The Labor Market Effects of State and Local Expansions of the Earned Income Tax Credit

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This study analyzes the labor market impact of state and local supplements to the federal Earned Income Tax Credit (EITC) program. Using Current Population Survey data from 1984 to 2020, I examine the differential impact of the state and local government supplements of the EITC on the labor force participation rates of married women. I examine whether the substantial expansions in the EITC program created by these supplements are an effective means of providing work incentives. In particular, do states and local counties with an EITC supplement witness higher female labor force participation rates? Exploiting variation in the policy over time both across states and within states between different demographic groups, I analyze whether the EITC supplements have raised labor supply among single women, and whether such differences exist in the labor supply of married women.

Keywords: State and Local EITC, female labor force participation rates, labor market outcomes

INTRODUCTION

Earned Income Tax Credit (EITC) is one of the major federal programs aiding the working poor. It encourages low-income workers with children to enter and remain in the labor market by supplementing the earnings of those working for low wages, hence "making work pay". It is a subsidy on labor earnings which raises the income of recipients without providing a disincentive to work. The EITC operates as a tax credit that serves to offset the payroll taxes and supplement the wages of low-income workers. The EITC's popularity relative to means-tested cash transfers like the Aid to Families with Dependent Children (AFDC) and Temporary Assistance for Needy Families (TANF) programs is due, at least in part, to the perception that the EITC rewards work. Unique among income-transfer programs for the poor, the EITC conditioned its benefits on earnings. Benefits actually increased with family earnings through a portion of the income distribution, before eventually phasing out at higher incomes. This was just the opposite of the traditional welfare programs like AFDC and Food Stamps, which provided maximum benefits to families without earnings and then reduced benefits at a very high rate as family earnings increased. As a result, EITC was viewed not as a replacement for traditional welfare, but as a supplement and as a potential source of cash assistance for the working poor, a group often overlooked by most poverty programs. The growing popularity of the federal EITC has led several states and some local governments to implement their own programs in recent years. The individuals who qualify for the federal EITC are entitled to receive the state supplement, which is typically a fixed percentage of the federal credit. The labor market effects of the federal EITC are well known; Eissa and Leibman (1996) found a positive, significant effect and Meyer and Rosenbaum found that as much as 40 percent of the increase in labor force participation of single women

with children between 1980 and 2000 can be attributed to the EITC expansions. The literature has also studied some of the state programs, most of which have focused on one of the state supplements to the federal EITC (Hoffman, 2007; Cancian and Levinson, 2006), with somewhat contradictory results.

In this paper, we analyze the labor market impacts of the implementation of all the state and local governments EITC supplement[1] using Current Population Survey data from 1984 to 2020. This is important for three reasons: it serves as a further test for the theory of labor force participation and labor supply, and contributes to answering the question of whether EITC payments by state governments affect participation in the same way as the federal EITC does. Given that at least one study found no significant effects of state EITCs (Cancian and Levinson, 2006), this question seems to be unresolved at this point. Moreover, since Cancian and Levinson looked at only one particular state EITC supplement (Wisconsin), it is worth checking the effect on labor force participation of all the states together, thus creating additional variation. A second reason is to help access the effectiveness of these state programs, that is, whether the EITC programs are indeed an effective means of boosting labor force participation in a state, or are they expensive programs that do not achieve these goals. To the extent that state governments can allocate the funds to alternative means (like child care centers) that may also achieve the same desired impact, an estimate of the labor market effects of state EITC programs will help inform that choice. Hence, the magnitudes of these effects are key determinants of the gains or losses from the changes in income redistribution. Finally, while the federal and some of the state EITC programs were implemented and subsequently expanded at a time of strong female labor force participation growth, many of these state programs implemented in the last decade coincide with a period of generally high female participation rates. If these EITC programs are found to have failed to affect female participation, this would suggest that future increases in the federal EITC may well fail to lead any more women to the labor force either. No other study has analyzed the labor market impact of all of the state EITC programs that have been implemented till date. Our focus here will be on married women because they are the demographic group of workers whose behavior is most susceptible to policy changes.

The remainder of the paper is organized as follows. Section 2 explains the eligibility criteria and the general structure of the EITC and outlines its theoretical impact on participation and hours worked. Section 3 discusses the pervious literature. Section 4 describes the data and the empirical results. Section 5 concludes.

