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The Intergenerational Transmission of Poverty and Public Assistance – Evidence from the Earned Income Tax Credit

Nicardo McInnis[1,2]
Katherine Michelmore[2]
Natasha Pilkauskas[2]

[1]California State University Northridge
[2]University of Michigan

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Abstract:
This paper examines the intergenerational effects of the Earned Income Tax Credit (EITC) on poverty and public assistance use. Using data from the PSID, we find that increased exposure to the EITC in childhood reduces the use of public assistance in adulthood (WIC and other public assistance) and reduces the likelihood of being in poverty (<100% of poverty) or near poor (<200% of poverty) by about 6 percentage points. These findings build on a growing literature that considers the intergenerational impacts of public policy and suggests that the economic benefits of policies in one generation may have long term effects on the next generation.

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Children who grow up in poverty are more likely to experience poverty as adults compared to those who were not poor. Children growing up in the bottom income quintile are roughly one-third as likely to reach the top income quintile in adulthood as those growing up in the top income quintile (Chetty et al. 2014). While this intergenerational correlation of poverty is presumed to have at least some causal component, a host of potential confounding factors, such as parental educational attainment, family structure, neighborhood characteristics, and school quality make it difficult to isolate a causal link between childhood poverty and adulthood poverty. As such, it is not clear whether investing in social programs to increase family income for the current generation necessarily leads to reductions in poverty for the next generation. These questions are critically important for public policy, amidst debates about how to break the intergenerational poverty link, and for assessing the short and long-term benefits of investing in anti-poverty programs.

As one of our largest anti-poverty programs, the Earned Income Tax Credit (EITC) provides an excellent context to investigate this question of how social investments in one generation affect poverty and economic well-being in the next generation. Large, federal expansions to the EITC beginning in the 1970s, in addition to several states implementing their own EITCs since the late 1980s, generate ample variation in childhood EITC exposure according to year of birth, state of residence, and household composition. This policy variation provides plausibly exogenous shocks to family resources during childhood, allowing us to examine the causal link between family income in childhood and economic outcomes in adulthood. A long line of research demonstrates that expansions to the EITC increase the short-term labor force participation of single mothers (e.g. Eissa and Liebman 1996; Meyer and Rosenbaum 2001; Michelmore and Pilkauskas 2021), increase pre-tax earnings, and lift families out of poverty (Hoynes and Patel 2018). A growing body of research examines the impacts of the EITC on children in both the short and long term: infants are less likely to be born low birthweight (Hoynes, Miller, and Simon 2015),[1] have higher test scores in childhood (Dahl and Lochner 2012; 2017), and are more likely to enroll in (Manoli and Turner 2018) and complete college (Bastian and Michelmore 2018). This work suggests that the EITC not only nearly pays for itself in the short-term (Bastian and Jones 2021), but is likely to generate cost savings in the long-term.

[1] However, Dench & Joyce (2020) questions the validity of their results.

To date, however, little is known about the intergenerational impacts of the EITC on poverty and economic self-sufficiency.

In this paper, we investigate how exposure to the EITC during childhood affects adult economic well-being, focusing on poverty, earnings, and public assistance use. Using data from the Panel Study of Income Dynamics (PSID), a longitudinal panel dataset, we exploit federal and state variation in EITC generosity over several decades to provide causal evidence on how increasing family resources throughout childhood affects poverty, public assistance use (cash, food and other welfare), earnings, and income mobility once these children reach adulthood, between ages 25 and 45.

Our study makes three primary contributions to the literature. First, our findings add to a growing body of evidence examining the long-term effects of childhood exposure to the social safety net on outcomes in adulthood (e.g. Hoynes, Schanzenbach, and Almond 2016; Bailey, Sun, and Timpe 2021). Much of the previous research on this topic is based on very targeted, in-kind programs such as the food stamps program, Medicaid, and Head Start, which all target poor and near-poor households (typically those with income below 130% of the federal poverty line). Less is known about the long-term effects of broader-reaching income transfer policies such as the EITC, which reaches more than 27 million households with income below roughly 225% of the federal poverty threshold each year (IRS 2018). Second, by examining the intergenerational poverty, employment, and earnings effects of the EITC, we illustrate the importance of considering the long-term benefits associated with social safety net programs; cost-benefit analyses confined to the short-term will underestimate the total benefits of the program (Bastian and Jones 2021). Finally, this work contributes to the literature on the causal effects of family income on later-life outcomes. While the broader literature on the consequences of childhood poverty presumes a causal link between family income in childhood and outcomes in adulthood, we lack rigorous, causal evidence on this question. By exploiting federal and state variation in EITC generosity, which generates plausibly exogenous increases in family income during childhood, we contribute to this growing literature (e.g. Aizer et al. 2016; Hoynes, Schanzenbach, and Almond 2016).

Our results suggest that exposure to more generous EITC benefits throughout childhood leads to substantial reductions in the likelihood of living in poverty as an adult and decreases the likelihood of receiving public assistance such as WIC, the supplementary food program for

Women, Infants, and Children, and other types of welfare assistance. A $1,000 increase in average annual EITC exposure during childhood increases the likelihood of having earnings above the poverty threshold by 7 percentage points, or 8 percent. The reductions in poverty and public assistance receipt are driven primarily by increases in employment and earnings in adulthood, particularly for those with income in the bottom half of the earnings distribution. For instance, a $1,000 increase in annual EITC exposure during childhood increases employment between ages 25 and 45 by about 4 percentage points and for individuals in the bottom half of the distribution, increased EITC exposure increases annual earnings by 10-30% in adulthood. We also find some suggestive evidence of increases in income mobility as a result of the EITC. These effects are confined to children with parental income rank in the second quartile (25^{th} through the 50^{th} percentile), who are more likely to receive the EITC in childhood. We find little evidence that exposure to the EITC in childhood affects the likelihood of ever marrying or having children, nor does it reduce total fertility, suggesting that reductions in receipt of public assistance are not driven by changes in family structure that may mechanically render some individuals ineligible for benefits.

These findings provide evidence of the causal impact of family resources during childhood on economic self-sufficiency in adulthood (between ages 25 and 45) and have important implications for policy. In particular, these results imply that the EITC produces economic benefits that persist beyond current beneficiaries, extending to the next generation as well. Furthermore, these results illustrate how policies that increase economic resources of low-income families can have long lasting impacts, implying that these programs could at least pay for themselves by reducing poverty and public assistance receipt, not only among current beneficiaries, but also among the children of the original beneficiaries.

Background

The EITC

The EITC was established in 1975 as a temporary subsidy for workers earning less than $10,000. The original credit was worth up to $500 and could only be claimed by families with children. Since its inception, the credit has been expanded several times. It was made a permanent fixture in the tax code in 1978, and the credit was indexed to inflation beginning in 1987.

The value of the credit was greatly expanded in the late 1980s and early 1990s. In 1991, a larger benefit was introduced for families with two or more children and in 2009, a more generous credit was introduced for families with three or more children (see Crandall-Hollick [2018] for a more detailed history of the EITC). As of 2021, the maximum federal credit was worth up to $6,728 for a family with three children, $5,980 for a family with two children, and $3,618 for a family with one child. In percentage terms, these credits are worth up to 45% of a household's annual earnings for a family with three or more children, up to 40% of annual earnings for a family with two children, and up to 34% of annual earnings for a family with one child. Accounting for inflation, the maximum federal EITC benefit has increased by more than $2,000 since 1975 (see Figure 1), with larger increases for families with two or more children.

[Figure 1 about here]

In addition to the several federal expansions to the EITC that have occurred over time, a number of states have implemented their own EITCs, which piggyback off of the federal credit. As of 2021, 30 states have established their own EITCs, varying in generosity and when they were implemented. Rhode Island instituted the first state EITC in 1987, whereas most recently, in 2017, Hawaii, Montana, and South Carolina instituted EITCs. Most state EITCs are designed as fixed percentages of the federal credit, ranging from 3-45% of the value of the federal credit. In these states, tax filers who claim the federal EITC would also be eligible for the state EITC, provided they fill out their state tax forms and claim the credit. A couple of states have their own EITC benefit structures that do not directly map onto the federal credit. California, for instance, provides a very generous EITC worth up to 85% of the federal EITC, but the credit phases out at a much lower income level than the federal EITC. Some Californian tax filers who claim the federal credit are not eligible for the state credit.

We leverage this rich variation in EITC generosity—over time, by state, and across household size—to test how exposure to larger benefits in childhood affects poverty and public assistance receipt in adulthood. For instance, we take advantage of the fact that a child born in 1990 in the state of New York would not initially be eligible for a state EITC because New York did not institute one until 1994, but a similar child born in 1995 in New York would be eligible for a much more generous credit, and for more years over the course of childhood. We leverage additional variation driven by comparing two children born in the same year, but in different states, as well as children born in different years, but who reside in households with the same

number of children. As we discuss in more detail below, we also take advantage of variation over the entire course of childhood, capturing exposure to the EITC from birth until age 15, providing additional variation in EITC exposure compared to a cross-sectional measure alone.

