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ABSTRACT

The federal Child and Dependent Care Credit (CDCC) subsidizes child care costs for working families. Before 2021, the CDCC was nonrefundable, so only families with positive tax liability after other deductions benefited. I estimate how CDCC eligibility, benefits, and marginal tax rates would change if the credit were made permanently refundable, relative to 2020 CDCC parameters set to be restored in 2022. Under refundability, some 5 percent of single parents gain eligibility and receive on average over \$1,000 annually. Eligibility increases are largest among Black and Hispanic households. Increases in marginal tax rates among moderate-income taxpayers are small.

JEL Classification Codes: H24, J13, J22

Key Words: Child and Dependent Care Credit, marginal tax rates, eligibility, refundability

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1. Introduction

The Child and Dependent Care Credit (CDCC), a tax credit based on income and child care expenses, subsidizes child care costs for working families. The federal CDCC is available to households with children younger than 13 in which all parents have positive annual earnings. While many families meet these criteria, from its introduction in 1976 through 2020, the CDCC was nonrefundable, so only families with positive tax liability after other deductions benefited. As low-income households tend to spend a higher proportion of their income on child care (Herbst 2018) and researchers show that the CDCC promotes work participation,¹ many policymakers advocated making the credit refundable. In response to the COVID-19 pandemic, the American Rescue Plan Act of 2021 made the CDCC refundable and increased its generosity during tax year 2021 only. In this paper, I estimate how CDCC eligibility, benefits, and marginal tax rates would change for different groups if the credit were made *permanently* refundable. I describe changes in outcomes and incentives that arise solely from changes in tax policy, relative to CDCC parameters as of 2020, which are set to be restored in 2022. The results are the first step in understanding the effects of a permanently refundable CDCC.

I first examine the maximum federal CDCC benefits that households may receive across the income distribution. Under the nonrefundable CDCC, the maximum benefit for households with two or more qualifying dependents is about \$1,500 per year, and households with adjusted gross income (AGI) below \$18,650 are ineligible for benefits because they do not have any tax liability. If the CDCC were made permanently refundable, low-income house-

¹See Averett, Peters, and Waldman (1997); Guner, Kaygusuz, and Ventura (2020); Michalopoulos, Robins, and Garfinkel (1992); Miller and Mumford (2015); and Pepin (2020).

holds could gain eligibility and receive up to 35 percent of AGI, to a maximum of \$2,100 per year, in benefits.

While making the CDCC permanently refundable would encourage child care spending and labor force participation, it would generate complex intensive margin labor supply incentives. I therefore characterize marginal tax rates as a consequence of federal individual income taxes and tax benefits targeted at families with children, including the CDCC. I show that making the CDCC permanently refundable would decrease marginal tax rates substantially for very-low-income families. For example, marginal tax rates would decrease by 35 percentage points among single parents with one eligible dependent, the maximum qualifying child care expenditures, and less than \$3,000 in AGI. Refundability, however, would increase marginal tax rates for taxpayers with slightly higher incomes. In particular, marginal tax rates for similar parents with \$25,000 to \$33,000 in AGI would increase by over 10 percentage points.

Given different effects of refundability across the income distribution, I also study the extent to which actual taxpayers would benefit from a permanently refundable CDCC using data from the 2018 Survey of Income and Program Participation (SIPP). I show that, all else equal, making the CDCC permanently refundable would lead to relatively large increases in eligibility among single-parent, Black, and Hispanic households, which are all less likely to qualify for the nonrefundable credit. Specifically, some 3 percent of Black households, 2 percent of Hispanic households, and 1 percent of white households would gain eligibility, all else equal. About 5 percent of single parents would gain eligibility and would receive on average over \$1,000 in benefits annually. This increase is substantial, constituting 18 percent of existing child care spending and 10 percent of AGI. As expected, marginal tax

rates with respect to income would increase for some moderate-income taxpayers, all else equal. Nevertheless, increases in marginal tax rates with respect to income are small relative to decreases in marginal tax rates with respect to child care expenditures, which could mitigate intensive margin labor supply disincentives.

Finally, I show that, all else equal, making the CDCC permanently refundable would increase government spending each year by about \$800 million, or 21 percent of CDCC spending during the late 2010s. Although an \$800 million increase in spending is considerable relative to recent years, it would restore spending levels that have decreased over time, as the CDCC is not indexed to inflation.

In the following section, I provide institutional details and document CDCC eligibility and benefits with and without refundability. In Section 3, I characterize how making the CDCC permanently refundable would affect marginal tax rates. In Section 4, I use data from the 2018 SIPP to show how refundability would affect CDCC eligibility, potential benefits, and marginal tax rates across income and demographic groups. In Section 5, I estimate effects of refundability on government spending. In Section 6, I discuss implications of refundability on state child care credit programs. In Section 7, I conclude.

2. Institutional Details and CDCC Generosity

Congress implemented the federal CDCC in 1976 and expanded it in 1981 and 2001. The latter expansion took effect in 2003, and between 2003 and 2020, households were able to claim up to \$3,000 worth of child care expenses per year for each of up to two children younger than 13. Such households could receive a tax credit worth up to 35 percent of those expenses, or \$1,050 per child. Beginning at \$15,000 in AGI, the benefit rate decreased by

1 percentage point for each additional \$2,000 until it remained at 20 percent for those with \$43,000 or more in AGI, who could receive up to \$600 per child in benefits. The CDCC, however, was nonrefundable, so taxpayers without positive tax liability were ineligible. The credit is not indexed to inflation.

Moreover, CDCC claimants must work to qualify for benefits, including both spouses among married taxpayers filing jointly. Additionally, if either spouse's earnings are less than child care expenditures, then the CDCC is calculated as a percent of the lesser of the two taxpayers' earnings. Almost any child care expenditures are eligible for the credit, except care provided by a noncustodial parent. To claim the credit, taxpayers must list their earnings, child care expenditures, and child care providers' tax identification or Social Security numbers on federal Form 2441. Benefits decrease taxes due at tax filing time.

Nonrefundability generates a difference between statutory and effective, or actual, benefits received. I therefore use the tax filing thresholds, AGI levels at which taxpayers begin to have positive tax liability, to document maximum effective CDCC benefit schedules with and without refundability in Figure 1. Specifically, the figure displays benefits for single parents with one or two or more eligible dependents and the maximum qualifying child care expenditures as of 2020. In the online appendix, I show that maximum effective CDCC benefit schedules for married parents, who receive larger standard deductions, are slightly less generous but otherwise similar.² I assume that single taxpayers file as head-of-household and that, among taxpayers whose child care expenditures exceed income, all income comes from earnings.³ The solid red line in Figure 1 shows effective CDCC benefits for taxpayers

²CDCC benefit schedules for taxpayers with lower child care expenditure amounts are less generous but otherwise similar and also can be found in the online appendix.

³In the analyses, I use a smooth interpolation between adjacent CDCC benefit rates, whereas the tax code prescribes a step function, to prevent discontinuities that result in marginal tax rates approaching

with two or more eligible dependents under 2020 tax law. The nonrefundability of the credit implies that taxpayers' incomes must exceed the tax filing threshold of \$18,650 to be eligible for benefits. For taxpayers with incomes above this threshold, benefits increase with income before reaching a peak of about \$1,530 for taxpayers with \$34,100 in AGI. Benefits then decrease until they plateau at \$1,200 for taxpayers with \$43,000 or more in income.

The solid blue line in Figure 1 shows that if the CDCC were made permanently refundable, low-income taxpayers would receive larger benefits. In particular, for taxpayers with two or more eligible dependents and less than \$6,000 in AGI, refundable CDCC benefits increase as income increases. Benefits then hold steady at \$2,100 for those with \$6,000 to \$15,000 in AGI. For taxpayers with AGI above \$15,000, refundable benefits steadily fall as income increases until they converge with nonrefundable benefits and remain constant at \$1,200.

Taxpayers with one eligible dependent face less generous but otherwise similar maximum effective CDCC benefit schedules. The dotted red and blue lines in Figure 1, which overlap with the solid lines at low income levels, display nonrefundable and refundable CDCC benefits, respectively, for single taxpayers with one child younger than 13. As with households with two or more children, taxpayers with less than \$18,650 in AGI are ineligible for CDCC benefits under 2020 tax law. Nonrefundable benefits then increase until they peak at about \$860 for taxpayers with \$27,600 in AGI. For taxpayers with higher incomes, benefits decrease with income until they remain constant at \$600 for those with \$43,000 or more in AGI. The dotted blue line shows that, similar to the schedule for taxpayers with two or more eligi-

infinity. Taxpayers likely respond to the interpolated marginal tax rates, as Chetty, Friedman, and Saez (2013) provide evidence that workers who are not self-employed are unable to adjust their incomes within small bins.

ble children, refundable CDCC benefits increase with income for taxpayers with less than \$3,000 in AGI and peak at \$1,050 for taxpayers with \$3,000 to \$15,000 in AGI. Refundable benefits then decrease, eventually converging with nonrefundable benefits. Hence, Figure 1 shows that making the CDCC permanently refundable would increase generosity among low-income taxpayers without affecting benefits for those with higher incomes.

