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Examining the impact of welfare reform, labor market conditions, and the Earned Income Tax Credit on the employment of black and white single mothers ☆

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Abstract

Using the Annual Demographic Files of the March Current Population Survey, we estimate the effects of welfare policies, labor market conditions, and the Earned Income Tax Credit on the probability of employment for black and white single mothers, and we investigate the extent to which changes in these macro-level factors account for racial differences in employment growth over this period. Compared to white single mothers, black single mothers are more likely to be high school dropouts, never married, and central city residents, and our results show that policy and labor market changes had a more profound effect on the employment of these groups. However, these compositional differences and interaction effects were not substantial enough to produce dissimilar explanations for the changes in employment by race. During the period of economic expansion, increases in the EITC were the most important factor, accounting for approximately 25% of the

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increase in employment for both black and white single mothers. Declines in the unemployment rate and welfare reform were less important, together accounting for an additional 25% of the increase.

Keywords: EITC; Single mothers; Employment; Welfare reform; Labor market conditions

1. Introduction

Between 1991 and 2000, employment among single mothers soared by 15 percentage points, from 62 to 77%, a remarkable occurrence that has intrigued social scientists for at least three reasons.[2] First, this decade of unprecedented employment growth followed roughly two decades of relative stagnation and/or decline. During the 1970s and 80s, as the employment of married women and single women without children grew steadily, single mothers' employment was relatively low and nonresponsive to labor market conditions. Second, during the 1990s, as rates of employment increased substantially among single mothers, rates among married women, single women without children, and low-skilled black men hardly improved at all. In the case of single women without children, employment actually declined slightly in some years. Third, over the period in which single mothers' employment grew, three major macrostructural developments unfolded: welfare reform, the longest period of economic growth in US history, and the expansion of the Earned Income Tax Credit (EITC). For each of these reasons, single mothers' employment has become the focal point of noteworthy analysis and oft-times heated debate, with most engaging a version of the question, "To what extent is rising employment among single mothers a behavioral response to more stringent welfare policies, economic growth, and/or the expansion of tax credits to working poor families?"

Not surprisingly, most who have tackled this question argue that single mothers' employment growth has been a function of some combination of all three factors (see, for instance, Ellwood, 2000; Grogger, 2003; Meyer and Rosenbaum, 2000, 2001; O'Neill and Hill, 2001; Schoeni and Blank, 2000). To the extent that findings differ, these tend to be a matter of degree rather than kind.[3] While some provide evidence attributing the overwhelming majority of the increase to changes in welfare policy (O'Neill and Hill, 2001), others point to the strengthening of the economy (Schoeni and Blank, 2000), and still others view employment growth as a direct and strong response to the EITC expansion (Grogger, 2003; Meyer and Rosenbaum, 2000, 2001).

[2] Figures are based on authors' calculations of the March CPS. "Employment" refers to the employment/population ratio, calculated as the sum of (1) the number working and the number with a job but not working to the sum of (2) the number working, the number with a job but not working, the number looking for work, and the number out of the labor force.

[3] This is, at least in part, because while most of these studies rely on the Current Population Survey (CPS) as their primary data source, they vary notably when it comes to the samples used (e.g., all women, single women, or single mothers), predictors included (e.g., waivers, TANF, welfare benefit levels, EITC, Medicaid, unemployment rates, and/or year, state, MSA dummy variables), time periods covered (e.g., waiver period only, TANF only, or both waiver and TANF periods combined), and units of analysis employed (e.g., women, families, MSAs, or states). Also, the fact that these studies do not all consider the *same* set of policy variables, and to the extent that policies are correlated with one another, could explain some of the difference in findings across studies.

What most of these studies have not problematized, or even mentioned in fact, is that employment growth among single mothers differed markedly by race (for exceptions, see McKernan et al., 2000; O'Neill and Hill, 2001). While noteworthy for both black and white single mothers alike, growth has been far greater among the former. Indeed, as employment among white single mothers grew by an impressive 12 percentage points between 1991 and 2000, from 71 to 83 percentage points, that of black single mothers grew by an astonishing 20 percentage points, from 49 to 69 percentage points (see Fig. 1). Furthermore, single white mothers appear to have been more negatively affected by the economic downturn of 2000–2003 than their black counterparts. During this period, their employment declined by five percentage points, from 83 to 77%, but employment among black single mothers hardly budged, declining by one percentage point from 69 to 68%. As a result, while net gains among white single mothers between 1991 and 2003 were on the order of six percentage points, among black single mothers, that figure, at 19 percentage points, remains impressive.

While 'race' has not been ignored altogether in prior work, usually it has only been included as a control variable with little or no discussion of its significance. To the extent that race is problematized, as in the work of O'Neill and Hill (2001) and McKernan et al. (2000), analyses are conducted separately by race, but again with little or no rationale provided for doing so. In this paper, we use the Annual Demographic Files of the March Current Population Survey to estimate the effects of welfare policies, labor market conditions, and the EITC on the probability of employment for black and white single mothers, and we examine the extent to which changes in these macro-level factors account for racial differences in employment growth over this period. We theorize that black single mothers experienced higher rates of employment growth over this period relative to their white counterparts because blacks' individual characteristics made them more receptive, as a group, to the employment "boosts" associated with welfare reform, economic growth, and the expansion of the EITC. In other words, we expect similarly situated black and white single mothers to respond in the same way to these macrostructural factors, but

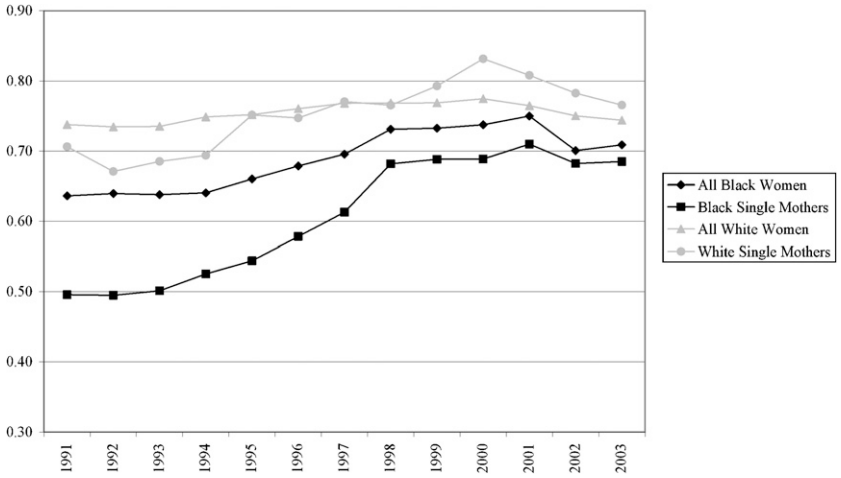

Fig. 1. Trends in employment–population ratios for women, age 18–54, living in an MSA, by Race, 1991–2003, March CPS (weighted).

because the composition of the two groups differs in important ways, one or all of these major factors may explain a larger share of black single mothers' employment growth. In so doing, we contribute to the small but growing sociological literature examining the predictors of employment among female heads with children (Browne, 1997; Christopher, 1996; Coverman and Kemp, 1987; Tienda and Glass, 1985), and we build on almost 30 years of research theoretically grounded in the urban poverty tradition which has sought to determine the extent to which employment of all single mothers is a behavioral response to the structure of the welfare system or a response to the structure of opportunities available in the labor market (Edin and Lein, 1997; Harris, 1993; McLanahan and Garfinkel, 1989; Pavetti, 1993). In the following sections, we outline these theoretical perspectives and hypothesize the impact these factors have had on employment.

2. Welfare reform

Between 1992 and 1996, the Clinton administration authorized the Department of Health and Human Services to grant states waivers of laws that govern Aid to Families with Dependent Children (AFDC) with the purpose of identifying innovative approaches to encourage self-sufficiency and work. During this period, 36 states received waivers to require work, 31 states received waivers to experiment with time limits, and 41 states obtained waivers to promote work and savings through greater earnings disregards and increased resource limits (US Department of Health and Human Services, 1997). By 1996, almost 60% of states had implemented at least one major welfare waiver statewide. In addition, in August of 1996, President Clinton signed into law PRWORA, which dismantled AFDC and replaced it with TANF. While no states had implemented TANF between 1990 and 1995, by 1996 24 states had, and all states were TANF-ready by July 1997.

Under TANF, the following conditions apply. First, states cannot use federal funds to provide assistance to families that have received aid for 60 cumulative months. Thus, after a period no longer than five cumulative years, single mothers must find alternative means to support their families, such as employment or private charity. Second, single mothers are obliged to participate in some sort of work activity, and states must provide evidence to the federal government that each year the percentage of recipients who work has increased. Third, states must sanction recipients who fail to comply with program requirements (Gallagher et al., 1998). Recipients can forever lose their right to receive public assistance for non-compliance, and must again find alterative sources of financial support. Finally, a number of states have expanded their earned income disregards that allow women to keep more of their earned income before it starts to negatively affect their grant amounts (see Corcoran et al., 2000 for exceptions to these TANF stipulations). Thus, while many aspects of AFDC created work disincentives—small earnings disregards, for example—TANF programs are intended to strongly encourage work and discourage nonwork (Corcoran et al., 2000). Because of these stricter requirements and stiffer penalties for noncompliance, widespread is the belief that rising labor force participation and employment among single mothers is in large part due to welfare waivers and TANF programs.

Generally speaking, prior work bears this out, but only two studies that we are aware of examine the effect of waivers and TANF on single mothers' employment by race (McKernan et al., 2000; O'Neill and Hill, 2001). By and large, both report that welfare reform had a greater effect on black single mothers' employment. O'Neill and Hill (2001) found that only white women experienced a significant employment boost from waiver implementa-

tion, but black single mothers' employment was more profoundly affected by welfare policy changes, especially TANF, not only in terms of the magnitude of the effect, but also in terms of reform's contribution to the overall employment growth. Similarly, McKernan et al. (2000) also found a larger impact of TANF on black single mothers' employment.