Prior literature

Many studies find that the EITC increases labor force participation among single mothers, increasing pre-tax earnings, and lifting families out of poverty in the short term (e.g., Meyer and Rosenbaum 2001; Hoynes and Patel 2018; Michelmore and Pilkauskas 2021; for an exception see Kleven 2019). The EITC is also linked with a host of other positive outcomes for mothers and their children such as: increased savings (Jones and Michelmore 2018) and reduced debt (Shaefer et al. 2013), improved health (Evans and Garthwaite 2014) and reduced suicidal behaviors (Morgan et al. 2021) and improved housing outcomes (Pilkauskas and Michelmore 2019). Several studies have examined effects on children in the short- to medium-term. These studies find that the EITC is linked with higher test scores for children (Dahl and Lochner, 2012; 2017; Agostinelli and Sorrenti 2018), and greater college enrollment (Manoli and Turner 2018) and completion (Bastian and Michelmore 2018).

A newer strand of research considers the intergenerational impacts of the EITC in the longer term, finding positive effects on economic and health outcomes. Individuals exposed to larger EITC benefits in childhood are in better health in adulthood and are less likely to be obese (Braga, Blavin and Gangopadhyaya 2020), and women exposed to larger EITC benefits in childhood are also less likely to have children or get married as very young adults (Michelmore and Lopoo 2021). A recent working paper also finds strong, positive correlations between EITC exposure and income rank in adulthood, lower EITC use in the second generation, and higher probability of employment in adulthood (Akee, Jones and Simeonova 2020). Yet, to date no research on the EITC has considered intergenerational impacts of the EITC on poverty, or the use of public assistance. Our paper fills this gap.

Many related studies consider the intergenerational impacts of exposure to other types of public assistance programs on adult poverty and economic well-being. Several studies use the roll out of the Food Stamp program to study intergenerational effects and find they are linked with improved adult health outcomes (Hoynes, Schanzenbach and Almond 2016), improved adult earnings (Bitler and Figinski, 2019), and greater economic self-sufficiency (especially

among children who were exposed before age 5; Bailey et al. 2021). Others have considered the intergenerational effects of welfare reform (work requirements, time limits and other conditions) and found some evidence of reduced intergenerational welfare use (but not broader social assistance; Hartley, Larmarch and Ziliak 2017), whereas other studies find that welfare reform was associated with improved human capital (Vaughn, 2018) and reduced food insecurity (Corman et al. 2021). Previous research also shows that exposure to Medicaid in childhood is linked with improved adult health (Boudreaux, Golberstein and McAlpine 2016) and that Head Start exposure has positive intergenerational effects on academic outcomes (Barr and Gibbs, 2017). Lastly, extended maternity leave policies have similarly been linked with intergenerational effects on wages (Carneiro, Loken and Salvanes 2015; Danzer et al. 2017), though this evidence is based on maternity leave policies in Western Europe, which have quite different social policy contexts relative to the US.

Thus, there is some evidence of the intergenerational transmission of the effects of policy on economic well-being, but much of this research is based on exposure to social safety net programs targeted at a relatively narrow portion of the population: those living below or near the poverty line, or from policies outside of the US context. Additionally, much of the evidence in the U.S. context is based on in-kind programs such as food stamps and Medicaid. Little is known about how exposure to a more widely targeted income transfer programs (e.g., the EITC includes families with incomes up to 225% of the federal poverty line, while programs such as food stamps target those with income below 130% of the federal poverty line) affects long-term poverty and economic self-sufficiency.

Given the prior literature on the positive effects of the EITC and positive intergenerational effects of other social policies on poverty and economic well-being, we anticipate that children who experience greater exposure to the EITC in childhood will be less likely to live in poverty as adults and be less likely to receive benefits from other public assistance programs. This hypothesis builds on a long literature suggesting that family financial conditions have long-term effects on children when they reach adulthood (e.g., Currie 2009; Duncan, Magnuson and Votruba-Drzal 2017). Although there are many reasons to anticipate that the additional income provided by the EITC during childhood should improve the outcomes of those children as adults, some research suggests that maternal employment induced by the EITC might lead to negative outcomes for children through reduced supervision and time with children

(e.g., Dave et al. 2019; Agostinelli and Sorreni 2018; Bastian and Lochner 2020; Reichman et al. 2020). Thus, although we believe the weight of the evidence would predict that EITC exposure in childhood should improve poverty and reduce public assistance use in adulthood, the offsetting effects of maternal employment may mute those effects.

Data

We use data from the Panel Study of Income Dynamics (PSID), a longitudinal data set that collects information on a wide range of topics including demographics, income, and public assistance use. The survey started in 1968 with nearly 5,000 households - 1,872 families from the Survey of Economic Opportunity, which oversamples the low-income population, and 2,930 families from a nationally representative sample. Since then, the survey has collected information on individuals living within a PSID household, as well as individuals who are direct descendants of original sample members. Prior to 1997, the survey was conducted annually, and since 1997, the survey has been conducted biennially. The structure of the PSID allows us to link individuals' outcomes in adulthood to a rich set of information about their childhood and family backgrounds.

We use data from the 1968 to 2017 survey waves for our analyses. Our sample comprises individuals born between 1967 and 1992. We examine the effect of exposure to the EITC during childhood between birth and age 15, on poverty and participation in public assistance programs during adulthood between the ages of 25 and 45. The 1967 birth cohort restriction allows us to observe the entire childhood environment for everyone in our sample, while the 1992 birth cohort restriction limits the sample to those we can observe at least through age 25. We further restrict the sample to years when individuals were the head of the household, as many of our outcome measures are only consistently collected for heads and spouses. We consider outcomes starting at age 25 because prior to age 25 many individuals are still living with their parents and have not yet formed independent households, a necessary condition to become the "head" or "spouse". [2]

Because of policy endogeneity concerns, we make no further sample restrictions based on income or family structure during childhood. EITC generosity likely affects family income, and previous work also finds changes in family structure as a function of EITC generosity (e.g.

[2] The vast majority (88%) of 25-45 year old individuals are either heads or spouses.

Herbst 2011; Michelmore 2018). As a robustness check, in some analyses we exclude individuals who are very unlikely to have received the EITC as children to illustrate that our results are not driven by children from higher-income families,[3] but all of our main models do not make such exclusions. Our final sample consist of 5,464 individuals, with up to 26,800 person-year observations (sample varies by outcome). Because of the non-random composition of the sample, we conduct all analyses using the average of the PSID sampling weights during childhood. Table 1 contains descriptive statistics on the sample.

Measures

EITC exposure. Our independent variable of interest is measured as the annual maximum federal plus state EITC benefit available in each year between a child's birth and age 15, conditional on the state of residence and the number of children in the family.[4] We average this maximum federal and state EITC benefit over the course of childhood, from birth to age 15. We measure exposure up until age 15 to avoid concerns that older teenagers may leave the household, which may also be endogenously determined by EITC exposure. Prior to taking the average, the annual maximum EITC benefit is converted to real 2017 dollars.

Variation in annual EITC exposure is generated by changes in federal and state EITC policies that occur over time and across household sizes. We illustrate this variation in Figure 2, which presents the maximum federal and state combined EITC benefit averaged over each year between birth and age 15, for each birth cohort in our sample. Average EITC exposure is much larger for individuals born in the 1980s and early 1990s relative to those born in the 1970s, and there is also considerable variation within each birth cohort, as illustrated by the vertical dispersion of points within each birth year. For those born in 1970, for instance, the average EITC exposure ranged from 0 to about $2,000 per year. Those born after 1980 experienced much wider variation in EITC exposure, due in part to the expansion of the EITC for households with multiple children, as well as the implementation and expansion of several state EITCs. For those born in 1992, for instance, Figure 2 illustrates that the average EITC exposure ranges from about $2,000 per year up to $6,000 per year. The vast majority of our variation is generated by federal

[3] We do not examine the effects on this high-income group (top 5%) as we do not have sufficient sample.
[4] This construction of childhood EITC exposure is similar to Braga et al. 2020.

changes to the EITC over time, followed by differences by household size; state variation makes up the smallest share of the variation in EITC exposure in our sample. (To further illustrate the EITC variation we are exploiting, in Appendix Figure 1, we plot the residuals by birth cohort from a model predicting the EITC amount with all the controls in our model.)[5]

We use this measure of EITC exposure rather than calculating actual household EITC benefits in childhood each year due to concerns of endogeneity of EITC eligibility. Households can only receive the EITC if they have at least some annual earnings, but their earnings must be below approximately 225% of the federal poverty line in order to meet the eligibility requirements. Thus, EITC-eligibility is directly correlated with family income, which is also correlated with poverty and public assistance receipt in adulthood. Relying on actual EITC exposure based on family income would result in a biased relationship between EITC exposure in childhood and poverty and public assistance receipt in adulthood, since children who grow up in poverty are more likely to live in poverty in adulthood. Leveraging the federal and state variation in the EITC over time ensures that variation in EITC exposure is driven by policy changes to the benefit amounts and structure, rather than changes in family income. Additionally, we leverage variation from changes in the number of children residing in the household over time and changes in state of residence. There is little evidence that fertility is affected by the EITC (Baughman and Dickert-Conlin 2009; Kuka and Shenhav 2020). In our main analyses we assume that cross-state moves are not related to EITC generosity, but we also test the robustness of our findings to individuals that do not change states.