STRUCTURE OF FEDERAL AND STATE EITC

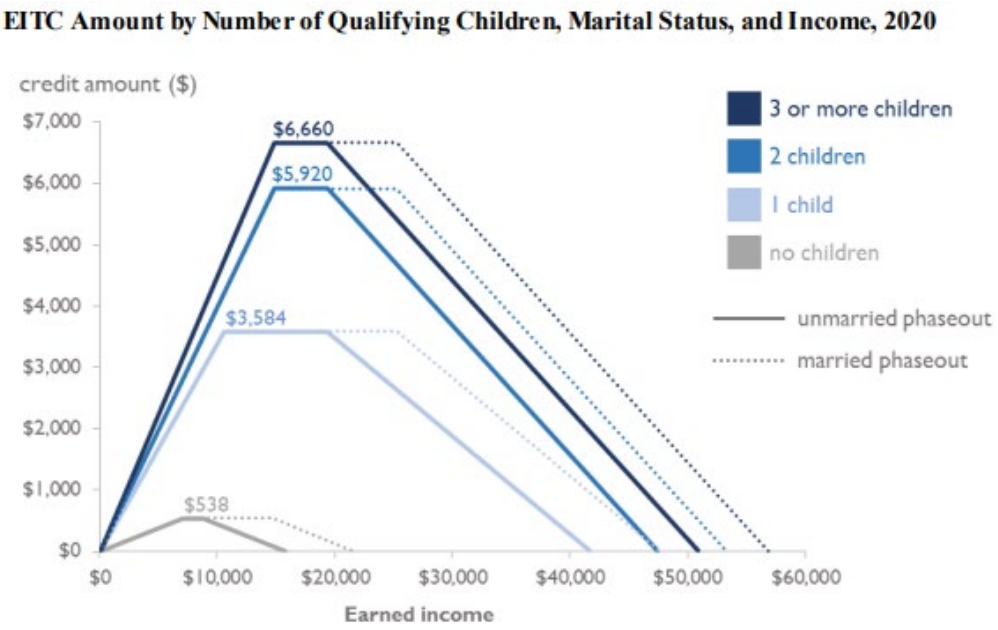
The EITC was established in 1975 for low-income working families with children. It is the largest cash transfer program for lower income families at the federal level. An unusual feature of the credit is its explicit goal to use the tax system to encourage and support those who choose to work. It is a tax credit for working families and individuals who earn less than a specified yearly wage. The EITC provides a wage supplement that is equal to a percentage of the earnings of the low-income individuals. The credit offsets the taxpayer's income tax liability or provides a refund in a situation where the family does not owe any taxes. Since its inception, the EITC has undergone three substantial expansions, the 1986 Tax Reform Act, the 1990 Omnibus Budget Reconciliation Act (OBRA) and the 1993 OBRA. It represents the largest single source of funding for low-income working families ($63 billion in 2019, National Center for Children in Poverty) and has been found to produce discernible increases in employment and reductions in welfare receipt among single parents, as well as large decreases in poverty (Neumark and Wascher, 2000).

The EITC is refundable, meaning that the Treasury Department pays it out regardless of whether the taxpayer has any federal income tax liability. A taxpayer's eligibility for the earned income tax credit depends on his earned income (or in some cases adjusted gross income), and the number of qualifying children who meet certain age, relationship and residency tests[2]. First, the taxpayer must have positive earned income, defined as wage and salary income, business self-employment income, and farm self-employment income. Also, the taxpayer must have adjusted gross income and earned income below a specified amount (in 2020, the maximum allowable income for a taxpayer with two or more children was $50,945 for unmarried, and $56,844 for married couples filing jointly; Tax Policy Center). Second, a

taxpayer must have a qualifying child, who must be under age 19 (or 24 if a full-time student) or permanently disabled and residing with the taxpayer for more than half the year. Prior to 1993, the EITC was only available to families with children, and even now, the maximum credit available to families with children is much larger than that available to childless taxpayers. In addition, households with two or more children are able to claim a higher EITC than households with only one child, starting in 1991. The amount of the credit to which a taxpayer is entitled depends on the taxpayer's earned income, adjusted gross income, and the number of EITC-eligible children in the household.