Interestingly, however, neither O'Neill and Hill (2001) nor McKernan and colleagues (2000) offer a compelling reason for welfare reforms' differential impact on single mothers' employment by race. We propose at least three reasons why welfare reform should explain a greater share of black single mothers' employment growth. Each speaks to black single mothers' greater vulnerability. First, prior research indicates that the impact of welfare reform on employment has largely been contingent on single mothers' individual-level attributes, with educational attainment representing the most important axis of consideration. For instance, using the CPS, Moffitt (1999) examined the effect of welfare waivers on labor force participation and found that waivers increased annual weeks and hours worked among single mothers who dropped out of high school. The effects were weaker or non-significant for those with more education. Replicating some aspects of Moffitt's study, Schoeni and Blank (2000) also report that high school dropouts were more profoundly impacted by reforms, specifically waivers. Only among dropouts did employment respond positively to waivers, increasing the share of women working by two percentage points. In both studies, welfare reforms were theorized to have a larger effect on less educated women because their greater economic vulnerability meant that they were more likely to rely on welfare and thus required to take part in some type of work activity. Because black single mothers are more likely to be high school dropouts, we would expect welfare reform to explain a greater share of their employment growth.[4]

Second, we might expect a greater effect of welfare reform on black single mothers' employment because of their familial circumstances. Here again, O'Neill and Hill (2001) have shown that employment gains between 1991 and 2000 among single mothers varied greatly by marital status. Employment growth has been greatest among single mothers who had never married, compared to those who were divorced, separated, or widowed. Researchers argue that being never married increases mothers' economic vulnerability and thus their reliance on public assistance, exposing them to the work requirements that are imposed under TANF. Because black single mothers are more likely than their white counterparts to have never married (Fields, 2004; Rawlings, 1992), it is reasonable to hypothesize that, as a whole, they experienced a greater increase in employment as a result of welfare reform.

Third, we might also understand the differential effect of welfare reform on the employment of black and white single mothers by examining the role of the state in implementing

[4] Others contend, however, that highly educated women have been more profoundly affected since they are more likely to have the personal and social resources necessary to make the transition from welfare to work. Specifically, O'Neill and Hill (2001) assert that reforms have generally had their strongest effect on college-educated women's employment. Using the CPS, they examined the effect of welfare reform on welfare and work participation from 1983 to 2000 and found that waivers only had a positive affect on the employment of single mothers with some college or more, explaining over 60% of the increase in employment. TANF, on the other hand, had a positive effect on the employment of single mothers in every educational category. While TANF raised employment among dropouts, increasing their labor market activity by 6.3 percentage points and explaining 40% of the increase, it also increased employment among high school graduates and women with some college by 5.6 and 7.6 percentage points, boosts that explain 71 and 97% of the changes in their employment, respectively.

specific aspects of welfare policy. According to welfare state scholars Quadagno (1994) and Lieberman (1998), we cannot understand the decisions that state actors make regarding US welfare policy without considering the role of race and racism in political discourse. Lieberman, for instance, asserts in *Shifting the Color Line* that racism—which he defines as an ideology of racial exploitation—has not only affected the content of social welfare policies, just as importantly it has affected the structure of institutions designed to achieve them. As a result, not only does racial composition shape the potential or promise that specific policies have, it also affects how citizens are treated. Recent evidence supports this perspective. Soss and colleagues (2001) sought to explain variation in the stringency of states' TANF sanction policies as a function of cross-state differences in problem-solving capacities, welfare liberalism, policy innovation, electoral politics, desires to control the poor, and finally, the racial composition of welfare clientele. Using data from 1996, they found that the racial and ethnic make-up of the welfare population was the most important criteria around which stringency was determined. The greater the proportion of black and/or Latino clients on states' AFDC rolls, the higher the likelihood that states had implemented strict rules and harsh penalties, including sanctions, restrictive time limits, and family caps. Furthermore, racial composition was the *only* variable to significantly predict whether or not states implemented stricter time limits and family caps. Thus, they conclude that the structure of TANF policies and the ways that welfare clients have been treated has depended, in great part, on the extent to which black, single mothers are represented on states' rolls.[5]

Prior research has also implicated race in states' monthly cash benefits to families receiving public assistance. Indeed, Howard (1999) finds that in 1990, states with larger black populations offered lower monthly welfare cash benefits. Overall, it seems likely that tougher penalties for noncompliance with work requirements and lower monthly benefits would increase the likelihood of employment among single mothers, and if black single mothers are disproportionately exposed to these sanctions as a function of which states they live in, then welfare reform may explain more of their employment growth relative to white single mothers.

In sum, for three reasons we would expect welfare reforms to explain a greater share of black single mothers' employment growth compared to white single mothers. First, the effect of welfare reform on single mothers' employment has been greatest among women with low levels of education, and black single mothers are less educated than white single mothers, on average. Second, the effect of welfare reform has been greatest among women who have never married. Here again, black women are far more likely than white single mothers to have never married. Finally, it seems likely that the impact of welfare reform on employment would be the most profound in states with harsh sanctioning policies, and black single mothers are more likely, by design, to reside in states in which harsh sanctioning policies have been implemented.

3. Labor market conditions

From March 1991 to January 2001, the United States was also in the midst of the longest economic expansion in the nation's history, one that brought with it substantial

[5] Other studies have found similar relationships between race and welfare generosity—states with a higher percentage of blacks on their welfare rolls adopted more stringent welfare policies both before (Fording, 2003) and after (Gais and Weaver, 2002) the 1996 welfare reform.

employment growth and the lowest unemployment rates in three decades. At its peak in 1992 (7.5%), the unemployment rate steadily declined such that by the year 2000, the figure had dropped to just 4% (Table No. 587, Statistical Abstracts of the US, 2003). This sizeable decline resulted in large part because, between 1993 and 1998, employment within the private sector grew on average 3% each year, resulting in an overall employment growth of roughly 18% (Holzer, 1999). However, the expansion did not last. Between 2000 and 2003, the unemployment rate climbed again, to 4.7% in 2001 and then 6% in 2003.

Although prior research has found that the economic expansion had a positive effect on single mothers' employment (Ellwood, 2000; McKernan et al., 2000; O'Neill and Hill, 2001; Schoeni and Blank, 2000), few have examined the economic expansion to explain trends in single mothers' employment by race.[6] For instance, research by O'Neill and Hill (2001) did analyze the impact of the economy on the likelihood of working separately by race. The authors show that during the waiver period, the decline in the unemployment rate explained roughly 32 and 36% of the increase in employment among white and black single mothers, respectively. During the TANF period, however, labor market conditions explained less, accounting for just 10% of white single mothers' employment increase, and 21% of the increase among black single mothers. In both cases labor market conditions explained a larger share of black single mothers' employment increases. However, they failed to explain *why* differences might exist.

We propose two reasons why black single mothers' employment may have been affected more from labor market conditions than their white counterparts. First, it may be the case that the low-wage, low-skill jobs that have been available in greater numbers were concentrated in areas where black women have a disproportionate presence or better access. For instance, according to a study by Holzer and Stoll (2001), suburban employers were more *willing* to hire welfare recipients, but actual *hiring* of welfare recipients was greater among central city employers, who are located near public transit and adjacent to neighborhoods with high concentrations of female-headed households. Although this particular study focused on employers' hiring of welfare recipients, one could just as well hypothesize that less-skilled single mothers generally, not just those on welfare, would be affected in a similar way. Because black single mothers are far more likely than white single mothers to reside in the central city (Fields and Casper, 2001; McLanahan et al., 1988), it seems likely that increases in the number of low-skill jobs would lead to an increase in black single mothers' employment more so than whites' employment.

Second, black single mothers might have experienced greater benefits from the economic expansion because the types of jobs that were created better suited their skill-set—black single mothers are more likely to be high school dropouts and less likely to be college graduates compared to white single mothers (Fields, 2004; Rawlings, 1992), and over this period opportunities for the lowest-paying jobs increased substantially. Indeed, among low-earning industries—those with earnings generally below $10 per hour and most likely to employ black single mothers—growth was substantial, increasing by 16%, or roughly 5.4 million jobs between 1989 and 1999 (Ilg and Haugen, 2000). Given their somewhat greater skill-set, white single mothers may have been more likely to fall into jobs that paid

[6] Other research has shown that, among men, changes in labor market conditions influence races differently. For example, Bound and Holzer (1993) found that the decline in manufacturing between the 1970s and the 1980s affected the employment of black males more than white males, with the employment of young black high-school dropouts being affected the most.

middle-level earnings in which job growth was far less impressive. In the following low-paying occupational and industrial mixes, job growth was particularly noteworthy: sales occupations in service industries grew 40%, sales occupations in retail trade grew 18%, administrative support occupations in service industries grew 17%, and service occupations in retail trade and service industries grew 17%. Job growth in these low-wage/low-skill jobs continued into the 2000–2003 period (coincidentally the period in which black single mothers' employment stabilized and that of white single mothers declined markedly). Thus, we hypothesize that black single mothers may have benefited more from the economic expansion than white single mothers because opportunities grew more in or around areas where blacks disproportionately reside—central cities—and because the type of job opportunities that became available better fit black women's qualifications—low-skilled and low-wage.

4. The EITC

While some are convinced that employment among single mothers increased dramatically because of welfare reforms, and others contend that reforms would have had little impact had it not been for a robust economy, still another set of researchers hypothesize that economic expansion would have done little if not coupled with public policy initiatives like the Earned Income Tax Credit (Danziger and Gottschalk, 1995). The EITC was established in 1975 as a financial incentive program to encourage work among low-income families with children by providing refundable tax credits or earnings subsidies. Because credits were small and failed to keep pace with inflation, the EITC was largely ineffective the first ten years of its existence (Ellwood, 2000). However, the EITC was expanded in a number of ways through the Omnibus Budget Reconciliation Acts of 1990 and 1993. First, credits were increased substantially. Second, beginning in 1991, larger credits were made available to families with two or more children. Third, before 1991, low-income mothers could only receive credit for their dependent children if they provided more than half of their support through earned income. This meant that women who received more than half of their income from AFDC could not qualify. These restrictions were ended in 1991. Fourth, whereas the EITC had been counted as earned income in calculations of AFDC and food stamps, since 1991 this has not been the case, increasing EITC's worth among the most disadvantaged of low-income mothers. These tax policy changes have led to a remarkable expansion of the EITC program. According to Meyer and Rosenbaum, "EITC credits increased 15-fold from 1.6 billion in 1984 to 25.1 billion in 1996. Single parents received over two-thirds of these EITC dollars" (2000: 1030). Thus, over a relatively brief span of time, the the EITC expansion had a profound and positive effect on working among low-income parents, especially among single mothers with two or more children.

In addition to federal credits, during the 1990s, a number of states also introduced their own EITC programs. Three states offered EITC programs in 1991, and, by 2003, 13 states had enacted programs. State EITCs are typically set equal to a fraction of the federal EITC, and so when the federal EITC increased, state credits did as well.

Given the dramatic increases over the 1990s in credit rates and maximum credits allowed for working parents with qualified children, much of the increase in single mothers' employment, including employment among welfare recipients, has been attributed to this expansion (Ellwood, 2000; Grogger, 2003; Hotz et al., 2001; Meyer and Rosenbaum, 2000, 2001). Arguably the most comprehensive studies to date have been those conducted

by Meyer and Rosenbaum (2000, 2001). They examined the effect of the tax and welfare policy changes on single mothers' employment and found that there were large relative increases in the work among female heads with two or more children, beginning the year in which credits for parents with two or more children were expanded. Overall, their findings support the notion that the EITC played a major role in spurring the recent increase in employment among single mothers.