Primary outcomes. To study the intergenerational effect of the EITC on poverty, we construct binary indicators for whether individuals have labor income above the U.S. Census Bureau's Official Poverty Measure poverty threshold and above 200% of the poverty threshold, given the individual's family size in a given year.[6] The poverty threshold indicators are constructed from 1993 onwards because the PSID only started collecting labor income separately for spouse and other family members in 1993.

[5] In Appendix Table 6, we also run analyses on the parent generation (i.e., what are the short-term effects of the EITC on childhood parental income and labor supply?) to show how economic wellbeing changed on average in childhood in response to the EITC.

[6] The poverty threshold data is obtained from the Census Bureau's website: https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

The PSID collects information on three public assistance programs: Temporary Assistance for Needy Family (TANF) formerly known as Aid to Families with Dependent Children (AFDC), the Supplemental Nutrition Assistance Program (SNAP) formerly known as Food Stamps, and the Supplemental Nutrition Assistance Program for Women and Children (WIC). The PSID also collects information on whether individuals participate in any other welfare programs other than the three listed. In addition to examining receipt of public assistance from any of these sources individually, we construct a public assistance use variable as a binary indicator equal to one if an individual or their spouse receives benefits from *any* public assistance program in a given year, and zero otherwise. To examine the length of time individuals receive benefits from public assistance programs, we also construct variables indicating the proportion of observed years individuals received benefits from any welfare program between age 25 and age 45. This is a continuous variable that takes on values between zero and one, where zero indicates that the individual never received benefits from any welfare program in any of the periods observed between ages 25 and 45, and one indicates that the individual received benefits in all periods observed between age 25 and 45.

Secondary outcomes. Although the main focus of our study is the intergenerational transmission of poverty and public assistance use, we also examine a few other outcomes related to economic well-being. First, we examine the link between childhood EITC exposure and adult employment and earnings. We consider both a binary measure of employment as an adult as well as a measure of annual hours worked. These are time-varying measures constructed in each year the individual is observed between ages 25 and 45. We analyze adult earnings as a) logged hourly wage, b) annual labor earnings for the individual and c) annual family labor income (in $2017).

Second, we consider economic mobility, another important indicator of the intergenerational transmission of economic well-being. To study mobility, we examine whether individuals move up in the income rank relative to the rank of their parents. We create four measures of mobility: continuous measures of rank difference and income difference (child-parent, in $2017) and indicator variables of child has higher income rank and child has higher income. We then construct two versions of each of these measures – one where we consider only the income rank of the head parent (using head's labor income) and one where we consider the income rank of both parents (using family income). When considering only the head parent's

income, we restrict the child's earnings to their own income. When examining both parent's income – or family income – we use the family income (both head and spouse if married) of the child's generation as well. To make income levels more comparable across generations, we restrict the construction of these income ranks between the ages of 25 and 35 for the child and the parents and take the average income rank over this age range.[7]

Both approaches to examining rank have limitations. In the "head only" approach we oversample fathers because men were more likely to be selected as "heads" to respond to the survey in the earlier years of the study. Thus, we may compare male parents to their male or female children. Since women tend to earn less than men, we may be less likely to observe female children out-earning their male parents. Using family income to measure economic mobility addresses this issue by incorporating the earnings of both the mother and father (if present) in the parent generation, and also incorporating earnings of the head as well as any spouse present in the household for the child generation. However, demographic shifts between the parent and child generation may also affect our interpretation of these findings. Female labor force participation has increased dramatically between these two generations, and there have been marked delays and declines in marriage and fertility rates over this time period.

Last, we consider the effect of childhood EITC exposure on marriage and childbearing as both outcomes can affect whether an individual lives below the poverty line and receives public assistance in adulthood. Marital status is constructed as a binary variable equal to one if the individual reports ever being married by age 45 or the last year observed in the PSID, whichever comes first, and zero otherwise. We construct two variables related to childbearing. The first is an indicator variable for whether the individual has a child by age 45 or the last year observed in the PSID, whichever comes first, and the second variable is the number of children they have by age 45 or the last year observed in the PSID, whichever comes first. Both the marriage and childbearing measures are constructed at the person-level, and do not vary over time.

[7] Instead of constructing the income rank at each age between 25 and 35, we take the average income in this age range for both the child and parent generation, and then construct the relevant ranks. We take this approach because information is not observed at all relevant ages for children and parents. Furthermore, as discussed in Solon, Barsky and Parker (1994), because of the procyclical nature of micro level income data, averaging across years produces a less noisy measure of income.

Control variables. We control for some parental attributes between the birth of the child and age 15: education, the age of the head of the household, and the share of childhood spent with married parents. For the child generation, we also control for race, gender, state of birth, year of birth, average number of siblings between birth and age 15, and the age (and age squared) at the time the outcome is observed (aged 25 through 45). We account for the possibility that state level EITC benefits might be correlated with state level attributes that are also correlated with our outcomes by including controls for the state unemployment rate, state gross domestic product, state maximum TANF benefits for a family of three, state maximum SNAP benefits for a family of three and the state minimum wage rate. All of these state controls come from the University of Kentucky's Center for Poverty Research National Welfare Database and are constructed as the average value between birth and age 15.

Empirical Strategy

Our identification strategy exploits variation from changes in the maximum federal and state level EITC benefits over time, by family size, and by state. We estimate a generalized difference-in-differences model where the treatment is a continuous variable that measures the average maximum federal plus state EITC benefit between birth and age 15. We estimate the following equation:

$$Y_{ist} = \beta_1 EITC_{isb}^{0-15} + \gamma_1 X_{isb}^{0-15} + +\gamma_2 W_{isb}^{0-15} + \gamma_3 Z_{isb}^{0-15} + \gamma_s + \delta_t + \theta_b + \epsilon_{ist} \quad (1)$$

Where i, s, b and t represent individual, state, birth cohort, and the survey year of the outcome, respectively. $EITC_{is}^{0-15}$ represents the average maximum federal plus state EITC benefits between birth and age 15. X_i^{0-15} is a set of parental controls and W_{isb}^{0-15} is a set of individual controls of the child generation. In some models, we also include, Z_{isb}^{0-15}, which controls for state level contextual variables. These state level controls account for time-varying state-level factors that may be correlated with state EITC generosity while in childhood as well as the outcomes of interest. Our model also includes a set of state fixed effects, birth cohort fixed effects, and a set of fixed effects for the year in which the outcomes are observed. These are captured by $\gamma_s, \delta_t,$

and θ_b, respectively. Standard errors are clustered at the state level, to allow for correlation in error terms occurring for individuals born within the same state.

Our main coefficient of interest is β_1, which represents the effect of a $1,000 increase in annual EITC exposure in childhood on the poverty, public assistance receipt, or income mobility outcome of each individual in adulthood. With state, year, and average number of sibling fixed effects in the model, variation in annual EITC exposure is driven by variation in federal and state EITC generosity at the intersection of these three sources: state-by-year, state-by-household size, and year-by-household size. Additional variation stems from accounting for EITC exposure over 15 years of childhood, rather than a single point in time.

We conduct several robustness checks to test the sensitivity of our findings. In particular, we run models excluding children with college-educated parents, and separately, models that exclude children growing up in the top 10% of the family income distribution. These individuals are much less likely to be eligible for the EITC as children and should therefore be unaffected by changes in EITC generosity during childhood. We also run a robustness check restricting our sample to individuals who did not change states between childhood and adulthood. In some models, we also control for state of birth specific linear trends to account for general trends in the outcomes of interest that vary by state and birth cohort and may be correlated with EITC exposure. However, there is also some concern that these time trends may bias our estimates by absorbing any dynamic effects of EITC exposure on the outcomes of interest. Additionally, prior work has also demonstrated issues with including time trends in difference-in-differences analyses when the treated and comparison groups are allowed to have different time trends (Borusyak and Jaravel 2017). Because of these concerns, our preferred specification excludes these time trends, but we demonstrate that many of our results are robust to their inclusion.

Finally, we also conduct subgroup analyses to test for heterogeneous treatment effects: we estimate some models separately by gender and race, given historical discrimination, gender and racial differences in eligibility, take-up and access to public assistance programs. We also conduct some quantile regressions to estimate not only how EITC exposure affects average outcomes, but also different points in the distribution (10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles). Lastly, we conduct an extension where we consider the age when the adult outcomes are measured.

Results

Poverty and Public Assistance

We begin by examining the effects of childhood EITC exposure on adult poverty and public assistance receipt in Table 2. Each cell represents a separate regression and displays the effect of a $1,000 increase in average annual EITC exposure in childhood (between birth and age 15) on the outcome of interest.[8] Column 1 represents models that include all of the demographic controls described above for the individual (child in adulthood) and their parents, as well as a set of state, year of birth, and average number of siblings fixed effects. Column 2 adds controls for average state characteristics between birth and age 15 (our preferred model, as detailed in the empirical strategy). Finally, column 3 adds state of birth-specific cohort time trends. In Figure 3, we plot the results over levels of poverty to further illustrate the effects of the EITC on poverty.

Results indicate that exposure to the EITC in childhood substantially reduces poverty in adulthood. A $1,000 increase in average annual EITC exposure in childhood increases the likelihood of being above the federal poverty threshold by 7 to 8 percentage points and increases the likelihood of individuals earning above 200% of the federal poverty line by about 6.5 percentage points. These results are robust across the three model specifications and are economically meaningful. About 87% of our sample has earnings above the federal poverty line, so this represents about a 9% increase in the likelihood of being above the poverty line. Similarly, about 72% of the sample has earnings above 200% of the federal poverty line, so this also represents a 9% increase in the likelihood of having earnings above 200% of the federal poverty line.

