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Abstract

Parents spend considerable time and resources investing in their children's development. Given evidence that the Earned Income Tax Credit (EITC) affects maternal labor supply, we investigate how the EITC affects a broad array of time-use activities, focusing on the amount and nature of time spent with children. Using 2003-2018 time-use data, we find that federal and state EITC expansions increase maternal work time, which reduces time devoted to home production, leisure, and time with children. However, for children of all ages, almost none of the reduction comes from time devoted to "investment" activities, such as active learning and development activities.

JEL Codes: D13, H24, H31, H53, I31, I38, J13, J22

Keywords: EITC, tax policy, time use, child investment, female labor supply

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1. Introduction

A growing literature documents the importance of family investments for child development (e.g., see surveys by Cunha et al., 2006; Heckman and Mosso, 2014; Kalil, 2015), with parental time becoming an increasingly important form of investment (e.g., Lee and Bowen, 2006; Del Boca et al., 2014; Carneiro et al., 2015; Caucutt et al., 2020). Caucutt et al. (2020) document that more than two-thirds of all family expenditures on child development (for children ages 12 or less) come in the form of parental time investments.

It is tempting to assume that the more time mothers spend working, the less they must spend with their children. Yet, such an assumption is clearly at odds with the time series for female labor supply and time with children, which have both increased substantially in recent decades.[1] Cross-sectional relationships are also at odds with a direct tradeoff. For example, Guryan et al. (2008) show that more educated parents both work more and spend more time with their children compared to less-educated parents. Clearly, parents devote time to many leisure and home production activities besides child care (Becker, 1965; Kooreman and Kapteyn, 1987; Aguiar and Hurst, 2007), and these activities trade off with work.

Understanding parental (especially maternal) time allocation decisions is critical for understanding the impacts of tax and transfer policies, including many welfare-to-work initiatives, on investments in children and child development. The Earned Income Tax Credit (EITC), the focus of our study, is one of the most significant tax/transfer policies in the United States, impacting millions of low- to middle-income families. Dahl and Lochner (2012, 2017), Chetty et al. (2011), Bastian and Michelmore (2018), Manoli and Turner (2018) and Agostinelli and Sorrenti (2018) estimate positive impacts of expansions in the EITC on test scores, educational attainment, employment, and earnings of economically disadvantaged children.[2] These studies emphasize the increase in financial resources for families that benefit from EITC expansions, with much of the increase in family income coming from

[1] See, e.g., Bryant and Zick (1996), Gauthier et al. (2004), Sayer et al. (2004), Bianchi and Robinson (1997), Craig (2006), Kimmel and Connelly (2007), Guryan et al. (2008), and Kalil et al. (2012) for evidence on growing parental time with children, while Costa (2000), Goldin (2006), Fernández (2013), and Bastian (2020) document the substantial increase in female labor supply over time.

[2] Hoynes et al. (2015), Averett and Wang (2018), and Braga et al. (2019) show that the EITC also improves children's health.

greater labor force participation and higher pre-tax family earnings.[3] However, Agostinelli and Sorrenti (2018) and Bastian and Michelmore (2018) also examine concerns that the additional time mothers spend working could offset the benefits associated with greater financial resources. Indeed, several studies estimate negative effects of full-time maternal employment on child development (Brooks-Gunn et al., 2002; Ruhm, 2004; Bernal, 2008).[4]

Even if the EITC increases maternal labor supply by increasing net-of-tax wages for low-income families, it need not reduce parental time investments in children. The positive income effects from higher wages can create incentives to increase overall investments in children. As shown by Caucutt et al. (2020), if all investment inputs are sufficiently complementary, families may wish to increase all types of investments, including time investments, despite the increase in their opportunity costs. Thus, higher wages may cause parents to substitute leisure and home production for time at work with little, or even positive, effects on time spent with children. Indeed, Kooreman and Kapteyn (1987) and Kimmel and Connelly (2007) estimate that increases in maternal wages lead to reductions in time devoted to leisure and home production but much weaker or even modest positive effects on child care.

Looking more directly at impacts of the EITC, studies spanning three decades of research have consistently concluded that it raises employment among single mothers (Hoffman and Seidman, 1990; Eissa and Liebman, 1996; Meyer and Rosenbaum, 2001; Grogger, 2003; Hoynes and Patel, 2018; Bastian, 2020).[5] Much less is known about changes in other uses of time. Looking at a broader set of tax policies, Gelber and Mitchell (2012) estimate that policies which encourage maternal labor supply also reduce time spent on home production. In their analysis of the EITC using data from the Panel Study of Income Dynamics, Bastian and Michelmore (2018) estimate modest and statistically insignificant effects of EITC expansions on the time parents spend with their children; however, their sample size is small and estimates imprecise.

In this paper, we use the 2003-2018 American Time Use Surveys (ATUS) to study, in

[3]For these mothers, the EITC also improves health (Evans and Garthwaite, 2014), reduces stress and financial insecurity (Mendenhall et al., 2012; Jones and Michelmore, 2016), and reduces poverty (Hoynes and Patel, 2018).

[4]Using family and child fixed effects approaches, Heiland et al. (2017) estimate that mothers who work 10 hours more per week spend about 3-4% less time with their children.

[5]Recently, Kleven (2019) has challenged this conclusion.

detail, the time allocation responses of mothers to state and federal expansions in the EITC with an emphasis on time spent with children. More specifically, our main (differences-in-differences style) approach estimates the effects of changes in the maximum EITC benefit level on time spent in different activities, accounting for basic family demographic characteristics, state and time fixed effects (both interacted with marital status and mother's educational attainment), and time-varying state-specific measures of economic conditions and welfare/tax policies. Because ATUS contains detailed information on respondent activities and who they were with during each activity, we are able to estimate the same basic specifications for a variety of time allocation activities, with and without children.

We begin by estimating impacts of the EITC on mother's labor supply over the 2003–2018 period, noting that most previous research examines earlier expansions (especially the major expansion from 1993 to 1996). There is some disagreement on the impacts of EITC expansions after the mid-1990s, with Bastian and Michelmore (2018) and Bastian and Jones (2019) estimating moderate positive effects (consistent with the previous literature) and Kleven (2019) finding more modest effects of the 2009 federal expansion and no effects of state expansions. Our approach is more similar to that taken by Bastian and Michelmore (2018) and Bastian and Jones (2019),[6] reaching similar conclusions: expansions of the EITC since 2003 have led to increased labor force participation, time spent working, and earnings among unmarried mothers. We also find suggestive evidence that federal EITC expansions had larger effects on labor supply—and on other categories of time use—than state EITC expansions. This result could reflect differences in public awareness of smaller state vs. larger federal expansions, a general issue highlighted in Chetty et al. (2013).

Next, we show that the increased time working comes at the expense of both leisure and home production activities. Decomposing single mothers' time-use into time with and without children, we estimate reductions in home production and leisure time with children, but no decrease in these activities without children.

Finally, we closely examine how time with children changes, exploring impacts on "investment" (e.g. reading, playing, helping with homework, providing medical care) vs. "non-

[6] Kleven (2019) takes an event-study approach that does not leverage differences in the magnitude of different expansions for identification.

investment" activities. Our estimates suggest no effect of the EITC on total investment time for families with children of all ages. Reductions in time with children are almost exclusively observed for passive non-investment activities like mother's own personal care, housework, and errands. One interesting exception is that both married and unmarried mothers respond to EITC expansions by spending less time providing or obtaining medical care for their children, which may be due to general improvements in children's health as estimated by Hoynes et al. (2015), Averett and Wang (2018), and Braga et al. (2019). We also observe modest increases in the time both single and married mothers play with their children, consistent with increases in family income if play time is a luxury for parents.

2. Federal and State EITC Policy Details

The EITC distributes over $65 billion a year to almost 30 million low-income families, lifting 6 million people out of poverty (Center on Budget and Policy Priorities, 2019). Total EITC benefits are determined by annual earnings, number of children, state of residence, and marital status. Figure 1 shows the relationship between EITC benefits and household earnings by the number of children and marital status for 2018. As is clear from the figure, the EITC contains a phase-in region, where benefits increase with earnings; a plateau region, where benefits do not change with earnings; and a phase-out region, where benefits decrease with earnings. Households that earn beyond this phase-out region are not eligible for the EITC. In 2018, federal EITC benefits were worth over $6,000 for households with 3 or more children earning between about $14,000 and $24,000. Maximum possible benefits available to households with 0, 1, and 2 children were approximately $500, $3,500, and $5,500, respectively.

Figure 2 shows the evolution of maximum benefits by number of children over time. The largest EITC expansion occurred between 1993 and 1996, which increased benefits dramatically for those with at least 2 children. Our analysis covers the years 2003-2018. The only change in the federal EITC schedule during this period occurred in 2009, when the maximum credit available to families with three or more children increased by about $1,000.

As of 2018, 29 states had their own EITC as well. State EITC benefits generally "top-up"

federal EITC benefits by a fixed percent, varying from about 3 to 40 percent (for values up to $220 to $2,800). Combined, the federal and state EITC can amount to over $9,000 per year, with the average recipient receiving over $2,500 a year. Figure 3 shows a map of state EITC rates (as a fraction of federal benefits) in 2000, 2005, 2010, and 2017. Figure A.1 shows the maximum possible federal plus state EITC benefits over time: there is substantial variation in EITC policy across states within each year.

We combine state and federal annual maximum EITC benefit amounts (based on state of residence, marital status, number and ages of children by year) into the variable, $MaxEITC$, which we measure in thousands of real 2018 dollars.[7] Panel A in Figure 4 shows the distribution of $MaxEITC$ for women with 0, 1, 2, and 3 or more children based on our main sample of women ages 18-49 in the 2003–2018 ATUS. Panel B in Figure 4 shows the distribution of $MaxEITC$ before and after the 2009 federal EITC expansion. Together, these figures illustrate the type of EITC variation over time and across states that we exploit for identification.

EITC-eligible children must be age 18 or younger, age 19–23 and a full-time student, or any age and disabled. However, incorporating these older children could introduce endogeneity and we avoid this concern by defining EITC-eligible dependents as age 18 or less.

3. Empirical Strategy

Although the largest EITC expansion occurred in the 1990s, our time-use data only goes back to 2003. Fortunately, during our sample period, there is substantial identifying variation across states and years generated by state EITC policy changes and the 2009 federal EITC expansion, as well as variation within states and years generated by the large difference in EITC benefits by number of children (see Figures 3 and 4). EITC policy variation allows us to compare outcomes for women within states and across years, as well as across states and within years.

An identifying assumption is that EITC policy expansions are not correlated with other economic policies or conditions which may themselves affect female employment or time use.

[7] We use the Consumer Price Index for all Urban Consumers to adjust for inflation.

For example, if states were more likely to create or expand an EITC during economic expansions and budget surpluses, the relationship between state EITCs, female employment, and time use would reflect economic conditions in general, not just EITC-led increases in employment. We show below that the EITC expansions during our time period are uncorrelated with state-year measures of economic conditions and policies.

The combined effects of 2003–2018 state EITC expansions and the 2009 federal EITC expansions are embodied in $MaxEITC$, a continuous treatment variable equal to the maximum possible EITC benefits that a family could receive given their state of residence, marital status, number (and ages) of children, and the year.[8] As discussed further below, $MaxEITC$ reflects exogenous policy variation that is independent of family income or actual receipt of the EITC, which are both endogenous with respect to work behavior.

We use the following differences-in-differences style regression to estimate the effects of EITC expansions on various time-allocation outcomes, Y_{ist}, separately for married and unmarried mothers:

$$Y_{ist} = \alpha_1 MaxEITC_{ist} \cdot Mar_{ist} + \alpha_2 MaxEITC_{ist} \cdot Unmar_{ist} + X'_{ist}\alpha_3 + \gamma_s + \gamma_t + \epsilon_{ist}, \quad (1)$$

where subscript i refers to mother, s to state of residence, and t to year. Mar_{ist} is an indicator equal to one for married mothers, while $Unmar_{ist} = 1 - Mar_{ist}$ is an indicator equal to one for unmarried mothers. The vector X_{ist} contains a rich set of potentially time-varying individual-level controls, including indicators for the number of children, and annual state-level factors reflecting the underlying economic and policy environment. We show that results are robust to various subsets of these controls as well as including state-specific time trends, state-specific time trends by marital status, and interacting annual state factors with marital status and children. State and year fixed effects (FE) are denoted by γ_s and γ_t, respectively. The idiosyncratic error, ϵ_{ist}, is assumed to be independent of $MaxEITC$ and marital status, conditional on other covariates X_{ist}, as well as state and year FE. We report standard errors that are robust to heteroskedasticity and clustered at the state level.[9] ATUS

[8] $MaxEITC$ is highly correlated with other aspects of the EITC and does a good job of capturing EITC expansions over time. For example, regressing $MaxEITC$ on the EITC phase-in rate—controlling for number of children, state, and year fixed effects—yields an R^2 of 0.999. We consider the phase-in rate in section 5.9.

[9] Alternate clustering and standard error specifications yield similar results, as does restricting the sample to unmarried mothers (available upon request).

weights are used in all specifications.

We also explore whether the effects vary by other family characteristics conditional on marital status, estimating equations of the form:

$$Y_{ist} = MaxEITC_{ist} \cdot Mar_{ist} \cdot Z'_{ist}\beta_1 + MaxEITC_{ist} \cdot Unmar_{ist} \cdot Z'_{ist}\beta_2 + X'_{ist}\beta_3 + \gamma_s + \gamma_t + \epsilon_{ist}, \quad (2)$$

where Z_{ist} reflects a vector of indicator variables for mother's race, educational attainment, or predicted probability of low-income (as described below).

4. Data from the American Time Use Surveys

We use the 2003–2018 Bureau of Labor Statistics' American Time Use Survey Data (ATUS). ATUS is the "nation's first federally administered, continuous survey on time use in the United States. The goal of the survey is to measure how people divide their time among life's activities" (U.S. Bureau of Labor Statistics, 2019).[10] ATUS data are linked to the Current Population Survey (CPS) and contain rich demographic and geographic information. We keep all women ages 18–49 in the main sample, 58,090 observations. Of these women, 43,685 are mothers and 14,940 are unmarried mothers.

With the use of time diaries, ATUS asks respondents how they spent every minute of a 24 hour day, also recording who they spent their time with. We scale reported time-use so that units can be interpreted as weekly hours. We divide time-use into three broad categories: paid work activities (including work, commuting, job search, and job-related socializing), home production, and leisure.[11] All time unaccounted for by these categories can be classified as schooling, sleep, and "uncategorized".[12] We also determine whether time in each activity was spent with children, creating our measure of "time with children". Additionally, we create a measure of "investment" time, a subset of leisure and home production activities in which the mother was with her child. Investment time includes activities like doing homework

[10] Time-use data exists for earlier years, but these samples are relatively small (generally 2,000–4,000 observations per year, compared to 10,000–20,000 per year for 2003–2018) and contain fewer covariates.

[11] Home production includes cooking and meal preparation, housework, car maintenance, taking care of garden or pets, travel related to household activities, other household management, taking care of children or other household members, and shopping. Leisure time includes exercise and sports, games, watching TV or movies, computer activity, socializing, talking on the phone or communicating, reading, listening to music or the radio, arts and entertainment, hobbies educational activities, and own medical care.

[12] The mean value of uncategorized time is only 1.36 hours, out of 168 weekly hours.

and children's education, providing and obtaining medical care, playing games or sports, doing crafts, or attending museums or events together. See the Data Appendix for complete details.

To measure labor supply, we have a few options available, some based on ATUS time-diary data and others based on linked CPS data. Our preferred measures are labor force participation (LFP, an indicator equal to one if employed or unemployed) and hours worked last week, both from CPS survey data. We use these CPS-based measures unless otherwise specified; however, results are qualitatively similar across measures.[13]

For time-use activities not specifically related to time with children (e.g. working, home production, leisure), we often study the full sample of women, since the largest incentive differences from EITC changes are between women with and without children. Between these two groups, the EITC's effect on labor supply and time-use will be most detectable. For outcomes related to spending time with children, we focus exclusively on mothers with children in the household.