We contend that the EITC expansion may explain a greater share of black, single mothers' employment because many of the changes that were implemented in the early 1990s would have had a more profound effect on mothers with their characteristics. Prior research indicates that the effects of the EITC are greater for single mothers who have dropped out of high school because they are more likely to fall into categories of low-wages that qualify for the credit (Meyer and Rosenbaum, 2001). Because black single mothers are more likely than their white counterparts to be high school dropouts, they may be more likely to benefit from the expansion of this credit. The EITC expansion may also explain a greater share of black single mothers' employment because blacks have more children, on average, than whites, and so the average EITC of black single mothers' would have improved significantly more than the average EITC of white single mothers, holding all else constant (Fields, 2004; Rawlings, 1992). For these reasons, we hypothesize the EITC expansions will explain a greater share of black single mothers' employment growth.

5. The study and findings

To address gaps in the literature outlined above, we examine the effects of welfare policies, labor market conditions, and the Earned Income Tax Credit on the probability of employment for black and white single mothers. We also investigate the extent to which changes in these macro-level factors account for racial differences in employment growth over this period. We hypothesize that employment among single mothers will be greater among those residing in waiver and TANF states, especially states with moderate to high sanction policies, negatively related to the unemployment rate, but positively related to the shares of low-skill jobs and EITC payments. We also hypothesize that these factors will explain a greater share of black single mothers' employment growth because black single mothers are more likely to have the characteristics that these factors have most profoundly affected.

5.1. Data and measures

To investigate the effects of welfare reform, the economy, and the EITC on the employment probabilities of black and white single mothers, we analyzed data from the Annual Demographic Files of the Current Population Survey (March CPS), 1991–2003. Others conducting similar research rely heavily on the March CPS to make causal connections between welfare policy changes and employment among single mothers (Grogger, 2003; Meyer and Rosenbaum, 2000, 2001; Schoeni and Blank, 2000). Cross-sectional in nature, the March CPS is a national probability sample of about 50,000 households that supplies comprehensive information on the employment status, occupation, and industry of persons 15-years old and older. Demographic characteristics, such as age, sex, race, and marital status are also available for each person in the household. Our sample consists of black and white single mothers ages 18–54 who resided in Metropolitan Statistical Areas

(MSAs).[7] Hispanics, non-citizens, and full-time students are excluded from the sample. We also excluded those living in MSAs or states that had no single mothers in one year or more (approximately 9% of the sample). The total sample size is 35,097: 14,385 black and 20,712 white, single mothers, with each year having approximately 2500 individuals.[8] Women in our sample come from 47 states and 172 MSAs, and each state and MSA is represented in every year.[9]

Because the March CPS does not provide a few of our important predictor variables, we appended relevant data from other sources. MSA unemployment rates for each year were gathered from the Bureau of Labor Statistics. State welfare waiver and TANF implementation dates were obtained from the 1999 Council of Economic Advisors (CEA) report, *The Effects of Welfare Policy and the Economic Expansion on Welfare Caseloads: An Update*. State-level AFDC/TANF maximum monthly benefits and information on the federal EITC were collected from the *Green Book* (Committee on Ways and Means, US House of Representatives, 2004). Data on state EITCs were assembled from the *State EITC Online Resource Center* (http://www.stateeitc.org/).

Table 1 describes the measures used in our analysis. Our dependent variable is a dummy variable that indicates whether a woman was employed in the week prior to the survey (1 = employed, 0 = not employed). Our choice of "employment" over "labor force participation" stems from our assessment of what constitutes labor market "success." We contend that in the context of welfare reform and economic growth, employment, which distinguishes between those with a job and those without, is a better indicator of labor market success than labor force participation, which distinguishes between those with a job (employed) and looking for work (unemployed) from those out of the labor force altogether. While gains in employment would indicate an increase in the percentage with a job, an increase in labor force participation could indicate nothing more than an increase in the number of individuals looking for work relative to those who are out of the labor force, and not an increase in those who are working. This is especially problematic when considering black women's employment experiences, as their moderate rates of labor force participation generally mask high rates of unemployment.

Referring to Table 1, four categories of predictor variables are specified: welfare policies, labor market conditions, the EITC, individual characteristics, and other relevant controls. Drawing from the CEA Report (1999), we test for state welfare policy effects using a dummy variable that takes the value of 1 if a state had implemented *any major welfare waiver*, statewide, in the year prior to the interview date. Any major waiver could refer to time limits, work requirements, job exemptions, sanctions, earnings disregard expansions, and/or family caps for additional children. Waivers were in place in three of our states in 1993 and had reached a total of 19 states by 1996. The value for any major welfare waiver is returned to 0 after the state enacts TANF.

[7] According to our estimates, between 1991 and 2003, 84% of black women and 74% of white women lived in MSAs. Among female heads, the distribution is roughly the same.

[8] Due to the expansion in the overall sample size of the March CPS (from 50,000 to 78,000 households), the last 2 years the sample size increased to roughly 4000.

[9] As a reliability check of our results, we excluded from the sample those residing in small MSAs (i.e., defined by the authors as those MSAs with fewer than 260 single mothers over the 13 year period 1991–2003). This reduced the number of states from 47 to 32, the number of MSAs from 172 to 48, and the number of individuals from 35,097 to 21,566. The only impact of this exclusion on the results is that (1) share of low-skill jobs had a small, but significant, positive impact on employment in most models, and (2) TANF had a significant impact on employment in high sanction states, but not in moderate sanction states.

Table 1
Definition of variables used in the analysis

Variable	Measurement	Range	Description
Employed	Categorical	0,1	Dummy variable equal to 1 if the respondent is employed last week (''working'' or ''with a job but not working''); 0 if the respondent is unemployed, or not in the labor force
Welfare policies			
Any major welfare waiver	Categorical	0,1	Dummy variable equal to 1 if the state had any major waiver in effect in the previous year. The dummy variable is ''switched off'' to 0 when TANF is implemented in the state. Major waivers include (1) termination/reduction time limit, (2) work requirement time limit, (3) family caps, (4) JOBS work exemptions, (5) JOBS sanctions, and (6) increased earnings disregard
TANF	Categorical	0,1	Dummy variable equal to 1 if the state had TANF in effect in the previous year and for every year following; 0 if the state had not yet implemented TANF
TANF sanction policies			
Low	Categorical	0,1	Dummy variable equal to 1 if the state's sanction policy for noncompliance with work requirements is ''partial''; 0 otherwise
Moderate	Categorical	0,1	Dummy variable equal to 1 if the state's sanction policy for noncompliance with work requirements is ''gradual full family''; 0 otherwise
High	Categorical	0,1	Dummy variable equal to 1 if the state's sanction policy for noncompliance with work requirements is ''immediate full family''; 0 otherwise
AFDC/TANF benefit	Continuous		Maximum potential AFDC/TANF monthly benefit for a family of 3, as a function of calendar year and state; in 2000 dollars, $1000 units, and lagged 1 year
Labor market conditions			
Unemployment rate	Continuous	1.4–18.6	Unemployment rate in a MSA, lagged 1 year
Share of low-skill jobs	Continuous	6.10–32.60	Percentage of individuals working in a low-skill job within a state, lagged 1 year. Low-skill workers are defined as those in a sales or service occupation and in a service or retail industry
Other policies			
Earned Income Tax Credit (EITC)	Continuous	1.26–3.96	Maximum potential EITC credit, as a function of calendar year, state of residence, and number of children in family; in 2000 dollars, $1000 units, and lagged 1 year
Individual characteristics			
Race	Categorical	0,1	Dummy variable equal to 1 if the respondent's race is black; 0 if the respondent's race is white

(*continued on next page*)

Table 1 (*continued*)

Variable	Measurement	Range	Description
Education			
Dropout	Categorical	0,1	Dummy variable equal to 1 if the respondent has less than a high school diploma; 0 otherwise
High school	Categorical	0,1	Dummy variable equal to 1 if the respondent has a high school diploma; 0 otherwise
Some college	Categorical	0,1	Dummy variable equal to 1 if the respondent has some college (13–15 years) education; 0 otherwise
College education	Categorical	0,1	Dummy variable equal to 1 if the respondent has a bachelor's degree or higher; 0 otherwise
Age			
Twenties	Categorical	0,1	Dummy variable equal to 1 if the respondent is between 18 and 29 years old; 0 otherwise
Thirties	Categorical	0,1	Dummy variable equal to 1 if the respondent is between 30 and 39 years old; 0 otherwise
Forties	Categorical	0,1	Dummy variable equal to 1 if the respondent is between 40 and 49 years old; 0 otherwise
Fifties	Categorical	0,1	Dummy variable equal to 1 if the respondent is between 50 and 54 years old; 0 otherwise
Marital status			
Divorced/separated	Categorical	0,1	Dummy variable equal to 1 if the respondent is separated/divorced; 0 otherwise
Never married	Categorical	0,1	Dummy variable equal to 1 if the respondent is never married; 0 otherwise
Widowed	Categorical	0,1	Dummy variable equal to 1 if the respondent is widowed; 0 otherwise
Number of children	Continuous	1–9	Number of children the respondent has under the age of 18
Other family income	Continuous	0–5	Other family income = (total family income − (total personal earnings + welfare income)); in 2000 dollars and logged
Other adults in household	Categorical	0,1	Dummy variable equal to 1 if the respondent is living with another adult (individual 18 years or older in the household); 0 otherwise
Central city	Categorical	0,1	Dummy variable equal to 1 if the respondent lives in the central city; 0 otherwise
Controls for unobserved factors			
Year dummies	Categorical	0,1	Year 91 = 1 if 1991, 0 otherwise; Year 92 = 1 if 1992, 0 otherwise,. . ..Year 2003 = 1 if 2003, 0 otherwise

We test for federal welfare policy effects using an indicator variable which takes the value of 1 if the state had *TANF* in effect in the previous year and 0 if not. Although PRWORA was signed into law in August of 1996, implementation of TANF-funded programs could not begin until states had submitted a TANF plan that was subsequently approved by the federal government. Thus, official implementation dates differ. The earliest a state could begin executing their TANF program was September 1996. The latest was July 1997 (CEA, 1999). Thus, while no states were assigned the value of 1 for the TANF dummy variable between 1991 and 1996 (because our TANF variables are lagged one year), 28 states were assigned the value of 1 in 1997, and all states were given the value of 1 for the TANF indicator variable for the years 1998–2003.

As a requirement of TANF, although some exceptions apply, single mothers have to engage in some sort of work activity. Moreover, following federal guidelines, states are required to sanction recipients who fail to comply with these requirements (Gallagher et al., 1998). However, sanctions for noncompliance vary considerably from state to state, with some states taking little action against noncompliance and others responding quickly and harshly. We identify three levels of harshness: (1) states whose maximum sanction is a partial family sanction (low); (2) states that impose full family sanctions, but only after repeated offenses (moderate); (3) states that impose full family sanctions after the first noncompliance offense (high) (CEA, 1999). Given the possibility that single mothers who reside in high sanction states may be more likely to work than those who reside in low sanction states, we included three indicator variables in our specification: *TANF*low* takes the value of 1 if the state's sanction policy for noncompliance with work requirements is partial; *TANF*moderate* takes the value of 1 if the state's sanction policy is "gradual full family"; and *TANF*high* takes the value of 1 if the state's sanction policy is "immediate full family." The omitted category includes states that impose no sanction or some lesser sanction, which was the case under traditional AFDC (i.e., pre-TANF implementation).