Interactions with other elements of the tax code also affect CDCC generosity.⁴ For instance, for some taxpayers, nonrefundable CDCC benefits directly offset benefits from the Child Tax Credit (CTC), a partially refundable tax credit for families based on number of children. Since 2018, households have been able to receive up to \$2,000 per child younger than 17.⁵ If the credit value exceeds the amount of tax a household owes, the household can receive refundable benefits through the Additional Child Tax Credit (ACTC). The ACTC is worth 15 percent of earnings over \$2,500, up to a maximum of \$1,400 per child. CTC benefits decrease with income for single taxpayers with more than \$200,000 and for married taxpayers with more than \$400,000.

Before calculating CTC benefits, taxpayers' tax liability is reduced by several nonrefundable tax credits, including the nonrefundable CDCC. Therefore, taxpayers with positive tax liability before claiming the CDCC but without positive tax liability after claiming the CDCC become ineligible for the nonrefundable portion of the CTC but remain eligible for the ACTC. Because the ACTC is limited to a percent of AGI over \$2,500, however, nonrefundable CDCC benefits decrease CTC benefits for some taxpayers. If the CDCC were made permanently refundable, these taxpayers' CTC benefits could increase: refundable tax

⁴A refundable CDCC generally would not interact with government transfer programs that receive federal funding because the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 prohibits such programs from counting tax refunds as resources for at least 12 months after receipt.

⁵Taxpayers also may receive up to \$500 per dependent aged 17–24 and per elderly dependent.

credits come after nonrefundable tax credits on federal Form 1040, so CDCC benefits no longer would affect tax liability used to calculate the CTC.

Table 1 illustrates interactions between the CDCC and CTC for hypothetical taxpayers. In particular, Table 1 shows federal taxable income and CDCC and CTC benefits for tax-minimizing single taxpayers with two eligible dependents, no additional children, and the maximum qualifying child care expenditures as of 2020. The hypothetical taxpayers have \$10,000, \$40,000, and \$70,000 in income, which comes solely from earnings. Those with only \$10,000 in earnings do not have taxable income and do not benefit from the nonrefundable CDCC or the nonrefundable portion of the CTC but receive \$1,125 in ACTC benefits. Consistent with Figure 1, if the CDCC were made permanently refundable, these taxpayers would receive \$2,100 in CDCC benefits. Taxpayers with \$40,000 in earnings have taxable income and receive \$1,320 in nonrefundable CDCC benefits, \$909 in nonrefundable CTC benefits, and \$2,800 in ACTC benefits. Although such taxpayers' CDCC benefits would not change under refundability, their CTC benefits would increase by \$291 because the CDCC no longer would affect tax liability used to calculate the CTC. Finally, taxpayers with \$70,000 in earnings receive \$1,200 in nonrefundable CDCC benefits and \$4,000 in nonrefundable CTC benefits. Because their tax liability is sufficiently high, these taxpayers' benefits would not change if the CDCC were made permanently refundable.

In addition, over 40 percent of workers have access to dependent care flexible spending accounts (FSA) that their employers offer, which interact with CDCC benefits.⁶ Since 1986, employees who receive FSAs from their employers have been able to set aside up to \$5,000 of

⁶U.S. Department of Labor, U.S. Bureau of Labor Statistics, National Compensation Survey: Employee Benefits in the United States, March 2020, Table 40, "Financial benefits: Access, civilian workers, March 2020," <https://www.bls.gov/ncs/ebs/benefits/2020/employee-benefits-in-the-united-states-march-2020.pdf>.

earnings before taxes for dependent care expenses. The employer deducts this income from employees' paychecks, but employees are reimbursed for qualified child care expenses, which, similar to the CDCC, include expenditures on care inside and outside of the home. Unlike the CDCC, however, the decision to set aside funds for an FSA occurs before the employee's child care expenses are realized.

While taxpayers may receive benefits from both FSAs and the CDCC, they may not double count expenses across the two child care subsidy programs. Before 2021, FSAs generally provided larger tax benefits per dollar than the federal CDCC, given the CDCC's nonrefundability and high marginal tax rates among high-income taxpayers. Nevertheless, families who spend over \$5,000 per year on child care can benefit from both programs. In addition, low-income families are relatively unlikely to have access to dependent care FSAs, as only 20 percent of workers with wages in the bottom quartile are offered FSA benefits. Table 1 shows the maximum FSA benefits that single taxpayers with two children could receive at different income levels as of 2020. Potential FSA benefits increase with income as taxpayers move into higher tax brackets. Specifically, taxpayers with \$10,000, \$40,000, and \$70,000 in earnings can receive up to \$500, \$600, and \$1,100 in FSA benefits, respectively.

The CDCC also may interact indirectly with the EITC. Although CDCC benefits do not affect EITC benefits directly, both tax programs promote work and redistribute income toward working families with children. The EITC is a refundable tax credit targeted at low- to moderate-income families. EITC benefits increase with household earnings until they reach a maximum benefit level, \$6,660 for families with three or more children as of 2020. Benefits then remain constant until household earnings reach another level, \$19,330 for families with children as of 2020, at which point benefits begin to phase out toward

zero. Table 1 shows that, as of 2020, taxpayers with \$10,000 in earnings were ineligible for the nonrefundable CDCC but received \$4,000 in EITC benefits. Taxpayers with \$40,000 in earnings received \$1,320 in CDCC benefits and \$1,655 in EITC benefits. Taxpayers with \$70,000 in earnings received \$1,200 in CDCC benefits but were ineligible for the EITC.⁷

Furthermore, 24 states and the District of Columbia supplement the federal CDCC with their own refundable or nonrefundable state child care credits. Statutory maximum benefits vary considerably across states, from \$394 to \$2,310 for families with two eligible dependents as of 2020. Unlike the federal CDCC, however, some states offer refundable credits, limit benefits to taxpayers with incomes below a certain threshold, or provide larger benefits to low-income households. States generally calculate their benefits as a percent of the federal CDCC received or the federal CDCC that the taxpayer would have received if the federal credit were refundable. I consider how state supplements to the federal CDCC would affect changes in benefits and marginal tax rates under permanent refundability in Section 6.

3. How Would Permanent Refundability Affect Incentives?

As a subsidy for child care, CDCC benefits encourage child care spending and effectively increase wages net of child care costs. Since all parents must work to receive benefits, increases in benefits promote labor force participation. However, the CDCC generates complex

⁷Though benefits are not administered through the tax code, the Child Care and Development Fund (CCDF) provides states funding to administer child care subsidy programs to about 800,000 very-low-income families, most of which are participating in or transitioning out of the Temporary Assistance for Needy Families program. If the federal CDCC were made permanently refundable, CCDF subsidies could decrease CDCC benefits for some very-low-income taxpayers by decreasing their out-of-pocket child care expenses. Nonetheless, few households receive CCDF benefits, and subsidies often do not cover all child care expenses. U.S. Department of Health and Human Services, Administration for Children and Families, Office of Child Care, “Characteristics of Families Served by the Child Care and Development Fund (CCDF) Based on Preliminary FY2018 Data,” <https://www.acf.hhs.gov/occ/resource/characteristics-of-families-served-by-child-care-and-development-fund-ccdf>.

intensive margin labor supply incentives. In this section, I examine the effects of making the CDCC permanently refundable on intensive margin labor supply incentives by comparing marginal tax rates with respect to income with and without refundability. More specifically, I simulate marginal tax rates as a consequence of federal individual income taxes and the CDCC, CTC, and EITC—hereafter, family tax benefits—with and without refundability. Accounting not only for the CDCC but also for other tax programs that affect families with children allows interactions between the CDCC and other tax benefits to affect marginal tax rates. This is particularly important when studying the effects of refundability on incentives, as evidence documented in Section 2 shows that making the CDCC permanently refundable would increase CTC benefits for some taxpayers.

