Who's Minding the Kids? Refundable Tax Credits and Child Care Arrangements

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Welfare reforms in recent decades have shifted the way the U.S. delivers assistance to low-income families away from direct cash assistance to an increasing reliance on refundable tax credits that are contingent on working. In 1990, the U.S. spent nearly $34 billion on cash assistance; whereas by 2015, Temporary Assistance for Needy Families (TANF), or traditional welfare, spending was reduced to $8 billion (Hoynes & Schanzenbach, 2018). In contrast, spending on refundable tax credits (the Earned Income Tax Credit [EITC] and the Additional Child Tax Credit/Child Tax Credit [CTC]) for the poor and near poor increased dramatically over the same time period, from $12 to $100 billion (Hoynes & Schanzenbach, 2018). While less is known about the CTC, a long line of research on the EITC indicates it improves the economic wellbeing of families by increasing labor supply among single mothers (Eissa & Liebman, 1996; Ellwood, 2000; Meyer & Rosenbaum, 2001), increasing earnings (Dahl, DeLeire, & Schwabish, 2009) and lifting families out of poverty (Hoynes & Patel, 2015).

These labor supply effects have implications for children's child care arrangements: when mothers move into the labor force, they must find child care for their children. Although prior work has examined how child care costs are linked with employment (net of subsides and the EITC; Herbst 2009), no research has studied how the shift from providing cash transfers through TANF to incentivizing work through refundable tax credits affects child care use, arrangements, and costs.[1] This is an important oversight as a long literature has documented the importance of high quality child care on children's development (e.g., Chaudry, Morrissey, Weiland and Yoshikowa, 2017; Yoshikowa et al., 2013). Additionally, recent research found that refundable tax credits increase labor supply most strongly among mothers with young children and in particular among mothers with infants and toddlers (Michelmore & Pilkauskas 2018), who face more expensive and scarce availability of care (Laughlin 2013; Phillips & Adam, 2001; Malik & Hamm, 2017). A number of recent policy proposals call for the expansion of tax credits for families with young children (Garfinkel et al., 2016; Maag & Isaacs, 2017; Shaefer et al., 2016; West, Boteach & Vallas, 2015), which, if prior research holds true, may lead to even more mothers with young children entering the labor force.

The current study addresses this gap in the literature by studying how refundable tax credits influence children's child care arrangements. Using data from the 1990-2008 panels of the Survey of Income and Program Participation, and a parameterized difference-in-differences approach whereby we capture several federal and state policy changes to the EITC and CTC over time, we examine how refundable tax credits affect a number of child care outcomes. We investigate the following research questions:

> 1) Do refundable tax credits increase child care usage (any use, hours, incidence of multiple care arrangements)?

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[1] Although a recent unpublished study focused on state EITCs and the use of center-based care; Caramanis, 2018.

2) Do the EITC/CTC affect the type of care arrangements children experience (family day care vs. center-based care vs. relative care)?
3) Do these credits affect whether children attend Head Start?
4) Do refundable tax credits affect the amount of money mothers spend on child care and does the added income from labor and the tax credits offset the additional cost of child care?

By understanding how refundable tax credits affect child care arrangements, we can better understand the implications of current policy, and potential policy expansions, for children.

Policy Background on the CTC/ACTC and the EITC

The Child Tax Credit (CTC) was implemented in the 1998 tax year as a $400 per-child credit for each child under the age of 17. Over the course of several expansions, the maximum credit was increased to $500, $1,000, and as of the 2018 tax year, $2,000.[2] Originally, the CTC was designed to offset taxes owed by parents, but in 2001, the credit was made partially refundable (known as the Additional Child Tax Credit, for simplicity, we refer to the combination of the ACTC and CTC as the CTC) for families with earnings over $10,000. In 2009, the American Recovery and Reinvestment Act (ARRA) temporarily reduced the $10,000 threshold to $3,000, which was later made permanent (Crandall-Hollick, 2016).

Figure 1 illustrates the CTC benefit schedule for the 2015 tax year. The CTC is trapezoidal in structure, where benefits phase in as earnings increase up to a threshold, then remain constant over a range of values of income (plateau), phasing out for earnings beyond a second threshold. For single parents earning over $75,000 the tax credit phases out at a rate of $50 for every $1,000 above the threshold ($110,000 for married couples).[3] Although nearly 70% of families with children claim the CTC each year (Maag & Isaacs, 2017), because of the income requirements, middle-income households are more likely to claim the credit than low-income households. The reduction in the earnings threshold from $10,000 to $3,000 allowed more low-income families to receive the CTC than originally, but a recent analysis shows that 90% of families in the 2nd and 3rd income quintiles receive the credit, compared to only 75% of families in the bottom income quintile. Estimates suggest that about 10.8 million working families do not receive the credit because their earnings are below $3,000 (Maag & Isaacs, 2017).