Another measure of a state's welfare policy is the *AFDC/TANF benefit levels*. The likelihood of single mothers' employment likely depends to some extent on the generosity of welfare benefits in each state in each year. In our sample, the monthly benefit ranges from a low of $124/mth in Mississippi in 1999 to a high of $1134/mth in Alaska in 1992. In our analysis, this variable is measured in logarithmic form, constant 2000 dollars and is lagged 1 year.

We determined the effect of the economy with two measures of local labor market conditions. *Unemployment rates* are measured at the MSA-level and are lagged 1 year (respondents interviewed in 2003 were assigned MSA unemployment rates from 2002). To determine how the economic expansion may have led to higher employment among single mothers, we also created a measure of the *share of low-skill workers in each state*, lagged 1-year. Using a sample of employed men and women aged 18–54 from the March CPS, low-skill workers were operationalized as those working in service or retail industries *and* in sales or service occupations.[10] These correspond to the occupational and industrial mix

[10] We excluded all single mothers from the sample used to construct this measure because our error terms would be correlated otherwise. Since single mothers only comprised approximately 6% of the sample, however, the measure is not significantly different than if single mothers had been included. Additionally, we created this measure at the state-level, as opposed to the MSA-level, because the CPS does not survey enough households at the MSA-level to make reliable estimates. We also explored using MSA-level employment data collected by the Bureau of Labor Statistics, but none of the sources offered data on the number of individuals working in given occupations and industries for every year of our analysis.

of low-skill jobs that experienced some of the fastest growth during the 1990s (Ilg and Haugen, 2000). Within each state and year, we calculated the percentage of all workers that worked in such occupations/industries. This measure ranges from a low of 6.1% in Vermont in 2002 to a high of 32.6% in Nevada in 1996.

We measure the impact of the EITC with a variable set equal to the total *maximum federal and state EITC benefit* (in 2000 dollars) available to each respondent, based on the number of children in her family, her state of residence, and the calendar year. This measure is logged and lagged 1 year. The maximum EITC value increased substantially over time; for instance, mothers with two children interviewed in 1991 were assigned an EITC value of $1256, whereas mothers with two children in 1997 were assigned an EITC value of $3903. If a woman was living in New York, she would have received no state supplement in 1991, but in 1997 she would have received an additional credit worth 20% of her federal EITC. Of course, the actual EITC benefit a family could potentially receive is a function of actual after-tax family income (see Meyer and Rosenbaum (2001) for a more complex specification). Our more simplistic measurement strategy, however, has been used by others examining the impact of the EITC on work outcomes, and has been found to yield results that are similar to more complex specifications (Grogger, 2003; Hotz et al., 2001).

Finally, we included a number of individual characteristics typically included in models of women's labor force participation (Browne, 1997, 2000; Christopher, 1996; Corcoran, 1999; Figueroa and Melendez, 1993; Tienda and Glass, 1985). Our *race* variable is a dummy indicator, equal to 1 if the respondent categorizes herself as black and equal to 0 if the respondent categorizes herself as white. Human capital variables include educational attainment and a proxy for previous work experience. We measured educational attainment using three indicator variables: *high school dropout*, *some college*, and *college/advanced degree*, with *high school graduate* representing the omitted category. Because the CPS does not have a measure of previous work experience, we employed *age* as a proxy.[11] We categorized age into four separate dummy variables to facilitate interpretation of regression results: *twenties* (18–29 years old), *thirties* (30–39 years old), *forties* (40–49 years old), and *fifties* (50–54 years old). The dummy variable indicating that a respondent is in her 20s is the omitted category in the regression models.

Additional controls include marital status, number of children less than eighteen years of age, other family income, the presence of a co-residential adult, and central city residence.[12] To measure marital status, we incorporated indicator variables *never married* and *widowed* with *divorced/separated* acting as the omitted category. Our specifications

[11] Because women often leave and re-enter the labor force, this measure is not ideal. Another proxy for previous work experience is *potential work experience*, measured as age minus the number of years of schooling minus 6, the age at which many children begin school, or (age − education − 6). However, this measure is problematic because education would then be entered into the regression equation twice: as part of the estimate of experience and as the educational attainment measure. Thus, we include only "age" and "educational attainment" in the model.

[12] We do not include controls for prior welfare receipt. Leading economists have argued that researchers should in fact not include controls for prior welfare receipt in models like ours because prior receipt is endogenous with employment (Grogger, 2003; Schoeni and Blank, 2000). Including such a control would thus bias the results. In our analysis, we attempt to identify those most at risk by interacting welfare policy variables with educational attainment, hypothesizing that those with the least amount of education will be impacted the most by reforms.

also include a continuous variable indicating the number of children the respondent has who are less than 18 years of age and living in the respondent's home. To calculate *other family income*, we subtracted from total family income the sum of personal earnings and welfare income and divided the total by 1000 (to facilitate interpretation). To correct for outlying cases, we recoded three cases with other family income greater than $50,000 to that value. The *presence of a co-residential adult* is measured using a dummy variable that takes the value of one if one or more adults, other than the respondent, are present in the household. Central city residence is measured using a dummy variable equal to one if the respondent lives within the central city. Finally, to capture any pre-existing trends in women's employment not due to welfare reform, the economy, and the EITC, we included a set of *year dummies* in all models, with *year 1991* as the omitted category. The year dummies will absorb the employment impact of any program or policy that varies only as a function of time (e.g., changes in the federal minimum wage or changes in the federal Medicaid policy).[13]

While an alternative approach to answering our research questions would be to follow the same individuals over time, longitudinal datasets that would allow such an analysis have several drawbacks. For instance, the Panel Study of Income Dynamics (PSID) has sample sizes too small to accommodate state-specific effects, an important aspect of our analysis. By utilizing data from multiple and consecutive years of the March CPS, however, we are in effect employing a time-series of cross-sections. Thus, we are able to follow the same MSAs/states over time, which is important given that our main variables of interest are measured at the MSA/state-level (TANF, unemployment rates, etc.). That we do not follow the same individuals over time is of less consequence to our analysis and thus our results. This is especially true given that the single mothers in our sample are randomly drawn from an identical population over the years, giving us confidence that we would arrive at the same results even if we had used longitudinal panel data.

5.2. Methods

To determine how much changes in welfare, labor market conditions, and the EITC accounted for the change in employment of single, black and white mothers over the period 1991–2003, we used a two-stage analytic framework. In the first stage, we pooled all years of the data, 1991–2003, and estimated the effect of our predictor variables on employment using multiple regression techniques. We did not estimate our models sepa-

[13] In prior research (Meyer and Rosenbaum, 2001), expansions in Medicaid eligibility has been included as an additional policy variable. Medicaid provides health coverage to low-income individuals and families. Prior to 1987, Medicaid eligibility for single mothers and their children generally required receipt of welfare. In April 1990, states were required to offer Medicaid to children under 6 years old in families with income below 133% of the poverty level, and since July 1991, all children under the age of 19 in families with income below 100% of the poverty line. Theoretically, the Medicaid expansion should have a positive effect on employment, since women with low income would be ineligible for AFDC and eligible for Medicaid under the new guidelines (Meyer and Rosenbaum, 2000). However, we decided not to explicitly include a Medicaid policy variable in our models because of the difficulty in measuring the value of Medicaid, and because prior research has shown that changes in Medicaid play a small role in the increase in the employment of single mothers (Meyer and Rosenbaum, 2000).

rately by race, because our theory dictates that the macro-level variables will have similar impacts for blacks and whites, controlling for individual and family characteristics.[14]

In our baseline model, we predict employment as a function of our main macro-level variables: welfare reform, labor market conditions, and the EITC. All controls are also included in this model. In subsequent models, we include interaction terms, one by one, to see if the impact of the macro-level variables vary as a function of the given individual-level characteristic. This necessitates six additional models with the following interaction terms: (1) welfare with education, (2) welfare with marital status, (3) welfare with severity of sanctions, (4) share of low-skill jobs with education, (5) share of low-skill jobs with central city, and (6) EITC with education.

In the second stage of our analysis, we determine how much each macro-level variable contributes to change in employment over the time period. We split the entire time period into two parts, 1991–2000 and 2000–2003, because employment grew in the first period and then fell in the second period. Therefore, our analysis will identify those factors associated with employment growth between 1991 and 2000 and those factors associated with employment decline between 2000 and 2003. We use the coefficient estimates from the regression models and the values of the main variables (i.e., welfare policies, labor market conditions, and the EITC) to calculate the predicted probability of employment under two conditions: actual and counterfactual. Finally, we use these predictions to tell us how much each factor contributes to the change in employment.[15] The predictions and calculations are performed separately by race and are repeated with the coefficients from each different model specification to arrive at a range of results. In sum, for each of the six factors—waivers, TANF, monthly benefits, unemployment rate, share of low-skilled jobs, and the EITC—we will have seven different estimates (using the results from the full model and the six interactive models) of their contribution to the change in employment, for both blacks and whites, and for the two time periods, 1991–2000 and 2000–2003.

Because out data are hierarchical in nature, we use hierarchical linear modeling (HLM) software to estimate a multi-level model predicting employment as a function of our independent variables (Raudenbush and Bryk, 2002). Our model has three levels: individuals are nested within MSAs, and MSAs are nested within states. Since individuals are clustered within MSAs and states, the odds of being employed may not by independent because women from the same MSA/state may share common features. An ordinary logis-

[14] As a reliability check, we explored whether the estimated effects of our main predictor variables on the likelihood of employment differed by race. We did this by re-estimating our main models after including a set of race interaction variables (i.e., interaction of the policy variables with our race indicator). None of the interaction variables in our model were statistically significant (at the 0.05 level), leading us to conclude that the main predictor variables (welfare, labor market conditions, and EITC) have similar impacts on employment for blacks and whites. We do, however, include interactions of race with the set of year dummies in all of our models; these interactions represent the black–white gap in employment in the given year, controlling for all other variables in the model. More specifically, since "1991" is the year dummy that is omitted, the coefficient on "black" represents the impact of race on employment in 1991, and the year–race interactions indicate whether the race-based employment gap in the given year is significantly different than the gap in 1991.

