Racial Disparities in Labor Market Responses to the EITC

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Abstract

By exploring the 1993 expansion of the Earned Income Tax Credit (EITC), this paper studies racial disparities in labor market responses to tax changes. We find that, relative to those without child, single mothers of any race experienced a considerable increase in employment. However, among married mothers, only blacks saw an increase in maternal employment. The findings on racial disparities among married mothers can be explained by the differences in intrahousehold labor supply decisions. Married black women are more likely than their white counterparts to be the family's primary breadwinner. When analyzing the joint labor decision, treating them as secondary earners leads to incorrect predictions.

1 Introduction

Recent years have seen a resurgence in debates regarding racial disparities both in the U.S. tax code and welfare programs. Scholars have brought renewed attention to studying such racial disparities (Kuka and Shenhav, 2020; Brown, 2007, 2022; Hardy, Hokayem and Ziliak, 2022) to help inform policies reforms that would be more equitable across race groups.[1] To the best of our knowledge, however, there is limited research on race-specific responses to tax policies and welfare programs.

Our research fills this gap by examining the effects of the Earned Income Tax Credit (EITC) on the Black and White populations. The EITC is the largest cash transfer program for low-income parents in the United States. In 2015, $60 billion in EITC credits were paid out to 25 million taxpayers, more than quadrupling in size compared to those in 1990. These credits lifted families out of poverty and encouraged women with children to work.[2] Among EITC recipients, the majority are minority households (Murray and Kneebone, 2017), from which the EITC may generate substantial racial impacts. Our study provides the first quantitative empirical work that delineates the heterogeneous labor market effects of the EITC by race.

Women's increased attachment to the labor-force has been one of the most striking trends in the United States since World War II. However, since 1990, women's advances in labor force participation have slowed due to a comparatively small rise in the relative gender wage ratio (Blau and Kahn, 2007). With one exception, single mothers have seen a noticeable increase in labor supply over this period (shown in Panel (a) of Figure 1). The cause of the

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[1]In her most recent book, "The Whiteness of Wealth: How the Tax System Impoverishes Black Americans–and How We Can Fix It", Brown (2022) raised the following question: Since the Internal Revenue Service (IRS) has never asked taxpayers to identify their race or ethnicity on their returns, does our tax system appear fair and neutral and does it have an impact on all people in the U.S. equally? Deep racial inequities exist in the education, employment, housing, and criminal justice systems in the U.S., especially for black and Hispanic households, and the IRS Code is no exception, meaning that even though the 1040 form does not ask for race or ethnicity, the policies and tax laws that are passed can intersect with other racial inequalities in the federal government to make the equality gap either better or worse. In contrast to the above findings, our study shows that US tax policy can indeed be an effective tool with which to enhance racial equality and lift more black families out of poverty.

[2]Several papers have studied this topic, such as Eissa and Liebman (1996); Meyer (2002); Eissa and Hoynes (2004); Hoynes and Patel (2018); Bastian (2020).

prominent upward trend of working single mothers is often attributed to the 1993 EITC expansion along with other tax reforms (Meyer and Rosenbaum, 2001; Juhn and Potter, 2006; Hoynes and Patel, 2018; Bastian, 2020). However, the figure above masks the growth in labor market participation of black married mothers. When we break down these trends by race, we find notable increases in the labor force participation rate among not only single mothers but also married black mothers (Panel (b) of Figure 1). This pattern demonstrates the importance of EITC reform in shaping female labor force participation across different race groups in the 1990s.

[Insert Figure 1 Here]

Our study adopts two identification methods and explores the differential impact of EITC for both single and married women by race. We focus on the 1990s, a time when the EITC expanded significantly, creating an opportunity to apply a transparent quasi-experimental research design. The first approach is a difference-in-differences (DD) estimation that compares, pre- and post- 1993 reform, changes in employment for mothers who benefit from the expansion relative to women without children, who serve as a comparison group.[3] Exogenous identification strategy emerges from utilizing women without children as a comparison group because they were not affected by the 1993 reform. In the absence of the 1993 reform, mothers' employment should follow a parallel pattern, which we validate with a range of event studies and balance checks. Our second identification strategy builds on Bastian and Michelmore (2018), exploiting the exogenously policy-induced changes in the EITC parameters, namely the changes in the maximum credit amount available given family characteristics.

The results from above two identifications generate consistent patterns. The EITC is equally effective in increasing maternal employment for single mothers among black and white women, while significant racial disparities are found for married wives. The EITC expansion substantially encourages the employment for married black mothers but not

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[3]Omnibus Budget Reconciliation Act of 1993 (OBRA93) and 1993 EITC expansion have been used interchangeably.

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for married white mothers. Even when comparing families with similar incomes, the racial gap remains. In other words, despite minority families being over-represented at the bottom of the income distribution, these racial disparities are not the result of racial income gaps.

The discussions of racial differences in responses to the EITC have been missing from past studies,[4] and our study indicates that the key discrepancies lie among married women. We postulate that married black and white couples experience significantly different joint labor supply dynamics, guided by the joint household labor decision-making theory. In a canonical model, a woman is seen as the secondary earner, as has been emphasized in the literature. However, the extent to which this is applicable varies by race, particularly considering the severe labor market discrimination against black men and the smaller racial wages difference among women (Blundell et al., 2018; Bayer and Charles, 2018).[5] Compared to their white counterparts, married black women may enjoy an income status that is more equitable with that of their husbands. As a result, married black women act more like the family's major breadwinners. Theoretically, primary earners' labor supply is more responsive to the changes in family income induced by EITC reform. The fact that women play different roles in intrahousehold decision-making between black and white women explains why there are racial differences in labor supply responses to the EITC.

To gain empirical support for our argument, we first examine racial disparities within married couples by comparing female and male contributions to family income. Indeed, we find that married black women are less likely to stay out of the labor market and more likely to be the family's primary earners.[6] To simulate married spouses' work choices in the event that the family obtained EITC credits in the 1993 reform, we then perform a more thorough examination. Spouses are assumed to be fully aware of the EITC

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[4]The only paper that emphasized differences across racial groups is Hardy, Hokayem and Ziliak (2022), finding that households headed by black and white women could have had differential responses to the EITC.

[5]In fact, the contribution of married women to family income is underestimated because they are typically seen as the secondary earners of the household (Bertrand, Kamenica and Pan, 2015; Bursztyn, Fujiwara and Pallais, 2017).

[6]Additionally, our simulation suggests that nonworking black married women in EITC-eligible households have higher potential earnings than those of their white counterparts.

expansion structure and the EITC credits that they may receive given their labor supply decision. We simulate and predict the family income generated by EITC reforms under different working arrangements between husbands and wives. The simulated outcomes demonstrate that EITC expansion offers work incentives for married black women since working improves family income more than does not working. The expected income for married women working is higher for black households because black married men have a lower rate of labor force participation than do white married men. Our analysis also excludes two alternative explanations: the findings are driven by neither the racial discrepancy in household income nor the EITC credits received by families.

We also conduct a series of robustness checks. First, we study the dynamic effect of the 1993 reform in an event-study framework.[7] Second, the EITC expansion in 1993 was significant, but it happened at a time when the government was experimenting with new welfare measures aimed at increasing employment, such as implementing time limits on cash aid recipients.[8] To tackle this problem, we estimate the impact of EITC expansion in states that have not implemented welfare reforms. In these states, we still find large EITC employment effects, confirming that the increase in employment due to the 1993 EITC expansion is independent of any employment effects from state welfare reform programs. Furthermore, the local business cycle is likely to have impacted families with and without children differently. Our extended specification accounts for confounding factors such as the business cycle to adjust for the number of children.

To provide a more comprehensive picture of how the EITC affects individuals of color, we move beyond the influence of employment in the last section. First, we draw on social norms to interpret racial disparities in responses to the EITC.[9] The results suggest that, for those living in areas with more conservative views on women, white mothers decreased their labor supply after the 1993 reform relative to the labor supply of married women

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[7]The dynamic effect of the EITC in the pre-expansion period suggests that the treatment and control groups were evolving similarly and supports a causal interpretation of the post period estimates.

[8]Those policy changes occurred at the same time, which raised the concern that the employment effect induced by the 1993 EITC expansion could be muddled by the effects of state-level welfare reform legislation.

[9]In particular, we divide the U.S. into regions according to societal attitudes toward gender roles (i.e., South vs. North) and find that white mothers, especially white married mothers, are more affected by gender norms.

without children, although the effect is imprecisely estimated. However, gender roles play a smaller part in determining employment decisions for black mothers. Second, we investigate whether the EITC accounts for racial disparities in terms of poverty rates, which is crucial because it is frequently cited that the program's major accomplishment is the reduction in poverty (Marr et al., 2015; Hoynes and Patel, 2018). The EITC reform significantly increases family income and, even more excitingly, increases the likelihood that black married couples with children live over the federal poverty line. Our findings indicate that the EITC can be used as a valuable policy tool for assisting black families with children in escaping poverty.

This paper is structured as follows. Section 2 examines the history of the EITC, provides details on the 1993 EITC expansion, and summarizes past studies on the EITC and labor supply. Section 3 describes the dataset used and develops the specification strategy. Section 4 reports the EITC's impact on employment and hours worked for black and white women, followed by an analysis that investigates and quantifies a possible explanation for the racial disparities. Section 6 further examines the differential effects of the EITC on poverty rates across races and investigates the varied roles played by gender norms in black and white maternal employment decisions. Finally, the last section concludes the paper.

2 Background and Related Studies

2.1 History of the EITC

The EITC was established during the Ford administration by the Tax Reduction Act of 1975 with the purpose of incentivizing low-skilled parents to work by offsetting the burden of payroll taxes and thus increasing their potential take-home pay. The EITC has changed and been amended several times throughout its history. The Tax Reform Act of 1986, signed by President Reagan, indexed the maximum earned income and phase-out income levels to inflation. In 1993, President Clinton signed into law the largest EITC expansion ever. The policy provided a tax cut for 15 million working families. For every dollar earned

by a very low-income working parent with one child (two or more children), the EITC increased from 23 cents to 34 cents (25 cents to 40 cents). The maximum credit [10] was increased by over $1,500. The income limit on eligibility was increased by approximately $3,700.

The timeline of historical expansions or reforms of the federal EITC and its features are summarized below:

- The 1986 Tax Reform Act (TRA86) increased the subsidy rate in the phase-in region, increased the maximum credit over the flat region, and reduced the phase-out rate.

- The 1990 OBRA (OBRA90) introduced a separate schedule for families with one child and families with two or more children.

- The 1993 Omnibus Budget Reconciliation Act (OBRA93) included the following changes: (1) The subsidy rate was further increased to 34% for one-child families and to 40% for families with two or more children. (2) The maximum credit was increased to $2,152 for one-child families and to $3,556 for families with two or more children. (3) The phase rate was set to 14% and 20% for families with 1 and 2 or more children, respectively.[11]

- The 2009 American Recovery and Reinvestment Act (ARRA09) introduced several changes, which can be summarized as follows: first, benefits were increased (45% subsidy rate) for larger families with three or more children; second, the marriage penalty was relaxed by raising the income threshold after which the EITC begins to phase out for married couples to $5,000 more than the amount for unmarried filers.

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[10]Tax credits differ from other tax expenditures in that they directly reduce income tax liabilities, rather than indirectly through reducing taxable income. That is, a $1 tax credit reduces one's tax liability by $1. A tax deduction of $1 reduces taxable income by $1 but reduces the tax liability by the marginal tax rate times $1. For example, an additional $1 deduction for a taxpayer in the 10% tax bracket reduces her tax liability by 10 cents; a taxpayer in the 40% tax bracket has her tax liability reduced by 40 cents. The EITC differs from most other tax credits in that it can be either partially or fully refundable. With a refundable tax credit, if a taxpayer were to have a $100 tax liability and a $200 refundable tax credit, then she would receive a tax refund of $100. The EITC depends on the number of qualifying children and earned income.

[11]Adjustments to the EITC schedule between 1990 and 1994 and between 1994 and 2000 are illustrated in Figure A1. We also report the EITC parameters that were in place between 1990 and 2003 in Table A1.

Figure 2 shows the maximum credit following each reform for households with no children, one child, two children, and three or more children. As shown, the 1986 and 1990 reforms slightly increased the maximum credit. At that time, the EITC was limited to families with children and did not vary based on the number of children in the family. The 1993 reform introduced a small credit for workers without children and increased the credit for families with children, dramatically so for those with multiple children. Since those reforms were implemented, the maximum EITC credits for families with zero, one, and two children have each remained unchanged in real terms, although families with three or more children saw an increase in 2009. In addition, several states have adopted their own EITC since the 1990s. Figure A2 shows the vast state-level variation in the EITC for families with different numbers of children after combining the federal and state credits.

[Insert Figure 2 Here]

2.2 Literature Review

There is a large body of literature on the effect of the EITC on labor supply that explores either one or more of the aforementioned EITC expansions in 1986, 1990, and 1993 or the initial launch of the EITC in 1975.