There are three regions in the EITC credit schedule. The initial phase-in region transfers an amount which is equal to the subsidy rate times their earnings. In tax year 2020, the subsidy rate of the EITC was 7.65 percent for taxpayers with no child, 34 percent for taxpayers with one child and 40 percent for those with two children, and 45 percent for those with three or more children. In the phase-in region, the family receives the maximum credit ($538, $3,584, $5,920 and $6,660, respectively in tax year 2020), while in the phase-out region, the credit is phased out at the phase-out rate 7.65 percent for taxpayers with no child, 15.98 percent for those with one child, 21.06 percent for taxpayers with two children, and 21.06 percent for taxpayers with three or more children (2020). Figure 1 shows the EITC (2020) parameters for single parent families, and married parents with no child, one child, two children, and three or more children.

FIGURE 1
FEDERAL EITC SCHEDULE, SINGLE PARENT FAMILY 2020



Source: Congressional Research Service (2021)

FIGURE 2
FEDERAL EITC BUDGET CONSTRAINT

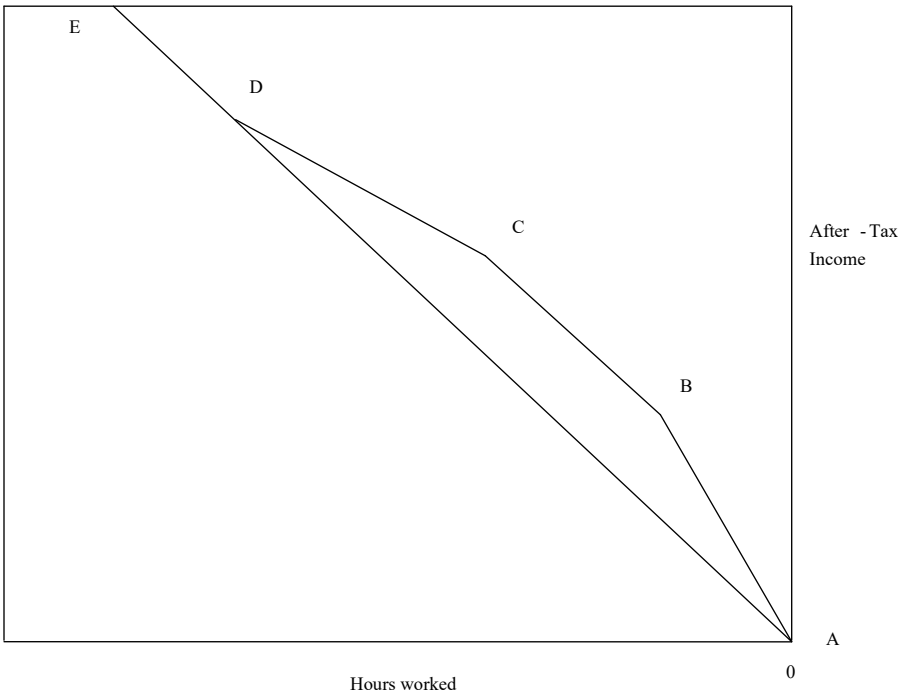


Figure 2 shows how the introduction of the EITC shifts the budget constraint of an otherwise untaxed individual from ADE to ABCDE. With the EITC, an individual faces a new budget constraint, where each hour chosen produces at least as much after-tax earnings as it did before the earned income tax credit was introduced. Since the credit is not available to a taxpayer who does not work, that is, one who has zero earnings, his well-being has not changed. Hence any taxpayer who preferred to work before will still prefer working and some may find that the additional after-tax income from the EITC makes it worth entering the labor force. Therefore, the impact of the EITC on the labor force participation (extensive margin) of taxpayers is unambiguously positive. The impact on the hours worked (intensive margin) of a taxpayer already working, however, depends on which region of the EITC he was in before the credit was introduced. There is a theoretically ambiguous effect on labor supply of a worker in the phase-in range. This is because, the credit increases the workers s effective wage so that the substitution effect encourages additional hours while the income effect causes hours to decrease. So, the relative magnitudes of the substitution and income effect determine whether hours worked increases or decreases. For a worker in the flat region, there is an unambiguous decrease in labor supply, since there is only an income effect, which reduces hours worked. In the phase-out region, the EITC again reduces labor supply, since there is both a negative substitution effect from the credit being phased out and a negative income effect from the additional income received from the credit. Beyond the credit region, the taxpayers may have an incentive to reduce their hours of work in order to receive the credit.