In terms of receipt of public assistance, all of the coefficients point in the expected direction, given the reductions in poverty: we find a negative association between EITC exposure in childhood and public assistance receipt in adulthood, but only a few coefficients are statistically different from zero. We interpret these results with some caution, as survey data tend to suffer from under-reporting of public assistance receipt relative to administrative data, and the level of underreporting in the PSID is measured to be near 50% for some programs like TANF, though reporting rates are much higher for programs like food stamps/SNAP and WIC (see

[8] We examined differences in the timing of EITC exposure (before age 8/ages 8-15) and found similar estimates to those presented here but they were very imprecise.

Meyer, Mok, and Sullivan 2009).[9] In theory, underreporting should be unrelated to EITC exposure in childhood; measurement error in public assistance receipt likely results in less precise estimates than in the absence of measurement error.

We find some evidence that exposure to the EITC in childhood reduces the likelihood of receiving WIC and some other welfare benefits, by about 1-2 percentage points. Only a small share of the sample receives WIC (6 percent) or other welfare (less than 1 percent), so these estimates are quite large. We do not find statistically significant reductions in the likelihood of receiving TANF/AFDC or food stamps/SNAP, though the point estimates are economically large and negative. The point estimate on TANF implies a 0.3 percentage point reduction in TANF receipt associated with a $1,000 increase in EITC exposure in childhood, which is a 33% reduction. About 10% of the sample receives food stamps in any given year; these point estimates imply a 20-30% reduction in food stamp receipt associated with a $1,000 increase in average annual EITC exposure. In late 2008, food stamps were renamed SNAP and underwent a number of changes that expanded eligibility. In Appendix Table 1, we look at the effects of childhood EITC exposure on receipt of food stamps before and after 2009 and find no significant effects before 2009 (although coefficients are positive), and a negative effect on SNAP receipt (a 6-7 percentage point decline) post-2009.

We also conducted analyses collapsing the data to a single observation per person, and measuring the fraction of years receiving public assistance, as a function of EITC exposure. Results, presented in Appendix Table 2, are qualitatively quite similar to those presented in Table 2.

Employment and earnings

Do labor supply and earnings explain the reductions in poverty and near poverty in adulthood? To examine this question, in Table 3, we show how EITC exposure in childhood affects employment and earnings in adulthood. We find evidence that EITC exposure in childhood is linked with increases in employment in adulthood, providing evidence of not only

[9] According to Meyer, Mok, and Sullivan (2009), the average reporting of TANF benefits in the PSID relative to the administrative records is about 53%, meaning that the PSID likely misses about half of TANF recipients in a given year. Food stamp reporting is a bit higher, at 73% of administrative records, while WIC reporting is much higher, at about 93% of administrative records.

short-run increases in labor supply among EITC recipients, but also long-run increases in labor supply among the *children* of EITC recipients. A $1,000 increase in average annual EITC exposure in childhood leads to a 4 percentage point increase in the likelihood of working in any given year between ages 25 and 45, which represents about a 4% increase in employment.

We also find some suggestive evidence of intensive margin increases in labor supply. A $1,000 increase in average annual EITC exposure in childhood is linked with a 100-130 hour increase in the number of hours worked in the last year, which represents a 6 to 7% increase in number of hours worked, or about 3 more weeks of annual, full-time employment per year. These increases in employment, however, do not translate into higher wages, or higher earnings at the mean, and some of the point estimates are negatively signed. We find a positive association between EITC exposure in childhood and annual family labor income, though the estimate is not statistically different from zero. This is somewhat puzzling, as we consistently find significant increases in the likelihood of having family labor income above the poverty line.

To examine this set of seemingly contradictory findings in more detail, in Table 4, we move beyond estimating effects at the mean, and estimate quantile regressions for logged hourly wages, annual personal earnings, annual family labor income, and the family income relative to the poverty threshold (at the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentile). For simplicity, we present results for our preferred model (Model 2 in Table 3), which includes demographic and family characteristics, as well as state control variables, but does not include state of birth specific linear trends.

Estimates from these quantile regressions shed light on the null findings for average individual annual earnings. We find substantial increases in individual earnings and family labor income associated with EITC exposure in childhood for the bottom three quartiles, while the relationship is not significant for the very top of the earnings distribution. At the 10^{th} percentile of the individual earnings distribution, we estimate that a $1,000 increase in average annual EITC exposure in childhood is linked with a $4,000 increase in annual individual earnings, and a $5,500 increase in annual family labor income. Average adult earnings and family labor income at the 10^{th} percentile are $0 and $13,300, respectively, which implies that these effects are quite economically meaningful—on the order of a 40% increase in family labor income. Estimates are similarly large for the 25^{th} percentile, with earnings increases of about 30%, and begin to taper off for the 50^{th} and the 75^{th} percentiles (though the effect is still positive and significant for

earnings). These effects amount to a 5-11% increase in annual earnings associated with a $1,000 increase in average annual EITC benefits in childhood. While coefficients for annual earnings and family labor income turn negative at the 90th percentile, these estimates are small relative to earnings and not statistically significant.

These increases in earnings for those below the 90th percentile of the earnings distribution also translate into substantial increases in the income-to-poverty ratio—a $1,000 increase in average annual EITC exposure in childhood increases the income to poverty ratio of someone at the 10th percentile of the distribution by 0.28. An individual at the 10th percentile of the distribution has an income to poverty ratio of 0.703, this point estimate of 0.28 would lift such an individual to nearly the poverty line (0.703+0.277=0.98). At the 25th percentile, we find similarly large effects on the income to poverty ratio and estimates at the 50th percentile are smaller.

That we find the largest effects of EITC exposure on the income to poverty ratio for those with income very near the poverty threshold (those at the 10th and 25th percentiles) explains why we find that EITC exposure leads to such large reductions in poverty and near poverty (see Table 2). The attenuation of earnings effects for those at the upper end of the distribution also sheds light on why we do not find statistically significant effects of EITC exposure on earnings when we evaluate effects at the mean.

Income mobility

The results thus far indicate that increasing exposure to the EITC in childhood leads to reductions in poverty in adulthood, as well as increases in employment and earnings in adulthood, at least for those with earnings in the bottom three quartiles of the income distribution. We next examine whether these improvements in poverty and earnings lead to increases in income mobility. That is, whether children are more likely to out-earn their parents upon reaching adulthood (see Table 5). We take a number of different strategies to measure income mobility (detailed in the measures section). We find no statistically significant effects of EITC exposure on any of these outcomes, though point estimates are slightly positive when we measure income and rank of only the head and child, which would suggest that children exposed to larger EITC benefits in childhood may have higher income and income ranks than their parents. However, these point estimates are very small and noisily estimated. On the other hand,

when we incorporate both head and spouse labor income of the parent and child generations, we find negatively-signed coefficients that are also small and noisily estimated.

Because of delays in fertility, increased female labor force participation and differences in wages, the effect of the EITC on income mobility may differ by gender. We also expect positive mobility effects to likely stem from individuals who grew up in the bottom half of the income distribution, who are more likely to have received the EITC as children. In Table 6 we examine whether income mobility effects differ by gender, as well as by the income rank of the parent's generation when the parent was 25-35 years old. We show the results using only the head's income for both the parent and child generation but results using both head and spouse yield substantively similar findings. We find some suggestive evidence of increases in income mobility among women, though none of our point estimates are statistically significant for either men or women. All of the coefficients are negatively-signed for men, but positively signed for women, implying that women may experience more upward income mobility than men.

Estimating models separately according to parental income quartile, we find some evidence of increases in income mobility among children whose parental income rank is in the second (25^{th}-50^{th}) quartile of the income distribution. A $1,000 increase in annual EITC exposure is correlated with an increase in income rank difference between the child and parent income distribution of 0.212 (measured on a scale of -1 to 1, where 1 represents a child with income rank of 100 and a parent with income rank of 0), and a 30-percentage point increase in the probability of having a higher income rank compared to one's parents. This implies that, for children whose parents' income rank places them in the second income quartile, a $1,000 increase in average annual EITC exposure increases the child's income rank by approximately 20 percentiles relative to their parents' income rank. Similarly, children growing up in the second income quartile are about 30 percentage points more likely to have higher income in adulthood than their parents. In contrast, we find no association between EITC exposure in childhood and changes in income mobility in adulthood for children growing up in the top half of the parental income distribution, or for those at the very bottom of the income distribution. Point estimates are small, and not statistically significant for any of the other income quartiles.

Subgroup analyses

We examine differences in the main results by both gender and race in Table 7. We study differences by these two demographic characteristics because of large differences by gender and race in income, wealth, employment and wages that arise from discrimination and discriminatory or racist policies. These historical differences in economic well-being affect intergenerational mobility and the likelihood of receiving public assistance (e.g., 60% of EITC recipients are unmarried women), making it important to consider heterogeneous treatment effects. Our analyses by race are limited to White/non-White differences due to small cell sizes, precluding our ability to examine differences among non-White ethnic and racial groups.