The EITC is most generous toward single parents with multiple children; therefore, a large share of the literature has leveraged this quasi-natural experiment and focused on the contrast between single mothers and single women without children (see the literature reviews in Hotz, Scholz and Moffitt (2003); Nichols, Rothstein and Moffitt (2016); Hoynes, Rothstein and Ruffini (2017)). The vast literature studying these differences has almost uniformly found evidence of increased employment after each of the EITC expansions. For example, Eissa and Liebman (1996) find that the 1986 EITC expansion increased the laborforce participation of single women with children, while Bastian (2020) studies the effect of the 1975 rollout of the EITC and finds that the introduction of the EITC increased maternal employment by 6%. A few studies have also looked at more than one instance

of EITC expansion and found consistent labor supply effects (Meyer and Rosenbaum, 2000, 2001; Whitmore Schanzenbach and Strain, 2021; Hardy, Hokayem and Ziliak, 2022). Whitmore Schanzenbach and Strain (2021) study all of past expansions and find that the average effect of these federal expansions is 3.2 to 3.7%, with a slightly smaller effect for state EITC.

The 1993 expansion was the largest in magnitude and is the backdrop for various EITC studies, including our own. However, the 1993 expansion overlapped with the state-initiated Aid to Families with Dependent Children (AFDC) expansions implemented between January 1993 and August 1996 through state waivers. After 1996, many of the concepts and policies included in the waivers were formally incorporated into the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), which also benefited families with children (U.S. Department of Health and Human Services, 1997). In addition, that period saw a tight labor market that motivated more women to join the laborforce. The effect of the business cycle could have interacted with the welfare reform, the generosity of which varied with the number of children. Therefore, more recent studies of the 1993 expansion have focused on controlling for these confounding changes (e.g., Hoynes and Patel, 2018; Whitmore Schanzenbach and Strain, 2021; Kleven, 2019).

The theoretical predictions of the effect of the EITC on the primary earner in a two-earner household is consistent with that for a single earner: a positive effect on labor supply on the extensive margin (Eissa and Hoynes, 2004). However, for the secondary earner, it depends on family income relative to the EITC benefit scheme. If the income of the primary earner lands on the plateau or in the phase-out region of the EITC benefit schedule, then even if the secondary earner started working, the family's EITC benefits would either stay the same or decline. Therefore, the expansion did not provide any extra incentives for secondary earners in such a position to work. However, the families in the phase-in region would have benefited from the additional labor supply of the secondary earner (Hoynes, 2019).Eissa and Hoynes (2004) found that the EITC expansion reduced the labor supply of married mothers while having a negligible effect on married men. This is consistent with the theoretical predictions for the labor supply of the secondary earner under the EITC

expansion.

Frequently, the woman in a household is considered the secondary earner. However, the degree to which this is true could differ by race, especially given the large gap in earnings between black and white men and less prominent racial earnings gap among women (Blundell et al., 2018; Bayer and Charles, 2018). Past studies of married couples and the EITC have not examined the possible heterogeneity stemming from different gender norms by race (Eissa and Hoynes, 2004; Ellwood, 2000; Dickert, Houser and Scholz, 1995). This study explores this heterogeneity and finds negative labor supply effects among married white women but positive effects among married black women. We elaborate on this finding in section 5.1.

Discussions of racial differences in the responses to EITC have also been largely missing from past studies. The only paper that emphasized differences across racial groups is (Hardy, Hokayem and Ziliak, 2022), which found that single black and white women could have had differential responses to the EITC when they are the heads of household. Our study builds on their observations and identifies an interesting racial dynamic in the ways in which married households respond to the EITC. We dissect the mechanism underlying these effects by income level and family structure. Both of these analyses have significant implications for the effect of the EITC on racial income inequality.

Most of the aforementioned studies have focused on the extensive margin of labor supply, while fewer studies have looked at the intensive margin. The findings for the extensive margin are more uniform than are those for the intensive margin (Meyer and Rosenbaum, 2001; Bollinger, Gonzalez and Ziliak, 2009; Rothstein, 2010). For example, Chetty, Friedman and Saez (2013) use the zip-code-level variation in knowledge of the EITC and number of children in a household and identify large intensive margin effects in areas with greater EITC knowledge.

Since the EITC affects households with children, it is unsurprising that it also changes the children's outcomes by changing household resources. The EITC significantly improves family income (Grogger, 2003; Bollinger, Gonzalez and Ziliak, 2009; Hoynes and Patel,

2018) and reduces the level of childhood poverty (Bitler, Hoynes and Kuka, 2017; Meyer and Wu, 2018) among low- and moderate-income households. The extra resources provided by the EITC also lead to improved infant health (Hoynes, Miller and Simon, 2015; Evans and Garthwaite, 2014) and test scores (Dahl and Lochner, 2012; Chetty, Friedman and Rockoff, 2014). The current study highlights that the poverty-alleviating effect of the EITC on black families exceeds that on white families. Therefore, it is reasonable to assume that the effects of the EITC on child outcomes may also vary by race.

3 Data and Estimation Strategy

3.1 Data

The data we use come from the 1990 to 2003 Current Population Survey's (CPS's) March Annual Social and Economic Supplement (ASES), which is an annual demographic file with information on 50,000 to 62,000 households, including labor market and income information for the previous year, so the data cover tax years 1989–2002.

Because previous research has indicated that the EITC has no impact on paternal employment rates, we limit our analysis to women. Our sample includes both married and unmarried females. The age restriction is set to 24 to 48 for unmarried women and to 24 to 54 for married women. To avoid any confusion about whether a woman can be listed as a qualifying dependent on her parents' return, we limit the sample to women over the age of 24. Any female who was separated from her spouse, was ill or disabled, or was a full-time student during the previous year are excluded from the unmarried sample. We apply these same restrictions (except for separation from her spouse) to married women. Additionally, we restrict our sample to women with some college education or below since the EITC targets those with low earning levels.

Determining the tax-filing units is critical, and CPS families serve as the basis for our tax-filing units. As a result, related and unrelated subfamilies are assigned to tax-filing

units distinct from that of the principal family. We regard any member of a tax-filing unit who is under the age of 19 (or under the age of 24 if a full-time student) to be a dependent child for tax purposes. We do not apply the support test to dependents since it contains characteristics that are endogenous to labor supply decisions, such as AFDC income. Furthermore, we do not have enough information to impose the EITC six-month residency requirement. As a consequence, we assume that any child under the age of 19 (or under the age of 24 if the child is a full-time student) fits both the dependent child and EITC child requirements.

We also exclude anyone (or any couple) with negative earned income (due to negative self-employment income), negative unearned income, or positive earned income but 0 hours of work. We also exclude women with taxable unearned family income over $40,000 (in 2010 dollars). This group would not be eligible for the EITC in any year during this period. The resulting sample size, after pooling the data from all 13 years and applying all sample restrictions, is 102,296 observations, consisting of 46,728 unmarried women and 55,568 married women.

Table A3 presents the summary statistics separately by race and maternity status for both unmarried and married women. The demographic variables used in the analysis are fairly standard and include age, race, education, number of children, number of children under age 5, and the state unemployment rate.

Summary statistics show that unmarried black women without children are slightly older than their white counterparts. In comparison with white single mothers, black single mothers are younger and have more children. Regarding married women, the average age of married black women without children is comparable to that of married white women without children. The number of children born to married women does not differ by race in a statistically significantly manner. Black women have a lower family income regardless of their marital status and whether they have a child.

The patterns of labor supply at both the extensive and intensive margins, as well as wage income, are of interest. Extensive labor supply is calculated using the probability of being

employed during the reference week, while intensive labor supply is calculated using the number of hours worked the previous week. White women, regardless of whether they have a child, are more likely to be employed and work slightly more hours than black women. Black mothers have a higher employment rate than white mothers, and married black women work longer hours than married white women, regardless of whether they have children. Unmarried black women make less money than unmarried white women, whereas married black women make more money than married white women.

The data on federal EITC parameters come from the Tax Policy Center and are reported in Appendix Table A1. We also include information on state EITC parameters over time, drawn from the Tax Policy Center and National Bureau of Economic Research, compiled in Kleven (2019), and presented in Appendix A2. Moreover, we include data on whether a state had an AFDC welfare waiver approved prior to the 1996 welfare reform law, drawn from the Department of Health and Human Services. Thirty-six states had a welfare waiver, as shown in Appendix Table A2. Unemployment rates by state and year are calculated from the CPS.

3.2 Empirical Strategy

Our first estimation strategy makes use of the DD technique. This approach compares the outcomes of a treated group (i.e., individuals with children) to the outcomes of a comparison group that is untreated by the program or policy under consideration (i.e., individuals without children). Specifically, we estimate the DD regression separately for black and white women.

$$Y_{igt} = \gamma Treated_g \times Post_t + \theta X_{igt} + \gamma W_{s,t} + \eta_g + \eta_t + \eta_s + \eta_r + \varepsilon_{igt}, \tag{1}$$

where Y_{igt} refers to the outcomes of an individual in group g who is employed in year t, namely, whether a woman is employed, number of hours she worked, and her labor income. $Treated_g$ indicates treatment status and is equal to 1 if the individual was treated and 0 otherwise. $Post_t$ equals 1 for years after 1993; otherwise, it equals 0. The interaction

term $Treated_g \times Post_t$ is the DD estimator of interest. ε_{igt} is an idiosyncratic error term, clustered at the state level to address potential serial correlation and heteroskadesticity issues.

The identifying assumption for our DD estimation is that the treatment and control groups are comparable, that is, that women without children are good counterfactuals for those with children in the evolution of the outcomes. To improve the comparability between treated and control individuals, we include a vector of personal characteristics, X_{igt}, such as age, number of children, and number of children under age 5 years, in all the analyses. For married women, we further control for either family income or the employment status of the spouse. Moreover, we include group fixed effects η_g, which control for all time-invariant differences between individuals with and without children. Additionally, year fixed effects η_t control for all yearly common shocks to individuals In addition, state fixed effects are used to control for time-invariant state- and region-specific effects. In all specifications, we add controls for the annual average state unemployment rate $W_{s,t}$ to account for general economic and labor market conditions.[12]

To further verify our identifying assumption, we conduct an event study DD estimation to examine whether individuals with and without children had similar trends in terms of the outcome before the 1993 EITC expansion, a check on the pretreatment parallel trend commonly used in the literature. We also examine possible sample composition issues due to the endogenous marriage and selection based on education. Finally, we investigate whether our focal program (the 1993 EITC expansion) is contaminated by other concurrent welfare programs, such as the time limits on the receipt of cash welfare.

To further strengthen our identification, we use an alternative estimation strategy that is analogous to that of Bastian and Michelmore (2018). We utilize the state-level and temporal variation in the EITC schedule. In particular, we assign the maximum EITC to families based on the year and their state of residence and estimate the following equation

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[12]In some cases, we even augment the specification with the state unemployment rate interacted with the presence of children, which allows the effect of local labor shocks to vary with the presence of children in a household.

for black households and white households separately.

$$Y_{igst} = \beta MaxCredit_{igst} + \theta X_{igst} + \eta_g + \eta_s + \eta_t + \varepsilon_{igt}, \qquad (2)$$

where Y_{igst} denotes the outcomes for individual (i) from state (s) in year (t). $MaxCredit_{igst}$ is equal to the sum of the federal and state EITC credits that individual i is eligible for based on family size, the number of eligible children, the effective tax year, and state of residence. Throughout the analysis, we follow the standard procedure and treat EITC policy changes as exogenous in terms of family structure. We employ broad eligibility based on family size rather than explicitly calculating eligibility based on income or earnings, which could be endogenously determined by the reaction of the households' labor supply to changes in EITC generosity. As a result, this estimate can be interpreted as an intention-to-treat (ITT) impact.

4   Main Results

4.1   Effect of the EITC on Employment

We first estimate the average effect of the 1993 EITC expansion on maternal employment using equation 1 and the CPS ASES weights and examine the impact for black and white women by marital status. The results are reported in Table 1 and indicate a substantial racial disparity in the impact of the 1993 expansion on women's employment.

[Insert Table 1 Here]

The estimates for all black and white women are displayed in the first two columns of the table. Black mothers were shown to be more responsive to the 1993 EITC expansion than were white mothers. In terms of magnitude, the expansion boosted employment among black mothers by 9.39 percentage points (15.05% from a baseline of 62.41%) and

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employment among white mothers by 3.12 percentage points (5.17% from a baseline of 60.34%).[13] All of the estimates are statistically significant at the 1% level. Our results imply that approximately 1.134 million mothers began working as a result of the 1993 EITC expansion.[14] Note that between 1990 and 2003, employment among black and white women rose by 10.01 and 6.12 percentage points, respectively. The 1993 EITC expansion was responsible for an approximately 37% (20%) increase in black (white) female employment between 1990 and 2003.

The estimates for unmarried black and white women are shown in the next two columns. In comparison to their childless counterparts, single black mothers experienced a 12.39 percentage points (20.6% from a baseline of 60.13%) growth in employment due to the 1993 EITC expansion, while the increase for single white mothers was 9.38 percentage points (12.5% from a baseline of 75.14%). This finding once again confirms that black single mothers increased their labor supply (on the extensive margin) more than their white counterparts, and the racial difference is significant. It is worth noting that our point estimate for unmarried women is comparable to that in Whitmore Schanzenbach and Strain (2021), who estimate that EITC expansion increased employment rates among unmarried mothers with less than a college degree by 10.2 percentage points.