The labor market incentives of the EITC are mixed. While the program has an unambiguously positive theoretical effect on participation, but conditional on participation the program has largely ambiguous effects on the labor supply decisions. There are also reasons to believe that all of these effects will be affected by complexities and lags in the tax code. The tax credits for income earned in one year are not received until taxpayers submit their EITC forms the following year. Also, workers limited understanding of the EITC may reduce their responsiveness. For these reasons, the magnitude of the actual effect of the EITC on hours worked is an empirical question. Table in appendix shows the complete federal EITC rate schedule since 1975.

Over the years, twenty-nine states and a few cities and counties have adopted their own EITC programs: Colorado, Delaware, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Oregon, Rhode Island, Vermont, Virginia, Washington, Wisconsin and the District of Columbia. These are set as a supplement to the federal EITC by offering benefits equal to some designated proportion of the federal payments[3], typical percentages ranging from 5 percent to 43 percent. Most of these states provide EITC supplements which are refundable for taxpayers with zero liability[4]. Wisconsin is the only state that differentially affects families with three or more children, by providing a more generous state EITC supplement for these families. State EITCs are set as a supplement to those who already qualify for the federal EITC, and the level is assigned to equal a given percentage of the federal payment. So, the effective EITC rate in a given state is such that, = (federal EITC rate) * (1+state EITC supplement). For example, a single parent with one child who earned $7500 in 2007 would be in the phase-in range of income, and is eligible for a federal EITC payment of $2550. If he lives in Rhode Island, which provides a 25 percent state EITC supplement, his effective phase-in rate would be (34*1.25) and hence would receive an additional $637.50 from the state government. Therefore, a 25 percent EITC supplement is equivalent to a 25 percent expansion of the federal EITC for residents of that particular state.

The details on state supplements are provided in table 1. While most of the states introduced EITC supplements in the mid to late 1990s, a considerable number of them implemented their state EITCs in the last few years.

The first state to enact an EITC supplement was Rhode Island in 1986. Initially, it offered a non-refundable EITC until 2002, and hence after a small portion is made refundable. There are four other states, Delaware, Iowa, Maine, and Virginia which offer credits that are nonrefundable. Such a credit is available only to the extent that it offsets a family s income tax. A nonrefundable EITC can provide substantial tax relief to families with state income tax liability, but it provides no benefits to working families that have income too low to owe any income taxes. Over the years, many states have increased their credits several times since first passing them and some states which had non-refundable state EITC supplements have made them refundable.

State EITCs are financed in whole or in part from funds available in a state's general fund that is, the same funding sources that are typically used for other types of tax cuts. When an EITC is used to offset the effects of a regressive tax increase such as a sales tax increase, a part of the proceeds of the revenue increase may be set aside for the EITC. Current federal regulations also offer the opportunity to finance a portion of the cost of a refundable credit from a state's share of the federal Temporary Assistance to Needy Families (TANF) block grant, but most states have very limited availability of such funds because the value of the TANF block grant has eroded over time and also states face costly new work requirements under the federal budget law[4]. There are five local governments who have also implemented their EITC programs in recent years. The first was Montgomery County in Maryland, which enacted the local EITC in 1999, set at 20 percent of the federal payment. The second local government and first city to pass its own EITC was Denver in 2002, a program which was discontinued in 2004 due to insufficient TANF funds. This was followed by New York City in 2004, which enacted a refundable EITC with the tax credit set at 5 percent of the federal credit. Finally, San Francisco launched a city-level, refundable EITC in 2005, which was initially set at 10 percent and increased to 16 percent in 2006.

TABLE 1
STATE EITC SUPPLEMENTS (1984-2018, PERCENTAGES OF THE FEDERAL CREDIT)