Table 1 reports summary statistics for all women, all mothers, and unmarried women ages 18–49 (using ATUS weights). On average, women have 1.2 children, are 33.8 years old, 52 percent are married, 89 and 33 percent finished high school and college, 13 and 17 percent are Black or Hispanic, and have $26,000 and $66,000 in individual and total household earnings. Average $MaxEITC$ is $3,337, while the average EITC benefits women are actually eligible for is $668, with 24 percent receiving some benefits.[14] Compared to the sample of all women, mothers are on average older, are more likely to be married, have lower education, are more likely to be nonwhite, are less likely to be employed, and have lower individual earnings but similar levels of household earnings. Compared to all mothers, unmarried mothers are on average more socially and economically disadvantaged: younger with lower education, more likely to be nonwhite, eligible for more EITC benefits ($1,525 vs. $1,079), and more likely to be eligible for at least some benefits (51 vs. 35 percent). We also report summary

[13] As already discussed, ATUS also asks about time spent on work activities, but this measure is noisier, since it is based on a 24 hour period, which may occur on a weekend day. Other available measures of labor supply in the CPS include employed and usual weekly work hours.

[14] EITC benefits imputed from NBER's TAXSIM (Feenberg and Coutts, 1993). Details here: https://www.nber.org/taxsim/.

statistics for the state-year variables we control for in our analysis (discussed in section 5.1): state GDP growth rate, state per capita GDP, state unemployment rate, minimum wage, maximum welfare benefits for a family with 1, 2, 3, or 4 children.

Table 2 uses the sample of mothers and reports summary statistics for time-use variables. Among all mothers, average weekly hours (from CPS) are 21.6 for work, 46.5 for home production, 33.4 for leisure, 38.7 for time with children, and 6.0 for investment into children. Table 2 also shows that mothers with more children spend less time on work and leisure, while they spend more time on home production, with children, and investing in children.[15]

Figure 5 shows how weekly hours spent working, with children, and investing in children vary with children's ages. On average, mothers with infants work 15 hours per week, and work hours steadily increase with a child's age, reaching 20 hours by age 6 and 25 hours by age 17. By contrast, maternal time with children monotonically decreases with a child's age: mothers spend about 60 hours per week with infants, falling to 40 hours by age 8 and 20 hours at age 17. We also observe a steady decline in investment time as children age, falling from about 10 hours per week for infants to 8 hours per week at age 4, to 2 hours per week at age 17. Figure 5 also displays the 25th and 75th percentiles for hours with children and investing in children by age of child.

5. Results

In this section, we first establish the exogeneity of state EITC changes. We then examine effects of the EITC on maternal labor supply before turning to impacts on other uses of time, including home production, leisure, and time with children. We decompose time with children into "investment" and "non-investment" activities to better understand how changes in the EITC might impact child development via time-use decisions. We also study whether time-use effects of the EITC differ on weekdays vs. weekends, and whether there are differential effects based on age of the mother or on the ages of children in the household. Finally, we explore the robustness of our estimates to different sets of controls and specifications that

[15] In the Online Appendix, we also show the full distribution for each category of time use by number of children. Appendix Figures A.2, A.3, and A.4 show the distribution of hours worked last week (CPS measure), home production, and leisure. Appendix Figures A.5 and A.6 show the distribution of total hours with children and investment hours in children.

leverage variation from state vs. federal EITC expansions.

5.1. Exogeneity of State EITCs

To examine whether EITC policy expansions are correlated with other state policies or economic conditions, we regress measures of state EITCs on several state-year characteristics, including GDP, unemployment rate, the top marginal income tax rate, the minimum wage, welfare generosity for families with 1, 2, or 3 or more children, and sales tax rates. We also include lags of each of these variables along with state and year FE.

In Table 3, we find that across four specifications and dozens of variables, only two estimates are significant at the 10 percent level. The four specifications are combinations of using the sample of all states or states that ever had a state EITC, and of using maximum state EITC benefits or the state EITC rate as outcomes. Testing for the joint significance of these state-level traits yields p-values between 0.85 and 0.95.[16] Although we find little evidence that these traits are associated with state EITCs, we control for these state-level traits throughout our analysis.

5.2. Labor Supply

We begin our analysis of time allocation decisions by studying the impact of the EITC on labor supply, earnings, and family resources.

Among all women, Table 4 Panel A shows that a \$1,000 increase in $MaxEITC$ increases average labor force participation (1.7 percentage points), weekly work hours (0.74), earnings (\$1,166), and EITC benefits (\$245). Here, work hours refers to hours worked last week, as reported in CPS data. By marital status, Table 4 Panel B shows larger estimated effects among unmarried women on LFP (3 percentage points), weekly work hours (1.2), earnings (\$1,597), EITC benefits (\$301), and the probability of being eligible for any EITC benefits (1.9 percentage points). Among married women, we find insignificant effects, except on EITC benefits (\$188).[17] These differences by marital status are all statistically significant

[16] Contrary to these results, there is some evidence that state economic conditions or policies were associated with state EITC expansions in the 1990s (e.g., Hoynes and Patel (2018)).

[17] Increases in EITC benefits are due to a mechanical and behavioral component. Even with no change in labor supply, increases in $MaxEITC$ will lead to increased EITC benefits by those already receiving it.

(p-values < 0.001) and are largely consistent with previous evidence on how the EITC affects unmarried and married mothers (Eissa and Hoynes, 2006; Bastian and Jones, 2019).[18]

Restricting the sample to mothers, estimates in Table 4 Panel C are very similar to (though less precise than) estimates in Panel B based on all women. For unmarried mothers, each \$1,000 increase in $MaxEITC$ raises LFP (2.4 percentage points), hours worked last week (0.83), earnings (\$1,222), and EITC benefits (\$361). For married mothers, results are all insignificant, except for EITC benefits (\$238). Appendix Table A.1, presents a similar pattern of results for subgroups of mothers by marital status interacted with race or educational attainment (based on estimating equation (2)). Impacts are generally larger and often significant for unmarried mothers, regardless of race and education, while impacts are mostly small and statistically insignificant for all types of married mothers (except for positive effects on EITC benefits).

The labor supply results presented thus far are based on CPS data on LFP and hours worked last week. Appendix Table A.2 shows that results are robust to studying other measures of labor supply from the CPS (usual weekly work hours, employed, and non-self-employed LFP) or from time diary data from ATUS (weekly work hours, working > 0 hours/week, working ≥ 20 hours/week, and working ≥ 40 hours/week).

In Appendix Table A.3 we isolate the effects of state EITC expansions by limiting the sample to years before or after the 2009 federal EITC expansion. In these specifications, variation in $MaxEITC$ comes exclusively from state EITC expansions. We find that both before and after 2009, EITC expansions are associated with increases in LFP and weekly hours worked among unmarried mothers, while effects for married mothers are much weaker and mostly insignificant. These results also highlight that our estimates are not driven by changes in labor supply associated with the Great Recession.

[18] Our study implictly addresses Kleven (2019) and his claim that the EITC does not impact labor supply in two main ways: one, we focus on 2003–2018, well after welfare reform, ensuring that our EITC estimates are not confounded with the simultaneity of 1990s EITC expansions and welfare reform; and two, by using time-use outcomes, we provide an alternate approach to testing whether the EITC impacted mothers.

5.3. *Effects on Broad Categories of Time Allocation*

Based on the labor supply results in Table 4, we expect to find that the EITC led to reductions in the amount of time unmarried mothers spend on non-work activities and that the EITC had little effect on the time-use of married mothers. In Table 5, we divide each woman's 168 weekly hours into home production, leisure, work activities, school, sleep, and 'uncategorized' using the ATUS time diary activity data.

For unmarried women, Panel A shows that \$1,000 in $MaxEITC$ reduces home production and leisure (1.04 and 0.74 hours), increases work activities (1.50 hours), and has little effect on school, sleep, and uncategorized time. For married mothers, whose labor supply is largely unaffected by the EITC, we see insignificant effects on other uses of time as well.

Panel B reveals similar patterns for the sample of mothers; however, estimated effects on work activities are muted for unmarried mothers relative to all unmarried women. Consequently, we also estimate more muted impacts on their other uses of time. Among single mothers, a \$1,000 increase in $MaxEITC$ increases work activities by 0.63 hours per week and reduces home production by 0.91 hours per week and leisure by 0.40 hours per week. For married mothers, all impacts are statistically and economically insignificant.

5.4. *Time With Children and Parental Time Investment in Children*

We now look specifically at how mothers spend their time with children. Table 5 Panel B decomposes home production and leisure into time with and without children.[19] Among unmarried mothers, each \$1,000 in $MaxEITC$ reduces home production and leisure time with children (-1.17 and -0.53 hours per week) but has small and insignificant effects on home production and leisure time without children (0.26 and 0.12 hours per week).

Tables A.6 and A.7 decompose the reduction in home production and leisure time with children (for unmarried mothers) into eight subcategories. Table A.6 shows that \$1,000 in $MaxEITC$ leads to statistically significant reductions in personal care (0.11 hours), housework (0.23 hours), and traveling/errands (0.19 hours). Reductions in waiting and shopping

[19]Time with children is not a mutually exclusive category, but rather overlaps with the other categories shown in Table 5. We do not decompose work, school, sleep, or uncategorized time into with/without children, because time with children is negligible for these activities and pre-2010 ATUS did not collect "with who" information when respondents reported sleeping, grooming, personal/private activities, or working.

(0.19 hours) are also substantial, though statistically insignificant. (We estimate negligible effects on all remaining home production subcategories.) Table A.7 shows that the entire reduction in leisure time with children comes from time spent socializing and relaxing.

Since the EITC reduces time that mothers spend with their children, it is natural to worry about impacts for parental time investments (e.g. reading together, help with homework, playing, doctor visits) and child development. Of course, reductions in time mothers spend with children may not have much of an effect on child development if this time would have been spent watching television, cleaning the house, etc. To investigate this issue, Table 6 decomposes maternal time spent with children into investment and non-investment activities. Each \$1,000 in $MaxEITC$ reduces total time unmarried mothers spend with children by 1.61 hours per week, but this decrease is explained completely by non-investment time, which declines by 1.56 hours per week. This reduction in non-investment time with children comes more out of home production time (0.9 hours per week) than leisure (0.75 hours per week), but reductions in both are significant.

Although changes in total time spent on investment are negligible, this does not necessarily mean that mothers do not adjust their time across different types of investment activities. Given the changes in family income induced by EITC expansions, parents may adjust the types of investment activities they engage in depending on the income elasticities of the activities. These elasticities may differ, for example, due to different complementarities with purchased goods and services or due to heterogeneous parental preferences for different types of activities (e.g. parents may enjoy some activities more than others).

We consider the impacts of EITC expansions on the investment subcategories of academic, health, and "other" investment time. Table 6 shows very small and insignificant effects of $MaxEITC$ on academic investment time, modest but statistically significant reductions in health investment time, and offsetting (but mostly insignificant) increases in "other" investment time. Appendix Table A.8 shows that the reductions in health investment reflect less time spent providing and obtaining medical care for children. This may reflect improvements in health that have previously been attributed to the EITC (Hoynes et al., 2015; Averett and Wang, 2018; Braga et al., 2019) such that children require less

medical attention.[20] Appendix Table A.8 also shows that increases in "other" investment time are entirely explained by increases in time spent playing (0.24 and 0.16 hours per week for unmarried and married mothers, respectively). The sizeable impacts on play time for married mothers suggests that these responses may be due to the increased family income associated with EITC expansions. This might be expected if parents view time spent playing with children as a luxury.[21]

5.5. EITC Effects on the Distribution of Time Use

We now briefly consider the impacts of EITC expansions on the distributions of weekly hours of work, home production, leisure, time with children, and time investing in children. Specifically, we estimate the effects of the EITC on the probability that unmarried mothers spend more than x hours per week on an activity using the following specification:

$$\mathbb{1}(Y_{ist} > x) = \delta_1 MaxEITC_{ist} \cdot Mar_{ist} + \delta_2 MaxEITC_{ist} \cdot Unmar_{ist} + X'_{ist}\delta_3 + \gamma_s + \gamma_t + \epsilon_{ist}. \quad (3)$$

In Figure 6, we restrict the sample to mothers. Panels A–D show that an increase in $MaxEITC$ raises the probability of working up to—but not above—40 hours per week. Thus, the EITC draws women into the labor market but does not increase work beyond full-time. An increase in $MaxEITC$ significantly reduces home production time in the 50–90 hours per week range, while it only reduces leisure time at the low end of the distribution (10–20 hours per week). The EITC reduces time spent with children throughout much of the distribution; however, investment time decreases most for the 1–30 hours range, while effects are negligible for mothers who spend more than 40 hours per week on investment.[22]

5.6. Weekends vs. Weekdays

Because the EITC increases work among unmarried mothers, these mothers must reallocate the rest of their time accordingly. Since most jobs are Monday to Friday, we may expect

[20] For example, increases in family income or employment may lead to improvements in health insurance.

[21] Indeed, Krueger et al. (2009) find that parents enjoy time spent playing with their children relative to nearly any other activity they study. The larger increase in time spent playing for married mothers is also consistent with modest negative impacts of the EITC on their labor supply. While we do not find a negative effect on the average labor supply of married mothers, we do find a decrease among younger married mothers in Section 5.7, lining up with previous studies (Eissa and Hoynes, 2004; Bastian and Jones, 2019).

[22] Appendix Figure A.7 shows very similar effects on the distribution of hours of work, home production, and leisure for the sample of all women.

a larger impact on weekday relative to weekend time use. We do not rescale time use here, so effects should still be interpreted as weekly hours.[23] In Table 7, we explore the EITC's impacts on weekend and weekday time spent on work, home production, and leisure, as well as time spent with children. Panel A pools women interviewed on weekends and weekdays (results shown in previous tables), while Panels B and C restrict the sample to women who were interviewed on weekdays or weekends.

For unmarried mothers, columns 1 and 2 show that $1,000 in $MaxEITC$ increases weekday work activities by 2.1 hours each week, while it reduces home production and leisure (combined) by 2.5 hours over the work week. Estimated effects are more muted and less precise when the sample is restricted to mothers (columns 3 and 4). Columns 5–7 show that unmarried mothers spend 2.5 fewer hours with children during weekdays, almost exclusively made up of non-investment time. Effects on the weekend are generally much smaller and statistically insignificant; although, in most cases, they suggest responses that partially compensate for adjustments made during the work week.

5.7. Heterogeneous Effects by Mother's Age

We next explore whether there are important differences in the way younger vs. older mothers respond to changes in the EITC, since they have differential labor market experience, attachment, and opportunity costs.

In Figure 7, we allow the effects of the EITC to vary by age for unmarried and married mothers by replacing $MaxEITC \cdot Mar$ and $MaxEITC \cdot Unmar$ in equation (1) with $\sum_a MaxEITC \cdot Mar \cdot \mathbb{1}(Age \in a)$ and $\sum_a MaxEITC \cdot Unmar \cdot \mathbb{1}(Age \in a)$, where a represents six age categories: 18–25, 26–30, 31–35, 36–40, 41–45, and 46–50. The outcomes in Panels A, B, and C are LFP, time with kids, and investment into kids.

Among unmarried mothers, the EITC has a larger effect on both LFP and time with children for younger mothers. Each $1,000 increase in $MaxEITC$ increases LFP by 2.4 percentage points for younger mothers and 1.8 percentage points for older mothers (results are not significantly different). Consistent with these adjustments in work behavior, among

[23] Recall that ATUS asks respondents how they spent every minute of a 24 hour day and that we re-scale time-use so that units can be interpreted as weekly hours.

younger mothers we observe reductions of over 2 hours per week spent with children and insignificant effects on child investment. Among older mothers, effects on time with children are smaller and close to zero for mothers over age 40. While statistically insignificant, we find a small increase in investment among older mothers, consistent with positive income effects and no offsetting reduction in their non-work time budget.