The last four columns present the results for married women. According to Eissa and Hoynes (2004), a married couple's labor supply is determined through a collaborative decision-making process, with the husband being considered the principal earner. As a result, the wife's labor supply is determined not only by her characteristics and family finances but also by her husband's employment status. We add household income and whether a woman has a working spouse to the analysis for married women sequentially to analyze the influence of wages and spousal employment independently. The estimates for married white women are consistent with the findings in Eissa and Hoynes (2004),

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[13]During our study period, the baseline employment rate for white and black women was derived using the three-year average employment rate before the 1993 expansion.

[14]Based on the calculation from the 1990 CPS ASES and the population census, 37% of black women and 40% of white women are mothers. There were approximately 3.64 million and 24.29 million white women aged 22-54 in 1990 who were mothers. The estimated 9.39 percentage points for black mothers and 3.12 percentage points for white mothers correspond to approximately 1.134 million mothers in total. Data on the female population by race and age group are derived from the 1990 Census of the Population.

as this group of women barely changed their labor supply in response to the 1993 EITC expansion. In contrast, married black mothers significantly increased their labor supply after the expansion. The estimates are stable, between 6.99 and 7.05 percentage points with alternative controls, which is 9.84% (9.92%) of the baseline labor supply for married black women.

In Table 2, we estimate employment responses exploring variations across time and states in terms of the size of the maximum EITC credit from equation 2 and find robust evidence of an extensive-margin impact. Among all black women, we find that a $1,000 increase in the size of the maximum credit is associated with a 0.71 percentage point increase in employment. However, the positive impact for white mothers is imprecisely estimated. When examining both federal and state expansions over the study period together, we find a 0.66 and 0.06 percentage point increase in employment for all black and all white mothers, respectively. Once again, the effect is insignificant for white mothers. These results are presented in Table A4.

[Insert Table 2 Here]

For unmarried women, a $1,000 increase in the size of the maximum credit increases employment among unmarried black mothers and unmarried white mothers by 0.61 and 0.41 percentage points respectively. These magnitudes are reasonable. For example, for unmarried mothers with two children, the maximum credit increased by $2,045 following the 1993 expansion, and by 1996, employment rates among members of this group increased by 1.25 (0.838) percentage points relative to childless unmarried black (white) women. Applying our estimates suggests that the EITC expansion explains approximately 10% (14%) of the increase in employment rates among the targeted black (white) women during this period.[15]

For married black women, a $1,000 increase in the size of the maximum credit resulted in

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[15]During our study period, the employment rate increased by 12.59 percentage points for unmarried black women and increased by 5.82 percentage points for unmarried white women.

a 1.24-percentage point increase in employment. In addition, the impact is fairly stable when alternative sets of controls reflecting joint decision-making for couples are included. In magnitude, for married couples with two children, the maximum EITC credit amounted to $3,110 in 1994. Our estimate suggests that 56% of the increase in married black women's labor supply between 1990 and 2003 is attributable to the 1993 EITC expansion.

4.2   Impact of the EITC on Hours Worked

It has also been shown that the EITC has only a small impact on hours worked among those already employed (e.g., Saez, 2010), with most of the impact on labor supply coming through the movement of individuals into the laborforce. It is of interest to examine whether there are any racial disparities in labor supply on the intensive margin. We estimate equation 1 but replace the outcome variable with hours worked conditional on working a positive number of hours. The results are reported in Table 3.

[Insert Table 3 Here]

Consistent with the prior literature, we find that the 1993 EITC expansion had a minor (although positive) influence on working mothers' hours worked compared to the hours worked by their childless counterparts, regardless of race. The same results hold for unmarried mothers. For married mothers, however, the findings are strikingly different. Married working mothers who are black increased their labor supply by working 2.28 more hours per week, or 6% of their baseline working hours.[16]

In conclusion, our findings indicate that the 1993 EITC expansion generated a significant racial disparity in employment and hours worked, particularly among married women. Specifically, after the expansion, the employment rate of married black women increased. Furthermore, married black working mothers were more likely to work longer hours if they already had a positive number of hours worked.

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[16]The average hours worked for married black women is 39.14 per week.

4.3 Event Study Estimates

The results in Tables 1–3 demonstrate the significant differential impacts of the EITC across race in terms of employment for mothers, relative to the control groups (women without children) at both the extensive margin and the intensive margin, with the former being more prominent. Here, we return to the dynamic DD model or event study approach and unpack the estimates to reveal the effects of the 1993 OBRA expansion year by year. An event study is considered the most direct test of the validity of the DD approach, enabling us to explicitly examine the validity of the control group by examining differences in pretrends across groups. Another advantage of using an event study is that it allows us to evaluate how the treatment effect evolves over time.

In particular, we present the estimates of Equation 1 and estimate an event time model (with all controls), where the dependent variable is equal to one if an individual is employed. Figure 3 plots the coefficients and 95% confidence intervals, with Panel A showing the sample comprised of married women and Panel B showing the sample comprised of single women. To capture racial differences, the graph displays the coefficients for black and white mothers separately.

[Insert Figure 3 Here]

The estimates prior to the 1993 OBRA expansion are quite flat between the treatment and control groups for all curves (single and married, black and white), confirming the validity of the quasi-experimental design. Moreover, there is a sharp increase in employment probability beginning in 1994, with larger increases for single mothers. For married mothers, the 1993 OBRA expansion, followed by the EITC expansion, only increased the level of maternal employment for black mothers. Furthermore, the differences in the employment probability between mothers and women without children has endured over time, lending support to Hardy, Hokayem and Ziliak (2022); Whitmore Schanzenbach and Strain (2021).

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4.4 Threats to Identification

All of the above approaches rely on variation at the family size (number of children)-by-year level, and marriage status is assumed to be independent of EITC reform. Previous findings have indicated that the EITC has had little impact on marriage and fertility decisions (Dickert-Conlin and Houser, 2002; Holtzblatt and Rebelein, 2000; Michelmore and Lopoo, 2021). This assumption also implies that the composition of the treatment and control groups must remain constant over time and that the distribution of treatment and control groups must be altered across years. In addition, the bottom of Figure 3 exhibits the distribution of single (white) black and white mothers. We discover that the distribution is smooth during the study period, supporting the composition hypothesis.[17]

Another concerns arises from the selection of groups based on a set education level, as pointed out by Eissa and Hoynes (2004), which may result in a change in the composition of the sample over time due to trends in educational attainment. We examine samples drawn from specified percentiles of educational distribution (e.g., the bottom 70%) and find that the estimates are consistent with the findings of our main sample. The results are reported in Appendix Table A5.

A third threat to our strategy is that the 1993 EITC expansion occurred during a period in which many states were experimenting with changes to their welfare policies that were designed to increase employment, for example, the implementation of time limits on the receipt of cash welfare.[18] Because these policy changes happened concurrently, estimates of the employment effect of the 1993 EITC expansion could be confounded by the effects of state-level welfare reform policies on employment. In fact, as pointed out in Kleven (2019), the 1993 EITC expansion has increased employment; however, the increased employment in the mid-1990s is better explained by state welfare waivers than by credit expansion.[19]

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[17]We also carefully examine the data and show that mean demographic characteristics (age, education, and family size) do not change differentially over the study period.

[18]Kleven (2019) offers a comprehensive summary and analysis of the social policy changes of the 1990s.

[19]In his most restrictive specification, Kleven controls for the effect of state welfare waivers by allowing it to vary by year, interacted with whether children are present in the household. However, Whitmore Schanzenbach and Strain (2021) argue that Kleven's approach absorbs much of the true employment effect of the EITC, which is identified by comparing households with and without children both before and after credit

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To test whether the observed increase in maternal employment is caused by state welfare reform or independent of changes to state welfare policies, we use a straightforward method and estimate the effect of credit expansion only in states that have not enacted welfare reforms. The estimates are reported in the last four columns of Table 4. We find strong EITC impacts on employment in these states, building confidence that the 1993 EITC expansion increased employment separate and apart from any employment effects due to state welfare reform policies. Our findings are also consistent with those of Whitmore Schanzenbach and Strain (2021).

In addition, because each state has its own welfare programs, we include state-specific fixed effects in all of our models. Furthermore, the local business cycle is likely to have impacted families with and without children differently. Our extended specification accounts for confounding factors, such as the business cycle, and adjusts them for the number of children. In particular, we control for the ratio of state-level employment to the working population and its interaction term with number of kids in the first columns of Table 4. When compared to the baseline estimates, those from our more restricted specification are very similar, and adding more confounding factors has a minimal effect on their magnitude.

5   Mechanism

Our aforementioned analyses show significant racial disparity in the impacts of the 1993 EITC expansion on employment and hours worked among mothers, particularly for the former. Moreover, the different impacts across races are more prominent among married mothers than among single mothers. To understand these patterns, we first present the mechanism through the labor supply decision of different family structures and then discuss two competing explanations according to family income and EITC credit levels.

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expansions.

5.1   Joint Decisions and Racial Disparity

Labor supply needs to weight the benefits and costs for the family. For single women, the decision mostly reflects her own considerations, whereas for married women, it is largely a joint decision. Note that the EITC is available to parents who report positive earned income. Hence, classic labor supply theory predicts that the EITC encourages single mothers to work. Moreover, the wellbeing of single parents who do not work remains the same, regardless of whether they are eligible for the EITC. Any person who was already employed will not alter their employment preference and will, thus, continue to work. As a result, the EITC has a definite positive influence on unmarried mothers' labor supply, at least on the extensive margin.

For married women, the impact of the EITC on labor supply is ambiguous. This is because the amount of credit claimed is based on family income. Classic labor theory depicts the joint labor supply decision for married couples as being determined through a sequential decision-making process, with the husband as the first mover and the wife as the secondary mover. As illustrated in Eissa and Hoynes (2004), the effect of the credit on the labor supply of primary earners is the same as that on the labor supply of single taxpayers. Therefore, the EITC should have an unambiguously positive impact on the husband's labor supply. However, the effect of the EITC on the wife's labor supply, the secondary earner in the family, largely depends on the husband's income and the location of the married family along the EITC income schedule. When the family is eligible for the EITC based on the husband's earnings, the credit adds to the household's unearned income and generates disincentives for the secondary earner to supply labor. In this regard, the EITC could have an even greater negative impact for the wife, as married couples are usually positioned on the plateau or in the phase-out region. Both the income and substitution effects within these regions suggest that wives would be better off either staying out of the labor market or working fewer hours.

However, married women's contributions to family income could be underestimated, as they are traditionally regarded as the secondary earners in the family. This is especially

evident when assortative mating results in sophisticated family formation and when women are more educated. Among others, Bertrand, Kamenica and Pan (2015); Bursztyn, Fujiwara and Pallais (2017) document some evidence of an increase in wives' contributions to family income. In particular, it is possible that married women sometimes act as primary earners. If this is the case, then the EITC would provide positive work incentives for married women in specific instances. There are several possibilities. For example, when their partners are not working or are having difficulty obtaining work in the labor market, married women with children are considered the primary earner in their households, and the EITC encourages them to work.[20] Another possibility is that the EITC might boost laborforce participation if the primary earner's income is in the phase-in region and the effect of the greater returns to work dominates the income effect. In such cases, the EITC would encourage the labor supply of married women.

To shed light on this argument, we first explore racial differences in the roles played by married women in the joint labor supply decision-making process and their relative contributions to family income. To begin the analysis, we examine the racial inequality in relative income within families by examining the distribution of wives' labor income relative to that of their husbands in Panel (a) of Figure 4. The relative labor income of a wife is computed by dividing her earnings by those of her husband. Because all married couples are included, the relative income ratio can range from zero to one, with zero for stay-at-home wives and one for working wives who are sole earners.

[Insert Figure 4 Here]

Several findings emerge from Panel (a). First, compared to their white counterparts, married black women are less likely to stay out of the labor market or be the family's primary source of income. Second, there are more married black women than married white women clustered near the relative income ratios of 0.4 and 0.6. These findings show that in black households, husbands and wives are more likely to both be income

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[20]When the labor earnings of working wives or the earning potential of stay-at-home wives are higher than those of their husbands, the situation is similar.

earners, with the wife's contribution to the family's income being just as significant as the husband's.

Given that more married black mothers entered the labor market and increased their employment after the 1993 EITC expansion than married white mothers, do black stay-at-home wives have higher earnings potential if they choose to work? To answer this question, we simulate the labor earnings for stay-at-home wives. We begin by estimating separate wage regressions for black and white wives who are currently employed. Then, we extrapolate the predicted earnings for nonworking wives with similar attributes, such as age, number of children, education, state of residence, employment status of husbands, and family income. The distribution of the simulated potential relative income ratio is displayed in panel (b) of Figure 4. As expected, the potential contributions to family income would be higher for black nonworking wives if they were to decide to work than they would for their white counterparts.

If the earnings or earnings ability of married women are just as important as those of their husbands, classical labor theory could be biased when predicting the impact of the EITC on the labor supply decisions of these women, as they no longer play the role of secondary earner, at least among black couples. In fact, the proposition that married couples make their labor supply decisions at the same time has become the subject of considerable research in labor theory and empirical practice (Manser and Brown, 1980; Lundberg, 1988). In an attempt to model the interdependent labor supply decision for married couples, we offer a different approach and demonstrate the outcomes in the following simulation.