State Children	CO	DC	DE	IL	IN	IA	KS	ME	MD 1+	MA	MN 0	MN 1+	MI	NE	NJ	NY	OK	OR	RI	VT	VA	WI 1	WI 2	WI 3+
1984																								
1985																								
1986																			22.21					
1987																			23.46					
1988																			22.96	23				
1989																			22.96	25		5	25	75
1990						5													22.96	28		5	25	75
1991						6.5					10	10							27.5	28		5	25	75
1992						6.5					10	10							27.5	28		5	25	75
1993						6.5					10	10							27.5	28		5	25	75
1994						6.5					15	15				7.5			27.5	25		4.4	20.8	62.5
1995						6.5					15	15				10			27.5	25		4	16	50
1996						6.5					15	15				20			27.5	25		4	14	43
1997						6.5				10	15	15				20		5	27.5	25		4	14	43
1998						6.5	10		10	10	25	25				20		5	27	25		4	14	43
1999	8.5					6.5	10		10	10	25	33				20		5	26.5	25		4	14	43
2000	10	10		5		6.5	10	5	15	10	25	33			10	22.5		5	26	32		4	14	43
2001	10	25		5		6.5	10	5	16	15	25	33			15	22		5	25.5	32		4	14	43
2002	10	25		5		6.5	15	5	16	15	25	33			17.5	27.5	5	5	25	32		4	14	43
2003	10	25		5	6	6.5	15	4.92	20	15	25	33			20	30	5	5	25	32		4	14	43
2004	10	25		5	6	6.5	15	4.92	20	15	25	33			20	30	5	5	25	32	20	4	14	43
2005	10	25	20	5	6	6.5	15	4.92	20	15	25	33			20	30	5	5	25	32	20	4	14	43
2006	10	35	20	5	6	6.5	15	5	20	15	25	33	10	8	20	30	5	5	25	32	20	4	14	43
Refundable	Y	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y

Children are left blank if the state supplement applies irrespective of the taxpayer's number of children.
Maryland also had a non-refundable EITC of 50 percent for families with children from 1987-2006.

PREVIOUS RESEARCH

Most of the previous studies of the labor supply effects of the EITC have focused on the three major discrete policy changes in the federal EITC as the main source of variation. Eissa and Liebman (1996) use a difference-in-differences approach to analyze the 1986 expansion of the EITC and found that the labor force participation rates of single women with children increased significantly compared to childless single women, whereas they found no change in the relative hours worked by single women with children who were already in the labor force. Meyer and Rosenbaum (2001) also determines the effect of EITC on the labor force participation of single women, by considering the impact of other tax and welfare changes like AFDC, Medicaid, Food Stamps and their implicit tax rates and earnings disregards, as well as AFDC waivers instituting time limits or work requirements, with their major source of variation being differences in incentives faced by single women with and without children. They found that the EITC played a dominant role in increasing the labor force participation rates of single mothers. Grogger (2003) looks at the effect of the federal EITC expansions and finds it to be the single most important policy measure for explaining the decrease in welfare and the rise in work and earnings among female-headed families.

Eissa and Hoynes (2004) look at the effect of federal EITC expansions from 1984-1996 on the labor supply of married couples. They find that increasing the EITC credit had a small positive impact on the labor supply of the husband, but a larger negative effect on the wives' labor supply, due to the marginal rate in the phase-out range. Hence, their finding suggests that EITC expansions reduced total family labor supply, and that the EITC is effectively subsidizing married mothers to stay at home. This is consistent with the earlier findings by Dickert et al (1995) and Ellwood (2000), who, using structural and quasi-experimental methods respectively, conclude that EITC does reduce the labor force participation of married women with children.

Neumark and Wascher (2001) exploit state level variation in EITC to see its effect on poor families. In order to get around the problem of endogeneity, they control for the state unemployment rate and welfare generosity. Analyzing a period from 1985-1994, when seven states implemented EITC supplements, they conclude that an increase in a state's EITC supplement helps families rise above poverty-level earnings by inducing labor market entry in families that initially did not have an adult in the workforce. Leigh (2005) also uses variation in the state EITC supplements to examine the effect of the EITC on pretax wages. Using data from the Current Population Survey Merged Outgoing Rotation Group for the period 1984-2002, he uses variation across states in the presence and generosity of state EITC add-ons to create cross-sectional variation in the average tax rate faced by women with children. He finds a very strong negative effect of the credit on wages especially for low-skilled workers, implying very little benefit of the credit for its nominal recipients. However, he finds no effect of the credit on the wages of college graduates, and although workers with children receive a more generous tax credit than childless workers, the hourly wages of both groups are similarly affected by an increase in the generosity of the EITC. Leigh also uses an instrumental variable strategy by constructing a simulated instrument for the EITC parameters in an employee s labor market, to find that wages respond to variation in the fraction of eligible employees and the average EITC rate, but do not respond to changes in the marginal EITC rate.