The effects for married mothers reveals an interesting pattern: for young married mothers under age 25, the EITC has a negative effect on LFP and a positive effect on time with—and investment into—children; while the EITC has a marginally significant effect on those aged 26-30 and null effects on those over age 30. The effects on younger married mothers are consistent with previous research finding small negative effects on the labor supply of married mothers (Eissa and Hoynes, 2004; Bastian and Jones, 2019).

5.8. Heterogeneous Effects by Child's Age

Since mothers typically spend progressively more time working and less time with children as their children grow older (see Figure 5), we next explore whether responses to EITC expansions depend on children's ages. To do so, we consider the effects of total time spent with children in age group a (i.e., ages 0-2, 3-5,..., 18-20, 21-22), Y_{ist}^a, by estimating separate regressions for different age groups as follows:

$$Y_{ist}^a = \phi_1^a MaxEITC_{ist} \cdot Mar_{ist} + \phi_2^a MaxEITC_{ist} \cdot Unmar_{ist} + X_{ist}'\phi_3^a + \gamma_s^a + \gamma_t^a + \epsilon_{ist}^a. \quad (4)$$

Here, ϕ_1^a and ϕ_2^a reflect the impact of a \$1,000 increase in the maximum EITC benefit on hours with (or investing in) children who are in age group a for married and unmarried mothers, respectively. By definition, these effects reflect impacts for mothers with at least one child in age group a.[24] Most children older than 18 are not EITC-eligible, unless they are full-time students or disabled. However, we consider children up through age 22 as quasi-placebo tests, since any effects for these (mostly ineligible) children would likely indicate spurious effects of unmeasured factors.

Figure 8 reports the effects of $MaxEITC$ on time spent with and investing in children of each age. A \$1,000 increase in the maximum EITC benefit significantly increases mar-

[24] Each regression uses the full sample of mothers with $Y_{ist}^a = 0$ for mothers with no children in age group a. X_{ist} contains the full set of controls.

ried mother's time spent with and investing in children ages 3–11: time spent with these young children increases by 0.6–1.3 hours per week (Panel A), while time spent investing increases by about one-third of an hour (Panel B). The same increase in $MaxEITC$ significantly reduces the time unmarried mothers spend with children ages 6–14 by about an hour (Panel A); however, it has no significant effects on their investment time with children of any age (Panel B). Finally, we note that effects on time spent with (or investing in) children ages 21–22 are both negligible and insignificant, consistent with their ineligibility for EITC (in most cases).

5.9. Robustness

In this section, we examine whether our results are robust to alternate sets of controls, alternate measures of the EITC, and whether mothers with the highest predicted probability of having low income are most affected by EITC policy changes.[25]

Alternate Controls: In Tables 8 and 9, we test whether our main results are robust to various sets of controls. Columns 1–3 progressively add year, state, and number of kids FE; demographic traits; whether the time-use data was collected on a weekend or weekday; and measured state-year factors (e.g. unemployment rate, minimum wage). Column 3 is the full set of controls used for all results above. Columns 4–6 examine whether the results are robust to progressively adding controls for state-specific time trends, state-specific time trends interacted with an indicator for unmarried, and state-year factors interacted with indicators for unmarried and having any children. These controls account for general trends in unobserved state-specific factors by marital status and allow for measured state policies and economic conditions to differentially affect time allocation decisions by marital status and children in the household. Finally, column 7 adds state $\times$ year FE, which largely absorbs variation in state EITC expansions and identifies the impact of the 2009 federal EITC expansion, while column 8 adds year $\times$ number of children FE, largely absorbing variation in the federal expansion (and other nationwide trends that differentially affect families of different sizes), identifying the impact of state EITC expansions.

Table 8 uses the sample of all women and examines the following outcomes: LFP, weekly

[25] When we separately estimate effects of the EITC by month, we find similar results across months.

work hours, and home production plus leisure hours. Across controls, the estimated effect on LFP for unmarried women ranges from 3.0 to 3.9 percentage points; estimated effect on weekly work hours ranges from 0.9 to 1.6; and the effect on home production and leisure ranges from -1.6 to -2.2 hours. Among married mothers, all specifications show consistent evidence that the EITC has little impact on labor supply, while there is a modest reduction in home production and leisure time.

Table 9 uses the sample of mothers and examines the same three outcomes from Table 8, as well as time with children and time investing in children. Results for the first three outcomes are similar to but more muted and less precise than those in Table 8. For unmarried mothers, the estimated effects on time with children range from -1.2 to -2.2 hours per week across all specifications, while estimated effects on time investing in children are consistently very small and statistically insignificant. Among married mothers, all estimates are insignificant.

Comparing columns 7 and 8 in both Tables 8 and 9 suggests that the 2009 federal EITC expansion had larger effects on labor supply, home production and leisure, and time with children than did state EITC expansions (for unmarried mothers).

Alternate Measures of the EITC: Table A.5 shows that results are robust to alternate measures of EITC expansions, specifically the EITC phase-in rate.[26] We find consistent evidence that EITC expansions lead to increases in LFP and work hours, coupled with reductions in home production and leisure time, for unmarried women and mothers. The expansions also cause unmarried mothers to reduce their total time with children but have little impact on their investment time with children. Among married women and mothers, our estimates suggest no effect of changes in EITC phase-in rates on their time allocation.

Subgroups Based on Predicted Household Income: We have shown how the EITC's impact varies by marital status, race, and education. In general, more economically disadvantaged mothers (e.g. unmarried, nonwhite, less educated) are more responsive to changes in the EITC. To better examine the role of economic disadvantage, we now take

[26]Notice that if the federal phase in rate is 40 percent and the state EITC matches 20 percent of the federal EITC, then the total phase-in rate is 0.40(1+0.20)=0.48. $MaxEITC$ and phase-in rate are highly correlated, see footnote 8.

into account several (exogenous) demographic factors to predict which mothers are most likely to have low household income (i.e. income less than $20,000 in 2017 dollars).[27] These women are most likely to find themselves on the phase-in or plateau regions of the EITC schedule, encouraging their labor supply. Dividing mothers into terciles based on their predicted probability of low income, we estimate equation (2) using these predicted probability terciles as Z_{ist} variables interacted with $MaxEITC$ and marital status. (Results are similar if we estimate a specification that only interacts the predicted probability terciles with $MaxEITC$, estimating an average effect across married and unmarried mothers.)[28]

Table 10 shows consistent evidence that mothers that with the highest predicted probability of having low household income are most affected by changes in the EITC. For unmarried mothers, we estimate positive effects on LFP and negative effects on time with children and time spent in home production or leisure for each tercile, with consistently larger effects for mothers that are more likely to be economically disadvantaged. Among unmarried mothers that are most likely to have low household income, each $1,000 increase in maximum EITC benefits raises LFP by 3 percentage points, while it lowers home production and leisure combined by 2.0 hours per week and reduces time with children by 2.1 hours per week. Importantly, none of our subgroups of unmarried mothers respond by reducing investment time with their children (results are negative, but small and insignificant).

Among married mothers, we find little evidence of any effects, except for a modest increase in investment time with children among those least likely to be of low income. Altogether, these results suggest that marital status is important even when conditioning on predicted household income.

[27] Specifically, we use OLS to estimate the probability that mothers have household income less than $20,000 (in 2017 dollars) controlling for number of children FE, four categories of mother's educational attainment (<12, =12, 13–15, and >16), race, age, and birth year, as well as year and state FE. While we do not use marital status to predict low income, it is strongly correlated with other traits associated with economic disadvantage. As such, we find that 44% of unmarried mothers vs. 25% of married mothers are in the high-predicted-probability tercile.

[28] Women with the lowest predicted probability of low household income have less than a 0.12 probability, while those in the highest tercile have a probability greater than 0.24. We note that results are similar when using alternate sets of controls and other low-income cutoffs, or when using probit or logit estimators to estimate the predicted probability of low income.

6. Conclusions

Using data from the 2003–2018 ATUS, we study the effect of the 2009 federal EITC expansion and several state EITC expansions on maternal time allocation decisions. Our results provide strong evidence that recent expansions in the EITC increase maternal work time, while reducing time allocated to home production and leisure activities. These impacts are concentrated among unmarried and otherwise economically disadvantaged women, with our results on labor supply largely confirming the prior literature that considered earlier expansions of the EITC.

Our more novel contribution lies in our analysis of maternal time allocation at home, in particular time spent with children. We find robust evidence that unmarried mothers respond to increases in the EITC by scaling back time with their children, especially primary-school aged children. In particular, they spend less time engaging in activities like personal care, housework, and relaxing when with their children. Importantly, they do not devote less time to active learning and development activities like reading or helping with homework, and they spend more time playing with their children. Among all the investment-related activities we examine, only time spent providing and obtaining medical care declines in response to EITC expansions. We suspect that this reflects diminished need for medical services due to health benefits associated with higher incomes and/or greater health care access (Hoynes et al., 2015; Braga et al., 2019; Averett and Wang, 2018).

Since labor supply among all but young (ages 18–25) married mothers is not impacted by the EITC expansions we study, it is no surprise that their time devoted to other activities also remains largely unaffected. That said, we observe modest increases in time spent with young children. Modest (though statistically insignificant) increases in their time spent playing with children are largely offset by reductions in time devoted to medical care, further suggesting that these same effects for unmarried mothers may be driven by improvements in family finances. If true, policies or economic changes that directly impact family resources may lead to important reallocations of parental time within the household even if they do not affect the amount of time parents spend outside of the home.

Altogether, our results suggest that while expansions of the EITC draw single mothers

into the labor market and away from their children, the adverse developmental consequences of this are likely to be quite limited, since reductions in time spent with children do not appear to be very investment-oriented. Indeed, as several studies document (Dahl and Lochner, 2012, 2017; Chetty et al., 2011; Bastian and Michelmore, 2018; Manoli and Turner, 2018; Agostinelli and Sorrenti, 2018), the benefits for children from greater financial resources appear to dominate any potential adverse impacts of reductions in non-investment time.

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Table 1: Summary Statistics

Sample:	All Women		All Mothers		Unmarried Mothers	
	Mean (1)	S.D. (2)	Mean (3)	S.D. (4)	Mean (5)	S.D. (6)
Children	1.20	1.25	1.96	1.03	1.85	1.08
Age	33.78	9.26	34.39	8.52	30.23	9.29
Birth Year	1976.5	10.5	1975.9	9.7	1980.3	10.4
Married	0.52	0.50	0.63	0.48	0.00	0.00
HS Graduate	0.89	0.32	0.86	0.35	0.80	0.40
Some College	0.63	0.48	0.59	0.49	0.47	0.50
College Graduate	0.33	0.47	0.30	0.46	0.13	0.33
Black	0.13	0.34	0.14	0.34	0.25	0.43
Hispanic	0.17	0.38	0.21	0.41	0.23	0.42
Employed	0.71	0.45	0.66	0.47	0.67	0.47
Individual Earnings (2018 $)	25,783	30,627	23,286	30,168	18,538	23,147
Household Earnings (2018 $)	65,848	48,216	65,920	48,463	46,315	41,475
Maximum Possible EITC	3,337	2,468	5,106	1,364	4,861	1,377
EITC Benefit Eligibility	668	1,521	1,079	1,827	1,525	1,959
EITC Eligible	0.24	0.43	0.35	0.48	0.51	0.50
State GDP Growth Rate	4.03	2.82	4.05	2.87	4.01	2.78
State GDP (billions of 2018 $)	13.18	0.96	13.19	0.96	13.20	0.95
State Unemployment Rate	6.21	2.10	6.22	2.09	6.28	2.11
State Minimum Wage (2018 $)	8.05	1.12	8.04	1.11	8.05	1.11
Max TANF 1 Kid	409.8	166.1	408.9	167.4	401.6	166.9
Max TANF 2 Kids	506.1	206.4	504.6	207.8	496.7	208.0
Max TANF 3 Kids	597.3	243.8	595.3	245.3	586.5	246.9
Observations	58,090		43,685		14,940	

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. EITC data from NBER and IRS. EITC benefits calculated using TAXSIM. Unemployment rates from BLS. GDP from BEA regional data. Minimum wage from the Tax Policy Center's Tax Facts. Welfare benefits from the Urban Institute's Welfare Rules Database.

Table 2: Weekly Hours Spent on Different Activities, by Number of Children

	All Mothers		Mothers with 1 Child		Mothers with 2 Children		Mothers with 3+ Children	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Activity	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Work (CPS)	21.6	19.5	23.9	19.5	21.8	19.4	16.9	18.8
Home Production	46.5	23.7	41.3	22.2	48.2	23.3	53.3	25.0
with Children	22.0	21.0	15.4	17.9	24.6	20.6	30.4	23.1
Not with Children	24.4	18.1	26.0	18.8	23.6	17.3	22.9	17.6
Leisure	33.4	22.1	34.7	22.8	32.7	21.5	32.1	21.5
with Children	15.6	18.4	13.2	18.0	16.7	18.3	18.3	18.7
Not with Children	17.8	19.5	21.6	21.4	16.0	17.7	13.8	17.0
Total Hours with Children	38.7	31.7	29.3	30.0	42.5	30.5	50.2	31.7
Investment into Children	6.0	10.1	4.3	9.0	6.9	10.5	7.9	11.1
Observations	43,685		17,012		17,144		9,529	

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. All measures based on ATUS time-diary data except work hours, which are based on hours worked last week in CPS.

Table 3: Testing the Exogeneity of State EITCs

Sample:	All States		Ever Had a State EITC	
Outcome:	Max State EITC Benefits	State EITC Rate	Max State EITC Benefits	State EITC Rate
	(1)	(2)	(3)	(4)
State Min Wage (2017 $)	-0.0043	-0.00020	0.0028	0.00098
	(0.015)	(0.0023)	(0.022)	(0.0037)
Lag State Min Wage	0.0070	0.0025	0.0077	0.0024
	(0.018)	(0.0028)	(0.024)	(0.0039)
State Unemp Rate	0.00057	-0.00032	0.0073	0.00092
	(0.019)	(0.0031)	(0.034)	(0.0055)
Lag State Unemp Rate	-0.0076	-0.00051	-0.0049	0.000094
	(0.022)	(0.0035)	(0.038)	(0.0063)
State GDP Growth Rate	-0.0031	-0.00071	-0.022	-0.0037
	(0.0054)	(0.00089)	(0.016)	(0.0027)
Lag State GDP Growth Rate	-0.00028	-0.00017	-0.0026	-0.00065
	(0.0027)	(0.00044)	(0.0060)	(0.0010)
Log State GDP	0.23	0.023	2.25	0.32
	(0.41)	(0.066)	(1.62)	(0.27)
Lag Log State GDP	-0.41	-0.045	-2.41	-0.34
	(0.47)	(0.075)	(1.79)	(0.30)
Max TANF with 1 Child	-0.0034	-0.00064	-0.0065	-0.0012
	(0.0022)	(0.00037)	(0.0044)	(0.00076)
Lag Max TANF with 1 Child	-0.0018	-0.00023	-0.00078	-0.00000075
	(0.0017)	(0.00027)	(0.0020)	(0.00034)
Max TANF with 2 Children	0.0037	0.00064	0.0061	0.0011
	(0.0025)	(0.00038)	(0.0042)	(0.00071)
Lag Max TANF with 2 Children	0.0030	0.00046	0.0030	0.00041
	(0.0020)	(0.00030)	(0.0019)	(0.00031)
Max TANF with 3 Children	-0.00081	-0.00013	-0.00067	-0.000071
	(0.00090)	(0.00013)	(0.0013)	(0.00022)
Lag Max TANF with 3 Children	-0.0012	-0.00019	-0.0018	-0.00029
	(0.00096)	(0.00014)	(0.0012)	(0.00018)
Testing Joint Significance (p-val.)	0.947	0.897	0.935	0.852
R-squared	0.950	0.953	0.921	0.924
Observations	761	761	404	404
Mean Dep Var	0.44	0.073	0.82	0.14
State, Year FE	X	X	X	X
State Time Trends	X	X	X	X

Notes: EITC data from NBER and IRS. Unemployment rates from BLS. GDP from BEA regional data. Minimum wage from the Tax Policy Center's Tax Facts. Welfare benefits from the Urban Institute's Welfare Rules Database. Robust standard errors in parentheses.