Starting with gender, we find similar reductions in poverty among men and women. However, when we look at public assistance receipt, we find some evidence that reductions in public assistance receipt are larger for women than men, although the point estimates generally have overlapping confidence intervals. Reductions in the receipt of WIC, for instance, are only statistically significant for women: A $1,000 increase in average annual EITC exposure in childhood is linked with a 3 percentage point reduction in receipt of WIC in adulthood for women, but no effect on men. This makes intuitive sense, since WIC is a program that targets pregnant women and their young children; men are not typically eligible for WIC (or TANF).[10] Similarly, while not statistically significant, our point estimates suggest that a $1,000 increase in annual EITC exposure in childhood reduces the likelihood of participating in any welfare program by about 5.6 percentage points for women, but just 1 percentage point for men.

On the employment margin, responses look similar for men and women, though men increase the number of annual hours worked more than woman (184 hours per year among men, compared to 71 hours among women). For earnings, the coefficients are positive for women, but negative for men and neither is statistically significant.

When we examine differences by race, we find some suggestive evidence of larger reductions in poverty and receipt of public assistance among non-White individuals than White individuals, although the estimates are imprecise, and the confidence intervals overlap between groups. Nonetheless, these estimates imply that increases in the likelihood of having earnings above the federal poverty threshold among non-White individuals are three times larger than the effects among White individuals (in terms of percentage points and percent relative to the

[10] The PSID does ask whether anyone in the household receives public assistance of a given form; thus it is possible for men to report that someone in the household receives WIC or TANF.

baselines). Similarly, employment, hours worked, and earnings point estimates are all substantially larger among non-White individuals compared to White individuals, though we lack precision to indicate that these differences are statistically significant at conventional levels.

Taking the point estimates at face value, we find that a $1,000 increase in average annual EITC benefits leads to a 3 percentage point increase in employment among White individuals, compared to an 8 percentage point increase in employment among non-White individuals. Similarly, we find no effect of EITC exposure on the earnings of White individuals, but an $8,000 increase in annual earnings among non-White individuals. These increases in earnings also translate into much larger effects on poverty reduction among non-White individuals relative to White individuals. A $1,000 increase in average annual EITC benefits in childhood increases the likelihood of being above the poverty line by about 6 percentage points among White individuals, compared to about 15 percentage points among non-White individuals. Together, these findings suggest that not only does the EITC reduce the intergenerational poverty link, but it may also reduce racial income gaps.

Marriage and Fertility

One mechanism through which the EITC reduces poverty is through earnings in adulthood, a result we find for the bottom three-quarters of the earnings distribution. Yet, another mechanism through which we might observe reductions in poverty is through changes in marriage and fertility. If EITC exposure in childhood increases the likelihood of marriage, or reduces the number of children in adulthood, both factors could also lead to reductions in poverty since poverty is assessed at the family level, and less public assistance since many programs are only available to single mothers with children. Additionally, prior research shows exposure to the EITC changes the timing of marriage and fertility in early adulthood for women (Michelmore and Lopoo 2021). In Table 8, we test for these mechanisms by examining three individual-level variables that are assessed by age 45 (or the last survey year they were observed, whichever comes first): ever married, ever have a birth, and total number of births.

We find little evidence that EITC exposure in childhood affects the likelihood of ever marrying, ever having a child, or the total number of births by age 45. We find some negative coefficients, which would indicate a negative relationship between EITC exposure in childhood

and the likelihood of ever marrying or having children, but estimates are relatively small and imprecise (and implied effect sizes are small). Together, these results imply that our findings of reductions in poverty and receipt of public assistance are not likely explained by changes in marriage and fertility in adulthood.

Robustness checks and extensions

We conduct a number of analyses to test the robustness of our main findings. First, we focus on restricting our analyses to a sample that would be more likely to have been affected by the EITC in childhood. In Appendix Table 3, we show results dropping individuals with college educated parents (more than 12,000 observations) from the sample, this group should be the least likely to have been affected by changes to the EITC during childhood. Although the point estimates are less precise with the smaller sample size, as anticipated, we generally find larger effects for individuals that grew up with parents without college degrees. We also test the robustness of our findings to excluding the top 10% of parental earners from the sample (about 1,800 observations), again with the assumption that this group would have been less likely to be affected by the EITC. Here we find generally similar results to those using the full sample (see Appendix Table 4).

Second, we consider the possibility of endogenous migration. We restrict our analysis to individuals who lived in the same state during childhood and adulthood. In Appendix Table 5 we show that our findings are very similar to those presented in the main tables.

Third, we conduct an analysis where we estimate the short-term effect of the EITC on the parent generation when our sample members were children (birth to age 15). We do this to provide context on the extent to which parental labor supply and income changed during childhood as a result of the EITC.[11] These results are presented in Appendix Table 6. While the estimates are noisy, they suggest that greater EITC exposure increases hours worked, annual after-tax earnings for the head and spouse as well as annual after-tax family income. At face value, these results imply that a $1,000 increase in EITC is associated with just over a week

[11] We use NBER's TAXSIM to estimate the families tax liabilities and then subtract them from the relevant pre-tax variables. Annual hours worked (by head and spouse), annual after-tax earnings (by head and spouse) and annual after-tax family income are measured as averages between birth and age 15.

more of work each year, almost $1,500 more in earnings for the head and spouse and almost $300 more in total family income.[12] This provides a guide on how the EITC influenced economic resources as a child which in turn is one mechanism through which the EITC is expected to impact later life outcomes for children. Of course, there are other potential pathways through which EITC benefits as a child could influence later life outcomes.

Lastly, we consider differences in the effects of childhood exposure to the EITC on adult outcomes stratifying the results by adult age to examine if the effects were concentrated at certain ages (see Appendix Table 7). Here we see few effects for those individuals when they are over age 40 – which is in keeping with what we expect as this group had the smallest exposure to the EITC in childhood (a relatively small portion of our sample has reached age 40 by the 2017 PSID follow-up). The effect of the EITC on lifting adults out of poverty and near poverty (200%) is somewhat larger for those adults when they are between ages 30 and 40, than at younger ages (25-30), and this is true for the declines in public assistance use as well. Overall, the findings are consistent when we look at the age of the adult outcomes, but there is some evidence that the effects are particularly pronounced when individuals are between the ages of 30 and 40.

Conclusion

We find that exposure to the EITC in childhood leads to reductions in poverty and public assistance receipt in adulthood. Our results suggest these reductions are driven by increases in employment and earnings in adulthood, rather than changes in childbearing or marriage. Of course, these findings may also in part be driven by other mechanisms (like improved health or increased education; e.g., Braga, Blavin, and Gangopadhyaya 2020; Bastian and Michelmore 2018) that lead to improved economic outcomes. Additionally, we find that the intergenerational effect on earnings is largely driven by those below the 75th percentile for earnings, those who are most likely to have been recipients of the EITC in childhood.

However, we do not find much evidence that the EITC leads to increases in income mobility, defined as achieving a higher income rank than one's parents, though our approach has some limitations. We do find some evidence of improvements in income mobility among children whose parents' fall into the second income quartile (25th-50th percentile), which is

[12] The lower family income suggests some trade-off between the primary and secondary earners.

consistent with the population of children most likely to be eligible for the EITC in childhood. Yet we find no effects of the EITC on income mobility of those with parental income in the bottom quartile of the income distribution. This may be due to data limitations, or may suggest that the EITC fails to increase income mobility among the nation's poorest children.

Nonetheless, our results indicate that there are intergenerational effects of exposure to the EITC as it relates to poverty, public assistance use, earnings and employment. These findings help bolster a growing evidence base about the intergenerational effects of the EITC; the EITC not only reduces poverty among current recipients, but in the long-term, among the children of EITC recipients. These findings also relate more generally to an emerging literature showing the long-lasting beneficial effects of childhood exposure to the social safety net (see Aizer, Hoynes and Lleras-Muney 2022 for a summary). If policy makers do not account for the long-term effects of safety net programs, they will likely underestimate the returns to the investments in these programs, especially programs that target families with children.