Our work goes along the lines of Leigh, but using additional variation with more states offering their own EITC programs in the recent years[5], and focusing on the labor force participation rates and week worked as outcomes, which he did not analyze specifically. Also, we use a richer set of regressors in different specifications to measure the presence and magnitude of the EITC offered by both the state and the local governments. This includes using the maximum credit received in some specifications, the phase-in rate in others, or whether the state is offering a sizeable enough credit in some other specifications. We focus here on married women in order to investigate whether added EITC payments from the state and local governments contribute to increasing the female labor force participation, above and beyond the positive impact that the federal EITC expansions have been shown to have on the national female participation trends. We do the analysis separately for married women with one child, married women with 2 children and married women with 3 or more children so that we can control for the compositional effects that could arise because the fertility rates have not been constant over time.

Cancian and Levinson (2006) have examined the effect of the EITC on labor supply comparing outcomes in Wisconsin, which supplements the federal EITC for families with three children differently, to outcomes in the states which do not supplement the federal EITC. They find no effect of the EITC on labor force participation, which is somewhat surprising given the findings of previous research. Hoffman (2007) looks at the effects of a non-refundable state EITC supplement considering the example of Delaware and finds atypical distributional impacts of this policy. Specifically, he finds that the lower income half of the EITC recipient population is ineligible for the Delaware non-refundable EITC. Married couples and both single-parent and two-parent families with less than two children often lose eligibility and substantial portions of the benefits. Thus, treating EITC as a tax relief, as in a non-refundable EITC, rather than income support operating through the tax system, eliminates the advantages of an EITC program. This finding encourages us to use additional variation by grouping together states with and without non-refundable EITC programs and see how female labor force participation rates vary between them.

More recently, Neumark & Williams (2016) studied that the state and local governments can also benefit from maximizing participation of their constituents in the federal EITC. They find evidence that the implementation of state EITCs increased federal EITC program participation. Essentially, the effects are qualitatively consistent with what one would expect given theoretical predictions of the effects of an increase in state EITC generosity on labor supply. Moulton et.al. (2016) examined variation in the EITC program when households lose eligibility due to children aging out of the program. Their study found that some of those who most likely qualify for the EITC (unmarried, less educated mothers) leave the workforce when they lose the benefit.

DATA AND MAIN RESULTS

Data Sources and Summary Statistics

The data we use come from the Current Population Survey Merged Outgoing Rotation Group, and the March CPS for the period 1984-2020. The CPS is the monthly household survey conducted by the Bureau of Labor Statistics to measure labor force participation and employment of about 60,000 households per month. In the Outgoing Rotation Group surveys, every household that enters the CPS is interviewed each month for 4 months, then ignored for 8 months, then interviewed again for 4 more months. The usual weekly earning questions are asked only to households in their 4th and 8th interview. New households enter each month, so one fourth of the households are in an outgoing rotation each month. The March CPS is an annual demographic le of between 50,000 and 60,000 households per year, and includes detailed labor market and income information.

Our primary sample includes women of prime working age (between 18 and 55 years). In order to determine the EITC eligibility, we consider any member of the household who is under the age of 19 years (or under 24 years if a full-time student) to be a dependent child for tax purposes. There are potential limitations with the MORG data. From January 1994 until October 1999, the basic monthly CPS (from which the MORG sample is drawn) did not ask respondents for their number of children. For this period, therefore, The MORG records for January 1994 to October 1999 were merged with the March CPS records for the same years, resulting in a successful merge rate of around 75 percent. We exclude women who are self-employed, ill or disabled, or in school full time during the previous year. We also exclude women with positive earned income but zero hours of work. The resulting size of the primary sample, after pooling all the years is 2,117,003 observations.

TABLE 2
SUMMARY STATISTICS

		Single			**Married**	
	No child	1 child	2+ children	No child	1 child	2+ children
LFP	0.89 (0.31)	0.86 (0.34)	0.86 (0.34)	0.88 (0.31)	0.83 (0.37)	0.82 (0.3827)
Age	32.56 (11.73)	31.54 (10.26)	32.07 (10.67)	41.04 (10.49)	36.64 (8.86)	36.62 (7.67)
Education	2.72 (1.00)	2.53 (0.95)	2.75 (1.06)	2.80 (1.08)	2.77 (1.08)	2.79 (1.08)
Children	0 (0)	1 (0)	2.86 (0.34)	0 (0)	1 (0)	2.86 (0.34)
Married				0.66 (0.47)	0.65 (0.47)	0.49 (0.49)
Black	0.16 (0.37)	0.21 (0.40)	0.15 (0.36)	0.06 (0.24)	0.07 (0.26)	0.07 (0.26)
Hispanic	0.06 (0.25)	0.09 (0.28)	0.08 (0.28)	0.05 (0.22)	0.07 (0.26)	0.09 (0.29)
Other	0.04 (0.20)	0.04 (0.19)	0.05 (0.21)	0.04 (0.20)	0.05 (0.21)	0.05 (0.22)
Observations	211048	131704	555046	420248	253610	544831