Throughout the analyses, I document marginal tax rates separately across single and married taxpayers, who receive different tax treatment. For instance, married parents receive larger standard deductions and face lower individual income tax rates. Additionally, at low income levels, CDCC benefits are a function of the lesser earner’s earnings. To estimate marginal tax rates, I use tax code provisions and the National Bureau of Economic Research’s TAXSIM program, which calculates individuals’ tax liabilities and tax credits, including their family tax benefits under 2020 tax law. In doing so, I assume households tax-minimize, single parents file as head-of-household, and married parents file jointly. I also assume all income comes from earnings. For married parents, I document marginal tax rates for spouses with equal earnings but find similar results for married parents with unequal earnings in the online appendix.⁸

The left panel of Figure 2 shows marginal tax rates for single parents with one eligible

⁸Details of the simulation procedure can be found in the online appendix.

dependent, no older children, and the maximum qualifying child care expenditures.⁹ The black line displays marginal tax rates as a consequence of federal individual income taxes and family tax benefits under 2020 tax law. Single taxpayers with less than \$11,000 in AGI face marginal tax rates as low as -0.39 because the EITC and CTC subsidize earnings at low income levels. Marginal tax rates are substantially higher among taxpayers with slightly higher incomes, however. For instance, taxpayers with about \$14,000 to \$19,000 in AGI face a marginal rate of 0.12 . Single taxpayers who fall in the phase-out region of the EITC have some of the highest marginal tax rates; those with about \$33,000 to \$43,000 in AGI face a marginal tax rate of 0.29 , which exceeds that of taxpayers with over \$85,000 in AGI.

The dashed line in the left panel of Figure 2 shows that, all else equal, making the CDCC permanently refundable would decrease marginal tax rates by 35 percentage points among single taxpayers with less than \$3,000 in AGI, who fall in the phase-in region of the refundable credit, where benefits are a function of earnings. Refundability would not affect marginal tax rates for single parents with \$3,000 to \$15,000 in AGI but would increase marginal tax rates by 1.5 percentage points for taxpayers with \$15,000 to \$25,000 in AGI and by 11.5 percentage points for taxpayers with \$25,000 to \$33,000 in AGI.

Marginal tax rates for married parents with two eligible dependents, no older children, and the maximum qualifying child care expenditures, depicted in the right panel of Figure 2, exhibit a similar pattern. Married parents with less than \$12,000 in AGI face marginal tax rates as low as -0.45 and -0.63 under the nonrefundable and a refundable CDCC, respectively. Making the CDCC permanently refundable would increase marginal tax rates among

⁹In the online appendix, I show that the pattern of results is similar for single parents with two eligible dependents and married parents with one eligible dependent.

moderate-income households already facing relatively high marginal tax rates. In particular, marginal tax rates would increase from 0.23 to 0.36 among households with about \$37,000 to \$43,000 in AGI.

Figure 2 implies that intensive margin labor supply incentives of making the CDCC permanently refundable depend on the region of the credit in which taxpayers fall. Because a refundable CDCC would subsidize earnings for single taxpayers with less than \$3,000 in AGI and married taxpayers with less than \$6,000 in AGI, very-low-income households experience a positive substitution effect that encourages work hours and a negative income effect that discourages work hours. Weakly positive income and substitution effects among taxpayers on the phase-out region of the refundable CDCC discourage intensive margin labor supply.

4. Effects across the Distribution of Taxpayers

Given different effects of refundability across the income distribution shown in Sections 2 and 3, I now study the extent to which actual taxpayers would benefit from a permanently refundable CDCC. To do so, I account for taxpayer characteristics and child care spending using data from Wave 1 of the 2018 SIPP. The data allow me to estimate CDCC eligibility rates by family structure and race and to simulate how permanent refundability would affect CDCC benefits and marginal tax rates across households that face different child care and labor supply incentives.

The SIPP is a nationally representative survey of about 45,000 households. Wave 1 of the 2018 SIPP was administered during 2018 and documents individuals' demographics and economic outcomes, including their child care expenses and income from various sources,

as of 2017. Specifically, I observe monthly individual earnings, as well as annual household income from rent, alimony, retirement, Social Security, and a number of assets. I also observe household child care expenses as of December 2017. When I study CDCC outcomes, I assume that child care expenses remain constant throughout the year. This likely yields an underestimate of annual child care expenses, as parents are more likely to rely on child care during the summer (Capizzano, Adelman, and Stagner 2002). In this case, I underestimate households' potential CDCC benefits and any changes in benefits that would occur if the credit were made permanently refundable.

To isolate the population most affected by the CDCC, I limit the sample to households with children younger than 13. There are about 5,500 households in the sample. I use information on income, demographics, and child care expenses to estimate households' potential nonrefundable federal CDCC benefits—the benefits that they would receive if they claimed the credit—using TAXSIM.¹⁰ In doing so, I estimate CDCC benefits that respondents would have received using 2020 tax parameters, but estimates using 2017 tax parameters are nearly identical.¹¹

Table 2 documents the proportion of single and married parents by eligibility status under the nonrefundable CDCC using sample weights. The table shows that 15 percent of single parents and 19 percent of married parents are eligible for nonrefundable CDCC benefits. About 5 percent of single parents have incomes too low to qualify for the nonrefundable

¹⁰I assume that effects of capital gains, property income other than rent, fellowship income, state income tax refunds, real estate and motor vehicle taxes paid, deductible medical expenses, home mortgage interest, charitable contributions, and casualty or theft losses on CDCC benefits are negligible. I also assume that among taxpayers with two or more children and over \$3,000 in child care expenditures, child care spending is not disproportionately allocated toward one child to the point that it decreases potential benefits. This assumption would be violated if, for example, a household spent \$5,000 on child care for its first child and \$2,000 on child care for its second child.

¹¹Results available upon request.

CDCC but would become eligible if the credit were made permanently refundable. Another 56 percent of single parents would gain eligibility if refundability led them to pay for child care. The remaining 25 percent of single parents do not work and have incomes too low to qualify for the nonrefundable CDCC. Among married parents, 10 percent have incomes too low to qualify for the nonrefundable CDCC, but virtually none of these households pay for child care and, therefore, would remain ineligible under a refundable credit. Most married parents are ineligible for the CDCC because they do not pay for child care or one of the parents does not work.

Similarly, Table 3 documents CDCC eligibility rates by the race of the mother or single father.¹² The table shows that Black and Hispanic households, which tend to have lower incomes, are less likely than white households to be eligible for the nonrefundable CDCC. Whereas 21 percent of white households are eligible, only 17 percent of Black households and 13 percent of Hispanic households are eligible. Making the CDCC permanently refundable would increase eligibility by about 3 percentage points among Black households, by about 2 percentage points among Hispanic households, and by about 1 percentage point among white households. Another 14 percent of Black households, 8 percent of Hispanic households, and 7 percent of white households have incomes too low to qualify for the nonrefundable CDCC but would become eligible if refundability led them to pay for child care. Table 3 suggests permanent CDCC refundability would decrease eligibility gaps between whites and underrepresented groups.¹³

Next, I study how potential CDCC benefits and marginal tax rates would change if the

¹²Race categories are defined as white non-Hispanic, Black alone, white Hispanic, and other.

¹³In the online appendix, I document CDCC eligibility by number of eligible dependents. I find that households with two or more eligible children are more likely to pay for child care and to be eligible for the nonrefundable CDCC.

CDCC were made permanently refundable among parents who currently work and pay for child care, all else equal. To study outcomes separately across working households that face different incentives due to the CDCC, I assign households to the ineligible, phase-in, or phase-out/plateau regions of the nonrefundable credit. As in Section 3, I simulate marginal tax rates with respect to income as a consequence of family tax benefits and individual income taxes using 2020 tax code provisions and TAXSIM. I also use 2020 tax code provisions and TAXSIM to simulate marginal tax rates with respect to child care expenditures as a consequence of the CDCC.¹⁴

Table 4 displays the average number of eligible dependents, child care expenditures, AGI, potential CDCC benefits, and marginal tax rates with respect to income and child care expenditures among working single parents with child care expenses using sample weights. The table shows that 23 percent of these parents fall in the ineligible region of the nonrefundable CDCC, another 23 percent fall in the phase-in region, and the remaining 54 percent fall in the phase-out/plateau region. About 60 percent of households in the ineligible and phase-in regions and about 45 percent of households in the phase-out/plateau region have two or more eligible dependents. Despite having low income levels, households in the ineligible and phase-in regions on average spend about \$6,000 and \$11,000 per year, respectively, on child care.¹⁵ While households on the phase-out/plateau region have similar average child care expenditures as households on the phase-in region, their average income, nearly \$70,000, is quite high compared to average incomes in the other credit regions.

Table 4 shows that, as expected, if the CDCC were made permanently refundable, average

¹⁴Details of the simulation procedure can be found in the online appendix.