Table 4: Labor Supply, Earnings, and EITC Benefits

Outcome:	LFP	Weekly Work Hours	EITC Benefits	Any EITC	Earnings	Earnings and EITC
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Average Effects (Sample of All Women, N=58,090)						
MaxEITC	0.017	0.74	244.7	0.0042	1166.4	1411.2
	(0.0081)	(0.35)	(49.3)	(0.010)	(385.4)	(379.6)
R-squared	0.099	0.158	0.330	0.320	0.238	0.229
Panel B: Effects by Marital Status (Sample of All Women, N=58,090)						
MaxEITC ×	0.0050	0.27	188.2	-0.010	732.4	920.6
Married	(0.0086)	(0.35)	(47.5)	(0.011)	(396.2)	(384.2)
MaxEITC ×	0.030	1.20	300.9	0.019	1597.3	1898.2
Unmarried	(0.0073)	(0.35)	(44.0)	(0.0088)	(386.6)	(379.0)
R-squared	0.104	0.161	0.337	0.326	0.239	0.230
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000
Panel C: Effects by Marital Status (Sample of Mothers, N=43,685)						
MaxEITC ×	-0.0060	-0.24	238.0	0.0052	423.4	661.4
Married	(0.011)	(0.44)	(36.2)	(0.0092)	(538.7)	(532.1)
MaxEITC ×	0.024	0.83	360.6	0.020	1222.0	1582.6
Unmarried	(0.0093)	(0.37)	(35.0)	(0.0089)	(511.0)	(514.8)
R-squared	0.093	0.131	0.284	0.291	0.213	0.200
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000
Mean Dep Var (All Women)	0.78	23.2	668.0	0.24	25782.9	26450.8
Mean Dep Var (Mothers)	0.74	21.6	1021.9	0.34	23514.9	24536.9

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Full set of controls from Table 8 column 3 used in each regression. Outcomes are based on CPS data. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 5: The EITC and Decomposing All 168 Weekly Hours of Time Use

Outcome:	Home Production			Leisure			Work	School	Sleep	Uncat.
With Children?		Yes	No		Yes	No				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Effects by Marital Status (Sample of All Women, N=58,090)										
MaxEITC ×	-0.47			-0.45			0.77	0.084	-0.024	0.096
Married	(0.49)			(0.38)			(0.46)	(0.29)	(0.28)	(0.069)
MaxEITC ×	-1.04			-0.74			1.50	0.021	0.20	0.062
Unmarried	(0.47)			(0.42)			(0.46)	(0.27)	(0.32)	(0.081)
R-squared	0.158			0.105			0.173	0.118	0.094	0.011
Eq. Eff. (p-val.)	0.006			0.104			0.134	0.464	0.115	0.941
Mean Dep. Var.	41.7			34.2			26.1	3.10	61.4	1.36
Panel B: Effects by Marital Status (Sample of Mothers, N=43,685)										
MaxEITC ×	-0.33	-0.023	-0.31	-0.069	-0.15	0.084	0.055	0.10	0.23	0.010
Married	(0.61)	(0.40)	(0.38)	(0.51)	(0.37)	(0.45)	(0.72)	(0.27)	(0.36)	(0.086)
MaxEITC ×	-0.91	-1.17	0.26	-0.40	-0.53	0.12	0.63	0.18	0.49	0.014
Unmarried	(0.51)	(0.34)	(0.35)	(0.56)	(0.36)	(0.54)	(0.61)	(0.29)	(0.48)	(0.11)
R-squared	0.117	0.222	0.077	0.111	0.144	0.141	0.157	0.133	0.112	0.024
Eq. Eff. (p-val.)	0.007	0.000	0.002	0.132	0.007	0.862	0.045	0.470	0.081	0.937
Mean Dep Var	46.5	22.0	24.4	33.4	15.6	17.8	23.5	2.18	60.9	1.49

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Standard errors are robust to heteroskedasticity and clustered at the state level. The six categories are mutually exclusive and add to 168 weekly hours. Work, school, sleep, and uncategorized time are not decomposed into with/without children, since most of this time is not with children and since pre-2010 ATUS did not collect "with who" information when respondents reported sleeping, grooming, personal/private activities, or working. Full set of controls from Table 8 column 3 used in each regression.

Table 6: Time With Children: Investment and Non-Investment Time (Sample of Mothers)

Outcome:	Total Time	Non-Investment Time			Investment Time			
		Total	Home Prod	Leisure	Total	Academic	Health	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Effects by Marital Status								
MaxEITC ×	-0.027	-0.31	-0.022	-0.43	0.28	0.096	-0.12	0.31
Married	(0.67)	(0.50)	(0.36)	(0.26)	(0.21)	(0.091)	(0.029)	(0.24)
MaxEITC ×	-1.61	-1.56	-0.90	-0.75	-0.049	-0.081	-0.15	0.18
Unmarried	(0.61)	(0.47)	(0.31)	(0.27)	(0.19)	(0.073)	(0.027)	(0.22)
R-squared	0.259	0.231	0.208	0.119	0.105	0.068	0.014	0.087
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.023	0.000	0.000	0.011	0.002
Panel B: Effects by Marital Status and Race								
MaxEITC ×	0.0086	-0.30	-0.031	-0.42	0.31	0.088	-0.12	0.34
White × Married	(0.67)	(0.50)	(0.36)	(0.26)	(0.21)	(0.089)	(0.029)	(0.24)
MaxEITC ×	-0.34	-0.42	0.0082	-0.54	0.083	0.14	-0.14	0.087
Nonwhite × Mar	(0.70)	(0.55)	(0.38)	(0.27)	(0.19)	(0.098)	(0.028)	(0.23)
MaxEITC ×	-1.74	-1.70	-0.96	-0.83	-0.038	-0.10	-0.15	0.22
White × Unmar	(0.64)	(0.49)	(0.33)	(0.27)	(0.20)	(0.072)	(0.027)	(0.23)
MaxEITC ×	-1.38	-1.30	-0.79	-0.61	-0.080	-0.037	-0.16	0.12
Nonwhite × Unmar	(0.60)	(0.48)	(0.29)	(0.28)	(0.18)	(0.073)	(0.029)	(0.21)
R-squared	0.259	0.232	0.208	0.119	0.106	0.068	0.014	0.088
Panel C: Effects by Marital Status and Education								
MaxEITC × Married	0.97	0.52	0.45	-0.20	0.45	0.13	-0.084	0.40
× >12 Yrs Educ	(0.76)	(0.62)	(0.46)	(0.30)	(0.19)	(0.088)	(0.035)	(0.20)
MaxEITC × Mar	-1.28	-1.36	-0.61	-0.73	0.085	0.053	-0.18	0.21
× ≤12 Yrs Educ	(1.00)	(0.83)	(0.55)	(0.53)	(0.33)	(0.13)	(0.054)	(0.38)
MaxEITC × Unmar	-0.99	-0.97	-0.60	-0.57	-0.022	-0.056	-0.11	0.14
× >12 Yrs Educ	(0.78)	(0.66)	(0.41)	(0.34)	(0.17)	(0.070)	(0.035)	(0.18)
MaxEITC × Unmar	-2.54	-2.41	-1.35	-1.00	-0.13	-0.12	-0.21	0.19
× ≤12 Yrs Educ	(0.90)	(0.80)	(0.57)	(0.50)	(0.30)	(0.12)	(0.054)	(0.35)
R-squared	0.260	0.232	0.208	0.119	0.106	0.068	0.014	0.088
Observations	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685
Mean Dep Var	38.7	32.7	19.9	11.7	6.04	1.19	0.23	4.62

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old women with at least one child under age 19. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Table 7: Time-Use Effects: Weekends vs Weekdays

Sample:	All Women		All Mothers			
Outcome:	Work + Leisure	Home Prod.	Work + Leisure	Home Prod.	With Children	
					Total Hours	Invest Hours
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Full Sample, Includes Weekends and Weekdays						
MaxEITC ×	0.77	-0.92	0.055	-0.40	-0.027	0.28
Married	(0.46)	(0.53)	(0.72)	(0.80)	(0.67)	(0.21)
MaxEITC ×	1.50	-1.78	0.63	-1.32	-1.61	-0.049
Unmarried	(0.46)	(0.51)	(0.61)	(0.71)	(0.61)	(0.19)
R-squared	0.184	0.159	0.157	0.122	0.259	0.105
Observations	58,090	58,090	43,685	43,685	43,685	43,685
Mean Dep Var	26.1	76.0	23.5	79.9	38.7	6.04
Panel B: Restricting Sample to Weekdays (Monday–Friday)						
MaxEITC ×	0.99	-1.32	-0.36	-0.27	-0.46	0.28
Married	(0.73)	(0.80)	(1.07)	(1.20)	(0.77)	(0.26)
MaxEITC ×	2.11	-2.54	0.51	-1.59	-2.52	-0.18
Unmarried	(0.70)	(0.73)	(0.89)	(1.11)	(0.76)	(0.26)
R-squared	0.121	0.115	0.098	0.087	0.245	0.121
Observations	28,690	28,690	21,608	21,608	21,608	21,608
Mean Dep Var	32.8	70.7	29.6	75.5	35.2	5.91
Panel C: Restricting Sample to Weekends (Saturday–Sunday)						
MaxEITC ×	-0.15	0.47	0.55	0.021	1.10	0.32
Married	(0.48)	(0.60)	(0.60)	(0.70)	(1.07)	(0.29)
MaxEITC ×	-0.28	0.50	0.59	0.017	0.56	0.28
Unmarried	(0.53)	(0.62)	(0.66)	(0.63)	(0.98)	(0.23)
R-squared	0.023	0.068	0.021	0.066	0.240	0.089
Observations	29,400	29,400	22,077	22,077	22,077	22,077
Mean Dep Var	9.51	88.9	8.49	91.0	47.7	6.35

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Table 8: Estimates Robust to Various Sets of Controls, Sample of All Women

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Outcome = Labor Force Participation (Mean = 0.78)								
MaxEITC ×	0.0071	0.0047	0.0050	0.0060	0.0065	0.0080	0.013	0.0070
Married	(0.0091)	(0.0090)	(0.0086)	(0.0079)	(0.0080)	(0.0088)	(0.0095)	(0.013)
MaxEITC ×	0.031	0.030	0.030	0.031	0.031	0.033	0.039	0.032
Unmarried	(0.0077)	(0.0076)	(0.0073)	(0.0069)	(0.0069)	(0.0083)	(0.0087)	(0.013)
R-squared	0.090	0.103	0.104	0.105	0.106	0.107	0.125	0.108
Panel B: Outcome = Weekly Work Hours (Mean = 23.2)								
MaxEITC ×	0.30	0.27	0.27	0.44	0.46	0.38	0.71	-0.012
Married	(0.38)	(0.36)	(0.35)	(0.34)	(0.34)	(0.37)	(0.42)	(0.38)
MaxEITC ×	1.19	1.20	1.20	1.37	1.38	1.30	1.63	0.90
Unmarried	(0.37)	(0.37)	(0.35)	(0.35)	(0.35)	(0.36)	(0.41)	(0.38)
R-squared	0.149	0.160	0.161	0.162	0.163	0.164	0.181	0.165
Panel C: Outcome = Weekly Home Production + Leisure Hours (Mean = 75.9)								
MaxEITC ×	-0.69	-0.79	-0.92	-1.08	-1.01	-1.10	-1.38	-0.80
Married	(0.62)	(0.62)	(0.53)	(0.52)	(0.51)	(0.54)	(0.54)	(0.62)
MaxEITC ×	-1.56	-1.64	-1.78	-1.94	-1.87	-1.96	-2.20	-1.67
Unmarried	(0.60)	(0.60)	(0.51)	(0.49)	(0.49)	(0.55)	(0.53)	(0.63)
R-squared	0.149	0.159	0.159	0.161	0.162	0.163	0.182	0.164
Controls								
Year FE, State FE, #Kids FE	X	X	X	X	X	X	X	X
Demographics	X	X	X	X	X	X	X	X
(Ed FE, Mar) × (St FE, Yr FE)		X	X	X	X	X	X	X
State-Year Factors			X	X	X	X	X	X
State Trend				X	X	X	X	X
State Trend × Unmarried					X	X	X	X
State-Year Factors × (Kids, Unmarried)						X	X	X
State FE × Year FE							X	
Year FE × #Kids FE								X
Observations	58,090	58,090	58,090	58,090	58,090	58,090	58,090	58,090

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. LFP and weekly work hours from CPS survey data, home production and leisure hours from time-use ATUS data. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 9: Estimates Robust to Various Sets of Controls, Sample of Mothers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Outcome = Labor Force Participation (Mean = 0.74)								
MaxEITC ×	-0.0050	-0.0077	-0.0060	-0.0054	-0.0056	-0.0096	0.0094	-0.0039
Married	(0.013)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.018)
MaxEITC ×	0.021	0.022	0.024	0.024	0.024	0.020	0.039	0.026
Unmarried	(0.010)	(0.0099)	(0.0093)	(0.010)	(0.010)	(0.011)	(0.012)	(0.018)
R-squared	0.079	0.093	0.093	0.095	0.097	0.098	0.121	0.100
Panel B: Outcome = Weekly Work Hours (Mean = 21.6)								
MaxEITC ×	-0.25	-0.25	-0.24	0.0087	0.0016	-0.023	0.61	0.16
Married	(0.46)	(0.45)	(0.44)	(0.44)	(0.44)	(0.43)	(0.58)	(0.60)
MaxEITC ×	0.74	0.82	0.83	1.07	1.08	1.06	1.67	1.24
Unmarried	(0.40)	(0.38)	(0.37)	(0.39)	(0.39)	(0.39)	(0.49)	(0.53)
R-squared	0.116	0.131	0.131	0.133	0.134	0.135	0.157	0.137
Panel C: Outcome = Weekly Home Production + Leisure Hours (Mean = 79.9)								
MaxEITC ×	-0.11	-0.20	-0.40	-0.62	-0.54	-0.27	-0.65	-0.36
Married	(0.96)	(0.93)	(0.80)	(0.80)	(0.79)	(0.74)	(0.85)	(0.81)
MaxEITC ×	-1.00	-1.12	-1.32	-1.52	-1.45	-1.18	-1.50	-1.29
Unmarried	(0.87)	(0.82)	(0.71)	(0.72)	(0.71)	(0.68)	(0.76)	(0.79)
R-squared	0.109	0.121	0.122	0.123	0.125	0.126	0.150	0.128
Panel D: Outcome = Weekly Hours With Children (Mean = 38.7)								
MaxEITC ×	0.068	0.12	-0.027	-0.016	-0.033	-0.16	-0.68	0.30
Married	(0.73)	(0.75)	(0.67)	(0.68)	(0.67)	(0.69)	(0.91)	(0.80)
MaxEITC ×	-1.53	-1.45	-1.61	-1.59	-1.61	-1.70	-2.21	-1.23
Unmarried	(0.68)	(0.68)	(0.61)	(0.62)	(0.62)	(0.64)	(0.83)	(0.77)
R-squared	0.248	0.259	0.259	0.261	0.262	0.262	0.278	0.264
Panel E: Outcome = Investment Hours With Children (Mean = 6.0)								
MaxEITC ×	0.35	0.30	0.28	0.35	0.34	0.33	0.22	0.46
Married	(0.24)	(0.24)	(0.21)	(0.21)	(0.22)	(0.23)	(0.27)	(0.32)
MaxEITC ×	0.0026	-0.031	-0.049	0.017	0.0065	-0.0071	-0.11	0.13
Unmarried	(0.23)	(0.22)	(0.19)	(0.19)	(0.19)	(0.20)	(0.23)	(0.29)
R-squared	0.098	0.105	0.105	0.107	0.108	0.108	0.127	0.109
Controls in Columns 1–8 Are Identical to Those in Table 8								
Observations	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. LFP and weekly work hours from CPS survey data; home production and leisure hours, hours with children, and investment with children from time-use ATUS data. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 10: EITC Effects by Predicted Probability of Low Income

Outcome:	LFP	Hours with Children	Hours Investing in Children	Hours Home Production and Leisure
	(1)	(2)	(3)	(4)
MaxEITC × Low	-0.0043	0.33	0.40	-0.28
× Married	(0.010)	(0.74)	(0.24)	(0.82)
MaxEITC × Med	-0.0070	-0.30	0.25	-0.42
× Married	(0.011)	(0.70)	(0.22)	(0.87)
MaxEITC × High	-0.0010	-0.82	0.069	-1.33
× Married	(0.015)	(0.78)	(0.27)	(0.99)
MaxEITC × Low	0.018	-1.44	-0.13	-1.00
× Unmarried	(0.0076)	(0.66)	(0.18)	(0.70)
MaxEITC × Med	0.021	-2.14	-0.21	-1.47
× Unmarried	(0.0095)	(0.67)	(0.21)	(0.74)
MaxEITC × High	0.030	-2.07	-0.10	-2.04
× Unmarried	(0.013)	(0.69)	(0.24)	(0.91)
R-squared	0.093	0.260	0.106	0.122
Observations	43,685	43,685	43,685	43,685

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. To create terciles (Low, Med, High) for predicted probability of low earnings, we first regress an indicator for household earnings less than $20,000 on a set of controls (year FE, state FE, number of kids FE, 4 education categories, black, hispanic, age, and birth year) using ATUS weights. Then, the predicted probabilities are used to categorize individuals into terciles, where the cutoffs are probabilities 0.12 and 0.24. Among married mothers, 40, 35, and 25 percent are in terciles 1, 2, and 3, respectively. Among unmarried mothers, 25, 32, and 44 percent are in terciles 1, 2, and 3, respectively. The outcome regressions control for predicted probability tercile FE and the full set of controls from Table 8 column 4. Standard errors are robust to heteroskedasticity and clustered at the state level.