The data are from survey years 1984-2020 of the Merged Ongoing Rotation Groups and March CPS. The sample contains women between the ages of 18 and 55 years. We exclude women who are self-employed. LFP: Labor force participation, which equals 1 if employed or unemployed, and zero if the individual is not in the labor force. Education: 1 refers to less than high school, 2 refer to high school degree, 3 refer to some college, 4 refer to college degree and 5 refer to advanced degree. Standard deviations are in parentheses.

Table 2 presents summary statistics for the primary sample separately by family size and marital status. The demographic variables used in the analysis include age, race, marital status, education, number of children, labor force participation rates and the state unemployment rate. Summary statistics show that married women are older and have about the same education levels as the single women, and this is true for women both with and without children. Of interest is the pattern of labor force participation. The participation rate is lower for married women compared to single women, but declines more sharply with the first child in case of married women.

TABLE 3
LABOR FORCE PARTICIPATION RATES BY DEMOGRAPHIC GROUPS

	Single			**Married**		
	No child	1 child	2+ children	No child	1 child	2+ children
Labor Force (all states)	0.89 (0.30)	0.86 (0.34)	0.86 (0.34)	0.88 (0.31)	0.83 (0.37)	0.82 (0.38)
Labor Force (EITC states)	0.89 (0.30)	0.86 (0.34)	0 .86 (0.33)	0.89 (0.30)	0.84 (0.36)	0.83 (0.37)
Labor Force (non-EITC states)	0 .89 (0.31)	0.86 (0.34)	0.86 (0.34)	0.87 (0.32)	0.83 (0.37)	0.81 (0.38)
Observations (all states)	211048	131704	555046	420248	253610	544831

Table 3 presents the labor force participation rates of women separately by marital status and the number of children, between states with and without state EITC supplements, as well as for all of the states together. As mentioned above, the labor force participation rates are lower for married women with children, compared to single women both with and without children. However, the labor force participation rates for married women (both with and without children) are higher in the states which supplement the federal EITC, compared to those states which do not offer any such program. The raw unconditional mean of the female labor force participation rates for single women are very similar between the states offering the EITC supplements and the states which do not offer any such supplement, and this is true irrespective of the number of children they have. There is very little difference in the participation rates of single women between states implementing the EITC supplement to the federal EITC and states which offer no such supplement.

However, the labor force participation rates for married women are higher in the states which have EITC supplements, when compared to women in the same demographic group but in states without EITC supplements. More specifically, the participation rates increased between 1990-1994, at the time when many states introduced the state EITC supplements, and more sharply for married women with children. Although the labor force participation rates leveled off during 1994-2002 and started to fall since, it is of interest to note that the participation rates remained higher for married women in states which supplemented the federal EITC compared to those which did not provide any such supplement. This evidence is a clear indication that married women in states with EITC supplements are behaving differently, that is, having higher participation rates than those women belonging to the same demographic group but in states without any state EITC programs.

Methodology

There are, however, individual specific covariates which might influence the labor supply. Failing to control for these factors could lead to biased estimates. In accordance with previous studies, the following variables were included in the model used in this study: individual characteristics such as age, race, family characteristics (number of children), state/year characteristics (minimum wage, TANF/AFDC benefits, unemployment rate). Specifically, the model takes the following functional form:

$$y_{i,j,s,t} = \alpha + \beta EITC_{j,s,t} + X'_{i,j,s,t}\gamma + \delta_t + \delta_s + \varepsilon_{i,j,s,t} \quad (1)$$

In equation (1), i denotes individual, j denotes group (defined by number of children), s denotes state and t denotes year. The outcome variable (y) denotes labor supply [annual hours worked], and also: labor force participation; full-time-year-round work status. Regressor (EITC) denotes maximum credit (also: credit phase-in rate). The covariates (X) denotes individual characteristics (age, race), family characteristics (number of children), and State/year characteristics (minimum wage, TANF/AFDC benefits, unemployment rate). Variation is provided by: increasing number of states with EITC supplements, changes in generosity of EITC supplements, differential treatment (EITC credit) by number of children within s, t.