The Earned Income Tax Credit (EITC) has many similarities to the CTC but also important differences. It was implemented more than 20 years before the CTC (in 1975) as a temporary credit (made permanent in 1978) intended to offset payroll taxes paid by *low-income* parents. Like the CTC, the EITC also has a trapezoidal structure, with benefits increasing to a plateau and then decreasing as earnings increase (also shown in Figure 1). The federal EITC has been expanded several times since its inception, increasing the phase-in rate, as well as introducing more generous credits for larger households.

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[2] This most recent change is not captured in the present study.
[3] The 2017 tax reforms also extended the plateau allowing families much higher up the income distribution the ability to claim the tax credit (for single parents those with incomes up to $200,000 can claim the full credit and it phases out completely at $240,000 or $400,000 and $440,000 respectively for married families).

Figure 1. EITC and CTC Benefit Schedule for Head of Household Filer, by Number of Children, 2015 Tax Year
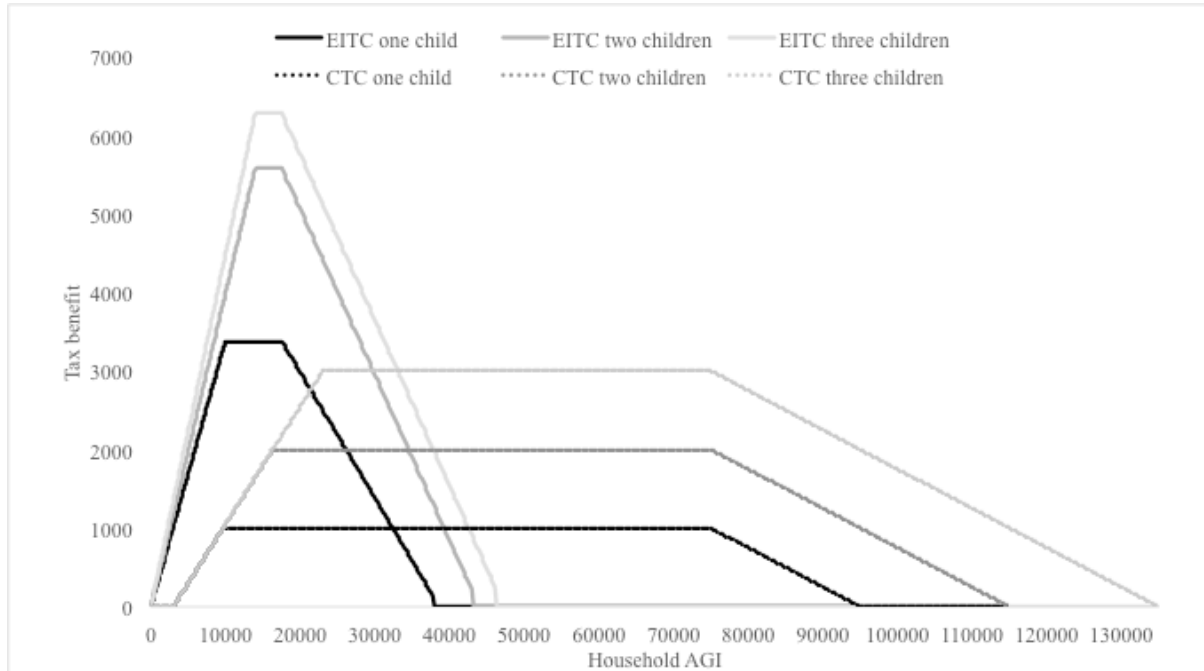
Source: Authors' calculations.

In addition to the federal EITC, twenty-eight states have implemented their own EITCs as of 2017. State EITCs are typically set as a share of the federal credit, ranging from 3.5% to 85% of the federal benefit. States vary in terms of when they implemented EITCs, their overall generosity, whether the credits are refundable, and some states have changed their generosity over time (most becoming more generous but some becoming less generous or eliminating their credits altogether). States with EITCs vary in terms of size, region and political orientation.