[15] For instance, to determine how much change in the unemployment rate contributed to employment growth for black women between 1991 and 2000, we predict the actual probability of employment of blacks in 1991 and 2000 (using the coefficient estimates from our models). Then we "assign" the women in 1991 the unemployment rates they would have faced in 2000, given their MSA, and calculate a counterfactual predicted probability. The *actual* 1991 employment probability is subtracted from this *counterfactual* employment probability, and this number is divided by the actual change in employment between 1991 and 2000.

tic model, however, assumes that all observations are indeed independent. Multi-level modeling adjusts for this by taking into account the error associated at each level of data. In this way, these models correct for the underestimation of the standard errors of coefficients that can occur when hierarchical data are estimated using traditional single-level logistic regression. Multi-level modeling also has advantages over other techniques, such as increased efficiency in the estimates through Bayesian estimation techniques and the ability to estimate random effects.

Multi-level analyses can take many forms. Because our dependent variable is binary, we estimated a logistic regression model to determine the relationship between the likelihood of employment and welfare reform, labor market conditions, and the EITC. All models are estimated with robust standard errors. Estimated coefficients from these models are interpreted in the same way as those derived from an ordinary logistic model. In our regression models, MSA-level measures (unemployment rates) and state-level measures (share of low-skill jobs, welfare waivers, TANF, monthly benefits, and EITC) are group-mean centered. This means that for each year, within MSAs and states, the values are represented as the deviation from the MSA or state mean across all years. This technique is equivalent to including a dummy variable for each MSA and state, and thus controls for any unobserved factor specific to a MSA or state that may be correlated with the likelihood of employment (Raudenbush and Bryk, 2002). Finally, because it is likely that variation in the effects exists due to state differences in welfare programs, we allow the TANF and waiver effects to vary across states in some models, producing a more precise estimate of the main effects of these factors, as well as allowing us to determine whether variation in the effects exists.

5.3. Descriptive statistics

Table 2 reports the means of variables used in the analyses for the total sample as well as separately for black and white female heads with children. The first set of columns shows the means for all years, and then the subsequent columns show the means for 1991, 2000, and 2003. Race differences in employment are large: 57% of single black mothers are employed compared to 73% of single white mothers. For blacks, employment followed an upward trend for almost the entire period, starting with 50% in 1991, reaching a peak at 71% in 2001, and then declining slightly to 69% in 2003 (see Fig. 1). White single mothers' employment followed a similar, but less dramatic pattern, beginning at 71% in 1991, reaching a high point of 83% in 2000, and then steadily declining to 77% in 2003.

Black women are only slightly less likely than white women to reside in states in which any major welfare waiver (14% versus 15%) or TANF (30% versus 31%) was implemented. Interestingly, however, a higher proportion of black women reside in states in which high sanction policies are in place for program noncompliance (29% versus 25%) and in which monthly benefits are lower ($431/mth versus $482/mth).

With reference to labor market conditions, on average, black women reside in areas with slightly higher unemployment rates (5.65 versus 5.57) and a lower share of low-skill jobs (14.07 versus 14.16). In 1991, white single mothers resided in states with a slightly higher share of low-skill jobs compared to black single mothers (14.05 versus 13.71). By 2000, these differences were insignificant.

With respect to EITC values, black single mothers have a slightly higher potential EITC credit than white single mothers ($2450 versus $2370), and this difference increased during

Table 2
Means and standard deviations of variables used in the analysis, black and white single mothers, March CPS 1991–2003

Variable	All Years			1991		2000		2003	
	Total	Blacks	Whites	Blacks	Whites	Blacks	Whites	Blacks	Whites
Employed	0.66	**0.57**	**0.73**	**0.50**	**0.71**	**0.69**	**0.83**	**0.69**	**0.77**
Welfare policies									
Any major welfare waiver	0.15	**0.14**	**0.15**	0.00	0.00	0.00	0.00	0.00	0.00
TANF	0.31	0.30	0.31	0.00	0.00	1.00	1.00	1.00	1.00
TANF sanction policies									
Low	0.36	**0.33**	**0.38**	0.00	0.00	**0.31**	**0.38**	**0.31**	**0.35**
Moderate	0.37	0.38	0.37	0.00	0.00	0.39	0.39	0.40	0.40
High	0.27	**0.29**	**0.25**	0.00	0.00	**0.30**	**0.23**	**0.30**	**0.25**
AFDC/TANF benefit (in $100s)	4.59 (1.77)	**4.31 (1.72)**	**4.82 (1.77)**	**5.01 (1.98)**	**5.57 (2.10)**	**3.75 (1.46)**	**4.26 (1.49)**	**3.62 (1.41)**	**4.10 (1.44)**
Labor market conditions									
Unemployment rate	5.60 (2.00)	**5.65 (1.81)**	**5.57 (2.15)**	5.33 (1.29)	5.26 (1.57)	3.98 (1.32)	3.90 (1.65)	5.63 (1.20)	5.73 (1.61)
Share of low-skill jobs	14.12 (2.01)	**14.07 (1.87)**	**14.16 (2.11)**	**13.71 (1.60)**	**14.05 (2.09)**	14.27 (1.83)	14.33 (2.23)	14.19 (1.54)	14.10 (1.72)
Other policies									
EITC (in $1000s)	2.41 (0.93)	**2.45 (0.97)**	**2.37 (0.90)**	1.26 (0.00)	1.26 (0.00)	**3.30 (0.83)**	**3.09 (0.82)**	**3.37 (0.86)**	**3.17 (0.85)**
Individual characteristics									
Education									
Dropout	0.16	**0.21**	**0.13**	**0.29**	**0.17**	**0.16**	**0.10**	**0.16**	**0.09**
High school	0.42	**0.44**	**0.40**	0.48	0.48	0.42	0.40	**0.39**	**0.36**
Some college	0.30	**0.29**	**0.32**	**0.18**	**0.22**	0.32	0.33	0.34	0.35
College education	0.11	**0.07**	**0.15**	**0.05**	**0.13**	**0.09**	**0.17**	**0.11**	**0.19**

Age									
Twenties	0.34	**0.40**	**0.30**	**0.44**	**0.33**	**0.39**	**0.27**	**0.36**	**0.24**
Thirties	0.41	0.41	0.41	**0.38**	**0.43**	0.39	0.39	0.36	0.38
Forties	0.22	**0.17**	**0.26**	**0.15**	**0.22**	**0.20**	**0.31**	**0.25**	**0.32**
Fifties	0.03	**0.02**	**0.03**	0.03	0.02	0.03	0.03	**0.03**	**0.06**
Marital status									
Divorced/separated	0.55	**0.36**	**0.71**	**0.36**	**0.72**	**0.32**	**0.68**	**0.35**	**0.65**
Never married	0.41	**0.62**	**0.25**	**0.61**	**0.22**	**0.65**	**0.28**	**0.62**	**0.30**
Widowed	0.04	**0.02**	**0.04**	**0.04**	**0.05**	0.03	0.04	**0.02**	**0.04**
Number of children	1.73 (0.97)	**1.91 (1.12)**	**1.58 (0.81)**	**1.93 (1.18)**	**1.60 (0.80)**	**1.85 (1.11)**	**1.53 (0.79)**	**1.85 (1.02)**	**1.55 (0.78)**
Personal earnings	$20,203 (21,074)	$**15,208 (15,730)**	$**24,263 (23,817)**	$**13,996 (13,532)**	$**23,083 (20,889)**	$**17,589 (17,758)**	$**29,159 (26,106)**	$**19,365 (17,842)**	$**28,663 (28,003)**
Other family income	$2769 (8212)	$2763 (8012)	$2773 (8371)	$3178 (8531)	$3215 (8935)	$2868 (8016)	$3213 (9233)	$**3362 (9222)**	$**2440 (7660)**
Log other family income	1.95 (3.67)	1.94 (3.69)	1.96 (3.66)	2.23 (3.86)	2.12 (3.80)	1.96 (3.71)	2.13 (3.78)	1.99 (3.78)	1.85 (3.57)
Other adults in household	0.44	0.44	0.45	**0.48**	**0.44**	0.44	0.47	**0.43**	**0.47**
Central city	0.45	**0.66**	**0.28**	**0.68**	**0.30**	**0.58**	**0.26**	**0.58**	**0.24**
N	35,097	14,385	20,712	1,151	1,472	869	1,277	1,655	2,520

Notes. These data are weighted. Standard deviations are shown in parentheses. Values in bold are significantly different between blacks and whites ($p < .05$); a Pearson χ^2 test was performed for categorical variables and a *t* test was performed for continuous variables.

the period under study. This is due to the fact that black single mothers have, on average, a larger number of children than white single mothers (i.e., the EITC maximum credits vary according to the number of children in a family, with higher credits going to families with more children).

There are substantial race differences among many of our individual demographic measures as well. Compared to white single mothers, single black mothers are more likely to be high school dropouts (21% versus 13%) and are less likely to have college degrees (7% versus 15%). They are younger (40% versus 30% in the 18–29 age group) and more likely to be never married (62% versus 25%). Black single mothers in our sample also have more children on average than white single mothers (1.91 versus 1.58). Slightly less than half of both black and white single mothers are co-residing with another adult, and both groups have roughly $2800 in other family income. Although "other family income" is roughly equivalent between black and whites, black single mothers have only about 60% of the personal earnings of white single mothers ($15,000 versus $24,000). Finally, compared to white single mothers, substantially larger percentages of black single mothers live in central cities (66% versus 28%).

5.4. Main effects

We begin by estimating five models predicting employment. These models estimate the main effects of our primary variables. Displayed in Table 3, model 1 includes only the control variables: race, individual and family demographic characteristics, the year dummies, and race-year dummy interactions. Our second model introduces welfare policies to the baseline model. Model 3 adds to the base model measures of labor market conditions, and model 4 adds to the base model the measure of EITC. Model 5 incorporates all of our major predictor variables. In all of the tables we present the estimated logit coefficients and standard errors. To facilitate interpretation, we transform some of the estimated coefficients into odds ratios by exponentiating the coefficient. The odds ratio indicates how the factor change in the odds of employment will change with a one-unit increase in the independent variable. It is important to remember that the odds ratio does not tell us how a change in the given variable affects the *probability* of employment (Long, 1997); probability simulations will be performed in the second part of our analysis.

Results from model 1 indicate that employment probabilities are lower for women who are black, who are high school dropouts, never been married, widowed, who have children and other adults in the home, and who live in central cities. The probability of working is higher for single mothers who have some college or a college education, who are in their thirties or forties, and who have higher levels of other family income. The majority of these results conform to past research predicting women's employment. One exception is the impact of other family income. In studies of married women, this measure typically has a negative effect on women's employment likelihood. Our finding of a positive effect is likely due to the fact that our sample consists only of single mothers, and so "other family income" takes on a different meaning than it would in a two-parent household. The other income may come from a cohabiting partner or other adult family member, and so may not be shared with the mother in the same way that spousal income is shared in married couples.