Results

TABLE 4
RESULTS (UNMARRIED WOMEN)

	Annual hours worked (1)	Participation (2)	Employment (3)	Full-time year round (4)
EITC (maximum credit)	40.07*** (4.86)	0.025*** (0.002)	0.027*** (0.002)	0.015*** (0.002)
EITC x 1980s	76.90*** (18.20)	0.057*** (0.009)	0.048*** (0.009)	0.038*** (0.009)
EITC x 1990s	23.01*** (4.24)	0.020*** (0.003)	0.020*** (0.003)	0.009*** (0.003)
EITC x 2000s	48.85*** (4.49)	0.029*** (0.002)	0.030*** (0.002)	0.019*** (0.002)
EITC x 2010s	38.65*** (4.34)	0.025*** (0.003)	0.028*** (0.003)	0.012*** (0.002)

All regressions include controls for year and state main effects. Standard errors in parenthesis are adjusted for state clustering

Table 4 reports the results for the group of unmarried women. All of the estimated effects are positive and statistically significant. EITC supplements increased annual hours worked, female labor force participation, and employment for the unmarried women group. Hence, the EITC expansions raised labor supply among the single women. The results also indicate that the EITC expansions were most effective in the 1980s (when benefits levels were still low), and leveled off since then. The state and local supplements were effective, but not as much as the federal EITC expansions.

TABLE 5
RESULTS (MARRIED WOMEN)

	Annual hours worked (1)	Participation (2)	Employment (3)	Full-time year round (4)
EITC (maximum credit)	5.57 (4.09)	0.011*** (0.002)	0.011*** (0.002)	–0.002 (0.002)
EITC x 1980s	12.52 (28.74)	0.045*** (0.014)	0.040*** (0.014)	–0.011 (0.015)
EITC x 1990s	5.08 (4.24)	0.013*** (0.002)	0.013*** (0.002)	–0.003 (0.002)
EITC x 2000s	5.98 (4.49)	0.010*** (0.002)	0.010*** (0.002)	–0.002 (0.002)
EITC x 2010s	4.78 (4.34)	0.011*** (0.003)	0.010*** (0.003)	-0.002 (0.002)

All regressions include controls for year and state main effects. Standard errors in parenthesis are adjusted for state clustering

Table 5 represents the results for the married women group. Unlike the single women group, there is no statistically significant impact of the state and local EITC expansions on annual hours worked and full-

time year-round work status for the married women group. Hence while raising the labor supply of single women, EITC expansions had no impact on the work force status of married women.

CONCLUSIONS

This paper presents a discussion of the impact of the state and local government EITC on the female labor force participation rates. Using Current Population Survey data, our results indicate the differential effect of state and local EITC on female labor force participation rates. The focus of the paper is on married women since they are the demographic group of workers whose behavior is most susceptible to policy changes. Our results indicate that the labor force participation rates for married women (both with and without children) are higher in the states which supplement the federal EITC, compared to those states which do not offer any such state program. This suggests the effectiveness of the state EITC supplement, which enhances married women's participation in the labor force. However, after controlling for other individual specific covariates which might affect the labor supply, we find that the EITC expansions has no impact on the labor supply of married women. The state and local EITC expansions did have a positive and significant impact on the labor supply of single women. Further analysis is needed to identify factors which contribute to the higher labor market involvement of married women and the role of the state supplement of the federal EITC program.

ENDNOTES

1. Till date, there are twenty-nine states and the District of Columbia, and four local governments which have implemented the EITC supplement.
2. Since 1993, a small amount of the credit is available to taxpayers without children.
3. Minnesota's credit for families with children is not structured as a percentage of the federal credit. Depending on income level, the credit for families with children may range from 25 percent to 45 percent of the federal credit. Also, Indiana has an EITC that is not based on the federal credit, but applies to families with children, where earned income exceeded 80% of total income and total income is below $12,000. 4Delaware, Iowa, Maine and Virginia provide non-refundable EITC supplements.
4. Colorado's EITC was funded by a state surplus under the Taxpayer Bill of Rights (TABOR). It was suspended in 2002 when surplus funds ran out.
5. Eleven more states enacted the state EITC supplement since Leigh's analysis in 2002.

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