Consider a multiperiod labor supply decision for a married wife who is thought to have made her labor supply decision at the same time as that of her husband. Her decision is based on their predicted income and the occurrence of any income shocks, as well as their current nonlabor income and labor supply (the EITC is considered a positive income shock). We group the multiple periods into two periods—before and after the EITC expansion—and assume that information on the EITC schedule and the amount of credit each couple is eligible for at any income level is accessible. We also make the

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assumption that individuals predict the amount of excess income to be generated by the EITC expansion based on their existing labor supply. Another advantage of using this condition in the simulation is that it allows us to distinguish the pure EITC impact from the effect of policy-induced behavioral changes.

To estimate the effect of EITC expansion on an individual's predicted income, we first apply the same restriction used in the baseline sample to the 1990 CPS and replicate this sample (hereafter referred to as the "simulated" sample) 13 times to represent the period between 1990 and 2003.[21] The EITC credits for this simulated sample are then calculated across the study period to examine the influence of the EITC expansion on expected family income. Because EITC payments are not reported in the CPS, we use NBER's TAXSIM program to simulate them (Feenberg and Coutts, 1993). This program is used to calculate taxes and tax credits and renders results that are comparable to IRS records (Jones and Ziliak, 2019).[22] To construct tax units, in the first stage, the CPS's family relationship markers are employed. The tax unit's marital status, the ages of its members, the number of (child) dependents eligible for tax credits, income, taxable and nontaxable transactions, and other items are all inputs into TAXSIM. The program then calculates simulated federal, state, and payroll taxes, EITC tax credits, Child Tax Credits (CTC) and other tax credits, based on a 100% take-up rate among those predicted to be eligible.[23]

The EITC credits calculated with the TAXSIM program are then added to the pretax family income of all married couples. Because there were various changes to the tax code in the 1993 OBRA expansion, we do not add the EITC credits to the posttax income. Since labor supply in our simulated sample remains constant, income fluctuations are due solely to changes in the EITC. We estimate a regression similar to that specified in equation 1 but with more flexible state and year-fixed effects. As we are interested in the

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[21]Our findings remain the same when building the simulated sample from the 1983 CPS.

[22]We disregard those observations with imputed earnings and hours worked as well as whole supplement imputations.

[23]We allocate the tax liability to the applicable tax unit head to estimate the tax unit's after-tax income, and then we aggregate across tax unit heads to estimate the total household after-tax income because some households include numerous tax filing units. The premise that members of the same household share resources justifies focusing on the household rather than the tax unit. Please see (Feenberg and Coutts, 1993) for further information.

wife's labor supply decision, we estimate separate regressions for married women who are currently unemployed and those who are working. The estimates for the impact of the EITC expansion on predicted family income are reported in Table 5.

[Insert Table 5 Here]

The first two columns report the results for married black women, whereas the next two report the results for married white women. All the coefficients are positive and significant, implying that the EITC increases family income for all women, regardless of their race and working status. More interestingly, the magnitude differences between employed and unemployed women are different for black and white women. Specifically, for white women, the EITC increases family income more for individuals staying out of the job market than for those employed. This situation creates work disincentives for working white women. In contrast, the EITC increases family income by approximately $353.5 ($437.1) for married black mothers if they remain unemployed (employed). Hence, the EITC offers work incentives for married black stay-at-home mothers, as their family income increases more significantly.

Moreover, the expected income effect of the EITC is likely associated with the husband's employment status. Black wives, for example, are more likely to be the family's primary source of income than white wives. We further partition the sample in Table 6 based on the spouse's work status. The results for a nonworking spouse are displayed in the first four columns. Clearly, although the EITC expansion increases family income only for working wives, the impact on black families is slightly greater. The next four columns present the results when husbands work. The EITC creates a significant work disincentive for wives in white families since expected income is higher when the wife is unemployed. However, the EITC continues to have a positive impact on the labor supply of black women.

[Insert Table 6 Here]

In sum, our analyses in this subsection show that black and white married women play different roles in the family earning structure. As the EITC credit is granted on total family income, labor supply by married women generates different benefits for the family across races. This joint decision of labor supply explains the racial disparity in terms of the impacts of the 1993 EITC expansion on the employment of married women as documented in the data.

5.2 Alternative Explanations

We discuss two possible explanations for our documented racial disparity in terms of the impacts of the 1993 EITC expansion, namely, the role of family income and the take-up of EITC credits.

Distributions of Family Income   Some may argue that differences in the income distribution between black and white couples account for the racial disparities in married women's employment and hours worked. For example, because married black couples are more likely to be located in the phase-in range, married black wives have a strong incentive to work following the expansion of the EITC. White couples, on the other hand, are more likely to have a higher income, putting them in the phase-out region or on the plateau. We test this claim by drawing the income distribution for married couples with a family income of less than $50,000 (such households are more likely to claim and receive the EITC). Other restrictions used in our regression sample are also imposed.

The results are presented in Figure A3. We also plot the 2000 EITC schedule in the same figure. The average income for black couples is $5,440, which is lower than that for white couples. However, only a small share of black couples are located in the phase-in region. These patterns suggest that the differences in the income distributions between black and white couples may not drive our findings of the racial disparity in terms of EITC impacts.

EITC Credits across Income Levels   The federal tax code does not explicitly benefit one race over another. However, black couples may be more likely to file for the EITC, resulting in a greater take up rate, which might explain some of the racial disparities between married black and white women. In Figure A4, we calculate the amount of the EITC for families at various income levels. The credit is calculated using NBER's TAXSIM simulation tool, which takes into account current adjusted gross income, number of qualifying children, residency, and other factors. The income of families is divided into a series of $5,000 bins. The results for married couples are shown in the right panel of the figure. We find no significant differences in the EITC credit between black and white couples within the same income bin, implying that the differential take-up ratio may not be the driving force behind our findings.

6   Extensions

In this section, we extend our previous analysis on labor market performance to gain a further understanding of the racial impacts of the EITC. Specifically, we first draw on the knowledge from social norms to understand the roots of race-specific responses to the EITC. We then examine whether the EITC casts different racial impacts on the poverty rate, which is one of the main achievements of the program.

6.1   Social Norms and Racial Disparities

A large stream of the economic literature shows that culture—broadly defined as accounting for the beliefs, values, preferences, attitudes and social norms that can be transmitted from one generation to another or through social interactions—affects a wide range of economic behaviors, such as female labor supply (i.e., Guiso, Sapienza and Zingales, 2006; Fernández and Fogli, 2009; Alesina, Giuliano and Nunn, 2013; Galor and Özak, 2016; Field et al., 2021). Thus, whether and to what extent culture plays a role in the maternal employment decision when family faces exogenous income shocks is of interest.

There are regional variations in gender roles in the US, with the South having more traditional gender attitudes than those of areas elsewhere in the nation. Using data from eight gender-related questions on the General Social Survey (GSS), Rice and Coates (1995) find that responses to these questions suggest that Southerners tend to hold more conservative opinions on questions about women in politics and female employment than do their Northern counterparts. In the antebellum era, women in the South were expected to "recognize their subordinate place and to be obedient to the head of the family" (Scott, 1970). More than a century later, gender inequality persists despite women's empowerment (Blau and Kahn, 2017; Neumark, 2018; Kleven, Landais and Søgaard, 2019). Gender norms, which describe how people of a particular gender and age are expected to behave in a given social context, play a vital role in the above situation (Bowles and Gintis, 2002; Alesina, Giuliano and Nunn, 2013).

It is thus interesting to understand whether gender norms interact with the documented racial disparity in the effects of the EITC on women's employment. Specifically, to investigate the differences in gender roles in the South and in other parts of the U.S., we divide the sample into two groups: the South and other areas. The Deep South is defined in a variety of ways, although it mostly includes Black Belt states (Georgia, Alabama, South Carolina, Mississippi, and Louisiana) and numerous bordering states (Virginia, Tennessee, Arkansas, North Carolina, Florida and Texas). Table 7 summarizes the findings, and a few interesting results arise. White women's employment decisions are heavily influenced by their gender role. Specifically, after EITC expansion, the employment rate for white mothers in other areas significantly increased, whereas that of their Southern counterparts remained almost unchanged. This regional difference is driven mainly by single women; that is, the increase in the employment rate caused by EITC expansion in other regions was about 44% larger than that in the South. Married white women did not experience a significant employment effect of EITC expansion in both Southern and other regions, which is consistent with the baseline result.

[Insert Table 7 Here]

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Conversely, gender norms have a lesser impact on black women. The likelihood of getting jobs boosted by the EITC expansion was similar for black women both inside and outside the Deep South. The regional similarity in the employment increase after EITC expansion also holds for married black women, though single black women located in the South had a slightly larger increase than that of those in other regions. Our findings suggest that regardless of marital status or the presence of children at home, black women in the U.S. have always had the highest rates of labor market involvement and inelastic labor supply relative to white women (Goldin, 1977).[24] In addition to the societal expectation of black women's gainful employment, labor market discrimination against black men resulted in lower pay and less stable employment compared to those of white men, which contributed to differences in labor participation between black and white women. Due to black men's unstable employment status, married black women have had a long history of supporting two-parent households financially, even often serving as the primary breadwinner.[25]

6.2   EITC and Racial Disparities in Poverty

The EITC is one of the most effective programs for reducing poverty for families with children in the U.S. and for fostering economic mobility (Marr et al., 2015; Hoynes and Patel, 2018).[26] Numerous labor, financial, educational, and health benefits are offered by the EITC program to millions of low- and moderate-income working families and their children. Moving out of poverty is particularly important for young children, and recent

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[24]While white women often leave the laborforce after marriage, black women's greater involvement rates persist throughout their lifetimes, even after marriage. In their seminal work, Goldin (1977) show that compared to only 7.3% of married white women and 23.8% of single white women, only 35.4% of married black women and 73.3% of single black women were employed in 1880.

[25]Historically, low-paying domestic work and agriculture have been the primary occupations of black women (Amott and Matthaei, 1996). Even after the 20th century's mass migration to the North, the majority of employers would only employ black women for domestic service jobs. Black women have accounted for the majority of women employed in low-wage jobs that require cooking, cleaning, and caring for others, even though these jobs are generally linked with mothering, despite white women's devaluation of black women as mothers to their own children.

[26]Focusing on single households, Hoynes and Patel (2018) estimate that the EITC lifted 3.4 million individuals out of poverty in 2012, although this number is a conservative calculation since it does not account for any behavioral effects of the EITC. Their study also suggests that a $1000 policy-induced increase in the EITC leads to a 7.3-percentage-point increase in employment and a 9.4-percentage-point reduction in the share of families with after-tax and transfer income below 100% poverty.

research has indicated that tax credits have advantages for practically every stage of life. For instance, Bastian and Michelmore (2018) document that children in families receiving these tax credits do better in school, are likelier to attend college, and can be expected to earn more as adults compared to those in families not receiving these tax credits.

Despite the fact that the EITC provides so many benefits to its recipients, it is unclear whether there is any racial disparity in how the program reduces the poverty rate for different groups or whether the EITC can be used as an effective policy tool through which to close the racial income gap given that black households are overrepresented at the bottom of the income distribution. Understanding this issue is crucial because, despite the fact that the federal tax code does not explicitly favor one race over another, historical racism and ongoing racial prejudice and discrimination have influenced the factors that determine a household's tax liability through both public policies and private actions. Racial disparities can be widened or reduced by changes in tax policy and administration, as well as by the structure of the tax code and the design of specific tax laws, which can have considerably different effects on individuals of different races.

Inspired by Hoynes and Patel (2018)'s methodology, we examine the impact of the EITC at different points along the income distribution using multiples of the official poverty line. Following their approach, we also use poverty thresholds based on the official poverty line. Instead of using after-tax after-welfare income, we add the pretax income with the EITC credits calculated by the NBER TAXSIM program for the true CPS sample from 1990 to 2003. As noted earlier, during the 1990s, there were tremendous changes in welfare due to the 1996 welfare reform, which may also have changed family incomes.[27] To gauge the impact of the EITC on family income, we restrict the additional income sources to only EITC credits based on family eligibility. We perform the analysis for both single and married households, expanding the abovementioned study, which concentrates on a single-parent household.

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[27]In 1996, Congress replaced the New Deal-era AFDC program with a new program called Temporary Assistance for Needy Families (TANF) with a goal of "ending welfare as we know it." The 1996 legislation stated that the purposes of the program were to assist needy families, fight welfare dependency by promoting work and marriage, reduce extramarital births, and encourage the formation and maintenance of two-parent families.

Figure 5 contains various comparisons of families with children with those without children. We estimate equation 1, and the outcome variable is derived by dividing family income (including EITC credits) by the poverty line. We also evaluate various thresholds in family income bins of 50-percentile increments, ranging from extreme poverty (0% of the poverty line) to more than 500% of the poverty line. Each estimate (and 95% confidence interval) in the graph comes from a different regression. A series of specific income-to-poverty ratios are presented on the horizontal axis. The point estimate associated with the income-to-poverty ratio of 150%, for example, represents the probability of a family with qualifying children falling into this bin compared to that of a family without children. Additionally, we depict the 2000 EITC structure with its three critical points (phase-in first kink point, plateau second kink point, and phase-out exhausted point) and their positions relative to the poverty line.