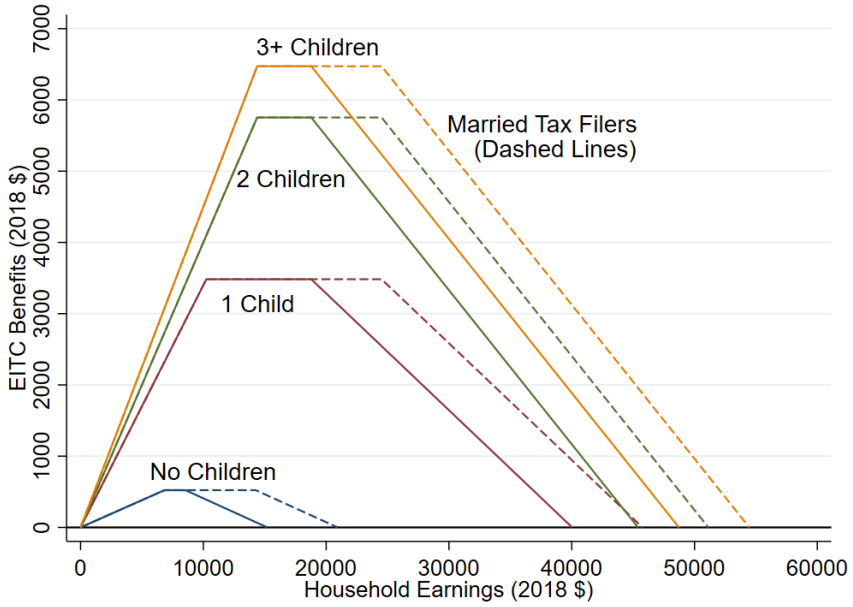

Fig. 1. Federal EITC Structure, 2018

Source: Authors' calculations from IRS data.

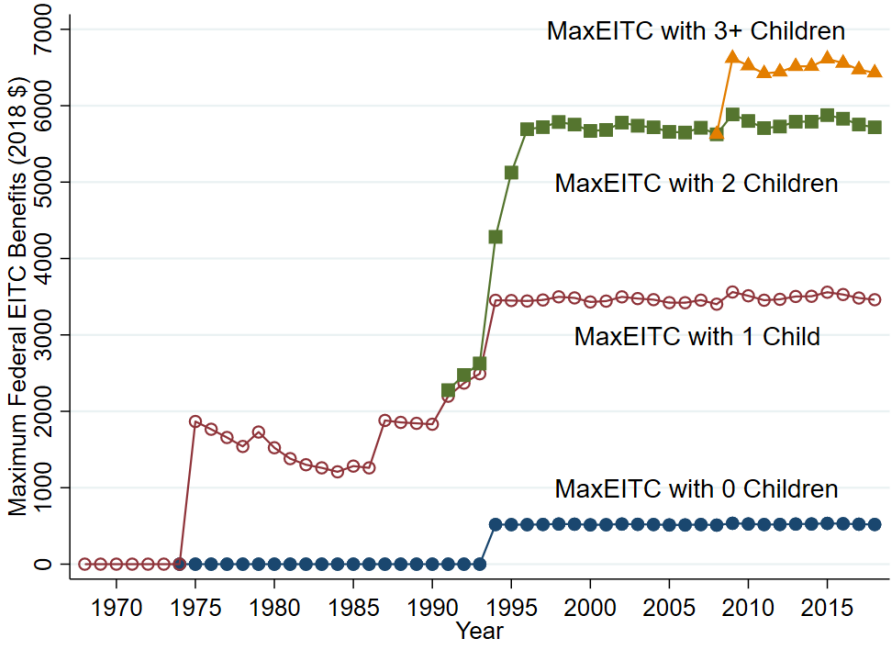

Fig. 2. Maximum Possible Federal EITC Over Time

Source: Authors' calculations from IRS data.

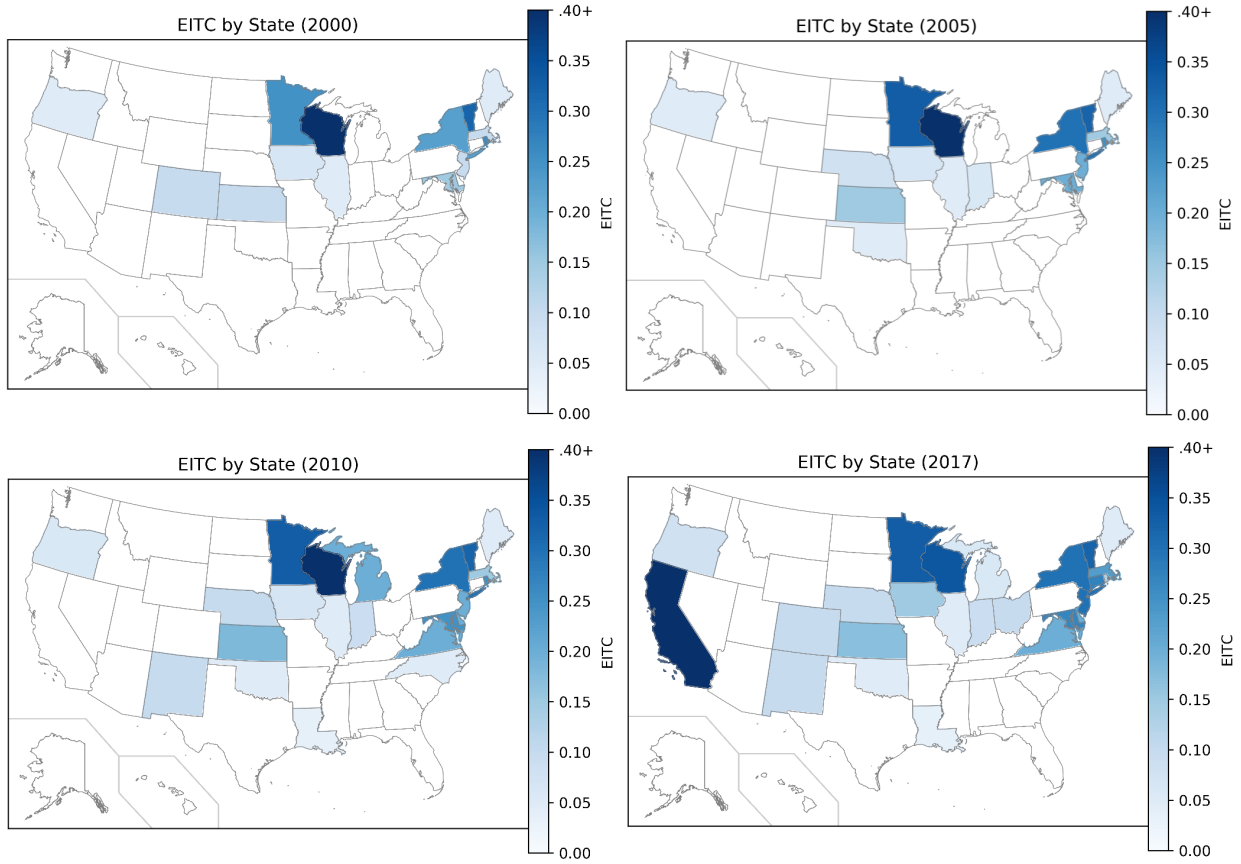

Fig. 3. State EITC Rates (as a Fraction of Federal Benefits) Over Time

Notes: Authors' calculations from NBER data. https://users.nber.org/~taxsim/state-eitc.html. Although CA has a high match rate, it only matches up to half of the maximum federal EITC benefit, so in our regressions we divide the CA state EITC rate by two.

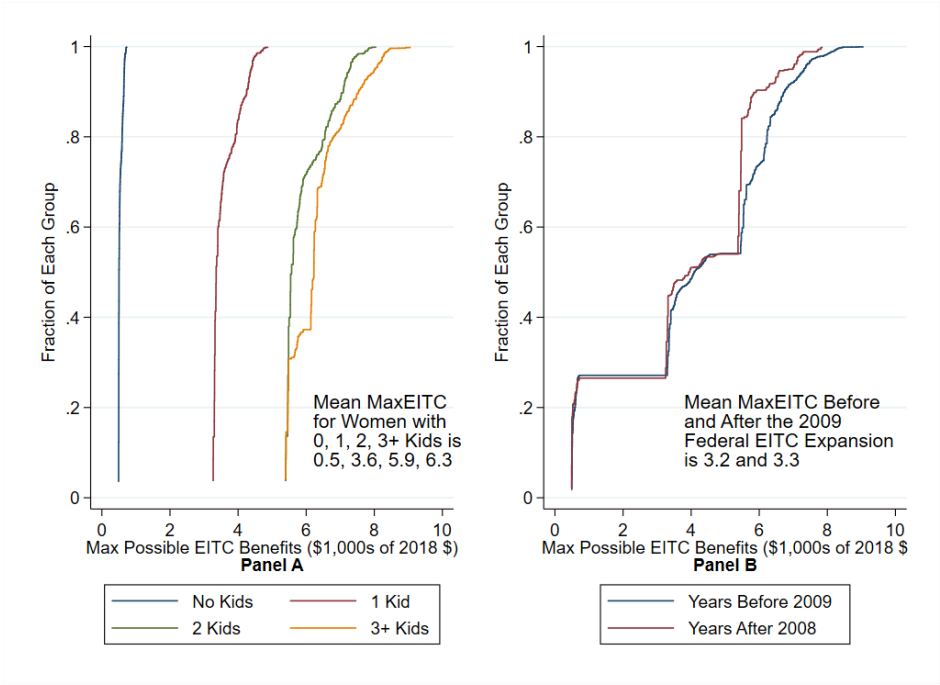

Fig. 4. Distribution *MaxEITC*, by Number of Children and Pre/Post-2009

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old.

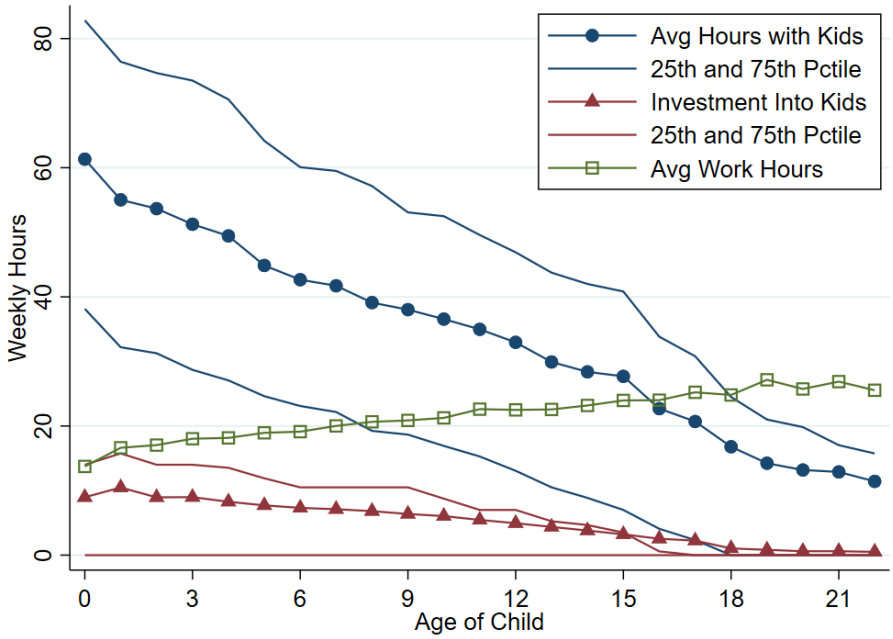

Fig. 5. Time Spent Working and Time with Children, by Age of Child

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old.

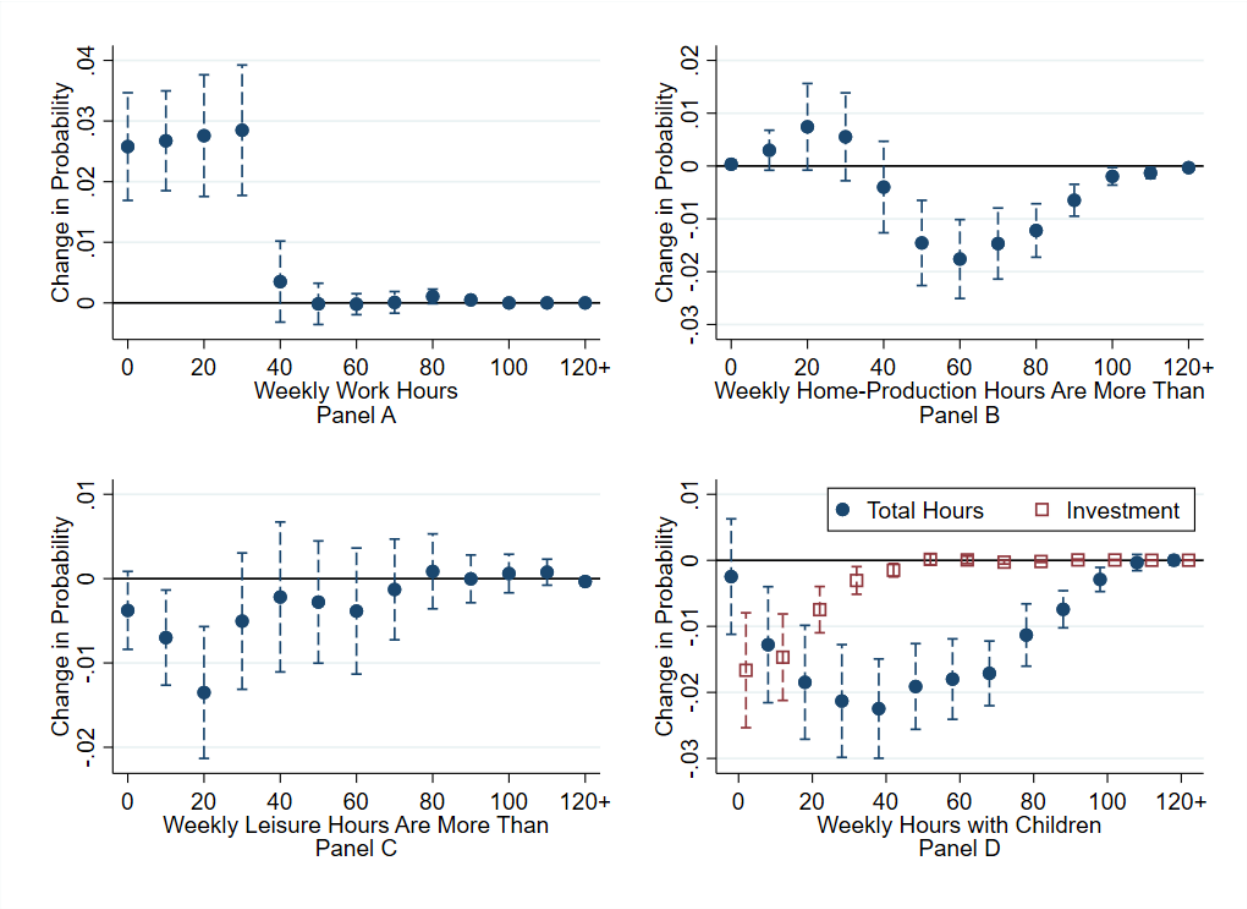

Fig. 6. Effect of the EITC on Time-Use among Unmarried Mothers: Prob(Hours $> X$)

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Each estimate comes from a separate regression using equation (3). Work hours in Panel A come from CPS survey data; outcomes in Panels B–D come from ATUS data, which asks about time-use in a single day and we scale these to weekly hours. Full set of controls from Table 8 column 3 used in each regression. Standard errors are robust to heteroskedasticity and clustered at the state level.