Table 3
Hierarchical logit coefficients predicting employment for black and white single mothers, March CPS 1991–2003

Fixed effects	Model 1 Baseline	Model 2 Welfare policies	Model 3 Labor market conditions	Model 4 Other policies	Model 5 Full
Any major welfare waiver		0.018 (0.054)			0.036 (0.064)
TANF		0.119 (0.111)			0.117 (0.105)
AFDC/TANF benefit		−0.053** (0.021)			−0.050** (0.019)
Unemployment rate			−0.072*** (0.019)		−0.071*** (0.016)
Share of low-skill jobs			0.011 (0.009)		0.008 (0.008)
EITC				0.087** (0.029)	0.091** (0.030)
Race (1 = Black)	−0.428*** (0.109)	−0.454*** (0.107)	−0.432*** (0.105)	−0.422*** (0.109)	−0.455*** (0.091)
Education					
Dropout	−0.979*** (0.051)	−0.982*** (0.051)	−0.983*** (0.051)	−0.977*** (0.051)	−0.984*** (0.035)
High school	omitted category				
Some college	0.467*** (0.034)	0.471*** (0.033)	0.468*** (0.033)	0.468*** (0.034)	0.472*** (0.031)
College education	1.160*** (0.054)	1.163*** (0.054)	1.160*** (0.053)	1.161*** (0.054)	1.163*** (0.053)
Age					
Twenties	omitted category				
Thirties	0.360*** (0.035)	0.363*** (0.034)	0.363*** (0.035)	0.357*** (0.034)	0.363*** (0.031)
Forties	0.351*** (0.054)	0.354*** (0.054)	0.355*** (0.054)	0.355*** (0.054)	0.361*** (0.039)
Fifties	0.064 (0.114)	0.066 (0.113)	0.062 (0.114)	0.074 (0.114)	0.074 (0.079)
Marital status					
Divorced/separated	omitted category				
Never married	−0.326*** (0.038)	−0.326*** (0.038)	−0.329*** (0.038)	−0.322*** (0.038)	−0.325*** (0.031)
Widowed	−0.685*** (0.082)	−0.687*** (0.083)	−0.685*** (0.082)	−0.685*** (0.083)	−0.687*** (0.065)
Number of children	−0.293*** (0.012)	−0.295*** (0.012)	−0.294*** (0.012)	−0.331*** (0.019)	−0.332*** (0.018)
Log other family income	0.025*** (0.003)	0.025*** (0.004)	0.025*** (0.004)	0.025*** (0.004)	0.025*** (0.004)
Other adults in household	−0.094** (0.036)	−0.097** (0.035)	−0.096** (0.036)	−0.092** (0.035)	−0.094** (0.035)
Central city	−0.285*** (0.042)	−0.280*** (0.042)	−0.280*** (0.041)	−0.284*** (0.042)	−0.275*** (0.041)
Constant	1.343*** (0.106)	1.639*** (0.134)	1.548*** (0.211)	1.291*** (0.103)	1.801*** (0.180)
Random effects (variance components shown)					
Intercept (MSA-level)	0.040***	0.040***	0.033***	0.040***	0.033***
Intercept (State-level)	0.033***	0.054***	0.015***	0.033***	0.025***
Any major welfare waiver		0.052***			0.057**
TANF		0.039***			0.027*
Pseudo *R*-squared[a]	0.42	0.42	0.52	0.42	0.51

Notes. These statistics are unweighted. Standard errors in parentheses. All models include year dummies and year dummies interacted with race (1991 is the omitted year dummy).

[a]Calculated using the following formula: unrestricted error − (restricted error/unrestricted error).

$^{+}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$ (two-tailed tests).

Model 2 adds to the base model the state and federal welfare policy variables. We find that neither welfare waivers nor TANF significantly impacts employment.[16] Monthly welfare cash benefits have a negative impact on employment. In model 3, we include our measures of labor market conditions and find that the MSA unemployment rate has a significant negative impact on the odds of employment for single mothers. The odds of employment decline by 7 percent for each additional 1-point increase in the MSA unemployment rate (i.e., $[\exp(-0.072) - 1] \times 100 = -7$). Shares of low-skill jobs, however, have no statistically significant impact on the employment of these single mothers. Model 4 shows the impact of the EITC measure on employment; it is significant and positive. For each additional $1000 increase in the maximum EITC, the odds of employment are 9 percent greater, holding all other variables constant. Our full model, model 5, incorporates all of our major predictor variables and reveals little change from previous models. We find no support for our hypotheses that employment would be greater among those who resided in waiver states and TANF states, and that employment would be positively associated with the percent of low-skill workers in a state. However, we do find evidence to support our hypotheses that the probability of employment would decline with higher welfare benefits and rising unemployment rates, and that the probability of employment would increase with the expansion of the EITC. The question is, for whom do these factors matter most?

5.5. Interaction effects

Table 4 displays the results of our models including interactive effects of individual-level characteristics and macro-level factors. Model 1 shows the results of welfare policy and education interactions, model 2 includes interactions of welfare policy and marital status, and model 3 incorporates an interaction of TANF with sanction severity. Models 4 and 5 show interactions of low-skill jobs with education and central city residence, respectively. Model 6 shows the results of the EITC and education interactions. Although not presented in the table, all of these models include the entire set of control variables from the full model in Table 3.

To begin, we hypothesized that to the extent greater employment is found among women residing in waiver or TANF states, these associations would primarily exist among low-skilled women (i.e., those with a high school diploma or less). Model 1 shows evidence of interactions between our three welfare policy measures and education levels. With respect to waivers, we find that waivers increase the probability of working among those with some college education. Although inconsistent with findings of previous research (see Moffitt, 1999), this finding is not counterintuitive. It is likely that, having other options, single mothers endowed with some human capital were unwilling to contend with the work requirements and sanctions that waivers introduced to the welfare system; as a result, they committed to employment. With fewer skills to fall back on and more structural barriers to employment, high school dropouts and graduates may have been less likely to work. However, lesser-educated single mothers were affected by reforms. We find that the odds

[16] At the bottom of Table 3, we show the "random effects" of the MSA-level intercept, the State-level intercept, welfare waivers, and TANF. The first two random effects indicate that there is significant variability among MSAs and states with respect to average employment levels of single mothers. The next two random effects indicate that significant variation exists among states in the *effect* of both waivers and TANF.

Table 4
Hierarchical logit coefficients predicting employment, models with interactions, for black and white single mothers, March CPS 1991–2003

Fixed effects	Model 1 Welfare* Education	Model 2 Welfare* Marital status	Model 3 TANF Severity	Model 4 Low-skill job* education	Model 5 Low-skill job* central city	Model 6 EITC* Education
Any major welfare waiver (Omitted Category = No Waivers)		0.064 (0.082)	0.074 (0.058)	0.036 (0.071)	0.035 (0.060)	0.035 (0.072)
Any major welfare waiver*Dropout	−0.103 (0.119)					
Any major welfare waiver*High school	0.051 (0.075)					
Any major welfare waiver*Some college	0.183* (0.088)					
Any major welfare waiver*College	−0.135 (0.174)					
Any major welfare waiver*Never married		−0.052 (0.092)				
TANF (Omitted Category = No TANF)		−0.037 (0.119)		0.116 (0.116)	0.112 (0.103)	0.113 (0.116)
TANF*Dropout	0.248* (0.125)					
TANF*High school	0.150 (0.115)					
TANF*Some college	0.111 (0.119)					
TANF*College	−0.131 (0.155)					
TANF*Never married		0.313*** (0.058)				
TANF*Low sanction			0.107 (0.099)			
TANF*Moderate sanction			0.186+ (0.113)			
TANF*High sanction			0.121 (0.121)			
AFDC/TANF Benefit		−0.036* (0.017)	−0.056** (0.019)	−0.049** (0.015)	−0.051** (0.019)	−0.050** (0.016)
Benefit*Dropout	−0.070** (0.022)					
Benefit*High school	−0.047** (0.017)					
Benefit*Some college	−0.062*** (0.019)					
Benefit*College	−0.054+ (0.032)					
Benefit*Never married		−0.034* (0.016)				
Share of low-skill jobs	0.008 (0.008)	0.008 (0.008)	0.008 (0.009)		−0.008 (0.008)	0.008 (0.008)
Share of low-skill jobs*Dropout				0.042** (0.014)		
Share of low-skill jobs*High school				0.002 (0.009)		
Share of low-skill jobs*Some college				0.008 (0.011)		
Share of low-skill jobs*College				−0.032 (0.020)		
Share of low-skill jobs*Central city					0.033*** (0.009)	

(*continued on next page*)

Table 4 (*continued*)

Fixed effects	Model 1 Welfare∗ Education	Model 2 Welfare∗ Marital status	Model 3 TANF Severity	Model 4 Low-skill job∗ education	Model 5 Low-skill job∗ central city	Model 6 EITC∗Education
EITC	0.085** (0.026)	0.103*** (0.027)	0.091** (0.029)	0.090*** (0.027)	0.091** (0.030)	
EITC∗Dropout						0.177*** (0.037)
EITC∗High school						0.071* (0.029)
EITC∗Some college						0.077* (0.033)
EITC∗College						0.044 (0.057)
Unemployment rate	−0.072*** (0.011)	−0.071*** (0.011)	−0.070*** (0.018)	−0.071*** (0.011)	−0.070*** (0.016)	−0.071*** (0.011)
Random effects (variance components shown)						
Intercept (MSA-level)	0.035***	0.034***	0.034***	0.034***	0.034***	0.034***
Intercept (State-level)	0.006*	0.026***	0.009**	0.025***	0.025**	0.025***
Any major welfare waiver		0.058***		0.057**	0.057**	0.060***
TANF		0.028*		0.026*	0.025*	0.027*
Pseudo *R*-squared[a]	0.49	0.51	0.51	0.51	0.51	0.51

Notes. These statistics are unweighted. Standard errors in parentheses. All control variables from full model (Model 5, Table 3) are included in these models.
[a]Calculated using the following formula: unrestricted error − (restricted error/unrestricted error).
$^{+}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$ (two-tailed tests).

of working for high school dropouts living in TANF states are 28% greater compared to those residing in states that had yet to implement TANF. Also, the negative relationship between monthly welfare benefits and employment is larger for those mothers with less education. These findings do support our hypotheses.

Model 2 examines the interaction of marital status and welfare policy. Results show no evidence of an interaction between waivers and marital status, but they do show that the impact of TANF on employment is contingent on marital status. Compared to ever-married single mothers living in TANF states, the odds of working among never-married single mothers living in TANF states are increased by a factor of 1.32, holding all else equal (i.e., $[\exp(0.313 - 0.037)] = 1.32$). The findings also show that the impact of monthly welfare benefits is greater for never-married mothers compared to ever-married mothers. For every $100 increase in welfare benefits, the odds of working decrease by a factor of 0.93 for never married mothers, but only decrease by a factor of 0.97 for divorced and widowed mothers. Again, these results also support our hypotheses.

In model 3, we examined whether the employment effects of TANF vary by levels of TANF sanction-harshness. Results show that employment is higher in moderate-sanction states than in states with low sanctions or high sanctions. Those residing in moderate-penalty states have employment odds that are 20% greater compared to those residing in states that have not implemented TANF. While not strongly supportive of our hypothesis that employment would be positively related to the level of stringency that states adopt, these results suggest that employment behavior is responsive to sanctions for noncompliance.