[Insert Figure 5 Here]

The figure displays several important findings. First, the EITC significantly affects the family income within the EITC income range for both married and single-parent households, with significant gains occurring between the plateau kink and phase-out exhausted points. Second, the EITC has a negligible impact at 0 and 50% of the poverty line for both single and married households, implying that the EITC has no impact on families with extremely low income. Third, between 100 and 200% of the poverty line, the EITC has a sizable and significant impact. The EITC lowers the likelihood of single-parent families falling below the federal poverty line. However, it also raises the likelihood of a family entering a higher income-to-poverty ratio bin, implying that the EITC largely lifts single-parent families with children out of poverty. The effects of the EITC on married households are concentrated between 100 and 150% of the poverty line, which provides further evidence that the EITC has a significant impact on moving married families with children out of poverty (Niolon et al., 2017).

Finally, and perhaps most exciting, the EITC increases the likelihood of black families with children (especially black married households) living above the federal poverty line. As noted in Hardy, Hokayem and Ziliak (2022), the EITC lowers income inequality between

black and white households by approximately 5 to 10% each year. According to our research, this decrease is mostly due to black married households' increasing income, which otherwise would put them below the poverty threshold.

7 Conclusions

In 2021, the EITC provided benefits to 25 million workers and families, making it one of the most important antipoverty initiatives in the U.S. Our research looks at how the EITC affects black and white women in terms of labor supply at both the extensive and intensive margins, as well as its effects on family income. Our findings indicate that regardless of marital status, the EITC has a disproportionately larger impact on black mothers. On the other hand, the EITC increases labor supply only for white mothers who are single. Our findings shed new light on the impact of the EITC on married black mothers, as past research has concentrated on single mothers. Furthermore, we find that the EITC raises family income for black couples more than for white couples and helps move more black families out of poverty. The EITC can be seen as a valuable tool for reducing the economic disparities between black and white households.

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Tables and Figures

Table 1: Baseline Results - Impact of the EITC on Women's Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All		Unmarried				Married	
	Black	White	Black	White	Black	White	Black	White
Treat×Post	0.0939***	0.0312***	0.1239***	0.0938***	0.0699**	-0.0077	0.0705**	-0.0076
	(0.0175)	(0.0108)	(0.0215)	(0.0134)	(0.0274)	(0.0134)	(0.0271)	(0.0134)
Observations	19,851	79,144	14,043	31,586	5,808	47,558	5,808	47,558
R-squared	0.0676	0.0792	0.0835	0.0879	0.1275	0.1218	0.0556	0.0686
Control	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
State Unemp	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	NO	NO	NO	NO	YES	YES	NO	NO
Spouse Emp	NO	NO	NO	NO	YES	YES	YES	YES

Notes: The sample includes all unmarried (married) women aged 24–48 years (24–54 years) with some college education or below from the 1990 and 2003 CPS ASES. The sample is restricted to white and black women. The binary dependent variable employment indicates whether a respondent worked in the prior year, so data on employment in year t come from the ASEC survey in year $t+1$. For CPS weights, Equation (1) is used. All columns include indicators for woman's education and age, number of children under age 5 years in the household, plus state, year and region fixed effects. Unemployment rate includes state-year employment-to-population ratios. Household income and the employment status of the spouse are also controlled in the married sample. The coefficient of interest is the interaction between post-EITC expansion and whether the woman has EITC-eligible children. Columns (1) and (2) report the estimates for black and white women, respectively. The estimates of Columns (3) and (4) are for single black and white females, respectively, while the estimates of last four columns are for married females. Standard errors are clustered by state. *** p<0.01, ** p<0.05, and * p<0.1.

Table 2: Impact of Maximum Federal EITC Credits on Women's Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All		Unmarried				Married	
	Black	White	Black	White	Black	White	Black	White
Max Credits($1000)	0.0071***	0.0005	0.0061***	0.0041**	0.0124***	0.0013	0.0121***	0.0015
	(0.0019)	(0.0013)	(0.0023)	(0.0020)	(0.0038)	(0.0013)	(0.0038)	(0.0013)
Observations	24,661	138,870	15,259	38,042	9,402	100,828	9,402	100,828
R-squared	0.0650	0.0786	0.0948	0.0951	0.1245	0.0978	0.0514	0.0756
Control	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
State Unemp	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	NO	NO	NO	NO	YES	YES	NO	NO
Spouse Emp	NO	NO	NO	NO	YES	YES	YES	YES

Notes: The sample includes all unmarried (married) women aged 24–48 years (24–54 years) with some college education or below from the 1990 and 2003 CPS ASES. The sample is restricted to white and black women. Employment is a binary variable indicating whether a respondent worked in the prior year. This table displays estimates of the employment effects of the 1993 EITC expansion using the maximum EITC value allowed, defined by the number of children, state, and year and measured in thousands of dollars, inflation-adjusted using the Personal Consumption Expenditures Price Index (PCEPI). The coefficients report the marginal effect of an additional thousand dollars of maximum EITC benefits on the probability of annual employment. The results are estimated with the regression function of Equation 2. Standard errors are clustered by state. *** p<0.01, ** p<0.05, and * p<0.1.

Table 3: Baseline Results - Impact of the EITC on Women's Number of Hours Worked

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All		Single				Married	
	Black	White	Black	White	Black	White	Black	White
Treat×Post	0.0113	0.4845	0.7638	0.7188	2.2785**	0.0529	2.2775**	0.0653
	(0.7993)	(0.4003)	(1.0784)	(0.6891)	(1.0796)	(0.4799)	(1.0816)	(0.4797)
Observations	15,829	95,016	9,616	28,812	6,126	66,197	6,126	66,197
R-squared	0.0515	0.0230	0.0716	0.0384	0.0781	0.0255	0.0779	0.0254
Control	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
State Unemp	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	NO	NO	NO	NO	YES	YES	NO	NO
Spouse Emp	NO	NO	NO	NO	YES	YES	YES	YES

Notes: The sample includes all unmarried (married) women aged 24–48 years (24–54 years) with some college education or below from the 1990 and 2003 CPS ASES. The sample is restricted to white and black women. The binary dependent variable employment indicates whether a respondent worked in the prior year. The results illustrate the impact of the EITC on the number of hours worked based on working women who report positive working hours. Standard errors are clustered by state. *** $p<0.01$, ** $p<0.05$, and * $p<0.1$.

Table 4: Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Unmarried		Married		Unmarried		Married	
	Black	White	Black	White	Black	White	Black	White
Treat×Post	0.1036***	0.0782***	0.0727***	-0.0019	0.0119	0.1127***	0.0951*	0.0149
	(0.0254)	(0.0165)	(0.0266)	(0.0136)	(0.0340)	(0.0325)	(0.0539)	(0.0370)
Observations	11,487	25,964	4,949	41,855	3,567	7,005	1,529	10,776
R-squared	0.1293	0.1184	0.1985	0.1352	0.1083	0.1259	0.1962	0.1347
Control	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
State Unemp	YES	YES	YES	YES	YES	YES	YES	YES
State Emp Ratio × Kids	YES	YES	YES	YES	YES	YES	YES	YES
Welfare Waiver	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	NO	NO	YES	YES	NO	NO	YES	YES
Spouse Emp	NO	NO	YES	YES	NO	NO	YES	YES

Notes: Each regression includes CPS ASEC data on unmarried women ages 20–48 years and married women ages 24–54 years with some college education or below. The sample is restricted to white and black women between 1990 and 2003. All columns include indicators for women's education and age, number of children under age 5 years in the household, and state and year fixed effects. Unemployment rate includes state-year employment-to-population ratios and interactions with children. The last four columns show the estimates of EITC reform for welfare nonwaiver states, which include Alabama, Alaska, Colorado, Washington DC, Kansas, Louisiana, Minnesota, Nevada, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, Rhode Island, and Wyoming. Standard errors are clustered by state. *** $p<0.01$, ** $p<0.05$, and * $p<0.1$.

Table 5: Simulated EITC Effect on Family Income for Married Couples

	(1)	(2)	(3)	(4)
	Black		White	
VARIABLES	Unemployed	Employed	Unemployed	Employed
Treat×Post	353.5042***	437.0609***	391.1914***	336.9112***
	(91.3451)	(53.3965)	(22.0786)	(21.0235)
Observations	5,488	9,492	59,584	109,620
R-squared	0.1843	0.2147	0.0775	0.1482
Control	YES	YES	YES	YES
Group FE	YES	YES	YES	YES
State*Year FE	YES	YES	YES	YES
Region FE	YES	YES	YES	YES

Notes: This table shows the estimates of the EITC expansion on an individual's predicted income based on a simulated sample of married couples. The data of simulated sample are from the CPS 1990. The sample selection criteria are the same as those in the main sample in Table 1-3, such as age, education, and income restriction on black and white women. This simulated sample is then replicated 13 times to recover the period between 1990 and 2003. EITC credits are computed with the TAXSIM program for this simulated sample over time. The outcome is constructed by the pretax after EITC benefits family income (predicted income). Odd columns show the impact of EITC expansion on the predicted income if a wife stays unemployed, and even columns show the impact on predicted income if a wife is employed. Standard errors are clustered by state. *** $p<0.01$, ** $p<0.05$, and * $p<0.1$.

## Table 6: Simulated EITC Effect on Family Income based on Spouse's Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Spouse is not Working				Spouse is Working			
	Black		White		Black		White	
VARIABLES	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed
Treat×Post	0.0000	479.4041***	0.0000	325.9827***	414.2174***	441.7449**	615.8053***	345.1699***
	(0.0000)	(71.0700)	(0.0000)	(24.8590)	(67.6423)	(169.1117)	(37.1938)	(23.7217)
Observations	2,534	3,850	26,726	44,450	2,744	5,516	32,858	65,170
R-squared	0.9585	0.8644	0.9771	0.8537	0.3225	0.3031	0.1397	0.1755
Control	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES
State*Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	YES	YES	YES	YES	YES	YES	YES	YES

Notes: The outcome is constructed by the pretax after the EITC credits family income (predicted income). EITC credits are computed with the TAXSIM program for this simulated sample over time. Odd columns show the impact of EITC expansion on the predicted income if a wife stays unemployed, and even columns show the impact on predicted income if a wife is employed. The first four columns show the impact of EITC expansion on predicted income for a wife when her husband is not working. The last four columns are the predicted income for a wife with a working spouse. Standard errors are clustered by state. *** $p<0.01$, ** $p<0.05$, and * $p<0.1$.

Table 7: Heterogeneous Effect - South vs. Other Areas

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All				Unmarried				Married			
	South		Non South		South		Non South		South		Non South	
	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White
Treat×Post	0.0823**	-0.0005	0.0901***	0.0269**	0.1275***	0.0650***	0.1079***	0.0937***	0.0649*	-0.0162	0.0614*	0.0072
	(0.0263)	(0.0099)	(0.0184)	(0.0100)	(0.0402)	(0.0135)	(0.0197)	(0.0168)	(0.0344)	(0.0158)	(0.0321)	(0.0111)
Observations	9,824	31,619	14,807	107,251	5,776	7,702	9,441	30,340	4,048	23,917	5,290	76,911
R-squared	0.0670	0.0570	0.0986	0.0830	0.0930	0.0610	0.1338	0.1105	0.1467	0.0905	0.2122	0.1162
Control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
State Unemp	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
Spouse Emp	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES