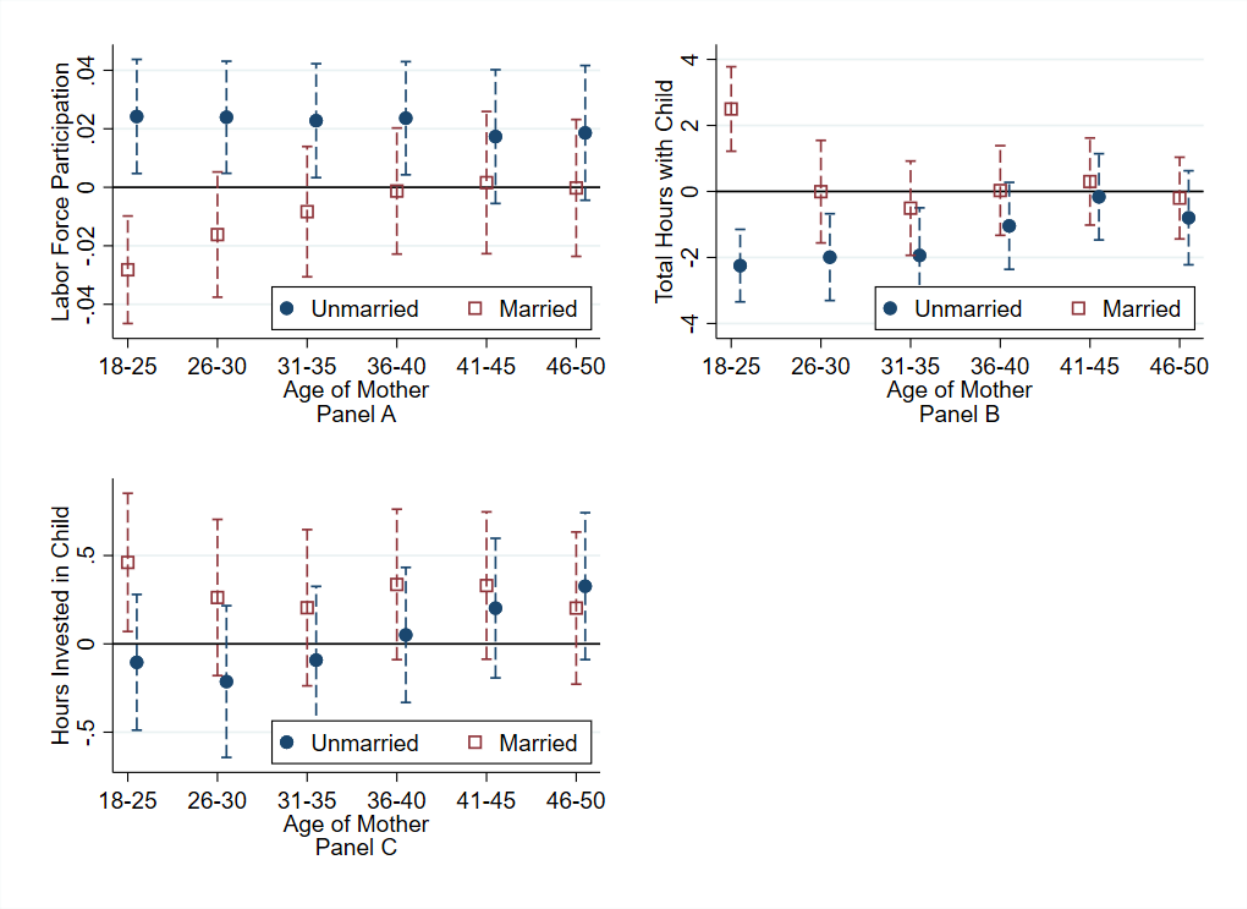

Fig. 7. EITC Effect on LFP and Time Spent with Children, by Mother's Age

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Each estimate comes from a single regression resembling equation (1), except "MaxEITC × Unmarried" and "MaxEITC × Married" are interacted with six binary age categories of the mother. Full set of controls from Table 8 column 3 used in each regression. Standard errors are robust to heteroskedasticity and clustered at the state level.

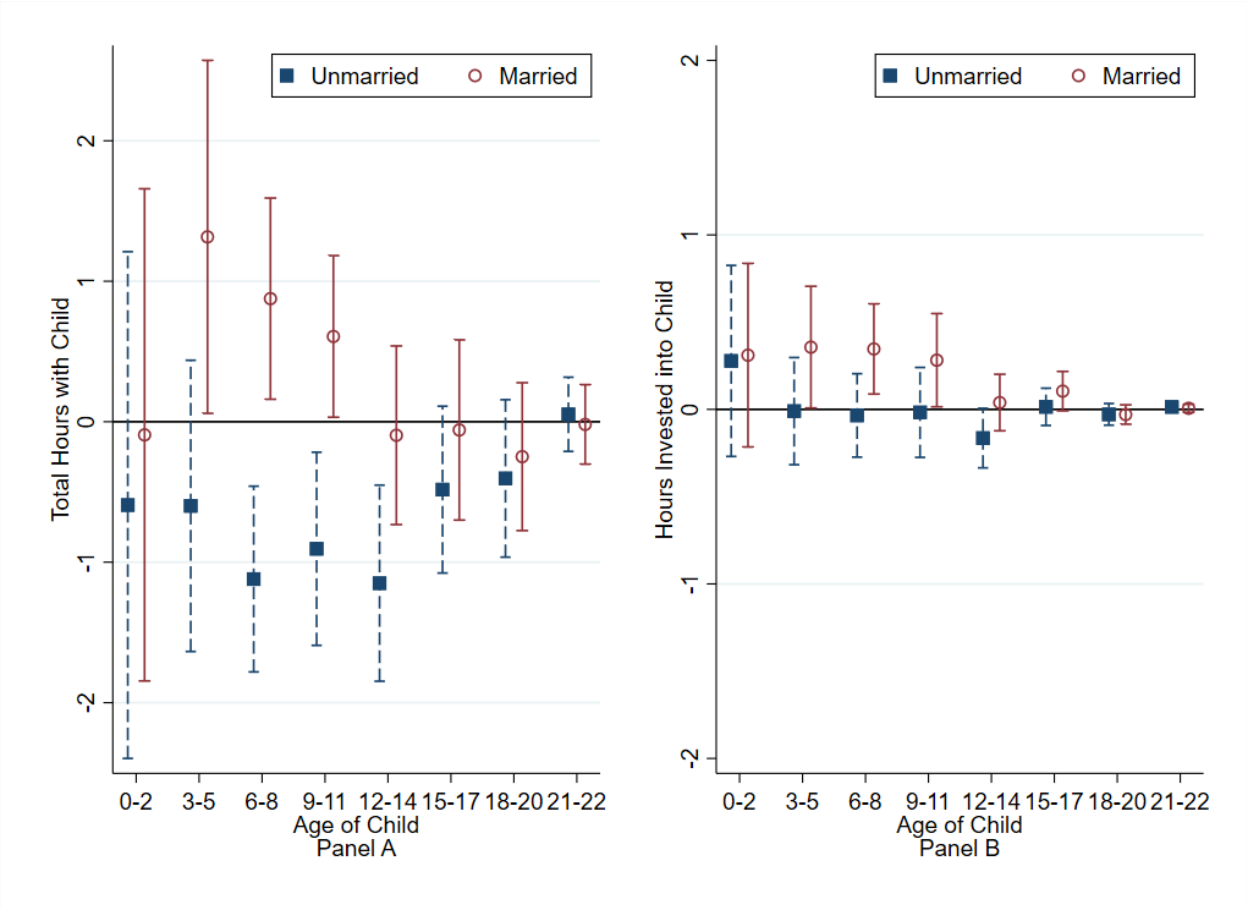

Fig. 8. Effects of the EITC on Time with Children, by Age of Children

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Estimates from equation (4). Full set of controls from Table 8 column 3 used in each regression. Standard errors are robust to heteroskedasticity and clustered at the state level.

For Online Publication

The EITC and Maternal Time Use: More Time Working and Less Time with Kids?[1]

Jacob Bastian and Lance Lochner

Appendix A: Additional Tables and Figures

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Table A.1: Labor Supply, Earnings, and EITC Benefits: by Race and Education

Outcome:	LFP	Weekly Work Hours	EITC Benefits	Any EITC	Earnings	Earnings and EITC
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Effects by Marital Status and Race						
MaxEITC ×	-0.0054	-0.26	233.1	0.0041	421.9	655.0
White × Married	(0.011)	(0.45)	(36.1)	(0.0096)	(545.9)	(537.7)
MaxEITC ×	-0.0081	-0.049	262.1	0.0099	539.1	801.2
Nonwhite × Married	(0.0097)	(0.42)	(36.9)	(0.0090)	(533.4)	(537.2)
MaxEITC ×	0.028	0.99	338.3	0.014	1449.2	1787.4
White × Unmarried	(0.0094)	(0.37)	(35.2)	(0.0098)	(509.1)	(509.9)
MaxEITC ×	0.016	0.54	401.8	0.031	822.7	1224.5
Nonwhite × Unmarried	(0.010)	(0.39)	(37.1)	(0.0090)	(536.4)	(543.3)
R-squared	0.094	0.132	0.285	0.292	0.213	0.201
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000
Panel B: Effects by Marital Status and Education						
MaxEITC × Married	-0.0095	-0.59	89.7	-0.0049	951.7	1041.3
× >12 Yrs Educ	(0.010)	(0.37)	(43.2)	(0.0088)	(780.5)	(795.8)
MaxEITC × Married	-0.00051	0.21	427.3	0.017	-255.2	172.1
× ≤12 Yrs Educ	(0.021)	(0.77)	(64.4)	(0.021)	(546.6)	(526.0)
MaxEITC × Unmarried	0.016	0.53	251.1	0.018	1634.6	1885.7
× >12 Yrs Educ	(0.012)	(0.37)	(43.6)	(0.0080)	(785.0)	(802.9)
MaxEITC × Unmarried	0.032	1.24	518.0	0.025	640.1	1158.0
× ≤12 Yrs Educ	(0.018)	(0.69)	(62.1)	(0.020)	(472.0)	(465.1)
R-squared	0.093	0.131	0.287	0.292	0.213	0.200
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000
Observations	43,685	43,685	43,685	43,685	43,685	43,685
Mean Dep Var	0.74	21.6	1021.9	0.34	23514.9	24536.9

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Outcomes are based on CPS data. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Table A.2: Robust to Various Measuring of Labor Supply

Outcome:	ATUS Time-Use Data				CPS Data		
	Time-Use Work Hours	>0 Work Hours	≥ 20 Work Hours	≥ 40 Work Hours	Usual Hours	Working	LFP Non-Self-Emp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Average Effects (Sample of All Women, N=58,090)							
MaxEITC	1.13	0.016	0.020	0.020	0.61	0.016	0.020
	(0.45)	(0.0077)	(0.0085)	(0.0077)	(0.32)	(0.0084)	(0.0072)
R-squared	0.184	0.164	0.173	0.168	0.161	0.115	0.092
Panel B: Effects by Marital Status (Sample of All Women, N=58,090)							
MaxEITC ×	0.77	0.011	0.014	0.014	0.094	0.0073	0.0077
Married	(0.46)	(0.0080)	(0.0088)	(0.0082)	(0.31)	(0.0090)	(0.0075)
MaxEITC ×	1.50	0.021	0.025	0.027	1.13	0.024	0.033
Unmarried	(0.46)	(0.0073)	(0.0082)	(0.0076)	(0.31)	(0.0080)	(0.0064)
R-squared	0.184	0.165	0.174	0.169	0.164	0.117	0.096
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Panel C: Effects by Marital Status and Race (Sample of All Women, N=58,090)							
MaxEITC ×	0.71	0.011	0.014	0.013	0.059	0.0075	0.0072
White × Married	(0.47)	(0.0081)	(0.0089)	(0.0083)	(0.32)	(0.0093)	(0.0078)
MaxEITC ×	1.14	0.013	0.019	0.019	0.33	0.0082	0.011
Nonwhite × Married	(0.43)	(0.0077)	(0.0083)	(0.0077)	(0.30)	(0.0074)	(0.0065)
MaxEITC ×	1.66	0.023	0.027	0.030	1.21	0.028	0.034
White × Unmarried	(0.47)	(0.0075)	(0.0083)	(0.0076)	(0.31)	(0.0086)	(0.0069)
MaxEITC ×	1.19	0.016	0.020	0.021	0.97	0.015	0.030
Nonwhite × Unmarried	(0.47)	(0.0077)	(0.0086)	(0.0077)	(0.32)	(0.0074)	(0.0062)
R-squared	0.185	0.165	0.174	0.170	0.165	0.118	0.096
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Panel D: Effects by Marital Status (Sample of Mothers, N=43,685)							
MaxEITC ×	0.055	0.00024	0.0011	0.0017	-0.39	-0.0040	0.00010
Married	(0.72)	(0.012)	(0.013)	(0.011)	(0.46)	(0.013)	(0.010)
MaxEITC ×	0.63	0.0089	0.0098	0.013	0.81	0.015	0.030
Unmarried	(0.61)	(0.0095)	(0.010)	(0.0095)	(0.37)	(0.011)	(0.0097)
R-squared	0.157	0.144	0.151	0.148	0.138	0.108	0.084
Eq. Eff. (p-val.)	0.045	0.060	0.057	0.015	0.000	0.000	0.000
Mean Dep Var (All Women)	26.15	0.493	0.438	0.376	23.22	0.714	0.735
Mean Dep Var (Mothers)	23.5	0.46	0.40	0.34	21.4	0.67	0.69

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Standard errors are robust to heteroskedasticity and clustered at the state level. These outcomes are based on time-use variables. Full set of controls from Table 8 column 3 used in each regression.