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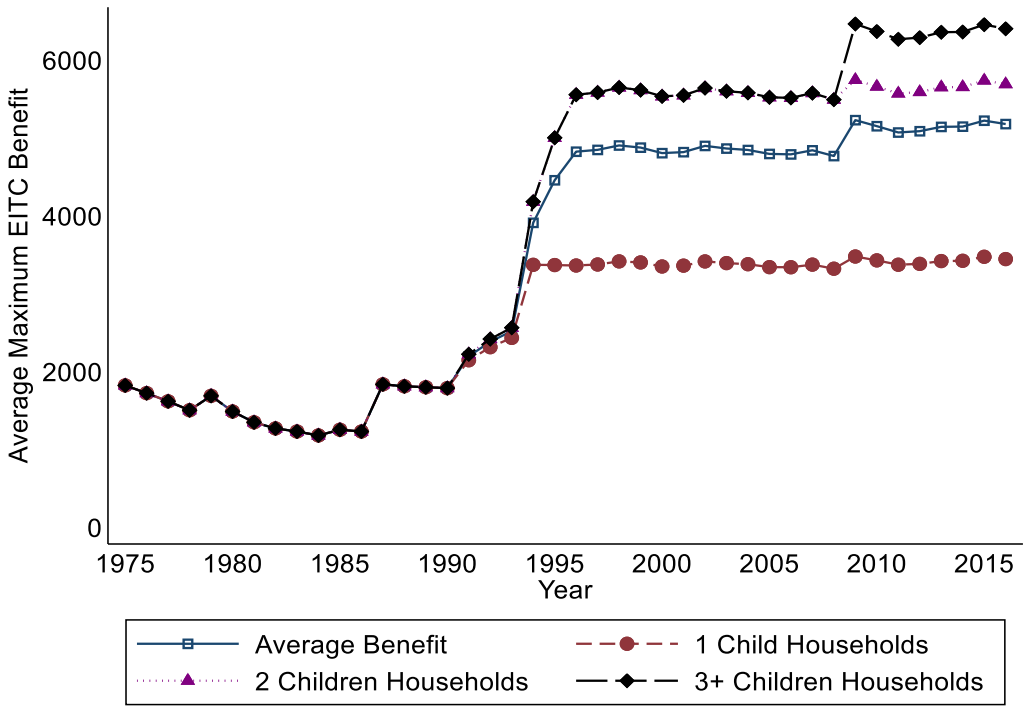
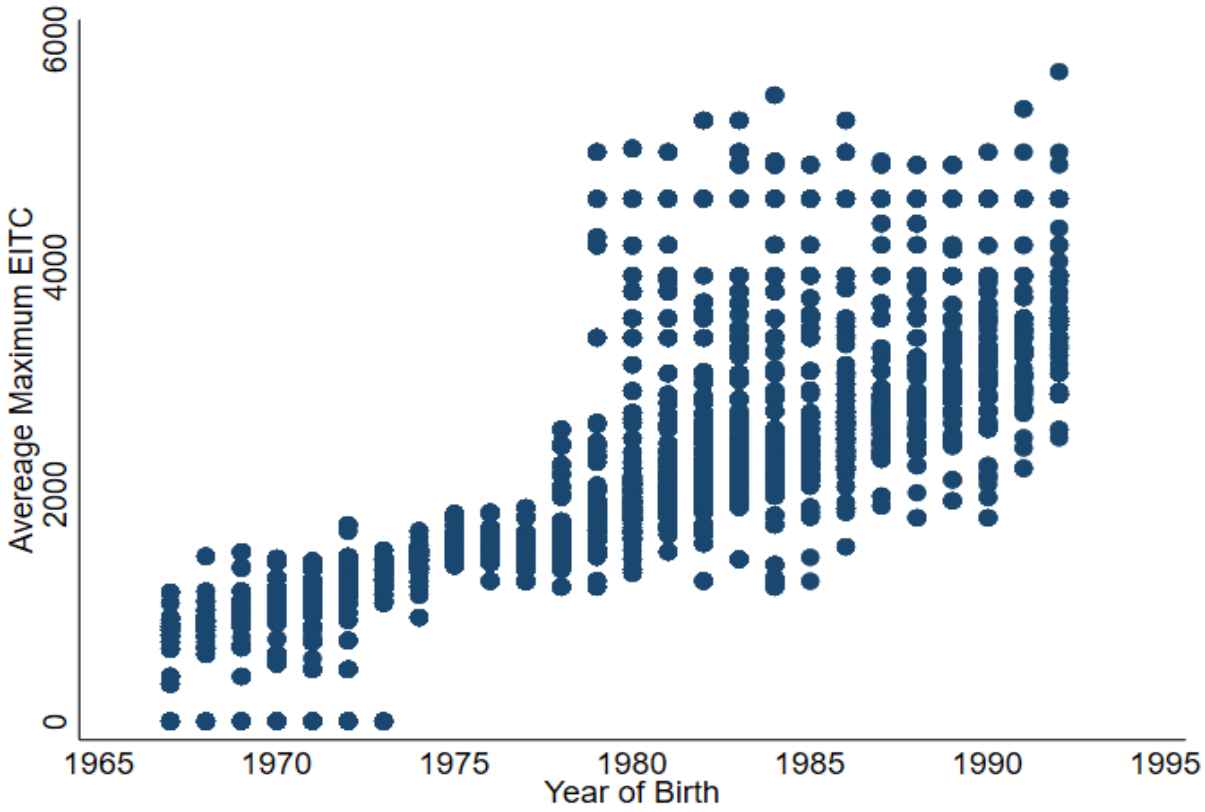
Figure 1. Maximum Federal EITC Benefit Over Time, by Number of Qualifying Children



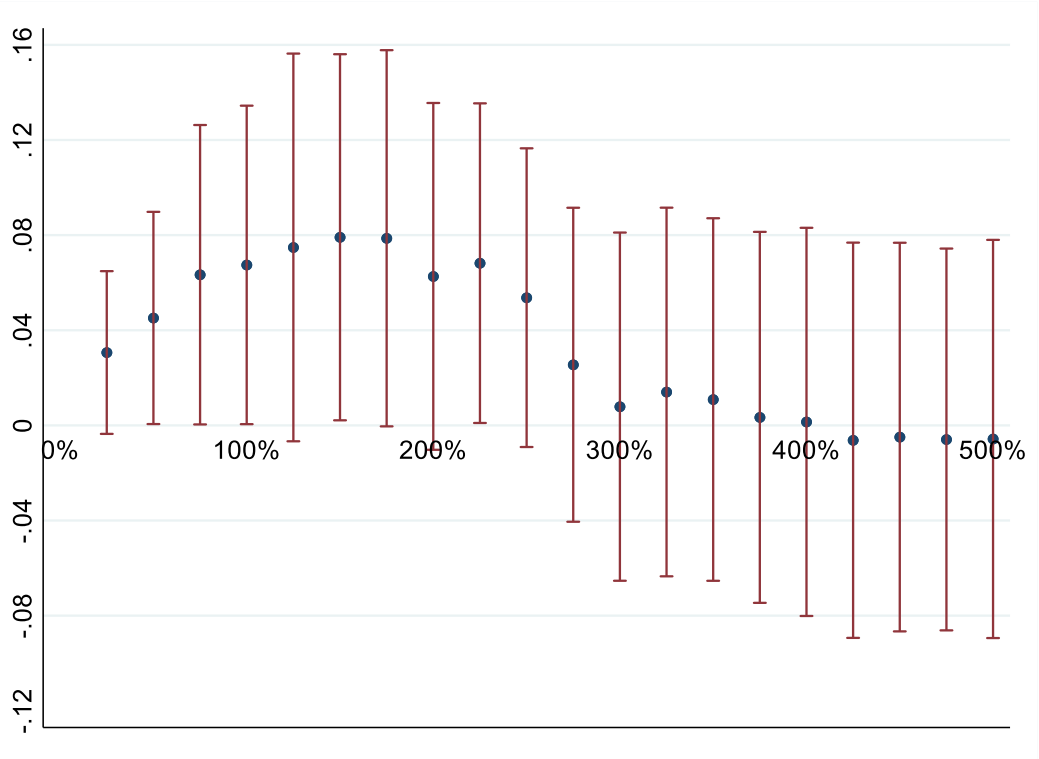
Notes : Authors' calculations.

Figure 2. Average Annual EITC Exposure between Birth and Age 15, by Year of Birth



Source: 1968-2017 waves of the Panel Study of Income Dynamics (PSID).
Notes: Sample consists of heads and spouses born between 1967 and 1992. All monetary variables are in 2017 dollars. All results are weighted by average childhood PSID weights.

Figure 3. Effect of EITC Exposure in Childhood on Income in Adulthood Above Various Levels of the Federal Poverty Threshold



Notes: Effect of the EITC measured in thousands of 2017 dollars. Regression includes individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. 95% confidence intervals clustered at the state level. Results are weighted by average childhood PSID weights.

Table 1: Descriptive Statistics

	Mean	SD
Parental characteristics - measured during childhood - ages 0-15		
Age of the parental head (average)	35.54	6.63
Married (share of childhood)	0.84	
Education		
Less than HS	0.12	
High School	0.32	
Some College	0.33	
College +	0.23	
Child characteristics		
Male	0.48	
Race		
White	0.85	
Non-White	0.15	
Age	32.17	5.49
Number of siblings (during childhood)	1.29	0.78
EITC measure		
Average annual maximum EITC exposure between ages 0 and 15 (in $1,000, $2017)	1.54	0.62
Outcome measures		
Poverty		
Above 100% poverty	0.87	
Above 200% of poverty	0.72	
Program participation/Public assistance		
TANF/AFDC	0.01	
Food stamps/SNAP	0.10	
WIC	0.06	
Other welfare	0.01	
Any welfare participation	0.13	
Secondary Outcomes		
Employment and earnings		
Worked last year	0.90	
Hours worked last year	1800.03	919.41
Hourly wage ($)	25.05	23.71
Annual earnings ($)	43918.98	46934.87
Annual family labor income ($)	71045.70	52892.18
Intergenerational income/rank		
Child and parent rank difference	-0.04	0.32
Child has higher income rank	0.46	0.50
Child and parent income difference ($)	-4394.72	3210.00
Child has higher income	0.44	0.50
Fertility and marriage		
Ever married	0.75	
Ever have birth	0.66	
Total number of births	1.44	1.38
Person-year observations	26800	
Number of individuals	4923	

Source: 1968-2017 waves of the Panel Study of Income Dynamics (PSID).
Notes: Sample consists of heads and spouses born between 1967 and 1992. All $ variables are in 2017 dollars. All results are weighted by average childhood PSID weights.