Notes: Each regression includes CPS ASEC data on unmarried women ages 20–48 years and married women ages 24–54 years with some college education or below. The sample is restricted to white and black women between 1990 and 2003. All columns include indicators for women's education and age, number of children under age 5 years in the household, and state and year fixed effects. Unemployment rate includes state-year employment-to-population ratios. Southern states include Georgia, Alabama, South Carolina, Mississippi, Louisiana, Virginia, Tennessee, Arkansas, North Carolina, Florida and Texas. Standard errors are clustered by states. *** p<0.01, ** p<0.05, and * p<0.1.
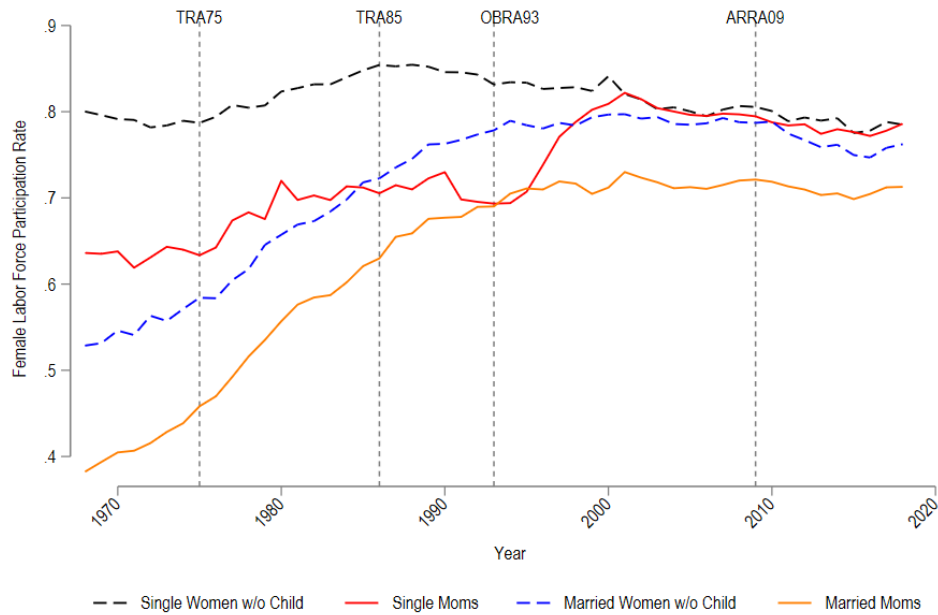
(a) By Marital Status and Motherhood
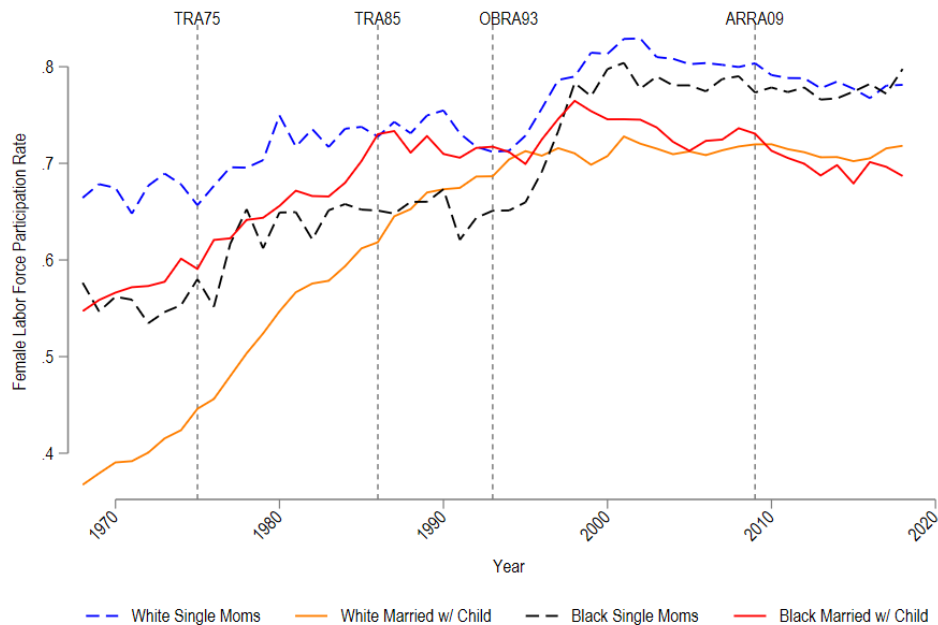
(b) By Race and Motherhood

Figure 1: Laborforce Participation by Prime-Age Women

Note: This figure shows the laborforce participation rate for women between 18 and 65 years old between 1968 and 2018. Panel A depicts different time-series trends by marital status and motherhood. Panel B shows the laborforce participation rate for black and white mothers only, separated by marital status. Source: CPS.
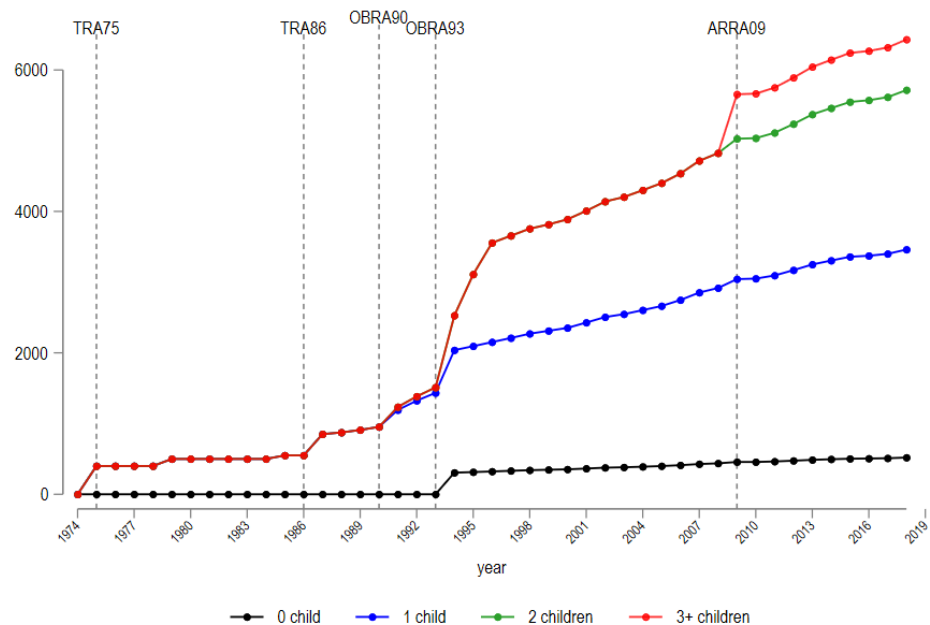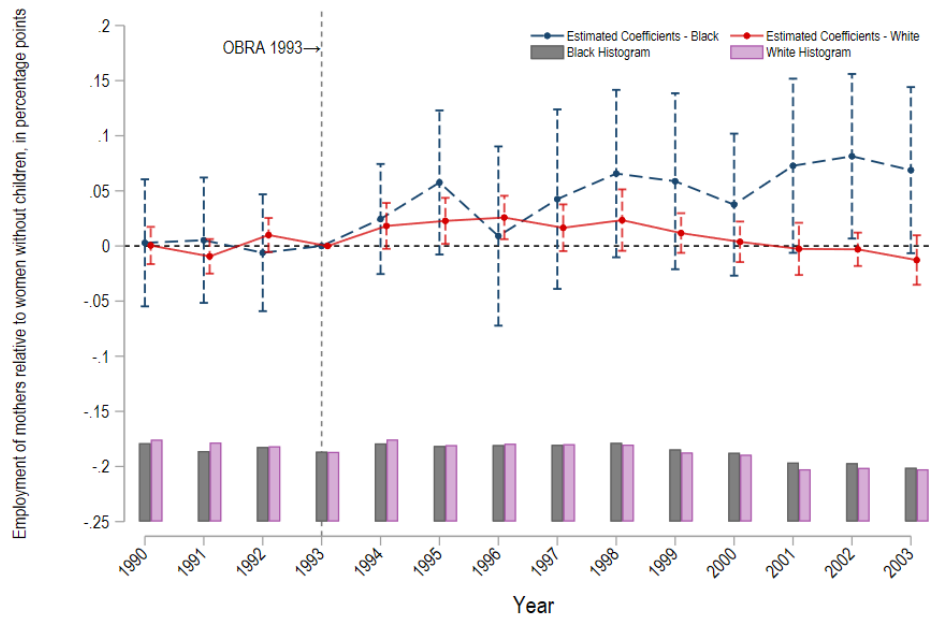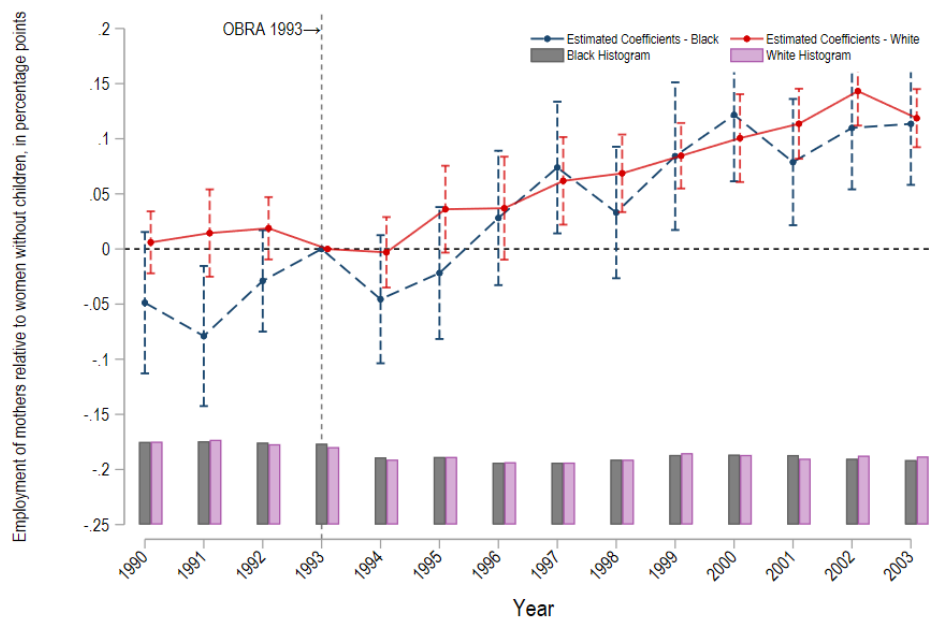
Figure 2: Federal EITC Maximum Credits
Note: This figure shows the maximum annual credit for families with 0, 1, 2, and 3+ EITC-eligible children between 1974 and 2018, in 2018 USD. Source: Tax Policy Center.

(a) Married Women

(b) Single Women

Figure 3: Event Study Estimates of the 1993 OBRA Expansion on Maternal Employment

Note: The estimates are jointly non-significant for all years before 1993. The sample includes single women ages 24–48 years and married women ages 24–54 years with some college education or below from the 1990–2003 CPS (March). Standard errors are clustered at the state level. The distribution of the black and white sample over different years is shown by gray and pink bars, respectively.
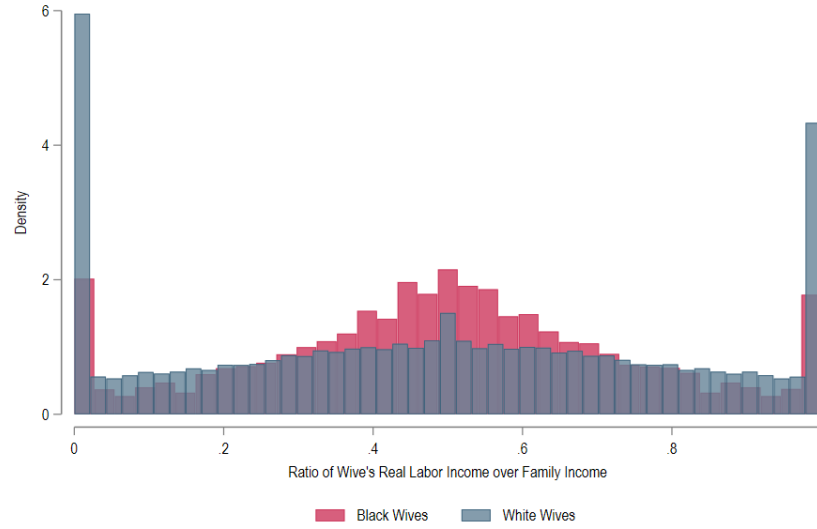
(a) Distribution of a Working Wives' Real Income
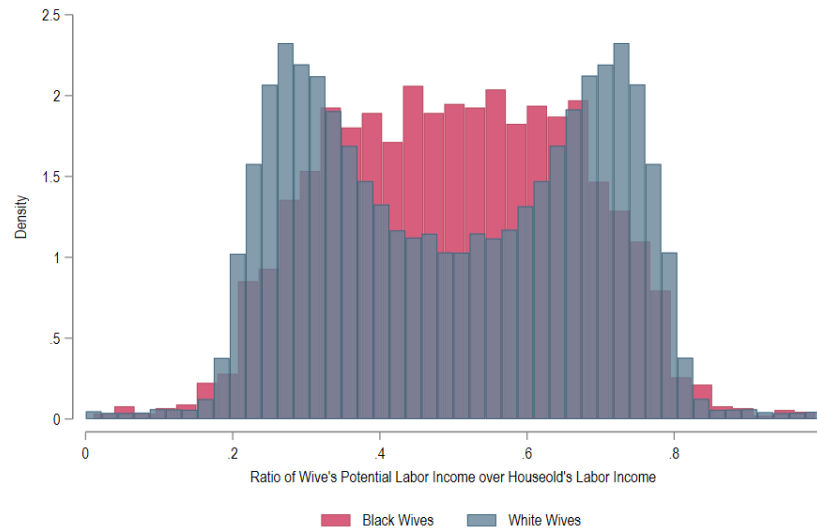
(b) Distribution of Potential Income for Nonworking Wives