¹⁵Note that welfare income and in-kind transfers are non-taxable and not included in AGI.

potential CDCC benefits would increase in the ineligible and phase-in regions but not in the phase-out/plateau region of the nonrefundable credit. In particular, average annual potential CDCC benefits would increase from \$0 to \$1,037 in the ineligible region and from \$617 to \$1,249 in the phase-in region, all else equal. These increases are substantial: in the ineligible region, the increase constitutes 18 percent of existing child care spending and 10 percent of AGI. In the phase-in region, it constitutes 6 percent of child care spending and 3 percent of AGI.

Consistent with evidence from Section 3, benefit increases affect marginal tax rates as a consequence of family tax benefits and individual income tax, all else equal. In the ineligible region, the average marginal tax rate with respect to income decreases from -0.22 to -0.27 , and the average marginal tax rate with respect to child care expenditures decreases from 0 to -0.16 . In the phase-in and phase-out/plateau regions, the average marginal tax rate with respect to income increases by 0.02. At the same time, average marginal tax rates with respect to child care expenditures decrease by 0.09 and 0.04 in the phase-in and phase-out/plateau regions, respectively. Thus, to the extent that child care costs present a barrier to work among moderate-income households, decreases in the marginal cost of child care could mitigate work disincentives of small increases in marginal tax rates with respect to income.

Among married parents, approximately 1 percent fall in the ineligible region of the non-refundable CDCC, and about 4 percent fall in the phase-in region. In the online appendix, I show that making the CDCC permanently refundable would increase average potential CDCC benefits by \$160 per year among married parents in the phase-in region, all else equal.

5. How Would Permanent Refundability Affect Government Spending?

In addition to affecting taxpayers, CDCC benefit increases under refundability would increase government spending. To understand how permanent refundability would affect government spending, I first use sample weights to estimate the number of working households with eligible dependents and child care expenditures that fall in each credit region. Next, I multiply the number of households in a given credit region by that region's increase in average potential CDCC benefits. For example, I multiply the 460,000 single households in the ineligible region by the \$1,042 increase in CDCC benefits shown in Table 4. Summing across credit regions, as well as across single and married households, I find that if all households with benefit increases were to claim the CDCC, making it permanently refundable would increase government spending annually by about \$800 million, all else equal. This constitutes a 22 percent increase in CDCC spending compared to that during the late 2010s.

Although an \$800 million increase in spending is considerable relative to recent years, it would restore spending levels that have decreased in real value over time, as the CDCC is not indexed to inflation. The left panel of Figure 3 displays federal CDCC spending in real and nominal dollars from 1996 to 2017. Consistent with increases in the maximum benefit, the 2003 expansion increased CDCC spending from \$2.7 billion to \$3.2 billion, or from \$3.8 billion to \$4.5 billion in 2019 dollars. Although CDCC spending increased in nominal terms between 2003 and 2017, real CDCC spending decreased to \$3.9 billion, despite increases in households' child care expenditures on average (Herbst 2018). Hence, if the CDCC were made permanently refundable, real spending would increase to levels only slightly higher than those in 2003, all else equal.

Decreases in real government spending over time correspond to decreases in the real value of CDCC benefits that taxpayers receive. The right panel of Figure 3 displays maximum effective CDCC benefits for single taxpayers with two or more eligible dependents from 1996 to 2019 in real and nominal dollars. The panel shows that the 2003 expansion increased the maximum effective CDCC benefit from about \$1,050 to \$1,650, or from \$1,500 to \$2,300 in 2019 dollars. Because the tax filing thresholds increased each year from 2003 to 2017, however, the nominal maximum CDCC decreased over time, and its real value decreased by an even larger amount. By 2019, the maximum real CDCC, about \$1,550, was only slightly higher than the maximum real benefit just before the 2003 expansion. If the CDCC were made permanently refundable, the nominal maximum effective benefit would remain constant at \$2,100, which would slow its decline in real value. Nonetheless, the credit's value will continue to erode over time unless its parameters are indexed to inflation. Annual adjustments to the maximum CDCC benefit and qualified child care expenditures, as well as the income threshold at which benefits begin to phase out, would allow the CDCC to remain a meaningful tax program in the long run.

6. State CDCC Benefits

Because states with CDCC programs generally calculate their benefits as a percent of the federal credit or the child care expenses used to calculate it, making the federal CDCC permanently refundable may yield different effects on benefits and marginal tax rates across states. I therefore study effects of refundability on benefits and marginal tax rates as a consequence of both state and federal CDCCs in two states with typical state CDCC programs—Iowa, which offers a refundable credit, and Rhode Island, which offers a nonrefundable credit.

Specifically, Iowa’s refundable CDCC is available to taxpayers with less than \$45,000 in AGI. Those with less than \$10,000 in AGI receive 75 percent of the federal CDCC that they would receive if it were refundable. Benefits decrease with income for taxpayers with more than \$10,000 in AGI so that those with \$40,000 to \$45,000 receive 30 percent of the “allowable” federal CDCC. Rhode Island’s nonrefundable CDCC is available to taxpayers regardless of income and is worth 25 percent of the federal CDCC received after accounting for nonrefundability.

The left panel of Figure 4 documents maximum total state and federal CDCC benefit schedules in Iowa with and without federal CDCC refundability as of 2020. The solid red line displays total benefits for taxpayers with two or more eligible dependents under the nonrefundable federal CDCC. The figure shows that Iowa taxpayers with incomes too low to qualify for the nonrefundable federal credit still may receive over \$1,500 in refundable state CDCC benefits. As expected, total CDCC benefits begin to decrease with income at \$10,000 in AGI but increase once income reaches the tax filing threshold and taxpayers become eligible for the federal CDCC. Maximum total benefits peak at about \$2,300 for taxpayers with \$34,000 in AGI; benefits then decrease with income. In particular, benefits decrease substantially at \$45,000 in AGI, where taxpayers are no longer eligible for the state CDCC.

The solid blue line in the left panel of Figure 4 displays total CDCC benefits for Iowa taxpayers with two or more eligible dependents if the federal CDCC were made permanently refundable. As expected, the difference between the blue and red lines is completely explained by the increase in federal CDCC benefits under refundability shown in Figure 1. The panel also shows that if the federal CDCC were made permanently refundable, low-

income taxpayers in Iowa could receive over \$3,600 per year in total CDCC benefits. Total CDCC benefits for Iowa taxpayers with one eligible dependent are less generous, but the pattern of results is otherwise similar.

Turning to Rhode Island, the right panel of Figure 4 shows that, unsurprisingly, taxpayers without federal tax liability receive neither state nor federal CDCC benefits under the nonrefundable federal CDCC. Taxpayers with higher incomes, however, benefit from both the state and federal CDCC; total benefits for taxpayers with two or more eligible dependents peak at about \$1,900 for taxpayers with \$34,100 in AGI. If the federal CDCC were made permanently refundable, taxpayers with two or more eligible dependents and less than \$25,500 in AGI would receive federal but not state CDCC benefits, as they do not have positive state tax liability. Total CDCC benefits then increase sharply as state tax liability increases. Rhode Island taxpayers with two or more eligible dependents and \$25,700 to \$34,000 in AGI experience increases in both state and federal CDCC benefits under refundability, which increases the maximum total benefit to about \$2,200 at \$26,000 in AGI. The pattern of results for Rhode Island taxpayers with one eligible dependent is similar.

Because increases in CDCC generosity generate complex changes in intensive margin labor supply incentives, as in Section 3, I examine how permanent refundability would affect marginal tax rates among taxpayers in Iowa and Rhode Island. Specifically, I simulate marginal tax rates as a consequence of state and federal individual income taxes and state and federal family tax benefits with and without refundability as of 2020 in Figure 5. The top and bottom left panels of the figure document marginal tax rates in Iowa for single parents with one eligible dependent and for married parents with two eligible dependents, respectively. The solid lines display marginal tax rates under the nonrefundable federal

CDCC, and the dashed lines display marginal tax rates under a refundable CDCC. The left panels show that accounting for state individual income taxes and family tax benefits yields lower marginal tax rates among low-income taxpayers and higher marginal tax rates among moderate-income taxpayers. For instance, Iowa single taxpayers with one eligible dependent and \$3,000 or less in AGI face marginal tax rates as low as -0.43 and -0.78 with and without federal CDCC refundability, respectively, whereas similar taxpayers with about \$33,000 to \$42,000 face marginal tax rates around 0.40 , regardless of refundability. Because a permanently refundable federal CDCC would not affect state CDCC benefits in Iowa, changes in marginal tax rates due to federal CDCC refundability are equivalent to those shown in Figure 2 for both single and married taxpayers.