Table A.3: State EITC Expansions and Labor Supply

Sample Years:	2003–2008			2009–2018		
Outcome:	LFP Work	Weekly Work Hours	Weekly Work Hours	LFP Work	Weekly Work Hours	Weekly Work Hours
	CPS	CPS	ATUS	CPS	CPS	ATUS
	(1)	(2)	(3)	(4)	(5)	(6)
MaxEITC × Married	0.013	0.88	0.98	-0.0025	-0.16	0.46
	(0.013)	(0.50)	(0.71)	(0.015)	(0.50)	(0.71)
MaxEITC × Unmarried	0.036	1.67	1.73	0.023	0.87	1.16
	(0.014)	(0.54)	(0.76)	(0.014)	(0.50)	(0.74)
R-squared	0.105	0.153	0.199	0.116	0.178	0.188
Observations	26,544	26,544	26,544	31,546	31,546	31,546
Mean Dep Var	0.78	23.9	26.5	0.78	23.3	26.0
Eq. Eff. (p-val.)	0.000	0.000	0.005	0.000	0.000	0.005

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Table A.4: The EITC and Decomposing All Time-Use (168 Weekly Hours)

Outcome:	Home Production			Leisure			Work	School	Sleep	Uncat.
With Children?		Yes	No		Yes	No				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Effects by Marital Status and Race										
MaxEITC ×	-0.37	-0.036	-0.33	0.018	-0.11	0.13	0.030	0.11	0.20	0.011
White × Married	(0.61)	(0.40)	(0.38)	(0.51)	(0.37)	(0.45)	(0.73)	(0.27)	(0.36)	(0.086)
MaxEITC ×	-0.16	0.033	-0.20	-0.66	-0.48	-0.18	0.34	0.087	0.40	0.0034
Nonwhite × Married	(0.60)	(0.41)	(0.39)	(0.51)	(0.38)	(0.46)	(0.69)	(0.27)	(0.37)	(0.087)
MaxEITC ×	-1.11	-1.25	0.14	-0.39	-0.58	0.19	0.87	0.17	0.45	0.011
White × Unmarried	(0.51)	(0.37)	(0.34)	(0.54)	(0.37)	(0.52)	(0.62)	(0.30)	(0.49)	(0.11)
MaxEITC ×	-0.55	-1.02	0.47	-0.47	-0.46	-0.011	0.23	0.20	0.57	0.017
Nonwhite × Unmarried	(0.54)	(0.31)	(0.38)	(0.60)	(0.35)	(0.59)	(0.64)	(0.30)	(0.47)	(0.11)
R-squared	0.117	0.222	0.077	0.113	0.144	0.141	0.158	0.133	0.113	0.024
Panel B: Effects by Marital Status and Education										
MaxEITC × Married	-0.26	0.49	-0.75	0.16	0.20	-0.046	-0.90	0.54	0.38	0.077
× >12 Yrs Educ	(0.60)	(0.55)	(0.34)	(0.50)	(0.36)	(0.47)	(0.84)	(0.23)	(0.38)	(0.096)
MaxEITC × Married	-0.45	-0.67	0.22	-0.35	-0.59	0.24	1.35	-0.52	0.048	-0.074
× ≤12 Yrs Educ	(1.00)	(0.57)	(0.60)	(1.07)	(0.71)	(0.79)	(1.32)	(0.47)	(0.48)	(0.14)
MaxEITC × Unmarried	-0.68	-0.83	0.15	-0.28	-0.36	0.085	-0.45	0.81	0.53	0.057
× >12 Yrs Educ	(0.56)	(0.51)	(0.35)	(0.59)	(0.37)	(0.55)	(0.95)	(0.28)	(0.48)	(0.10)
MaxEITC × Unmarried	-1.16	-1.68	0.52	-0.61	-0.81	0.20	2.00	-0.58	0.40	-0.051
× ≤12 Yrs Educ	(0.93)	(0.56)	(0.56)	(1.06)	(0.66)	(0.87)	(1.12)	(0.47)	(0.57)	(0.17)
Observations	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685
Mean Dep Var (Mothers)	46.5	22.0	24.4	33.4	15.6	17.8	23.5	2.18	60.9	1.49

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Standard errors are robust to heteroskedasticity and clustered at the state level. The six categories are mutually exclusive and sum to 168 weekly hours. Tables A.6 and A.7 further decompose home production and leisure with children from columns 2 and 5. Full set of controls from Table 8 column 3 used in each regression.

Table A.5: Outcomes Robust to EITC Definition

Outcome:	LFP	Work Hours	Home Prod. and Leisure Hours	Time with Children Hours	Investing in Children Hours
	(1)	(2)	(3)	(4)	(5)
Panel A: Sample = All Women					
EITC Phase-In Rate	0.0020	0.064	-1.08		
× Married	(0.012)	(0.47)	(0.80)		
EITC Phase-In Rate	0.037	1.41	-2.26		
× Unmarried	(0.010)	(0.48)	(0.77)		
R-squared	0.103	0.160	0.159		
Observations	58,090	58,090	58,090		
Panel B: Sample = All Mothers					
EITC Phase-In Rate	-0.019	-0.81	-0.27	0.49	0.47
× Married	(0.015)	(0.60)	(1.21)	(0.89)	(0.31)
EITC Phase-In Rate	0.033	1.18	-1.62	-2.92	-0.21
× Unmarried	(0.012)	(0.53)	(1.10)	(0.78)	(0.28)
R-squared	0.093	0.131	0.122	0.260	0.105
Observations	43,685	43,685	43,685	43,685	43,685

Notes: 2003–2018 ATUS data. Sample includes all women or all mothers 18–49 years old. Units are 10 percentage points. The following example illustrates the phase-in rate: if the federal phase-in rate is 40 percent and the state EITC matches 20 percent of the federal EITC, then the total phase-in rate is 0.40(1+0.20)=0.48. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Table A.6: Decomposing Home Production with Kids (from Table 5 Column 2)

Outcome:	Personal Care	House-work	Food Prep	Waiting, Shop-ping	Caring for Others	Civic	Eating	Errands, Travel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MaxEITC ×	-0.069	0.042	0.025	-0.087	0.024	-0.0074	0.11	-0.044
Married	(0.035)	(0.16)	(0.041)	(0.30)	(0.046)	(0.0066)	(0.091)	(0.061)
MaxEITC ×	-0.11	-0.23	0.029	-0.19	-0.0034	-0.0069	-0.015	-0.19
Unmarried	(0.049)	(0.15)	(0.040)	(0.29)	(0.026)	(0.0057)	(0.088)	(0.046)
R-squared	0.019	0.082	0.013	0.158	0.014	0.020	0.156	0.059
Eq. Eff. (p-val.)	0.257	0.000	0.683	0.036	0.404	0.841	0.011	0.001
Full Controls	X	X	X	X	X	X	X	X
Observations	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685
Mean Dep Var	0.24	3.48	0.11	6.48	0.12	0.013	4.09	2.85

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Table A.7: Decomposing Leisure with Kids (from Table 5 Column 5)

Outcome:	Activities with Children	Educ	Socializing & Relaxing	Sports	Religious	Volunteer	Phone	Travel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MaxEITC ×	0.13	0.0037	-0.43	0.053	-0.013	0.0025	0.055	0.043
Married	(0.17)	(0.0081)	(0.25)	(0.052)	(0.047)	(0.042)	(0.020)	(0.035)
MaxEITC ×	0.094	0.0030	-0.58	0.038	-0.051	-0.074	0.039	0.0035
Unmarried	(0.17)	(0.0085)	(0.25)	(0.051)	(0.049)	(0.055)	(0.017)	(0.036)
R-squared	0.087	0.011	0.097	0.024	0.055	0.016	0.022	0.050
Eq. Eff. (p-val.)	0.456	0.756	0.202	0.468	0.028	0.001	0.053	0.004
Full Controls	X	X	X	X	X	X	X	X
Observations	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685
Mean Dep Var	2.98	0.017	10.2	0.63	0.52	0.33	0.14	0.78

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Table A.8: Decomposing Health and "Other" Investment in Kids" (Table 6 columns 7 and 8)

	Health Investment		Other Investment						
	Provide Medical Care	Obtain Medical Care	Play	Arts and Crafts	Sports	Talk and Listen	Organize and Plan	Look After Kids	Attend Events
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MaxEITC ×	-0.068	-0.055	0.16	0.0022	0.051	-0.040	0.0069	0.085	0.041
Married	(0.023)	(0.028)	(0.15)	(0.013)	(0.052)	(0.038)	(0.012)	(0.075)	(0.062)
MaxEITC ×	-0.085	-0.068	0.24	0.0049	0.032	-0.064	-0.0016	0.026	-0.051
Unmarried	(0.022)	(0.026)	(0.14)	(0.013)	(0.051)	(0.038)	(0.012)	(0.083)	(0.046)
R-squared	0.010	0.016	0.082	0.013	0.020	0.037	0.016	0.029	0.029
Eq. Eff. (p-val.)	0.013	0.253	0.067	0.678	0.326	0.044	0.049	0.005	0.000
Unmarried vs Mar	-0.017	-0.012	0.076	0.0027	-0.019	-0.024	-0.0085	-0.059	-0.092
Difference	(0.0070)	(0.011)	(0.041)	(0.0064)	(0.019)	(0.012)	(0.0043)	(0.021)	(0.020)
Observations	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685	43,685
Mean Dep Var	0.11	0.12	2.28	0.075	0.56	0.41	0.078	0.60	0.63

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

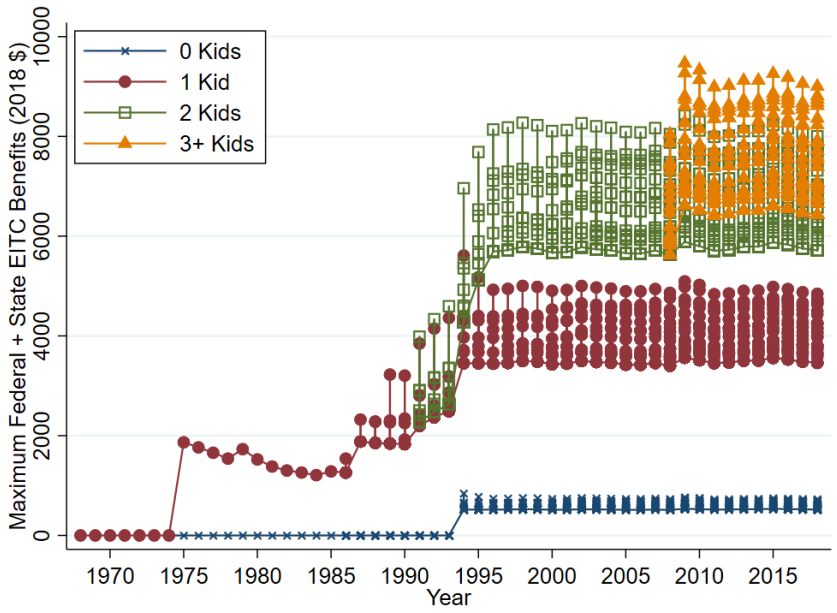

Fig. A.1. Maximum Possible Federal + State EITC Over Time

Source: Authors' calculations from IRS and NBER data. Each point denotes a state by year value.

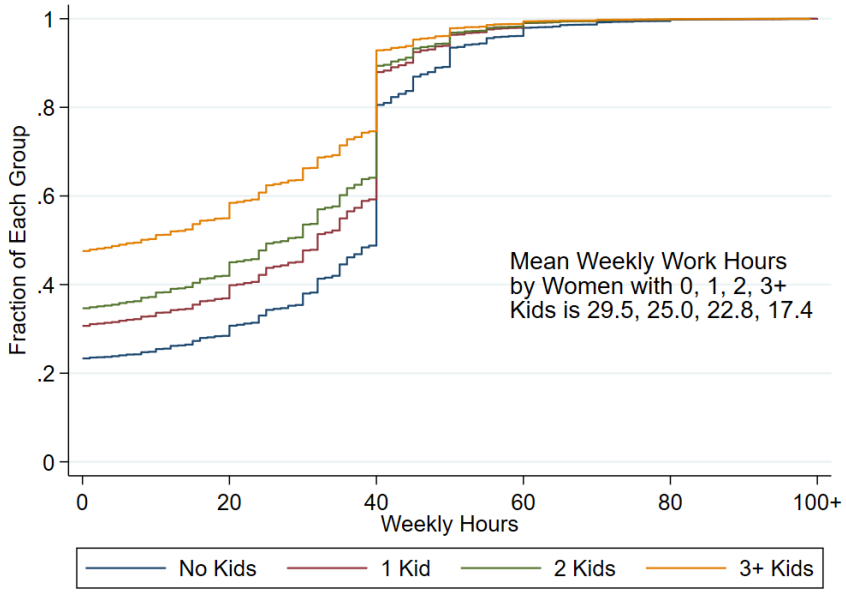

Fig. A.2. CDF of Weekly Work Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Weekly work hours from CPS hours worked last week.

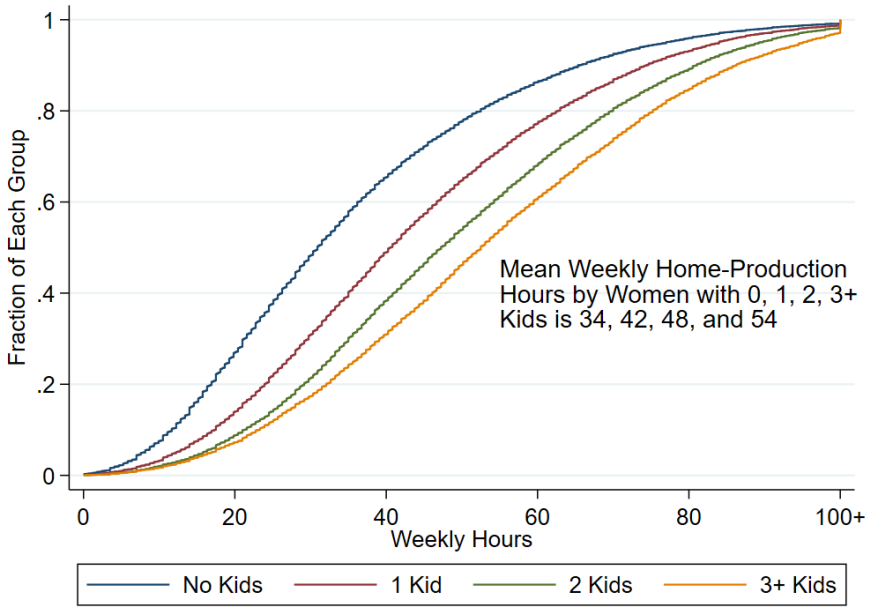

Fig. A.3. CDF of Home-Production Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Home production hours from ATUS data, which asks about time-use in a single day (scaled to weekly hours).

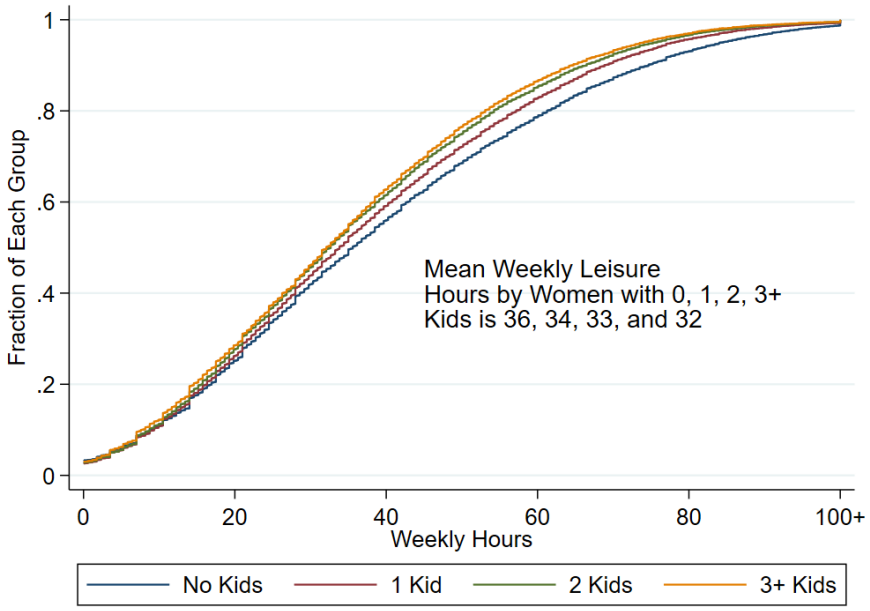

Fig. A.4. CDF of Weekly Leisure Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Leisure hours comes from ATUS data, which asks about time-use in a single day (scaled to weekly hours).