Model 4 represents a test of the hypothesis that the relationship between low-skill jobs and employment is contingent on single mothers' level of educational attainment. We find that, among high school dropouts, every additional percentage point increase in the share of low-skill jobs is associated with a 4.3% increase in the likelihood of employment. For those with a high school degree or more, shares of low-skill jobs are not associated with the probability of employment. These results also support our hypothesis.

Next, we explore whether the impact of low-skill jobs varies according to central city residence. Results from model 5 show that among single mothers living in the suburbs, share of low-skill jobs does not have a statistically significant impact on employment. But for those living in the central city, a 10 percentage point increase in share of low-skill jobs is associated with a 28% increase in the odds of employment (i.e. $[(\exp(0.033 - 0.008) \times 10) - 1] \times 100$).

Finally, model 6 shows that the impact of the EITC on employment is contingent on education. Among high school dropouts, high school graduates, and women with some college education, the probability of working increases as the EITC increases. College educated women's employment behavior is not significantly related to the value of the EITC. These results also suggest that an increase in the EITC has a much larger positive impact on the likelihood of employment among high school dropouts, compared to women with more education, which also supports our hypothesis.

5.6. Predicted probability simulations

In the second stage of our analysis, we determine how much the change in welfare policy, labor market conditions, and the EITC contributes to the observed change in employment over the periods 1991–2000 and 2000–2003. We perform our simulations using

estimated coefficients from seven different models (Model 5 in Table 3 and Models 1–6 in Table 4). Results of this analysis are displayed in Table 5; panel A shows results from 1991 to 2000 and panel B shows results from 2000 to 2003.

Our simulation procedure followed three steps. First, for the 1991 sample, we multiplied each woman's individual-level characteristics and macro-level characteristics by the estimated coefficients from the given model to arrive at her individual probability of being employed.[17] These individual probabilities were then averaged to arrive at the overall probability of employment for the sample in 1991. We also performed these calculations for respondents in years 2000 and 2003.

Second, we assigned each woman from the 1991 sample the welfare policies and labor market conditions that she *would have faced* in 2000 given her state and MSA. We also assigned each woman from the 1991 sample the EITC she *would have received* in 2000, given the number of children she had at that time and her state of residence. We assigned 2000 variable values only for those variables that had a *significant* impact on employment in the given model. Next, for the 1991 sample, we multiplied each woman's actual individual-level characteristics and assigned actual macro-level characteristics with the appropriate estimated coefficients from the model to arrive at her "counterfactual" probability of being employed. The individual counterfactual predicted probabilities were averaged for the entire 1991 sample to determine the overall counterfactual probability of employment in 1991 given the 2000 welfare policies, labor market conditions, and EITC.[18]

Finally, we subtracted the actual probability from the counterfactual probability to determine how the employment levels in 1991 would have changed assuming the 2000 macro-level variable values (e.g., a negative number means employment levels would have been lower and a positive number means employment levels would have been higher). These changes in predicted probability are shown in the first three columns in panel A of Table 5. These changes are then divided by the overall change in employment from 1991 to 2000 to identify the percent of change due to a given factor (i.e., the percentages are shown in the last three columns in panel A of Table 5). Each column represents a summary (or range) of the simulation results using the coefficients from the seven different models. Results from each specific model are shown in Appendix A. The simulation for the 2000–2003 period is done in the same way; these results are shown in panel B of Table 5.

We begin by discussing results from the 1991-2000 period (see panel A in Table 5). In 1991, actual employment probabilities of black and white single mothers were 49 and 70%, respectively. In 2000, their employment probabilities were 69 and 83%, respectively, increases of 20 and 13 percentage points. These are the differences we wish to explain. Three main results emerge from our analysis.

[17] To incorporate the random effects in our predicted probabilities simulations, we needed to randomly select a "random effect" from our distribution and then estimate the predicted probability of employment for each woman given this random effect. Because the random effect will be different with each "draw," we repeated this procedure 100 times, and then averaged the 100 distinct predicted probabilities to arrive at a final predicted probability of employment for each woman.

[18] We could not use the same procedure for the individual-level characteristics (education, age, etc.) because the CPS data do not allow us to follow the same women over time. Furthermore, we could not simply predict the probability of employment in 1991 using the "average" individual characteristics in 2003 because the predicted probability at the mean of a variable does not equal the average of individual predicted probabilities when the model is non-linear, as is the case with the logit model.

Table 5
Components of change in employment for black and white single mothers, using significant coefficient estimates from Model 5 in Table 3 and Models 1–6 in Table 4

Change in employment from 1991–2000 and 2000-2003			
Predicted employment[a]	All	Blacks	Whites
1991	0.61	0.49	0.70
2000	0.77	0.69	0.83
Change	**0.16**	**0.20**	**0.13**
2000	0.77	0.69	0.83
2003	0.73	0.68	0.77
Change	**−0.04**	**−0.01**	**−0.06**

Panel A. Explaining change from 1991 to 2000

Explanatory variable	Change in predicted 1991 employment using 2000 values (*X*s) [b]			Percent of change in employment due to given factor (%)		
	All	Blacks	Whites	All	Blacks	Whites
Any major welfare waiver	—	—	—	—	—	—
TANF	0.01–0.02	0.02–0.04	0.01	6–12	10–20	8
AFDC/TANF benefit	0.01–0.02	0.02	0.01–0.02	6–12	10	8–15
Unemployment	0.01–0.02	0.02	0.02	6–12	10	15–16
Low-skill jobs	0.00	0.00–0.01	0.00	0	0–5	0
EITC	0.03–0.04	0.04–0.05	0.03–0.04	19–25	20–25	23–31
All	**0.06–0.08**	**0.07–0.11**	**0.06–0.07**	**38–52**	**40–57**	**46–54**

Panel B. Explaining change from 2000 to 2003

Explanatory Variable	Change in predicted 2000 employment using 2003 values (*X*s) [b]			Percent of change in employment due to given factor (%)		
	All	Blacks	Whites	All	Blacks	Whites
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.03 to −0.02	−0.02	48–50	200–300	32–34
Low-skill jobs	0.00	0.00	0.00	0	0	0
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**48–50**	**200–240**	**33–34**

Bold represents the total change in employment between years, and the total amount of change that could be explained from various explanatory variables.

[a] Predicted employment statistics are weighted using CPS weights. Because weights are used, predicted statistics will approximate (but not exactly equal) actual employment statistics (see Table 2).

[b] These values are percentage points.

First, welfare reform generally, TANF-implementation specifically, is related to relatively small increases in the percentage of single mothers who are employed, and, as expected, the increase is slightly higher for blacks compared to whites. For blacks, the TANF simulation shows that employment would increase 2–4 percentage points in 1991 and so explains between 10 and 20% of the overall change in employment from 1991 to 2000; for whites, the TANF simulation shows that employment would increase 1 percentage point in 1991 and so explains 8% of the overall change in employment.

The simulation that yields the largest increase in blacks' employment compared to whites' employment is the one that uses the coefficients from the TANF-marital status interaction model. Since black single mothers are substantially more likely to be never married compared to white single mothers (62% versus 25%), and TANF only has a positive impact on the employment of this group of single mothers (i.e., TANF has no effect on widowed or divorced mothers), the simulation predicts that black single mothers' employment would have been 4 percentage points higher in 1991 under the 2000 welfare regime. White single mothers' employment would have only increased one percentage point under this scenario (see Appendix A). Simulations using results from the other two interactive welfare models show only slight differences by race.

In the third welfare interactive model, we find that only moderate sanctions have an impact on work, and whites and blacks are equally likely to live in moderate sanction states. Therefore, the use of the coefficients from the "TANF severity" model in the simulations produces similar results by race (see Appendix A).

Our second main finding is that labor market conditions, unemployment rates in particular, also explain a relatively small percent of the rise in employment among single mothers. Again, our results are similar for blacks and whites. Using the 2000 counterfactual unemployment rates in the prediction shows that blacks employment in 1991 would be 2 percentage points higher, explaining 10% of the overall change between 1991 and 2000 for blacks. For whites, the predicted probability of employment would also be 2 percentage points higher, and so change in unemployment rates explains between 15-16% of the change between 1991 and 2000 for whites. Although our findings do show that blacks are more likely than whites to be high school dropouts and live in the central city, and these individuals are the only ones to be affected by the share of low-skill jobs, we found that the change in low-skill jobs explained little of the change in employment rates for blacks or whites. For example, using the coefficients from the "low-skill job" and "central city" interaction model (Model 5, Table 4), our simulation showed that blacks' employment in 1991 would have been 1 percentage point higher and there would have been no change for whites (see Appendix A). Overall, low-skill jobs do little to explain change in employment because the share of low-skill jobs changed very little over time (see Table 2), and the impact of low-skill jobs on employment was pretty small.

Third, we find that the EITC played the largest role in explaining increases in employment of black and white single mothers between 1991 and 2000. For instance, if the EITC of 1991 mirrored that of 2000, we would predict the employment probability to have been between 4 and 5 percentage points higher for single black mothers and 3–4 percentage points higher for single white mothers. Thus, changes in the EITC explain roughly 20–25% and 23–31% of the increase in employment for black and white single mothers, respectively. Our results show that the increase in the predicted probability of employment using the counterfactual EITC is only slightly higher for blacks, despite the fact that (1) the EITC is larger in magnitude for mothers with more children, and blacks have more children than whites and, (2) dropouts' employment behavior appears to be the most sensitive to changes in the EITC, and a higher proportion of blacks are high school dropouts (see Model 6, Table 4). Again, we speculate that the racial differences in the EITC value, racial differences in the percentage of high school dropouts, and the differential impact of EITC by education are all not large enough to produce substantially different results by race. Also, the two groups are at different places on the probability curve, and so a larger

change in the logit for blacks does not necessarily translate into a larger change in the predicted probability of employment.

Taken together, if welfare policies, labor market conditions, and the EITC of 1991 mirrored those of 2000, we would predict the employment probability of single black and white mothers to have been 7–11 and 6–7 percentage points higher, respectively. Thus, these macro-level characteristics account for at most 40–57% of the increase in employment probabilities of single black mothers and 46–54% of the change in employment observed among single white mothers. For both groups, the unexplained difference could be attributed to changes in individual characteristics, such as human, family, and financial capital, or to changes in other unmeasured macro-level factors (e.g., changing cultural perceptions of non-working mothers). All in all, our results show that blacks' employment in 1991 would increase slightly more than whites if the macro-level conditions of 1991 were like those of 2000. These factors do not explain a higher proportion of the change in employment from 1991 to 2000, however, because blacks' employment increased significantly more than whites over this period.