Similarly, the top and bottom right panels of Figure 5 characterize marginal tax rates for single taxpayers with one eligible dependent and married taxpayers with two eligible dependents in Rhode Island. The right panels show that at low income levels, accounting for state individual income taxes and family tax benefits largely does not affect marginal tax rates. Given that low-income taxpayers do not benefit from Rhode Island's CDCC, it is unsurprising that, among taxpayers with less than about \$20,000, changes in marginal tax rates under a refundable federal CDCC are equivalent to those depicted in Figure 2. The sharp increase in state CDCC benefits as Rhode Island taxpayers begin to have positive state tax liability and to receive state CDCC benefits shown in Figure 4, however, generates a substantial decrease in marginal tax rates for taxpayers within a small income bin. Specifically, the marginal tax rate among single taxpayers with one eligible dependent and about \$21,500 in AGI decreases from 0.22 to -0.70 , and the marginal tax rate among married taxpayers with two eligible dependents and about \$34,000 in AGI decreases from 0.27 to -0.62 . Changes in

marginal tax rates due to federal CDCC refundability among higher-income taxpayers are similar to those shown in Figure 2. For example, marginal tax rates increase from 0.22 to 0.36 for Rhode Island single taxpayers with one eligible dependent and \$25,000 to \$27,500 in AGI and from 0.31 to 0.44 for married taxpayers with two eligible dependents and \$39,000 to \$43,000 in AGI.

Figures 4 and 5 imply that in states with refundable CDCCs, making the federal CDCC permanently refundable is unlikely to change state CDCC benefits or to differentially affect incentives. In states with nonrefundable CDCCs, making the federal CDCC permanently refundable may lead to small increases in state CDCC benefits. Discontinuities in the total CDCC benefit schedule under federal CDCC refundability also could generate sharp decreases in marginal tax rates for some taxpayers. For most taxpayers, however, changes in marginal tax rates are likely to remain similar when accounting for state individual income taxes and family tax benefits.

7. Conclusion and Discussion

In this paper, I show that making the CDCC permanently refundable would increase eligibility and benefits among low-income taxpayers, who do not tend to benefit from other child care subsidy programs, such as dependent care FSAs. Furthermore, refundability would lead to particularly large increases in eligibility among Black and Hispanic households, which are relatively unlikely to qualify for the nonrefundable CDCC. Turning to intensive margin labor supply incentives, refundability would decrease marginal tax rates with respect to income among very-low-income taxpayers. Moderate-income taxpayers would experience small increases in marginal tax rates with respect to income but decreases in marginal tax rates with

respect to child care expenditures.

Making the CDCC permanently refundable would make the credit more similar to the EITC by transferring income toward low-income working families. Figure 6 compares maximum refundable CDCC and EITC benefit schedules as of 2020 for households with one, two, and three or more children by AGI. While EITC benefits are more generous, refundable CDCC and EITC benefits phase in at similar rates for low-income households. The refundable CDCC phases out at a much lower rate relative to the EITC (and never phases out completely), though the CDCC's maximum plateau and phase-out regions begin at lower income levels. More specifically, for households with two or more children, the EITC phase-out rate (0.21) is considerably higher than both the refundable CDCC phase-out rate (0.03) and the average marginal tax rate increase among households currently on the phase-in and phase-out/plateau regions of the nonrefundable CDCC (0.02).

Despite relatively high marginal tax rates in the phase-out region of the EITC, researchers show that EITC benefits increase work participation among single mothers (Eissa and Liebman 1996; Hoynes and Patel 2018; Keane and Moffitt 1998; Meyer and Rosenbaum 2001; Micheltore and Pilkauskas, forthcoming) and that decreases in labor supply among taxpayers on the phase-out region are relatively small (Chetty, Friedman, and Saez 2013). Hence, evidence from research on the EITC, along with the relatively small increases in marginal tax rates due to refundability shown in Table 4, suggests that making the CDCC permanently refundable would increase work among low-income parents who are willing to pay for child care. Evidence that increases in CDCC generosity increase paid child care use (Miller and Mumford 2015; Pepin 2020) corroborates the idea that a permanent refundable CDCC likely would increase both work and child care spending among low-income parents.

While I show that making the CDCC permanently refundable generally would encourage work and child care spending, additional research is needed to understand how increases in eligibility and benefits would affect taxpayers' behavior. Characterizing the extent to which increases in CDCC generosity among low-income taxpayers induce parents to pay for child care and to enter the labor force will allow policymakers to better understand the costs and benefits of altering CDCC policies, such as refundability.

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Tables and Figures

Table 1: Tax Benefits for Single Taxpayers with Two Eligible Dependents by Income

	\$10,000	\$40,000	\$70,000
Federal taxable income	\$0	\$21,191	\$51,191
Nonrefundable CDCC	\$0	\$1,320	\$1,200
Refundable CDCC	\$2,100	\$1,320	\$1,200
Nonrefundable CTC	\$0	\$909	\$4,000
ACTC	\$1,125	\$2,800	\$0
CTC loss from nonrefundable CDCC	\$0	\$291	\$0
Potential FSA benefits	\$500	\$600	\$1,100
EITC	\$4,000	\$1,655	\$0

Notes: Federal taxable income and benefits for single households with two eligible dependents, no additional children, and the maximum qualifying child care expenditures as of 2020. Results shown for tax-minimizing households with \$10,000, \$40,000, and \$70,000 of income that comes solely from earnings. “CTC loss from nonrefundable CDCC” notes the additional CTC benefits that the taxpayer would receive under a refundable CDCC. “Potential FSA benefits” are the maximum dependent care FSA benefits that the household can receive if their employer offers an FSA.

Source: Author’s calculations using federal tax forms.

Table 2: Proportion of Households by Marital Status and Eligibility Status

Eligibility status	Single	Married
Eligible	0.15	0.19
Ineligible		
No child care expenditures	0.36	0.42
No earnings	0.00	0.03
Low income	0.05	0.00
No child care expenditures and no earnings	0.00	0.25
No child care expenditures and low income	0.20	0.01
No earnings and low income	0.02	0.00
No earnings, no child care expenditures, and low income	0.23	0.09
Total	1.01	0.99
Observations	1,985	3,465
Representative of	10,087,672	17,935,792

Notes: Proportion of households with eligible dependents, by marital status and eligibility status for the nonrefundable CDCC.

Source: Author’s calculations using TAXSIM and Wave 1 of the 2018 SIPP with sample weights.

Table 3: Proportion of Households by Race and Eligibility Status

Eligibility status	White	Black	Hispanic	Other
Eligible	0.21	0.17	0.13	0.13
Ineligible				
No child care expenditures	0.42	0.37	0.35	0.42
No earnings	0.03	0.01	0.01	0.03
Low income	0.01	0.03	0.02	0.01
No child care expenditures and no earnings	0.16	0.07	0.19	0.21
No child care expenditures and low income	0.07	0.14	0.08	0.06
No earnings and low income	0.01	0.01	0.01	0.00
No earnings, no child care expenditures, and low income	0.10	0.20	0.20	0.14
Total	1.01	1.00	0.99	1.00
Observations	2,877	641	1,279	653
Representative of	14,985,414	3,611,198	5,946,440	3,480,414

Notes: Proportion of households with eligible dependents, by race and eligibility status for the nonrefundable CDCC.
Source: Author's calculations using TAXSIM and Wave 1 of the 2018 SIPP with sample weights.