Figure 4: Wives' Relative (Potential) Income

Note: The data are from the 1990 and 2003 CPS ASES. The sample includes members of married couples between 22 and 54 years of age. Panel A displays the ratio of husbands' income to that of wives, with zero being assigned to the relative income of a stay-at-home wife and one being assigned to that of a working wife who is the single earner. Panel B displays the income ratios resulting from a simulation of potential earnings for stay-at-home wives. To simulate these labor earnings, we first estimate separate wage regressions for black and white wives who are currently employed. We then extrapolate the predicted earnings for nonworking wives with similar attributes, such as age, number of children, education, state of residence, employment status of husbands, and family income.
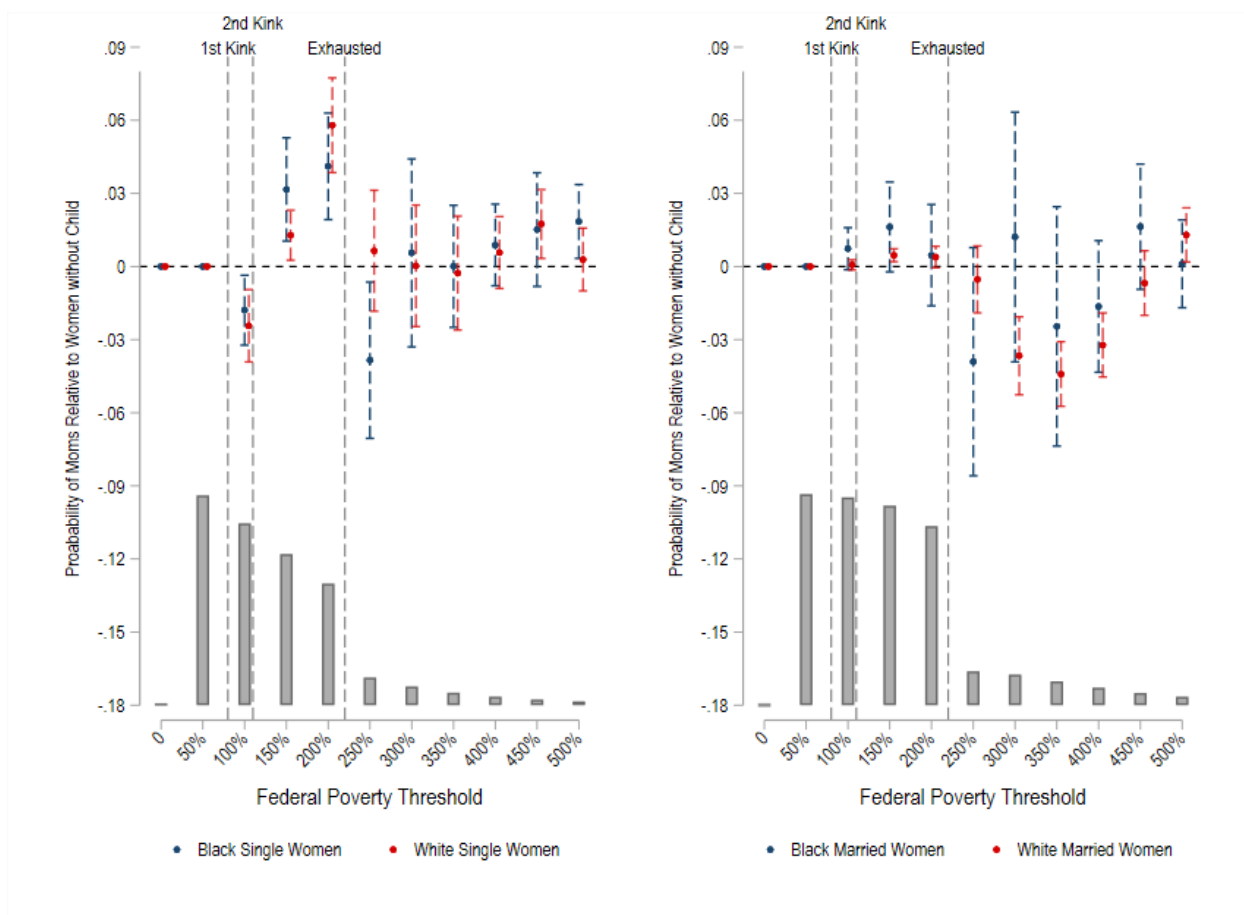
Figure 5: Effects of the EITC and Racial Disparity on Poverty

Note: The data on historical poverty thresholds or poverty lines, which are defined based on family size, number of children, and residence, are from the U.S. Census Bureau. The household income values used to define the threshold bins are calculated by subtracting taxes from gross household income and adding welfare payments. The 95% confidence intervals are clustered by state. The gray bar represents the distribution across different poverty threshold bins.

Appendix Tables and Figures

Table A1: Historical Federal EITC Parameters

Year	Family Size	Phase-in Rate (%)	First Kink	Max Credit	Second Kink	Phase-out Rate (%)	Exhaustion Point
1990	all	14	6,810	953	10,730	10.00	20,264
1991	1 child	16.7	7,140	1,192	11,250	11.93	21,250
	2+ children	17.3	7,140	1,235	11,250	12.36	21,250
1992	1 child	17.6	7,520	1,324	11,840	12.57	22,370
	2+ children	18.4	7,520	1,384	11,840	13.14	22,370
1993	1 child	18.5	7,750	1,434	12,200	13.21	23,050
	2+ children	19.5	7,750	1,511	12,200	13.93	23,050
1994	0 children	7.65	4,000	306	5,000	7.65	9,000
	1 child	26.3	7,750	2,038	11,000	15.98	23,755
	2+ children	30	8,425	2,528	11,000	17.68	25,296
1995	0 children	7.65	4,100	314	5,130	7.65	9,230
	1 child	34	6,160	2,094	11,290	15.98	24,396
	2+ children	36	8,640	3,110	11,290	20.22	26,673
1996	0 children	7.65	4,220	323	5,280	7.65	9,500
	1 child	34	6,330	2,152	11,610	15.98	25,078
	2+ children	40	8,890	3,556	11,610	21.06	28,495
1997	0 children	7.65	4,340	332	5,430	7.65	9,770
	1 child	34	6,500	2,210	11,930	15.98	25,750
	2+ children	40	9,140	3,656	11,930	21.06	29,290
1998	0 children	7.65	4,460	341	5,570	7.65	10,030
	1 child	34	6,680	2,271	12,260	15.98	26,473
	2+ children	40	9,390	3,756	12,260	21.06	30,095
1999	0 children	7.65	4,530	347	5,670	7.65	10,200
	1 child	34	6,800	2,312	12,460	15.98	26,928
	2+ children	40	9,540	3,816	12,460	21.06	30,580
2000	0 children	7.65	4,610	353	5,770	7.65	10,380
	1 child	34	6,920	2,353	12,690	15.98	27,413
	2+ children	40	9,720	3,888	12,690	21.06	31,152

Notes: This table shows the federal EITC parameters by family size between 1990 and 2000. The phase-in rate corresponds to the increase in the tax credit for each additional dollar of income. The first kink point is the minimum income needed to receive the maximum credit. The maximum credit is largest possible EITC amount a family can receive. The second kink point is the maximum income allowed before the credit begins to phase out. The phase-out rate is the reduction in the tax credit for each additional dollar of income above the second kink point. The exhaustion point is the income level at which the EITC is completely phased out.

Table A2: Approval Year of Statewide Welfare Waiver

State	Year First Approved	State	Year First Approved
Arizona	1995	Montana	1995
Arkansas	1994	Nebraska	1995
California	1992	New Hampshire	1996
Connecticut	1994	New Jersey	1992
Delaware	1995	North Carolina	1996
Florida	1994	North Dakota	1996
Georgia	1993	Ohio	1996
Hawaii	1994	Oregon	1992
Idaho	1996	South Carolina	1996
Indiana	1993	South Dakota	1994
Illinois	1994	Tennessee	1996
Iowa	1993	Texas	1996
Maine	1996	Utah	1992
Maryland	1995	Vermont	1993
Massachusetts	1995	Virginia	1995
Michigan	1992	Washington	1995
Mississippi	1995	West Virginia	1995
Missouri	1995	Wisconsin	1994

Notes: Data on welfare waivers from Kleven, Landais and Søgaard (2019) table A.III. The year reported is the year in which the first welfare waiver was approved. Data are originally sourced from the Department of Health and Human Services, Assistant Secretary for Planning and Evaluation (1997).

Table A3: Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Unmarried Women		Unmarried Mothers		Married Women		Married Mothers	
	Black	White	Black	White	Black	White	Black	White
Age	38.687	37.157	32.908	34.011	43.509	43.772	34.369	33.840
	(7.136)	(7.882)	(6.303)	(6.4778)	(7.953)	(8.580)	(7.065)	(6.834)
Number of Children	0	0	2.164	1.867	0	0	2.341	2.138
	.	.	(1.209)	(0.974)	.	.	(1.278)	(1.064)
Number of Children Under 5	0	0	0.526	0.420	0	0	0.569	0.600
	.	.	(0.752)	(0.658)	.	.	(0.772)	(0.755)
Probability of Employed	0.665	0.796	0.581	0.670	0.554	0.569	0.563	0.527
	(0.472)	(0.403)	(0.493)	(0.470)	(0.497)	(0.495)	(0.496)	(0.499)
Hours Worked Last Week	38.369	39.340	36.809	36.673	36.442	35.413	35.694	33.212
	(10.706)	(11.755)	(10.896)	(11.459)	(10.877)	(12.642)	(10.045)	(12.748)
Wage Income	11,097.190	13,682.400	8,535.368	9,812.189	6,532.675	5,943.756	6,341.830	4,717.202
	(10,539.780)	(10,707.910)	(9,616.335)	(9,724.841)	(7,703.371)	(7,351.538)	(7,277.910)	(6,381.471)
Household Income	17,124.740	20,018.730	13,392.500	16,769.200	22,994.010	25,089.500	22,093.680	24,666.490
	(10,699.600)	(10,473.610)	(9,630.017)	(10,306.980)	(10,555.440)	(10,084.410)	(10,316.270)	(9,831.507)
Observations	5,035	13,924	9,008	17,662	2,437	16,538	3,371	31,020

Notes: This table includes authors' tabulations from the CPS ASES for the period 1990–2003. The sample includes both unmarried and married women with no more than a college degree. See the text for further sample selection criteria. Columns (1), (2), (5) and (6) report the summary statistics for women without children, whereas the other columns report those for mothers. Wages are defined for workers only, and all dollar amounts are reported in 2010 dollars. Annual working hours include those reporting zero hours worked. Standard errors are in parentheses.

Table A4: Impact of the Maximum Federal+State EITC Credit on Women's Employment

|	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All		Unmarried			Married		
	Black	White	Black	White	Black	White	Black	White
Max Credits($1000)	0.0066***	0.0006	0.0056**	0.0042**	0.0121***	0.0003	0.0118***	0.0006
	(0.0019)	(0.0013)	(0.0023)	(0.0020)	(0.0038)	(0.0013)	(0.0038)	(0.0013)
Observations	24,661	138,870	15,259	38,042	9,402	100,828	9,402	100,828
R-squared	0.0650	0.0786	0.0948	0.0951	0.1245	0.0978	0.0514	0.0756
Control	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
State Unemp	YES	YES	YES	YES	YES	YES	YES	YES
State UR × has Children	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	NO	NO	NO	NO	YES	YES	NO	NO
Spouse Emp	NO	NO	NO	NO	YES	YES	YES	YES

Notes: The sample includes all single (married) women aged 24–48 years (24–54 years) with some college education or below from the 1990 and 2003 CPS ASES. The sample is restricted to white and black women. Employment is a binary variable indicating whether a respondent worked in the prior year. For the CPS weights, Equation (1) is used. All columns include indicators for women's education and age, number of children under age 5 years in the household, and state and year fixed effects. Unemployment rate includes state-year employment-to-population ratios. This table displays the estimates of the employment effects of the 1993 EITC expansion using the maximum EITC value allowed defined by number of children, state, and year and measured in thousands of dollars, inflation-adjusted using PCEPI. The coefficients report the marginal effect of an additional thousand dollars of maximum EITC benefits on the probability of annual employment. Standard errors are clustered by state. *** $p<0.01$, ** $p<0.05$, and * $p<0.1$.

Table A5: Robustness Checks - Impact of the EITC on Women's Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All		Unmarried				Married	
	Black	White	Black	White	Black	White	Black	White
Treat×Post	0.0839***	0.0195**	0.1123***	0.0945***	0.0629***	-0.0004	0.0622***	0.0002
	(0.0154)	(0.0083)	(0.0203)	(0.0129)	(0.0221)	(0.0093)	(0.0231)	(0.0094)
Observations	24,471	138,616	15,056	37,788	9,338	100,828	9,338	100,828
R-squared	0.0880	0.0752	0.1239	0.1021	0.1756	0.0987	0.1804	0.1073
Control	YES	YES	YES	YES	YES	YES	YES	YES
Group FE	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
State Unemp	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
HH Income	NO	NO	NO	NO	YES	YES	NO	NO
Spouse Emp	NO	NO	NO	NO	YES	YES	YES	YES