Figure 2 illustrates how policy changes over time (excluding the 2017 changes) affected average household federal EITC and CTC benefits and eligibility rates among single mothers.[4] The solid black line represents the average EITC benefit for a head of household filer, and the solid gray line represents the average CTC benefit. The largest federal expansions to the EITC occurred in the early 1990s, which increased the average household EITC benefit from about $650 in 1990 (2016$) to over $1,900 by 1998. Since then, there have been few federal changes to the EITC, although there was an expansion for three-child households in 2009 that increased the phase-in rate of the credit from 40 to 45 cents per dollar. The CTC, in contrast, when it began in 1998 was worth about $360 for a single-mother household. Over time, the credit has expanded in generosity, and the threshold for eligibility has decreased, increasing the average household CTC benefit to about $1,200 by 2010. Since the CTC is not indexed to inflation, the real value of the CTC has decreased slightly since 2010. We exploit this variation in the average EITC and CTC

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[4] The average benefits were calculated using a sample of single mothers and using TAXSIM to impute EITC and CTC benefits. The changes in the average benefits over time reflect only federal policy changes to the program over time, rather than changes in the income distribution or demographic changes over time. Average benefits are not conditional on receipt of benefits.

benefits for single mothers over this time period to investigate how expansions to these refundable tax credits affect child care arrangements.

Figure 2. Average Benefit (in thousands of 2016$) and Share of Children Eligible for the EITC and CTC Over Time
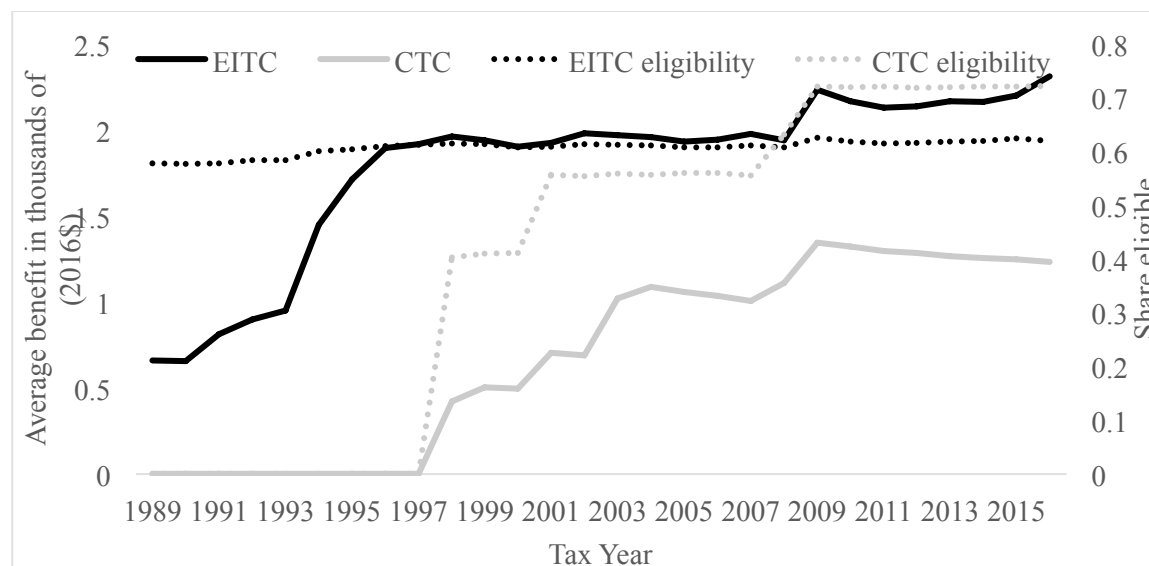
Source: March CPS 1990-2017 and NBER's TAXSIM. All values in 2016$

Data

Data come from the Survey of Income and Program Participation (SIPP) longitudinal panels from 1990 through 2008. Information on child care arrangements are asked once or twice per panel as part of the topical modules. Since we only observe outcomes typically once per panel, we treat the data as repeated cross-sectional information, and utilize the observations in the child care topical modules. We restrict analyses to non-college-educated, single-mother (either never married, divorced, separated, or widowed) headed households containing at least one child under age 18.[5] College-educated single mothers tend to be quite different from less-educated single mothers, both in their labor supply, and their likelihood of being eligible for the EITC.