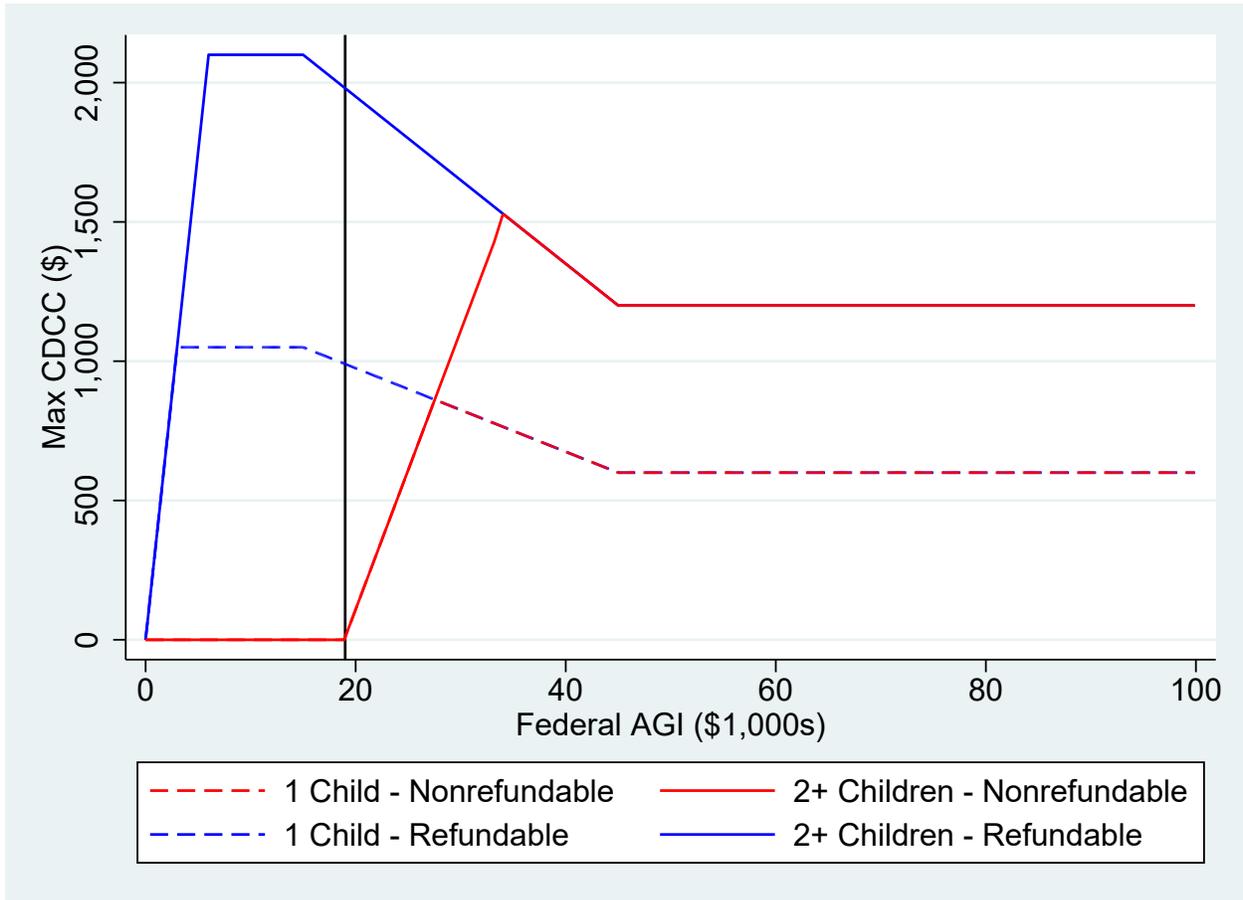
Table 4: Distribution of Working Single Households with Eligible Dependents and Child Care Expenditures

	Nonrefundable CDCC	Refundable CDCC
Ineligible		
Proportion of households	0.23	0.23
One eligible dependent	0.43	0.43
Two or more eligible dependents	0.57	0.57
Average child care expenditures (\$)	5,720	5,720
Average AGI (\$)	10,918	10,918
Average potential CDCC benefits (\$)	0	1,042
Average mtr with respect to income	-0.22	-0.27
Average mtr with respect to child care	0	-0.16
Phase-in		
Proportion of households	0.23	0.23
One eligible dependent	0.41	0.41
Two or more eligible dependents	0.59	0.59
Average child care expenditures (\$)	11,104	11,104
Average AGI (\$)	25,100	25,100
Average potential CDCC benefits (\$)	617	1,249
Average mtr with respect to income	0.17	0.19
Average mtr with respect to child care	0	-0.09
Phase-out/plateau		
Proportion of households	0.54	0.54
One eligible dependent	0.54	0.54
Two or more eligible dependents	0.46	0.46
Average child care expenditures (\$)	10,128	10,128
Average AGI (\$)	69,944	69,944
Average potential CDCC benefits (\$)	792	792
Average mtr with respect to income	0.22	0.24
Average mtr with respect to child care	-0.04	-0.08
Observations	382	382
Representative of	2,009,166	2,009,166

Notes: Average number of eligible dependents, child care expenditures, AGI, potential CDCC benefits, and marginal tax tax rates with respect to income and child care expenditures with and without refundability as of 2020 for working single households with eligible dependents and child care expenditures, by region of the nonrefundable CDCC. Marginal tax rates with respect to income are as a consequence of federal CDCC, CTC, and EITC benefits and individual income taxes.

Source: Author's calculations using TAXSIM, federal tax forms, and Wave 1 of the 2018 SIPP with sample weights.

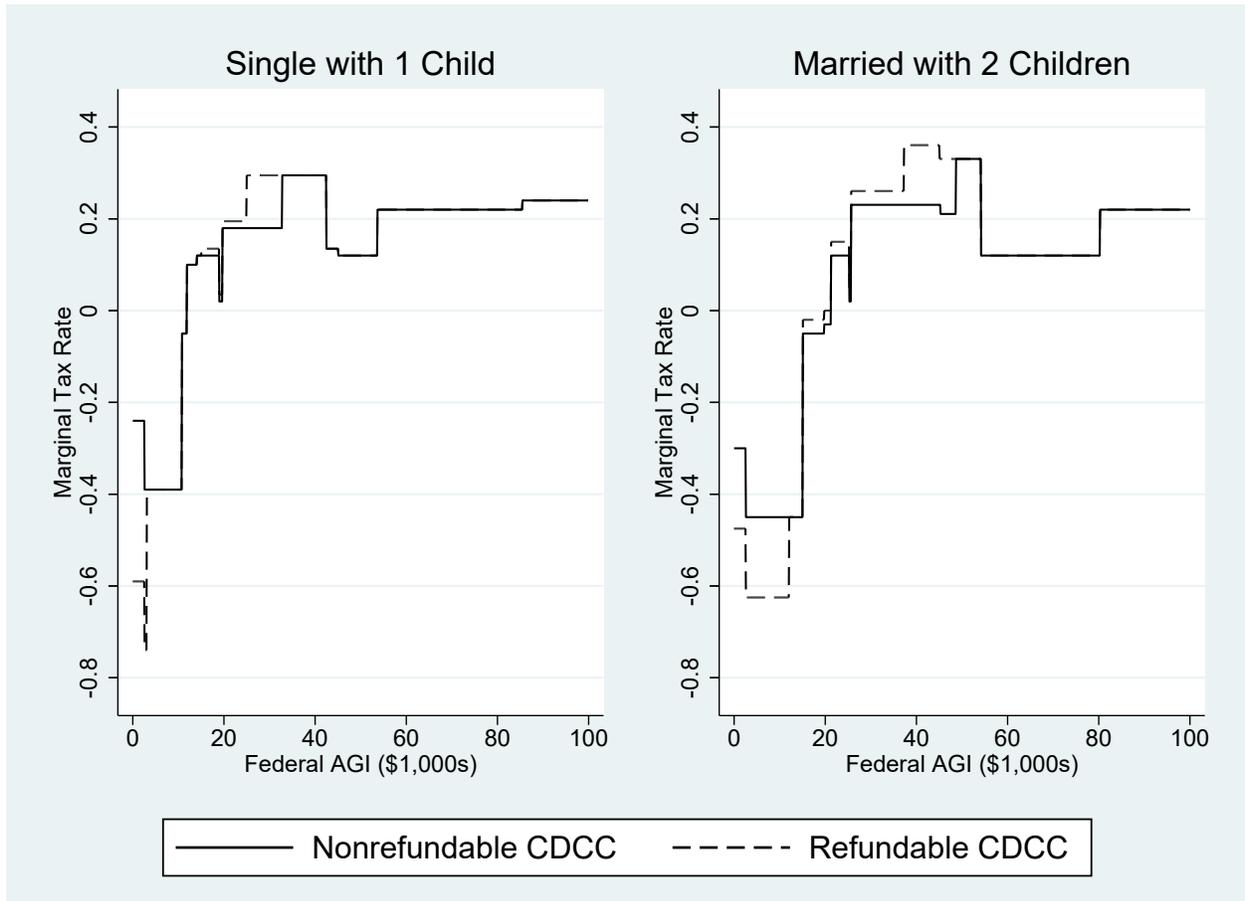
Figure 1: Maximum Federal CDCC Benefits by Federal AGI



Notes: Maximum federal CDCC benefits for households with one or two or more eligible dependents with and without refundability as of 2020.

Source: Author's calculations using federal tax forms.