Notes: The sample includes all unmarried (married) women aged 24–48 years (24–54 years) from the 1990 and 2003 CPS ASES. Education is set below the 70th percentile of the distribution each year. The sample is restricted to white and black women. The binary dependent variable employment indicates whether a respondent worked in the prior year, so data on employment in year t come from the ASEC survey in year $t + 1$. For the CPS weights, Equation (1) is used. All columns include indicators for women's education and age, number of children under age 5 years in the household, and state, year and region fixed effects. Unemployment rate includes state-year employment-to-population ratios. Household income and the employment status of the spouse are also controlled in the married sample. The coefficient of interest is the interaction of post-EITC expansion and whether the woman has EITC-eligible children. Columns (1) and (2) report the estimates for black and white women, respectively. The estimates of Columns (3) and (4) are for single black and white females, respectively, while those of last four columns are for married females. Standard errors are clustered by state. *** p<0.01, ** p<0.05, and * p<0.1.
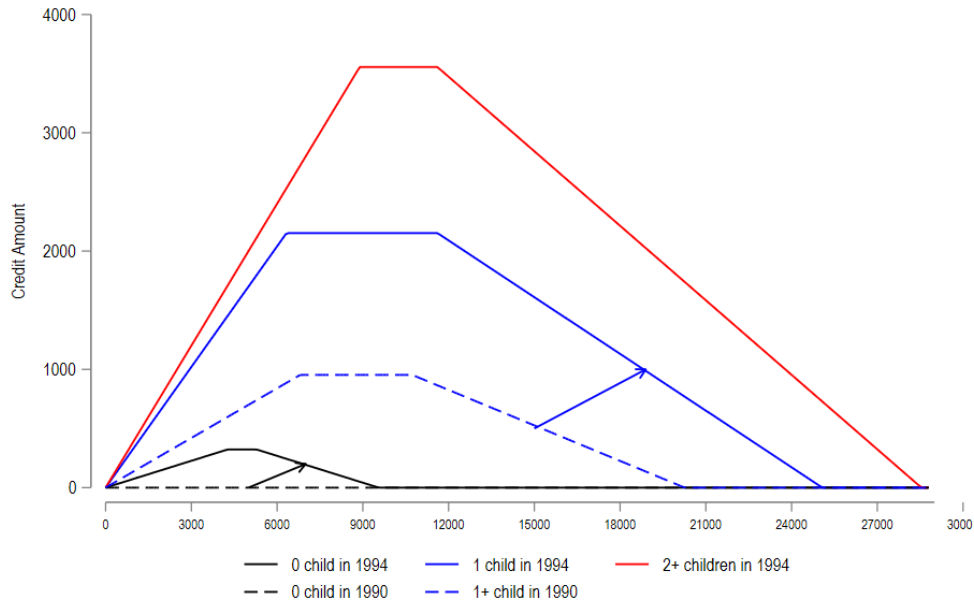
(a) Between 1990 and 1994
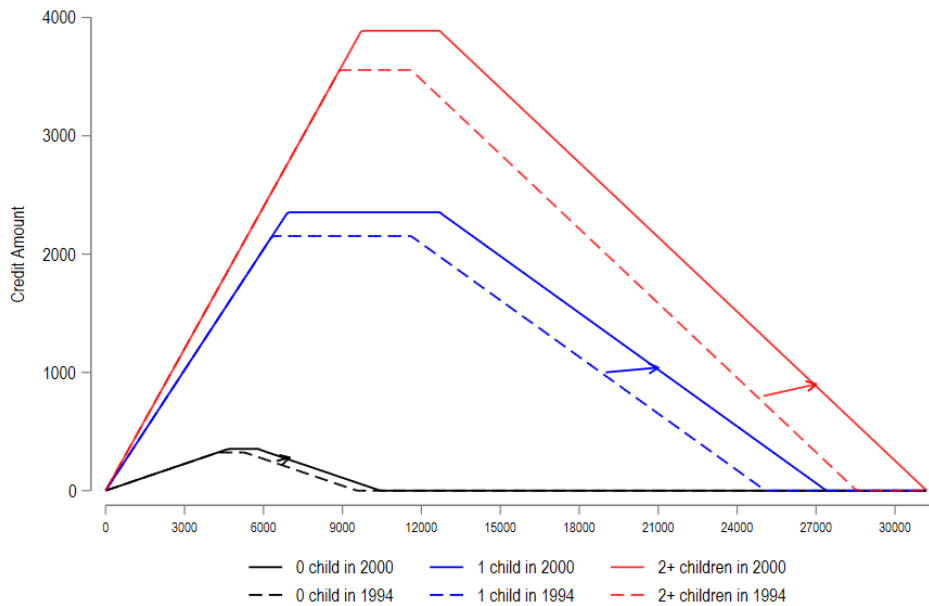
(b) Between 1994 and 2000

Figure A1: EITC Schedule Between 1990 and 2000

Note: This figure shows the federal EITC parameters for different family sizes. Panel A shows the changes in the EITC schedule between 1990 and 1994 as a function of total family earnings for families with 0, 1, 2, and 3+ EITC-eligible children. Panel B shows the changes in the EITC schedule between 1994 and 2000.
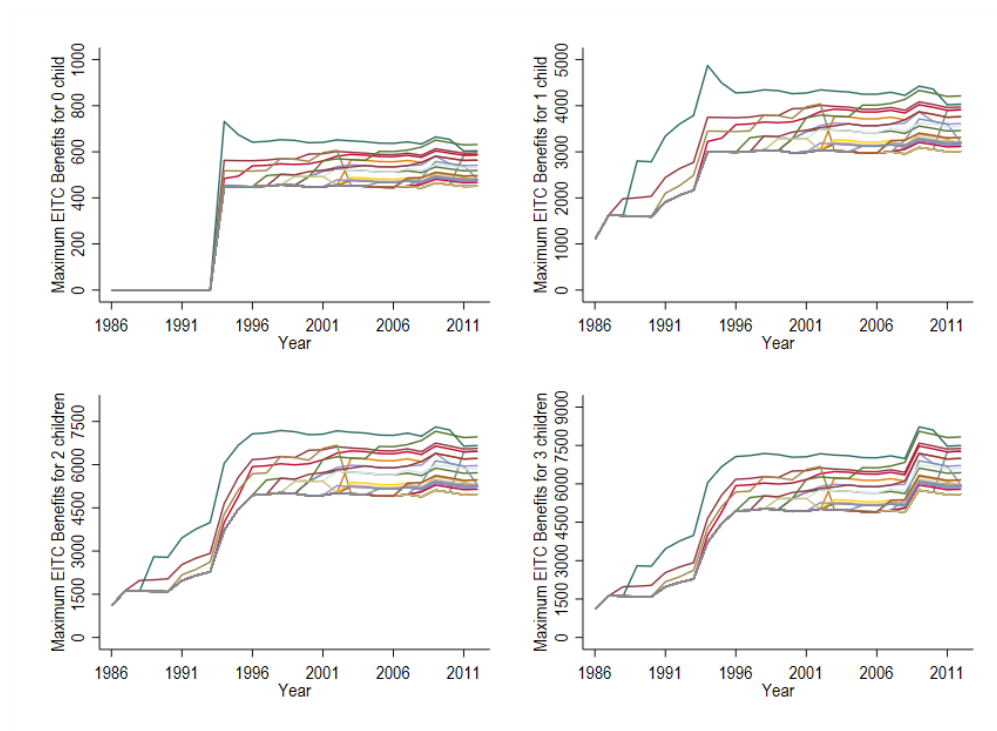
Figure A2: Variation in Maximum State EITC Credits

Note: This figure shows federal and state EITC exposure by year and state. EITC exposure is defined as the maximum potential federal and state EITC that an individual could receive in a given year and state for a zero, one, two, and three plus household. The lowest line denotes the federal EITC for states with no state EITC; the other lines are for individual states. Source: Authors' calculations based on Tax Policy Center EITC parameters.
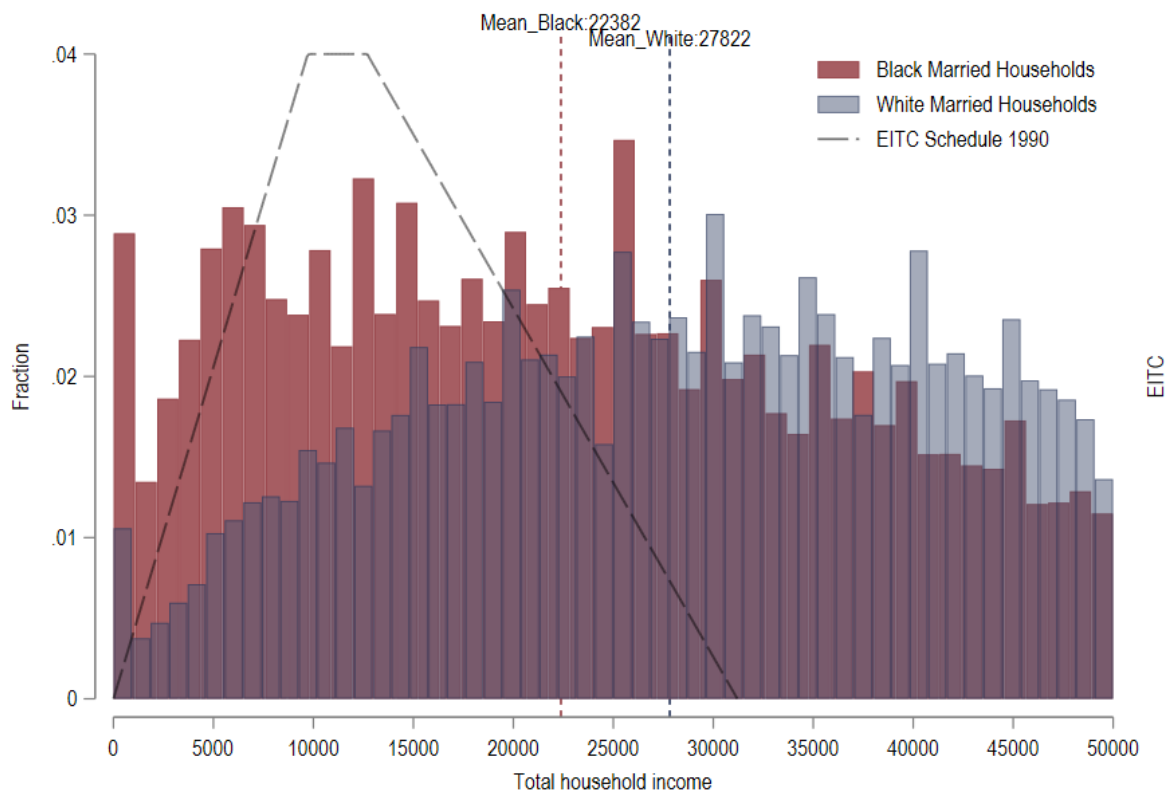
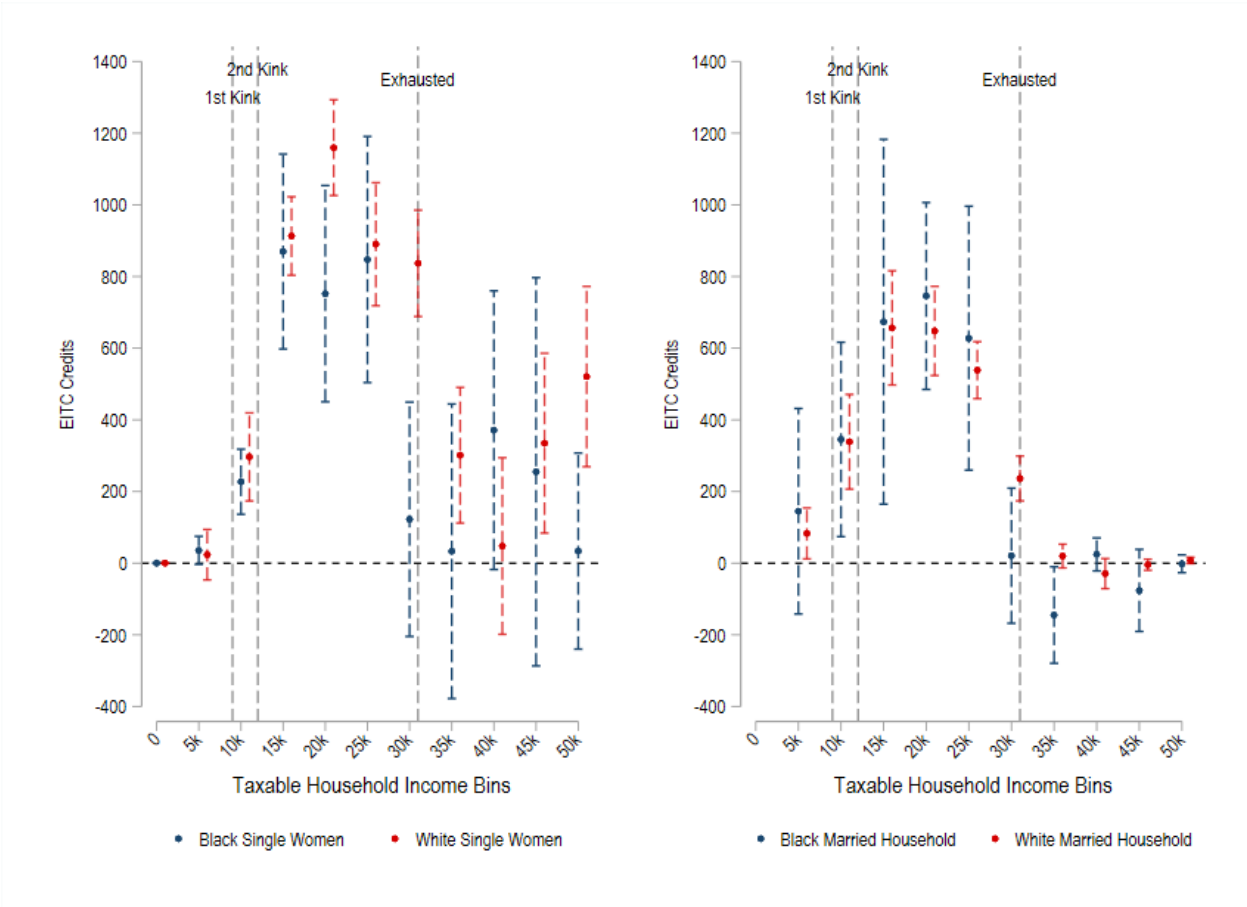Figure A3: Distribution of Household Income between 1990 and 2003

Figure A4: EITC Credit Received by Households with Different Income Levels