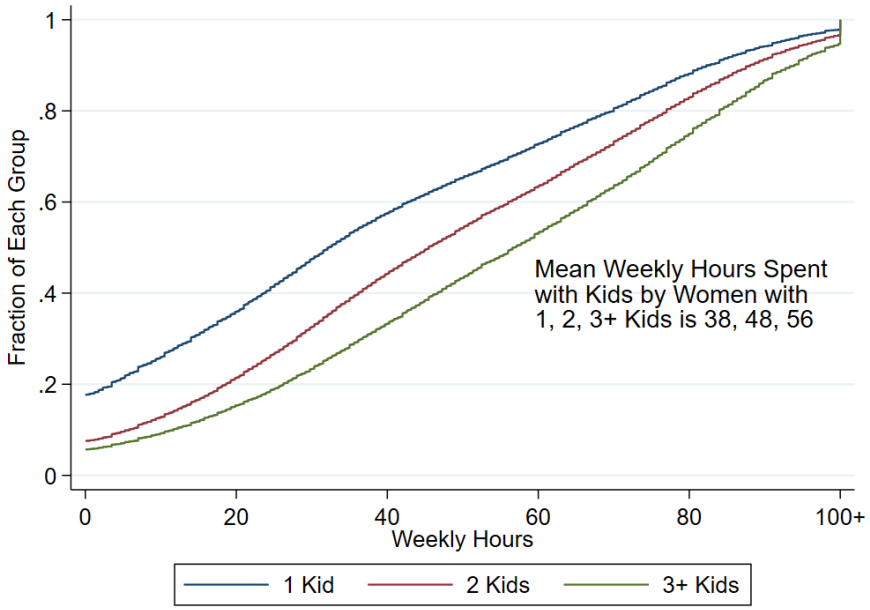

Fig. A.5. CDF of Weekly Hours with Children, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Time with kids comes from ATUS data, which asks about time-use in a single day (scaled to weekly hours).

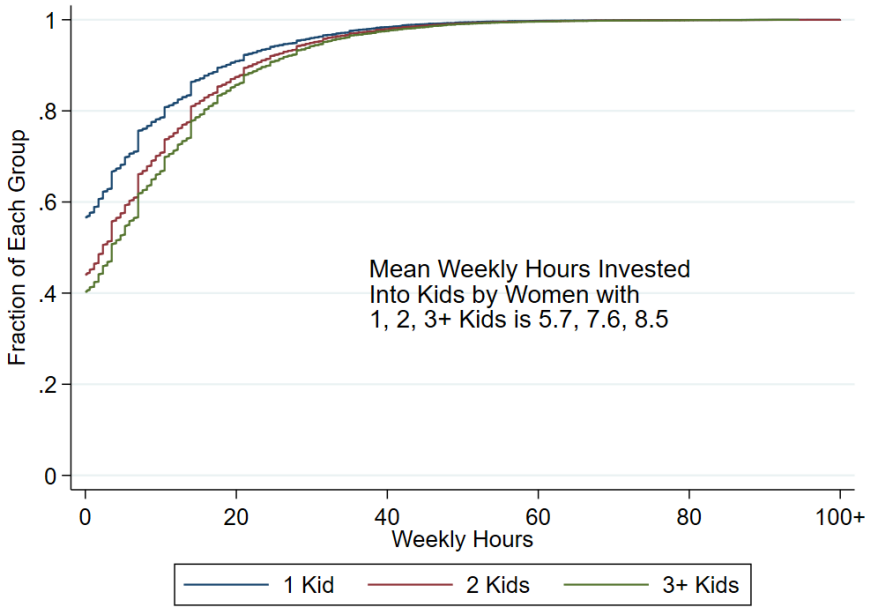

Fig. A.6. CDF of Weekly Hours Invested in Children, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Investment hours comes from ATUS data, which asks about time-use in a single day (scaled to weekly hours).

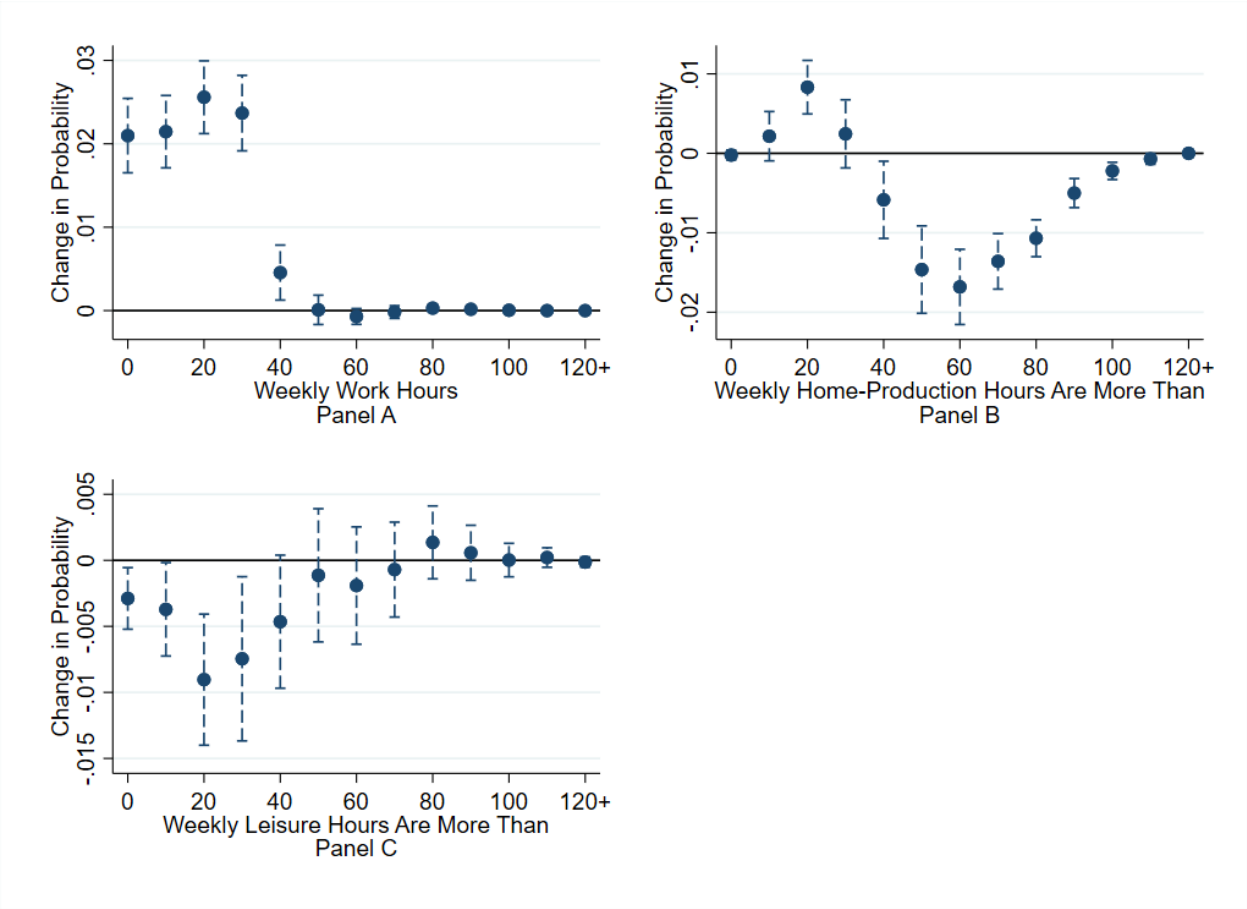

Fig. A.7. EITC Effect on Time-Use by Unmarried Women: Prob(Hours $> X$)

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Figure identical to Figure 6 Panels A-D except the sample includes all women. Standard errors are robust to heteroskedasticity and clustered at the state level. Full set of controls from Table 8 column 3 used in each regression.

Data Appendix: ATUS Data Activity Lexicon (2003)

This appendix provides a detailed description of how we categorized all ATUS time-use activities.

The American Time Use Survey (ATUS) is a comprehensive survey of time use in the U.S. and has been administered annually since 2003. The ATUS sample is drawn from the Current Population Surveys (CPS), covering the population of non-institutionalized civilians at least 15 years old. Typical sample sizes have been about 26,000 respondents since 2004 with surveys administered evenly throughout the year. We use sample weights designed to adjust for stratified sampling, non-response, and to get a representative measure for each day of the year.

The survey asks individuals detailed information about all of their activities over the previous day, including who they were with at the time. The survey also collects information about the respondent and household. It can be linked with the CPS data. Our analysis combines data from the 2003–2018 surveys.

The following provides a detailed breakdown of how we categorized all ATUS time-use activities based on the 2003 ATUS Data Activity Lexicon.

HOME PRODUCTION:

01 Personal Care

- 01.02 Grooming - all
- 01.03 Health-related Self Care - all
- 01.05 Personal Care Emergencies - all
- 01.99 Personal Care, n.e.c* - all

02 Household Activities

- 02.01 Housework - all
- 02.02 Food and Drink Preparation, Presentation, and Clean-up - all
- 02.03 Interior Maintenance, Repair, and Decoration - all
- 02.04 Exterior Maintenance, Repair, and Decoration - all
- 02.05 Lawn, Garden, and Houseplants - all
- 02.06 Animals and Pets - all
- 02.07 Vehicles - all
- 02.08 Appliances and Tools - all
- 02.09 Household Management - all
- 02.99 Household Activities, n.e.c* - all

03 Caring For and Helping Household Members

- 03.01 Caring For and Helping Household Children
  - 03.01.01 Physical care for household children
  - 03.01.06 Talking with/listening to household children
  - 03.01.07 Helping/teaching household children (not related to education)
  - 03.01.08 Organization and planning for household children
  - 03.01.09 Looking after household children (as a primary activity)
  - 03.01.10 Waiting for/with household children
  - 03.01.11 Picking up/dropping off household children (as a primary activity)

03.01.99 Caring for and helping household children, n.e.c.*
03.02 Activities Related to household Children's Education - all
03.03 Activities Related to household Children's Health - all
03.04 Caring for Household Adults - all
03.05 Helping Household Adults - all
03.99 Caring for and Helping Household Members, n.e.c.* - all

04 Caring For and Helping Nonhousehold Members

04.01 Caring For and Helping nonhousehold Children
04.01.01 Physical care for nonhousehold children
04.01.06 Talking with/listening to nonhousehold children
04.01.07 Helping/teaching nonhousehold children (not related to education)
04.01.08 Organization and planning for nonhousehold children
04.01.09 Looking after nonhousehold children (as primary activity)
04.01.11 Waiting for/with nonhousehold children

07 Consumer Purchases - all
08 Professional and Personal Care Services - all
09 Household Services - all
10 Government Services and Civic Obligations - all
11 Eating and Drinking - all

16 Telephone Calls

16.01 Telephone Calls (to or from)
16.01.03 Telephone calls to/from education services providers
16.01.04 Telephone calls to/from salespeople
16.01.05 Telephone calls to/from professional or pers. care svcs providers
16.01.06 Telephone calls to/from household services providers
16.01.07 Telephone calls to/from paid child or adult care providers
16.01.08 Telephone calls to/from government officials
16.99 Telephone Calls, n.e.c* - all

17 Traveling

17.01 Travel Related to Personal Care - all
17.02 Travel Related to Household Activities - all
17.03 Travel Related to Caring For and Helping household Members - all
17.04 Travel Related to Caring For and Helping Nonhousehold Members - all
17.07 Travel Related to Consumer Purchases - all
17.08 Travel Related to Using Professional and Personal Care Services - all
17.09 Travel Related to Using Household Services - all
17.10 Travel Related to Using Government Services and Civic Obligations - all
17.11 Travel Related to Eating and Drinking - all
17.16 Travel Related to Telephone Calls - all
17.17 Security Procedures Related to Traveling - all
17.99 Travel n.e.c.* - all

SCHOOL:

06 Education
- 06.01 Taking Class
  - 06.01.01 Taking class: degree
  - 06.01.03 Waiting associated with taking classes
  - 06.01.04 Security procedures related to taking classes
  - 06.01.99 Taking class, n.e.c.*
- 06.03 Research/Homework
  - 06.03.01 Research/homework: class for degree
  - 06.03.03 Waiting associated with research/homework
  - 06.03.99 Research/homework n.e.c*
- 06.04 Registration/Administrative Activities
  - 06.04.01 Administrative activities: class for degree
  - 06.04.03 Waiting associated with administrative activities (education)
  - 06.04.99 Administrative for education, n.e.c*
- 06.99 Education, n.e.c* - all

17 Traveling
- 17.06 Travel Related to Education - all

WORK:

05 Working and Work-Related Activities - all

17 Traveling
- 17.05 Travel Related to Work - all

LEISURE:

01 Personal Care
- 01.04 Personal Activities - all

03 Caring For and Helping Household Members
- 03.01 Caring For and Helping Household Children
  - 03.01.02 Reading to/with household children
  - 03.01.03 Playing with household children, not sports
  - 03.01.04 Arts and crafts with household children
  - 03.01.05 Playing sports with household children
  - 03.01.10 Attending household children's events

04 Caring For and Helping Nonhousehold Members
- 04.01 Caring For and Helping nonhousehold Children
  - 04.01.02 Reading to/with nonhousehold children
  - 04.01.03 Playing with nonhousehold children
  - 04.01.04Arts and crafts with nonhousehold children
  - 04.01.05 Playing sports with nonhousehold children
  - 04.01.10 Attending nonhousehold children's events
  - 04.01.12 Dropping off/picking up nonhousehold children

04.01.99 Caring for nonhousehold children n.e.c.*
04.02 Activities Related to Nonhousehold Children's Education - all
04.03 Activities Related to Nonhousehold Children's Health - all
04.04 Caring For Nonhousehold Adults - all
04.05 Helping Nonhousehold Adults - all
04.99 Caring for and Helping Nonhousehold Members, n.e.c.* - all

06 Education
06.01 Taking Class
06.01.02 Taking class: personal interest
06.02 Extracurricular School Activities (Except Sports) - all
06.03 Research/Homework
06.03.02 Research/homework: class for personal interest
06.04 Registration/Administrative Activities
06.04.02 Administrative activities: class for personal interest

12 Socializing, Relaxing, and Leisure - all
13 Sports, Exercise, and Recreation - all
14 Religious and Spiritual Activities - all
15 Volunteer Activities - all

16 Telephone Calls
16.01 Telephone Calls (to or from)
16.01.01 Telephone calls to/from family members
16.01.21 Telephone calls to/from friends, neighbors, or acquaintances

17 Traveling
17.12 Travel Related to Socializing, Relaxing, and Leisure - all
17.13 Travel Related to Sports, Exercise, and Recreation - all
17.14 Travel Related to Religious/Spiritual Activities - all
17.15 Travel Related to Volunteer Activities - all

UNCATEGORIZED:

01 Personal Care
01.01 Sleeping - all

50 Data Codes - all

INVESTMENT TIME

Our measure of child time investment sums all of the time parents report spending with children in each of the following activities (each categorized as either home production or leisure as above):

(03.01) Caring For and Helping Household Children: (03.01.02) Reading to/with household children; (03.01.03) Playing with household children, not sports; (03.01.04) Arts and crafts with household children; (03.01.05) Playing sports with household children; (03.01.06) Talking with/listening to household children; (03.01.07) Helping/teaching household children (not related to education); (03.01.08) Organization and planning for household children;

(03.01.09) Looking after household children (as a primary activity; (03.01.10) Attending household children's events.

(03.02) Activities Related to Household Children's Education: (03.02.01) Homework (household children); (03.02.02) Meetings and School Conferences (household children); (03.02.03) Home schooling of household children.

(03.03) Activities Related to Household Children's Health: (03.03.01) Providing medical care to household children; (03.03.02) Obtaining medical care for household children.

(12.03) Relaxing and Leisure: (12.03.07) Playing games; (12.03.09) Arts and crafts as a hobby.

(12.04) Arts and Entertainment (other than sports): (12.04.01) Attending performing arts; (12.04.02) Attending museum; (12.04.03) Attending movies/film.

(13.01) Participating in Sports, Exercise, and Recreation: all subcategories.