Table 2: Effect of EITC exposure in childhood on poverty and public assistance receipt in adulthood

	(1)	(2)	(3)
Poverty			
Above poverty	0.072**	0.067**	0.080***
	(0.034)	(0.033)	(0.027)
Above 200% of poverty	0.066*	0.063*	0.065*
	(0.037)	(0.036)	(0.038)
Public assistance			
TANF/AFDC	-0.007	-0.003	-0.004
	(0.009)	(0.008)	(0.007)
Food Stamps/SNAP	-0.031	-0.022	-0.030
	(0.038)	(0.037)	(0.033)
WIC	-0.016	-0.009	-0.023*
	(0.010)	(0.011)	(0.012)
Other welfare	-0.014*	-0.013*	-0.013*
	(0.008)	(0.007)	(0.007)
Any welfare program participation	-0.045	-0.032	-0.047
	(0.040)	(0.038)	(0.031)
State controls		X	X
State-specific time trends			X
Number of observations	26,800	26,800	26,800

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Effect of EITC exposure in childhood on earnings and employment in adulthood

	(1)	(2)	(3)
Worked last year	0.044*	0.036*	0.040*
	(0.025)	(0.020)	(0.023)
Hours worked last year	139.282**	108.321	134.536*
	(69.236)	(64.876)	(73.745)
Logged hourly wage	0.009	-0.007	-0.023
	(0.059)	(0.064)	(0.080)
Annual earnings	2,669.442	-249.057	-2,096.816
	(4,354.376)	(4,337.921)	(4,919.712)
Annual family labor income	4,404.495	2,009.244	69.876
	(4,962.566)	(5,284.753)	(7,123.138)
State controls		X	X
State-specific time trends			X
Number of Observations	26,757	26,757	26,757

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Effect of EITC exposure in childhood on earning adulthood, results from quantile regressions

	Logged hourly wage	Annual earnings	Annual family labor income	Labor Income to Poverty Ratio
10th percentile	(0.063)	4,153.755***	5,567.766***	0.277***
	-(0.059)	-(1262.508)	-(1148.664)	-(0.075)
	[2.16]	[0.00]	[13,320.65]	[0.703]
25th percentile	-(0.002)	4,754.294***	6,898.304***	0.407***
	-(0.036)	-(1013.899)	-(1501.236)	-(0.067)
	[2.57]	[15,984.78]	[33,289.31]	[1.81]
50th percentile	0.002	3,873.476***	2388.203	0.183**
	-0.026	-1183.705	-1796.442	-0.093
	[2.98]	[35,621.52]	[61,190.65]	[3.23]
75th percentile	(0.03)	2,637.427***	(1071.498)	-(0.112)
	-(0.025)	-(1022.657)	-(1782.805)	-(0.141)
	[3.38]	[57,132.87]	[97,261.90]	[5.18]
90th percentile	-(0.048)	-(3480.337)	-(2538.093)	-(0.206)
	-(0.032)	-(2623.289)	-(2412.464)	-(0.193)
	[3.79]	[86,584.24]	[140,000.00]	[7.76]
State controls	X	X	X	X
Number of observations	23,459	26,757	26,370	26,625

Notes: Effect of the EITC measured in thousands of 2017 dollars. Means in brackets. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: The effect of EITC exposure in childhood on income mobility

	Labor income of parent head and child head			Head and spouse income		
	(1)	(2)	(3)	(1)	(2)	(3)
Child and parent rank difference	0.027	0.017	0.020	-0.015	-0.021	-0.027
	(0.034)	(0.032)	(0.038)	(0.030)	(0.030)	(0.036)
Child has higher income rank	0.010	0.004	0.001	-0.024	-0.029	-0.038
	(0.050)	(0.047)	(0.058)	(0.044)	(0.046)	(0.057)
Child and parent income difference	1,511.555	250.265	-1,463.712	-2,369.219	-3,508.842	-4,114.076
	(3,926.519)	(3,732.587)	(4,762.645)	(4,865.200)	(5,283.643)	(6,944.789)
Child has higher income	-0.014	-0.022	-0.024	-0.052	-0.057	-0.045
	(0.047)	(0.044)	(0.054)	(0.042)	(0.042)	(0.048)
State controls		X	X		X	X
State-specific time trends			X			X
Number of observations				4,531		

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6: The effect of EITC exposure in childhood on income mobility by gender and parental income rank

	All	Men	Women	Parent Rank<25	Parent Rank 25-50	Parent Rank 50-75	Parent Rank>75
Child and parent rank difference	0.017	-0.005	0.051	0.082	0.212***	0.010	0.001
	(0.032)	(0.038)	(0.043)	(0.054)	(0.072)	(0.042)	(0.052)
Child has higher income rank	0.004	-0.036	0.027	0.015	0.304*	-0.028	0.004
	(0.047)	(0.074)	(0.055)	(0.080)	(0.160)	(0.071)	(0.077)
Child and parent income difference	250.265	-3,460.050	3,200.064	5,730.524	6,385.041	-780.614	3,817.280
	(3,732.587)	(5,620.139)	(3,512.135)	(3,851.553)	(12,079.240)	(3,359.463)	(5,750.058)
Child has higher income	-0.022	-0.040	-0.014	0.016	0.283*	-0.012	-0.053
	(0.044)	(0.065)	(0.051)	(0.078)	(0.156)	(0.066)	(0.070)
State controls	X	X	X	X	X	X	X
Number of Observations	4,531	2,130	2,401	895	1,017	1,176	1,443

Notes: Effect of the EITC measured in thousands of 2017 dollars.Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Effect of EITC exposure in childhood on public assistance and employment in adulthood, by gender and race

	All	Men	Women	White	Non-white
Panel A. Social Assistance Receipt					
Above poverty	0.072**	0.063*	0.084**	0.059*	0.148
	(0.034)	(0.036)	(0.040)	(0.030)	(0.090)
Above 200% of poverty	0.066*	0.072*	0.070	0.059	0.139*
	(0.037)	(0.042)	(0.053)	(0.040)	(0.082)
TANF/AFDC	-0.007	0.006**	-0.011	-0.002	-0.020
	(0.009)	(0.003)	(0.016)	(0.007)	(0.019)
Food Stamps/SNAP	-0.031	-0.016	-0.033	-0.028	-0.013
	(0.038)	(0.025)	(0.056)	(0.043)	(0.058)
WIC	-0.016	0.016	-0.033*	-0.021	0.038
	(0.010)	(0.021)	(0.017)	(0.013)	(0.056)
Other welfare	-0.014*	-0.012	-0.015	-0.013*	-0.028*
	(0.008)	(0.009)	(0.009)	(0.007)	(0.015)
Any welfare program participation	-0.045	-0.009	-0.056	-0.038	-0.062
	(0.040)	(0.032)	(0.055)	(0.043)	(0.067)
Panel B. Employment and Earnings					
Worked last year	0.044*	0.046	0.037	0.032*	0.083
	(0.025)	(0.028)	(0.025)	(0.016)	(0.081)
Hours worked last year	139.282**	184.372**	71.227	97.928*	237.165
	(69.236)	(88.410)	(81.735)	(55.418)	(218.869)
Logged hourly wage	0.009	-0.025	0.020	-0.005	0.051
	(0.059)	(0.093)	(0.070)	(0.075)	(0.085)
Annual earnings	2,669.442	-2,198.953	1,519.921	-764.889	8,345.729*
	(4,354.376)	(7,642.841)	(2,752.091)	(4,941.706)	(4,259.567)
Annual family labor income	4,404.495	1,735.607	1,265.235	1,972.597	4,929.207
	(4,962.566)	(7,190.568)	(5,693.543)	(5,986.918)	(5,135.038)
State controls	X	X	X	X	X
Number of observations	26,800	12,074	14,726	16,649	10,151