Child care measures. We examine a number of child care measures. First, we study overall use of child care to understand whether tax credits increase use. Second, we study hours in care – as there is evidence that the EITC affects labor at the intensive margin, which likely translates to more time in child care. Third, we study the use of multiple care arrangements, as prior research has linked multiple arrangements with poorer child behavior (Morrissey, 2009). Fourth, we study the type of child care arrangements – distinguishing between relative care, family day care and center-based care as a long literature shows that center-based care is linked with the best outcomes for children (e.g. Chaudry et al 2017). Fifth, we study whether tax credits

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[5] Mothers of older children are eligible for the EITC. We make this restriction to compare the EITC and CTC.

affect the likelihood of using Head Start for child care. Last, we do a number of analyses to consider the economic wellbeing of families taking into account child care costs, increased earnings and the tax credits themselves.

EITC and CTC measures. We impute family EITC and CTC benefits using NBER's TAXSIM model. Because of endogeneity concerns in using own eligibility for tax credits, whereby differences in tax credit eligibility are correlated with other household characteristics that are likely correlated with the outcomes of interest, we create simulated measures of EITC and CTC benefits using the several federal and state policy changes over time. This approach, used in a number of studies (Cohodes et al., 2016; Currie & Gruber, 1996; Jones, Milligan, & Stabile, 2015; Jones & Michelmore, 2018), can be thought of as a parameterized difference-in-differences analysis. Changes in the size of the benefits arise from differences in policy parameters from year to year, by household size, and in the case of the EITC, state policies. Under the assumption that these policy changes are exogenous to the outcomes of interest, we can conclude a causal relationship between changes in tax credit generosity and the outcomes of interest.[6]

Control variables. We include a number of demographic and state-year contextual variables in our analyses. These include the following demographic variables: mother's education (less than high school, high school, some college), mother's age, and race/ethnicity (non-Hispanic black, non-Hispanic white, Hispanic, other). State-year contextual variables include the state unemployment rate, top tax bracket in the state, state gross domestic product (GDP), and the maximum monthly welfare benefit available in the state for a family of three.[7] These state-year contextual variables control for other conditions at the state-year level that may be correlated with implementation and expansions of state EITCs. All our models also include state, year, and number of children fixed effects.

Empirical Strategy

To analyze how the expansions to the EITC and CTC affect child care arrangements, we estimate models of the following form:

$$(1)\ Y_{istc} = \beta_0 + \beta_1 avgben_{stc} + \beta_2 X_{istc} + \beta_3 \alpha_{st} + \beta_4 \gamma_s + \beta_5 \delta_t + \beta_6 \rho_c + \epsilon_i$$

where Y_{istc} represents the child care outcome of interest, measured for single mother *i,* living in state *s,* in year *t,* with number of children residing in the household with the same single mother *c*. We model this as a function of tax credit generosity, $avgben_{stc}$, which represents the one year-lagged average EITC and CTC benefit for a single mother residing in state *s,* at time *t,* with number of children *c*. The coefficient of interest, β_1, represents how child care arrangements change when the average household tax credit increases by $1,000. X_{istc} represents a vector of

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[6] Details regarding the construction of these simulated measures is in Appendix B.

[7] Data for the unemployment rate come from the Bureau of Labor Statistics Local Area Unemployment Statistics: https://www.bls.gov/lau/. Data on the top tax bracket in the state comes from the National Bureau of Economic Research: http://users.nber.org/~taxsim/state-rates/. State GDP comes from the Bureau of Economic Analysis Regional Data: https://www.bea.gov/regional/index.htm. Information on welfare benefits comes from the Urban Institute's Welfare Rules Database: http://wrd.urban.org/wrd/Query/query.cfm

demographic characteristics, α_{st} represent state-year level controls. State fixed effects (γ_s) control for state-level characteristics that may produce different levels of maternal labor supply and also correlate with state policy generosity. Year fixed effects (δ_t) control for national events, such as recessions, that may be correlated with both benefit generosity and maternal labor supply. Number of child fixed effects (ρ_c) control for differences in maternal labor supply by number of children in the household, and are also strongly correlated with the average benefit amount for both the EITC and the CTC.

With all of these controls in the model, the identifying variation comes from three primary sources: within-state changes to benefits over time, between-state differences in benefits at a given point in time, and changes in benefits that occur differentially by family size. For the EITC, this relies on differences in state generosity of EITCs as well as differences in how federal policy expansions affect one, two, and three child households. For the CTC, the changes are driven by differences in federal benefit generosity across family size over time as well as reductions in the earnings minimum.