Our results from panel B decompose the trends in employment from 2000 to 2003. In 2003, the employment probabilities of blacks and whites were 68 and 77%, respectively, decreases from the year 2000 of 1 and 6 percentage points. Because the welfare measures do not change between 2000 and 2003, they cannot, by definition, contribute to the change in employment during these years. The role of welfare benefits, low-skill jobs and the EITC all had no role in explaining the decline. The most important explanation for the decline in the employment level during these years, not surprisingly, was the increase in unemployment rates. Using the 2003 counterfactual unemployment rates in the prediction shows that employment in 2000 would have been approximately 2 percentage points lower for both groups. The increasing unemployment rate would have predicted a *lower* employment level for black women in 2000 and so the increasing unemployment rate actually over-accounts for the change in black women's employment. Black single mothers' employment was not as sensitive to the worsening economy as the model would have predicted. For white women, the change in unemployment rates between 2000 and 2003 explains roughly a third of their employment decline during that time.

6. Discussion and conclusion

Over the 1990s, black and white female heads with children experienced a dramatic rise in rates of employment unparalleled by any other subgroup of women (or men for that matter). Beginning in 2000, white single mother's employment fell somewhat, but black single mothers' employment remained relatively constant. The overall rise in employment corresponded to three important macro-structural developments, federal and state welfare reforms, a long economic expansion, and radical changes in the EITC. Given the simultaneity of these occurrences, three questions warranted consideration: (1) What effects have welfare policies, labor market conditions, and the EITC had on the probability of employment for black and white single mothers during the 1990–2003 period? (2) To what extent do changes in these policies, programs and conditions account for the change in employment among single mothers? and (3) Do racial differences in single mothers' individual characteristics lead to different explanations for the differential employment growth by race?

Our results showed that between 1991 and 2000, the EITC—a financial incentive program that provides refundable tax credits or earnings subsidies to low-income families

with children—explained most of the increase in single mothers' employment over time. The EITC had a positive impact on employment in all of our models, and had a stronger impact for those with the least amount of education.

Labor market conditions also accounted for a notable portion of the rise in employment between 1991 and 2000—between 6 and 12%—and indicated that single mothers are indeed responding to the structure of labor market opportunities. Not surprisingly, we find that single mothers' employment rises and falls with the strength of the economy, as indicated by the negative relationship between the likelihood of employment and unemployment rates. The share of low-skills jobs had a small, positive impact on employment for two sub-groups of mothers—central city residents and high school dropouts. It may be that the indicator of labor market opportunity used in this study (share of low-skill jobs) changed too slowly to be sensitive to the employment changes we seek to explain.[19]

Changes in welfare policies did result in a higher probability of employment among single mothers also, but only among those without a high school degree, those who were never married, or those living in a moderate sanction state. Welfare reform explained a similar proportion of the increase in employment as changes in the labor market, but that role varied depending on our model specification. In all of our models, state monthly welfare benefits had a consistent negative impact on the likelihood of employment. The steady decrease in the maximum monthly benefit over the 1990s also explained between 6 and 12% of the increase in single mothers' employment. While it appears that new welfare policies pushed recipients off of the rolls and discouraged non-recipients from participation, this should not necessarily be taken as a sign of "success," because increases in employment say little about the quality of jobs that single mothers now hold. Therefore, we stress the importance of examining other outcomes to determine how single mothers have fared after reforms, given that reforms, while a catalyst for employment generally, are not necessarily catalysts for finding *good* jobs. Future work should examine whether the quality of single mothers' jobs has improved, worsened, or remained stable over the 1991–2003 period.

With respect to racial differences, our results showed that, compared to white single mothers, black single mothers are more likely to be high school dropouts, never married, and central city residents, and policy and labor market changes had a more profound affect on the employment of these groups. However, these demographic differences and interaction effects were not substantial enough to produce radically dissimilar explanations for the changes in employment by race. Our analysis showed that, all in all, changes in these policies and programs increased black single mothers' employment slightly more than white single mothers' (in terms of percentage point increases), but because whites' employment grew less steadily over the 1990s, there was also less growth to explain.

Other trends that unfolded throughout the 1990s also likely pulled single mothers into jobs. For example, between 1990 and 1997, the minimum wage was raised four times to its current level of $5.15/h. This programmatic change is controlled for in our models via our

[19] One indicator of labor market opportunity that might help to explain single mothers' employment increases is wage levels. Women may have increased labor market participation less because job opportunities increased than because opportunities became more economically attractive, making unemployment too costly. And while there is substantial evidence that wages did rise substantially, data limitations precluded us from examining this question in this study. The Bureau of Labor Statistics only began collecting MSA-level wage data in 1997. Because this study spans 1991–2003, missing data make this measure inadequate for our purposes.

year dummies, but because we do not include it as an independent variables we cannot determine whether it has an independent effect on employment, and whether it accounts for a significant part of the increases in employment over time. Although research has been conducted examining the effect of the minimum wage on single mothers' employment, few have considered the effect of all five of these factors in the same study, a much-needed investigation given the likely importance of all for single mothers' employment.

It should also be noted that while welfare reforms may have been a catalyst for labor force participation among high school dropouts, their employment likely would not have increased much without the presence of a strong economy. In other words, the interaction between reforms and the economy likely played an important role in rising employment. In areas experiencing little job growth, it is unlikely that reforms would have led to a substantial rise in the employment of former welfare recipients, although labor force participation would likely have risen. There is also some question as to whether single mothers would have transitioned from welfare to work in areas with a strong economy if reforms had not encouraged them in that direction. Future research should thoroughly investigate these relationships.

Appendix A

Components of change in employment for black and white single mothers

Panel A. Explaining change from 1991 to 2000						
Using significant coefficients (*B*s) from	Change in predicted 1991 employment using 2000 values (*X*s)[a]			Percent of change due to given factor[b]		
	All	Blacks	Whites	All	Blacks	Whites
Base Model						
Any major welfare waiver		—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.01	0.02	0.02	6	10	15
Unemployment	0.01	0.02	0.02	6	10	15
Low-skill jobs	—	—	—	—	—	—
EITC	0.03	0.04	0.03	19	20	23
All	**0.06**	**0.07**	**0.06**	**38**	**35**	**46**
*Welfare*Education Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	0.02	0.02	0.01	12	10	8
AFDC/TANF benefit	0.02	0.02	0.01	12	10	8
Unemployment	0.02	0.02	0.02	12	10	15
Low-skill jobs	—	—	—	—	—	—
EITC	0.04	0.04	0.03	24	20	23
All	**0.08**	**0.09**	**0.07**	**47**	**45**	**54**
*Welfare*Marital Status Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	0.01	0.04	0.01	6	20	8

(*continued on next page*)

Appendix A (*continued*)

Using significant coefficients (*B*s) from	Change in predicted 1991 employment using 2000 values (*X*s)[a]			Percent of change due to given factor[b]		
	All	Blacks	Whites	All	Blacks	Whites
AFDC/TANF benefit	0.01	0.02	0.01	6	10	8
Unemployment	0.01	0.02	0.02	6	10	15
Low-skill jobs	—	—	—	—	—	—
EITC	0.04	0.05	0.04	25	25	31
All	**0.08**	**0.11**	**0.07**	**52**	**57**	**54**
TANF Severity Model						
Any major welfare waiver	—	—	—	—	—	—
TANF	0.01	0.02	0.01	7	10	8
AFDC/TANF benefit	0.01	0.02	0.01	7	10	8
Unemployment	0.01	0.02	0.02	7	10	16
Low-skill jobs	—	—	—	—	—	—
EITC	0.03	0.04	0.03	19	20	24
All	**0.07**	**0.09**	**0.07**	**44**	**45**	**54**
*Low-Skill Job*Education Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.01	0.02	0.02	6	10	15
Unemployment	0.01	0.02	0.02	6	10	15
Low-skill jobs	0.00	0.00	0.00	0	0	0
EITC	0.03	0.04	0.04	19	20	31
All	**0.06**	**0.08**	**0.06**	**38**	**40**	**46**
*Low-Skill Job*Central City Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.01	0.02	0.02	6	10	15
Unemployment	0.01	0.02	0.02	6	10	15
Low-skill jobs	0.00	0.01	0.00	0	5	0
EITC	0.03	0.04	0.03	19	20	23
All	**0.06**	**0.08**	**0.06**	**38**	**40**	**46**
*EITC*Education Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.01	0.02	0.01	6	10	8
Unemployment	0.01	0.02	0.02	6	10	15
Low-skill jobs	—	—	—	—	—	—
EITC	0.03	0.05	0.04	19	25	31
All	**0.06**	**0.08**	**0.06**	**38**	**40**	**46**

Appendix A (*continued*)

Panel B. Explaining Change from 2000 to 2003						
Using significant coefficients (*B*s) from:	Change in predicted 2000 employment using 2003 values (*X*s)[a]			Percent of change due to given factor[c]		
	All	Blacks	Whites	All	Blacks	Whites
Base Model						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.02	−0.02	50	200	33
Low-skill jobs	—	—	—	—	—	—
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**50**	**200**	**33**
*Welfare*Education Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.03	−0.02	50	300	33
Low-skill jobs	—	—	—	—	—	—
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**50**	**200**	**33**
*Welfare*Marital Status Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.02	−0.02	48	240	32
Low-skill jobs	—	—	—	—	—	—
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**48**	**240**	**32**
TANF Severity Model						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.02	−0.02	50	201	34
Low-skill jobs	—	—	—	—	—	—
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**50**	**201**	**34**
*Low-Skill Job*Education Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.02	−0.02	50	200	33

(*continued on next page*)

Appendix A (*continued*)

Using significant coefficients (*B*s) from:	Change in predicted 2000 employment using 2003 values (*X*s)[a]			Percent of change due to given factor[c]		
	All	Blacks	Whites	All	Blacks	Whites
Low-skill jobs	0.00	0.00	0.00	0	0	0
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**50**	**200**	**33**
*Low-Skill Job*Central City Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.02	−0.02	50	200	33
Low-skill jobs	0.00	0.00	0.00	0	0	0
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**50**	**200**	**33**
*EITC*Education Model*						
Any major welfare waiver	—	—	—	—	—	—
TANF	—	—	—	—	—	—
AFDC/TANF benefit	0.00	0.00	0.00	0	0	0
Unemployment	−0.02	−0.02	−0.02	50	200	33
Low-skill jobs	—	—	—	—	—	—
EITC	0.00	0.00	0.00	0	0	0
All	**−0.02**	**−0.02**	**−0.02**	**50**	**200**	**33**

[a] These values are percentage points.

[b] These percentages are calculated using the following formula: [(Predicted employment in 1991 using values of measures in 2000 − Predicted employment in 1991 using values of measures in 1991)/Change in predicted employment from 1991 to 2000] × 100.

[c] These percentages are calculated using the following formula: [(Predicted employment in 2000 using values of measures in 2003 − Predicted employment in 2000 using values of measures in 2000)/Change in predicted employment from 2000 to 2003] × 100.

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