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

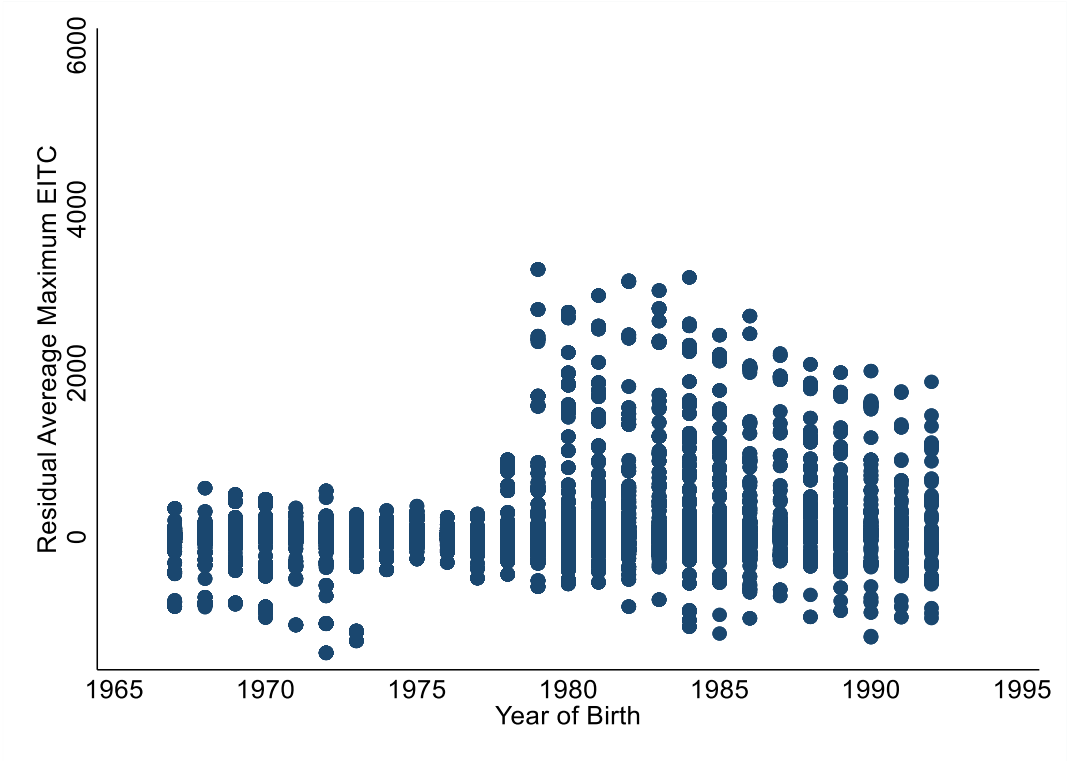
Table 8: Effect of EITC exposure in childhood on marriage and childbearing in last observed year in PSID

	(1)	(2)	(3)
Ever married	-0.012	-0.007	-0.020
	(0.048)	(0.050)	(0.061)
Ever have a birth	-0.020	-0.012	-0.040
	(0.051)	(0.057)	(0.072)
Total number of births	-0.080	-0.060	-0.182
	(0.132)	(0.138)	(0.162)
State controls		X	X
State-specific time trends			X
Number of observations	4,923	4,923	4,923

Notes: Effect of the EITC measured in thousands of 2017 dollars. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Figure A1. Residual for Average Annual EITC Exposure between Birth and Age 15, by Year of Birth



Source: 1968-2017 waves of the Panel Study of Income Dynamics (PSID).

Notes: The residuals are collected by treating maximum EITC benefit as the dependent variable and using the set of independent variables from our main model to predict EITC exposure, then collect the residuals. The sample consists of heads and spouses born between 1967 and 1992. All monetary variables are in 2017 dollars. All results are weighted by average childhood PSID weights.

Appendix Table 1: Effect of EITC exposure in childhood on SNAP pre and post 2009

	(1)	(2)	(3)
Panel A			
Food Stamps Pre-2009	0.023	0.040	0.051
	(0.058)	(0.056)	(0.061)
State controls		X	X
State-specific time trends			X
Number of Observations	10,919	10,919	10,919
Panel B			
Food Stamps Post-2009	-0.070**	-0.063*	-0.073**
	(0.033)	(0.031)	(0.028)
State controls		X	X
State-specific time trends			X
Number of Observations	12,832	12,832	12,832

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix Table 2: Effect of EITC exposure in childhood on fraction of years receiving public assistance in adulthood

	(1)	(2)	(3)
Above poverty	0.073*	0.065	0.084***
	(0.040)	(0.039)	(0.031)
Above 200% of poverty	0.066	0.059	0.084*
	(0.048)	(0.047)	(0.044)
TANF/AFDC	-0.005	-0.002	-0.005
	(0.007)	(0.006)	(0.006)
Food Stamps/SNAP	-0.056	-0.044	-0.064*
	(0.041)	(0.039)	(0.033)
WIC	-0.023	-0.015	-0.027
	(0.014)	(0.015)	(0.020)
Other welfare	-0.008	-0.007	-0.009*
	(0.005)	(0.005)	(0.005)
Any welfare program participation	-0.073*	-0.056	-0.083**
	(0.041)	(0.040)	(0.035)
State controls		X	X
State-specific time trends			X
Number of Observations	4,920	4,920	4,920

Notes: Effect of the EITC measured in thousands of 2017 dollars. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix Table 3: Effect of EITC exposure in childhood on public assistance receipt in adulthood

	(1)	(2)	(3)
Above poverty	0.074	0.074	0.100*
	(0.058)	(0.058)	(0.052)
Above 200% of poverty	0.050	0.050	0.051
	(0.046)	(0.046)	(0.063)
TANF/AFDC	-0.001	0.002	0.003
	(0.011)	(0.011)	(0.013)
Food Stamps/SNAP	-0.082	-0.070	-0.104**
	(0.054)	(0.054)	(0.049)
WIC	-0.006	-0.000	-0.035
	(0.035)	(0.035)	(0.035)
Other welfare	-0.015*	-0.011	-0.012
	(0.009)	(0.007)	(0.008)
Any welfare program participation	-0.101*	-0.087	-0.135***
	(0.060)	(0.059)	(0.050)
State controls		X	X
State-specific time trends			X
Number of Observations	14,249	14,249	14,249

Notes: Effect of the EITC measured in thousands of 2017 dollars. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix Table 4: Effect of EITC exposure in childhood on public assistance receipt in adulthood

	(1)	(2)	(3)
Above poverty	0.082**	0.082**	0.089***
	(0.033)	(0.033)	(0.027)
Above 200% of poverty	0.072*	0.072*	0.077**
	(0.037)	(0.037)	(0.036)
TANF/AFDC	-0.007	-0.003	-0.003
	(0.010)	(0.008)	(0.008)
Food Stamps/SNAP	-0.038	-0.029	-0.038
	(0.040)	(0.039)	(0.033)
WIC	-0.018	-0.012	-0.027**
	(0.012)	(0.012)	(0.014)
Other welfare	-0.015*	-0.014*	-0.014*
	(0.008)	(0.007)	(0.007)
Any welfare program participation	-0.052	-0.041	-0.057*
	(0.042)	(0.041)	(0.032)
State controls		X	X
State-specific time trends			X
Number of Observations	25,080	25,080	25,080

Notes: Effect of the EITC measured in thousands of 2017 dollars. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix Table 5: Effect of EITC exposure in childhood on poverty, public assistance receipt and labor force participation in adulthood - restricted to non-movers

	(1)	(2)	(3)
Poverty			
Above poverty	0.112**	0.112**	0.128***
	(0.051)	(0.051)	(0.038)
Above 200% of poverty	0.093*	0.093*	0.081*
	(0.049)	(0.049)	(0.043)
Public assistance			
TANF	-0.015	-0.010	-0.012
	(0.016)	(0.013)	(0.012)
Food Stamps	-0.040	-0.029	-0.053
	(0.055)	(0.054)	(0.043)
WIC	-0.010	-0.003	-0.013
	(0.015)	(0.015)	(0.014)
Other welfare	-0.012	-0.011	-0.012
	(0.009)	(0.007)	(0.007)
Any welfare program participation	-0.046	-0.032	-0.052
	(0.057)	(0.055)	(0.043)
State controls		X	X
State-specific time trends			X
Number of Observations	18,587	18,587	18,587

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix Table 6 : Short-term effect of EITC exposure on the childhood parental income and labor supply

Average annual hours worked by head and spouse	47.59
	(59.56)
Average annual after tax earnings by head and spouse	1,472.86
	(2,213.32)
Average annual after tax family income	283.38
	(2,235.36)
State controls	X
State-specific time trends	
Number of Observations	4,897

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. Each dependent variable is measured as the average between birth and age 15. After tax income is estimated using the NBER TAXSIM Software. All regressions include individual level controls for sex, race, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix Table 7: Effect of EITC exposure in childhood on poverty and public assistance use by age

	Age 25-30	Age 31-35	Age 36-40	Age 41-45
Above poverty	0.060	0.077**	0.083	-0.003
	(0.049)	(0.037)	(0.063)	(0.168)
Above 200% of poverty	0.016	0.118***	0.092	0.040
	(0.060)	(0.038)	(0.065)	(0.173)
TANF	-0.003	-0.004	-0.000	0.019
	(0.015)	(0.005)	(0.005)	(0.016)
Food Stamps	-0.005	-0.022	-0.065	0.030
	(0.050)	(0.030)	(0.046)	(0.093)
WIC	0.010	-0.011	-0.067*	0.004
	(0.015)	(0.021)	(0.034)	(0.028)
Other welfare	-0.012	-0.016	-0.013	-0.021
	(0.007)	(0.015)	(0.011)	(0.025)
Any welfare program participation	-0.003	-0.042	-0.101**	0.027
	(0.051)	(0.033)	(0.047)	(0.088)
State controls	X	X	X	X
State-specific time trends				
Number of Observations	12,657	7,055	4,621	2,467

Notes: Effect of the EITC measured in thousands of 2017 dollars. Each cell represents a different regression. All regressions include individual level controls for sex, race, age, age squared, state of birth, average number of siblings between birth and age 15, and birth year fixed effects and parental controls for proportion of years married between the birth of the child and age 15, dummies for the highest level of education completed by the parents and the average age of the head parent between the child's birth and age 15. The regression also includes state policy controls for GDP, Food Stamps/SNAP, AFDC/TANF and minimum wage rate. Standard errors (in parentheses) are clustered at the state level to account for within state correlated error terms. All results are weighted by average childhood PSID weights.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$