Next Steps

We are currently coding the child care variables in the SIPP, following prior research (Laughin 2013). Once this coding is complete, we will examine whether EITC/CTC expansions affect the child care use of children. We have already constructed the simulated EITC and CTC variables to identify the policy change over time and, thus, will be able to run these analyses shortly. Preliminary results from analyses taking the same approach using the Current Population Survey (CPS) suggest that increases in the EITC and CTC lead to increased spending on child care. Unfortunately, the CPS does not have information on child care arrangements or hours, thus, we are using the SIPP. In addition to examining the research questions outlined above, we plan to investigate differences by child's age as infant/toddler child care is much more expensive and difficult to find than child care for children ages 2-5. Recent research has also highlighted the challenges of child care for school aged children. Although the focus of our paper is to examine early childhood, in extensions we plan to also study after-school care arrangements for older children.

Importance of this research for social policy and child wellbeing

Over the last several decades, the U.S. social safety net has shifted how benefits are transferred to low-income families, from a system primarily consisting of cash welfare, to a system that incentivizes work through refundable tax credits. A long line of research indicates that this shift greatly increased the share of single mothers in the labor force, which has implications for the child care arrangements of their children. Results from this analysis will shed light on how these expansions to refundable tax credits over the last few decades affect children's child care arrangements, potentially affecting their achievement in school and their later life well-being.

Appendix A: EITC and CTC Policy differences

Although the structure of the EITC and CTC are quite similar they differ in a few ways that may result in different effects on child care. First, their income thresholds differ. The CTC reaches families with higher income than the EITC. In the 2016 tax year, single mothers with adjusted gross income up to $100,000 could receive the CTC, whereas the EITC completely phases out for single mothers with adjusted gross income above $48,000 (for families with three or more children). Additionally, although the CTC can be claimed by families earning as little as $3,000 ($2,500 starting in 2019), families can claim the EITC on the first dollar of earned income. Second, the CTC and EITC differ in how benefits are allocated per child. The EITC differs for families with one child, two children, or three children but does not increase for those with more than three children. The CTC, on the other hand, provides up to $1,000 per child, with no caps on the number of children claimed. Third, parents can only claim the CTC for children under the age of 17, whereas the EITC includes 17 and 18 year olds (and up to age 23 if the child is enrolled in school). Last, because the EITC is fully refundable, the average EITC benefit was about $3,200 in 2016 (CBPP, 2016) compared with the $1,500 average benefit for families receiving the CTC (Maag & Isaacs, 2017).

Appendix B: Simulated EITC and CTC Construction

To construct the simulated credits, we use a nationally-representative sample of single mothers in a given year and inflate/deflate their income using the Consumer Price Index (CPI) for each year between 1989 and 2016 (1996-2016 for the CTC), the tax years of interest. Relying on a single year of data on a nationally-representative sample holds constant the income distribution from year to year, accounting only for changes in the income distribution as a result of inflation. Fixing the income distribution this way reduces concerns that tax credit generosity influences the income distribution and ensures that any changes in benefits will be due to changes in the policy, and not changes in the income distribution. We then use NBER's TAXSIM to calculate federal income tax liability in each year, which includes measures for the EITC and CTC. We then compute state EITC benefits by running this sample of single mothers through each state's EITC laws in each year between 1989 and 2016. Calculating state EITCs using the national sample of single mothers reduces concerns of endogeneity of state demographic characteristics with respect to state EITC benefits. If states with EITCs tend to have higher populations of EITC-eligible families, for instance, we would find larger average state EITC benefits in these states than in states without their own EITCs because of these endogenous demographic differences and not solely due to differences in state tax laws.

Once we obtain measures of federal and state credits for the nationally-representative sample of single mothers, we then collapse the sample to the state-year-family size level. This produces a data set that contains a measure of the average federal and state EITC/CTC for a given family size (one, two, or three or more children)[8], in a given state, in a given year. Differences in this measure will reflect only differences in policy generosity across states, time, and family size and not potentially endogenous household decisions. We match this information

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[8] For the CTC, we create simulated benefits for one, two, three, and four plus child households, since there is no cap on the number of children claimed for the CTC, and 95% of our sample has four or fewer children. Households with more than four children are assigned the average CTC for a household with four or more children.

to our sample by year, state, and number of children residing in the household. We first estimate the effect of each simulated tax credit separately, before combining the value of the average EITC and CTC to leverage the variation in both credits, as well as to account for the correlation between average EITC generosity and average CTC generosity.