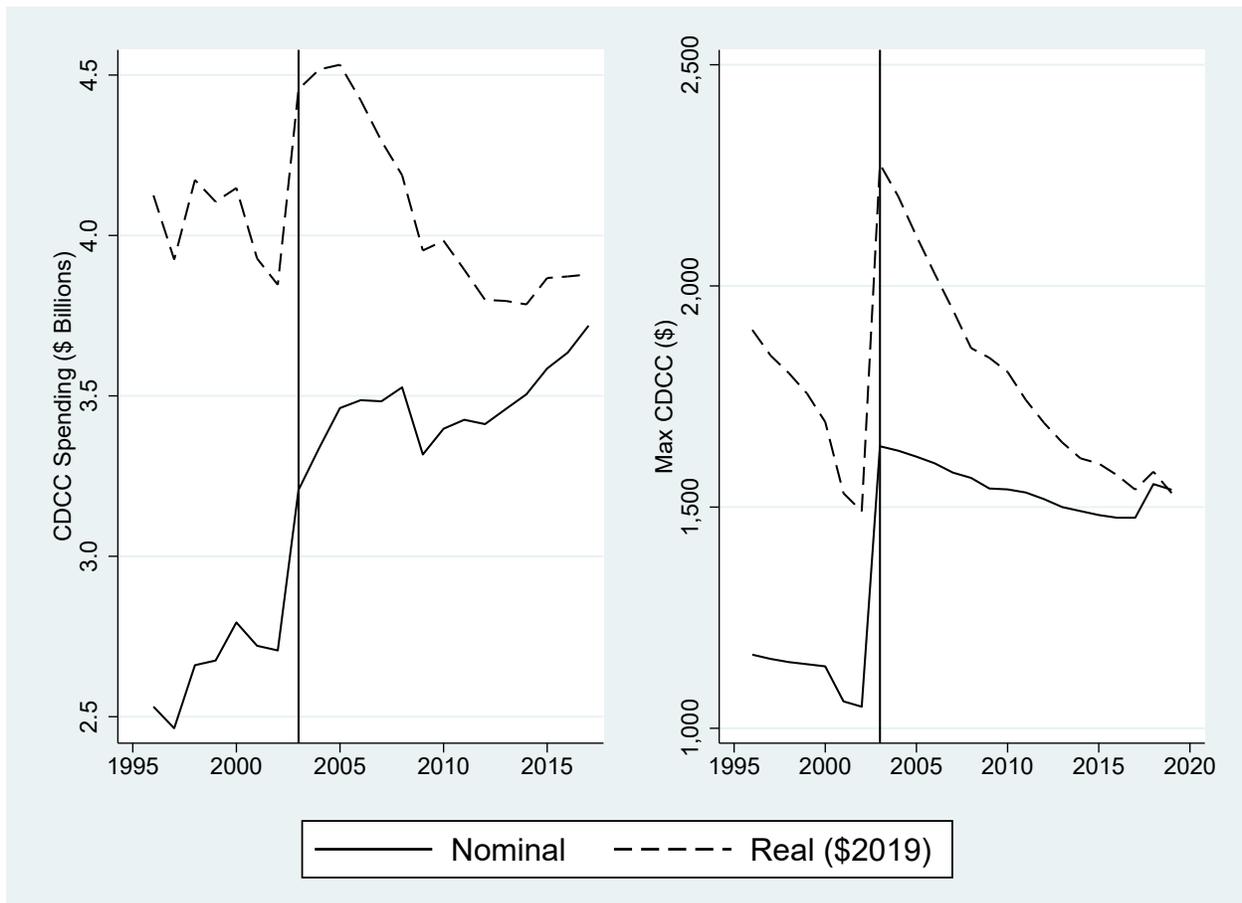
Figure 2: Marginal Tax Rates due to Federal CDCC, CTC, EITC, and Individual Income Taxes



Notes: Left panel: Marginal tax rates with respect to earnings due to federal CDCC, CTC, and EITC benefits and federal individual income taxes among single parents with one eligible dependent and no older children with and without refundability as of 2020. Right panel: Marginal tax rates with respect to the lesser earner's earnings due to the federal CDCC, CTC, EITC, and individual income taxes among married parents with two eligible dependents, no older children, and equal earnings with and without refundability as of 2020.

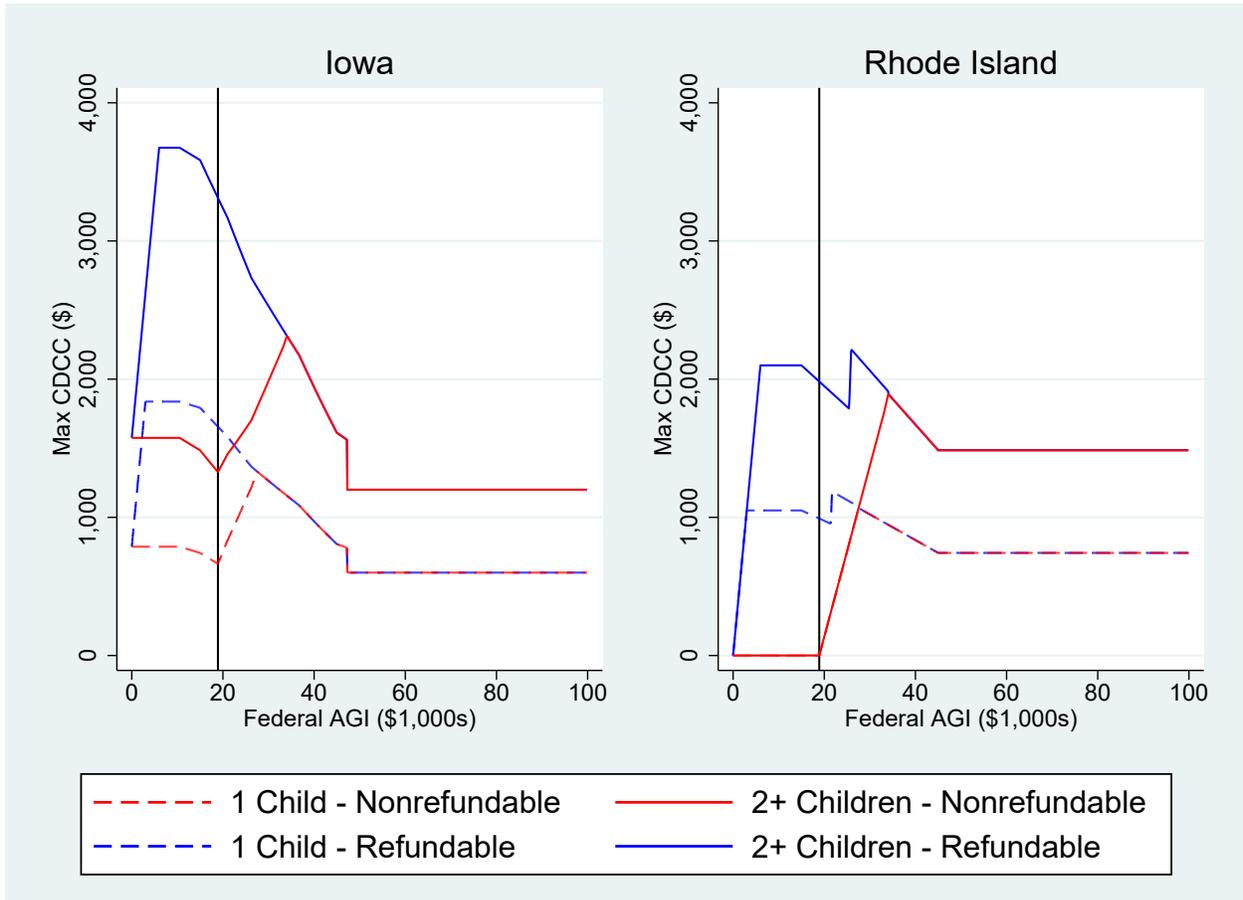
Source: Author's calculations using TAXSIM and federal tax forms.

Figure 3: Federal CDCC Spending and Maximum Benefits by Year



Notes: Left panel: Federal CDCC spending in real and nominal dollars from 1996-2017. Right panel: Maximum federal CDCC benefits in real and nominal dollars from 1996-2019. Source: Left panel: Author's calculations using IRS SOI data. Right panel: Author's calculations using federal tax forms.

