)
Unemployment Rate	0.041 (0.005)	0.041 (0.006)	0.041 (0.005)	0.014 (0.015)
Growth in Employment per Capita	-0.016 (0.004)	-0.022 (0.006)	-0.017 (0.004)	-0.042 (0.012)
Median Wage	-0.047 (0.055)	0.009 (0.075)	-0.053 (0.055)	-0.060 (0.170)
Median Wage Squared	-0.000 (0.002)	-0.001 (0.003)	-0.000 (0.002)	0.003 (0.006)
Ratio of 80th to 20th Wages	0.279 (0.033)	0.331 (0.049)	0.260 (0.033)	0.048 (0.104)
	National Variables			
Poverty(t-2)	0.364 (0.221)	0.570 (0.163)	0.494 (0.230)	0.463 (0.358)
Unemployment Rate	0.039 (0.011)	0.033 (0.010)	0.054 (0.016)	0.219 (0.093)
Growth in Employment per Capita	-0.019 (0.012)	-0.044 (0.012)	-0.023 (0.016)	0.009 (0.066)
Median Wage	-0.631 (0.472)	-0.502 (0.530)	-0.640 (0.778)	-4.223 (4.728)
Median Wage Squared	0.021 (0.017)	0.017 (0.019)	0.024 (0.027)	0.170 (0.164)
Ratio of 80th to 20th Wages	-0.090 (0.190)	-0.161 (0.215)	0.055 (0.310)	4.962 (2.042)

NOTE: Robust standard errors are in parentheses. All regressions, based on three-year moving averages of Current Population Survey data from 1980-1999 for all 50 states and the District of Columbia, are weighted by the number of families in each state and control for year effects, state-specific fixed effects, and state-specific trends. For all families the average cell size is 792.565 and the interquartile range is 289.



APPENDIX TABLE 1. SUMMARY STATISTICS

	All Families	Families Headed by a Single Mother	Families Headed by a Married Couple	Families Headed by a White Person	Families Headed by a Black Person
Head Count	0.104 (0.031)	0.441 (0.089)	0.077 (0.034)	0.082 (0.026)	0.278 (0.081)
Poverty Gap	0.043 (0.014)	0.209 (0.056)	0.028 (0.014)	0.034 (0.012)	0.122 (0.041)
Squared Poverty Gap	0.024 (0.009)	0.125 (0.043)	0.015 (0.008)	0.019 (0.008)	0.071 (0.028)
Median Real Wage	13.660 (1.981)	8.532 (1.507)	15.021 (2.330)	14.327 (2.472)	10.680 (3.698)
Median Real Wage Squared	190.540 (56.299)	75.073 (27.280)	231.067 (73.726)	211.393 (81.631)	127.743 (136.166)
Ratio of 80 <sup>th</sup> to 20 <sup>th</sup> Wage	2.924 (0.276)	2.612 (0.584)	2.656 (0.460)	2.892 (0.368)	2.872 (2.317)

NOTE: Means with standard deviations in parentheses. The data are from the 1981–2000 Current Population Surveys (Calendar years 1980-1999) for all 50 states and the District of Columbia. Each subgroup is weighted by the number of families in the respective category from each state.