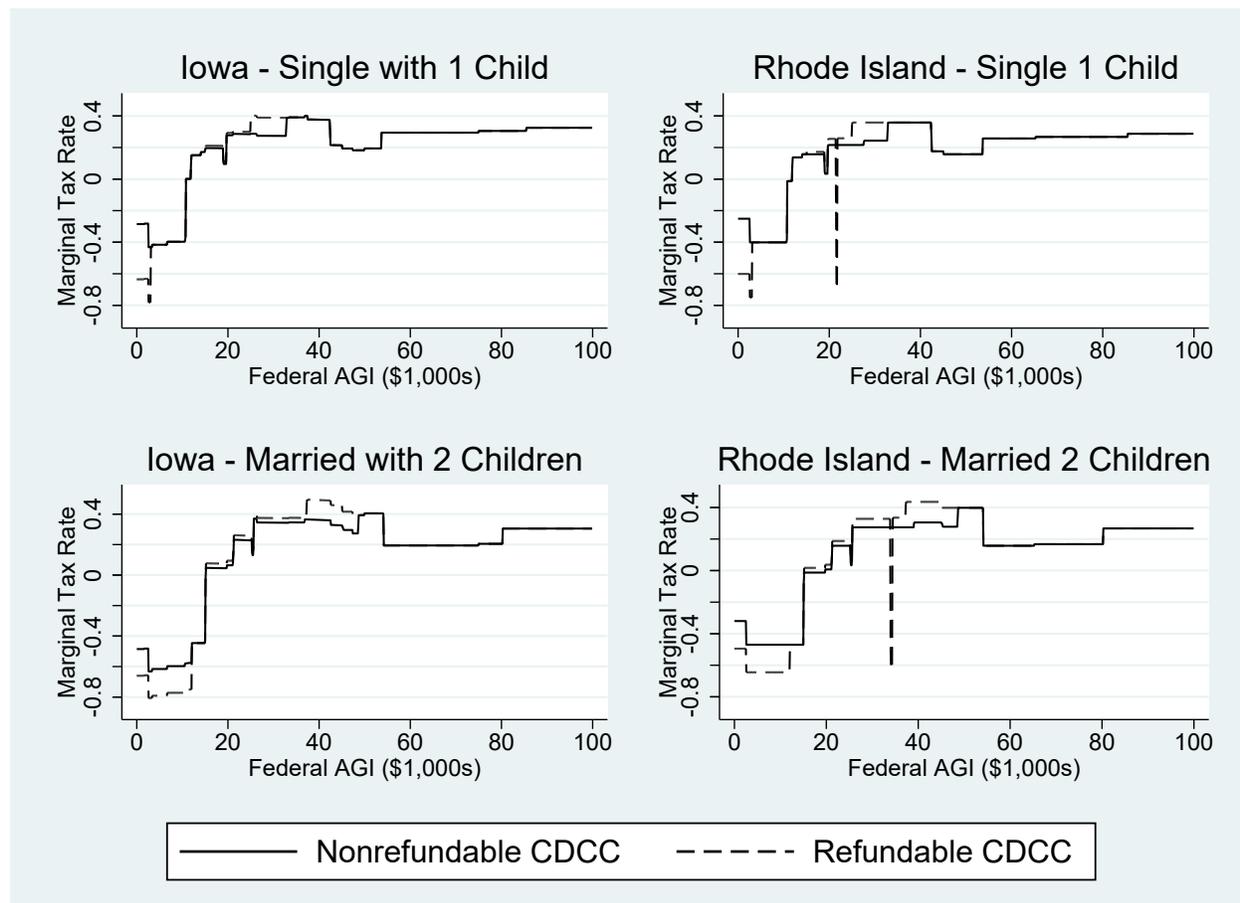
Figure 4: Maximum State and Federal CDCC Benefits by Federal AGI



Notes: Left panel: Maximum state and federal CDCC benefits for households with one or two or more eligible dependents in Iowa with and without refundability as of 2020. Right panel: Maximum state and federal CDCC benefits for households with one or two or more eligible dependents in Rhode Island with and without refundability as of 2020.

Source: Author's calculations using state and federal tax forms.

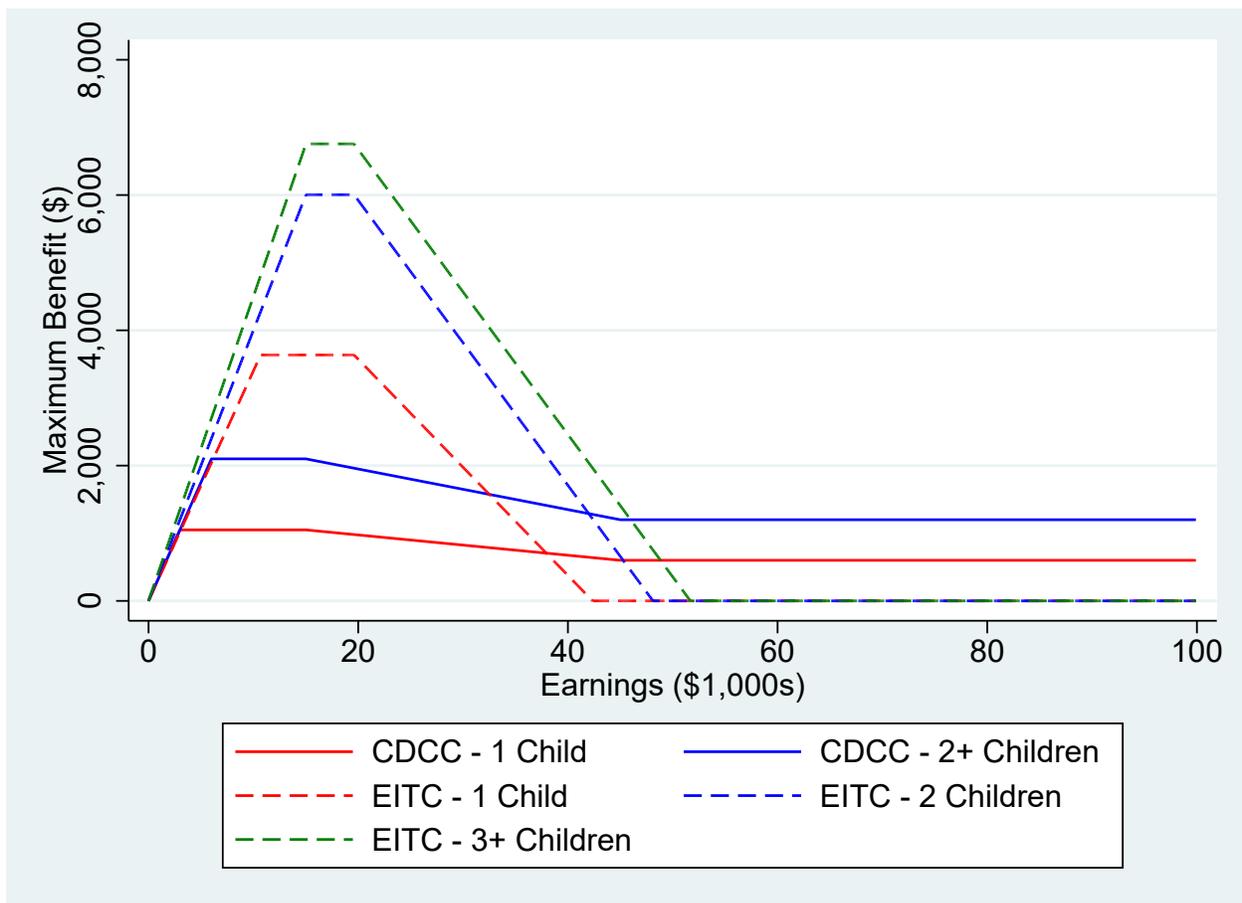
Figure 5: Marginal Tax Rates due to State and Federal CDCC, CTC, EITC, and Individual Income Taxes



Notes: Top left panel: Marginal tax rates with respect to earnings due to state and federal CDCC, CTC, and EITC benefits and state and federal individual income taxes among single parents with one eligible dependent and no older children in Iowa with and without refundability as of 2020. Bottom left panel: Marginal tax rates with respect to earnings due to state and federal CDCC, CTC, and EITC benefits and state and federal individual income taxes among married parents with two eligible dependents and no older children in Iowa with and without refundability as of 2020. Top right panel: Marginal tax rates with respect to earnings due to state and federal CDCC, CTC, and EITC benefits and state and federal individual income taxes among single parents with one eligible dependent and no older children in Rhode Island with and without refundability as of 2020. Bottom right panel: Marginal tax rates with respect to earnings due to state and federal CDCC, CTC, and EITC benefits and state and federal individual income taxes among married parents with two eligible dependents and no older children in Rhode Island with and without refundability as of 2020.

Source: Author's calculations using TAXSIM and state and federal tax forms.

Figure 6: Maximum Refundable Federal CDCC and EITC Benefits by Earnings



Notes: Maximum refundable federal CDCC and EITC benefits for households with one, two, and three or more children as of 2020.

Source: Author's calculations using federal tax forms.

A1. Section 3 Simulation Procedure

To estimate marginal tax rates as a consequence of individual income taxes and family tax benefits under current tax law, I first simulate family tax benefits for households with \$0 to \$100,000 in income in \$100 increments using TAXSIM. I then take the difference in family tax benefits across consecutive \$100 income levels for single and married parents separately. For example, I subtract family tax benefits for single parents with one child and \$10,000 in AGI from family tax benefits for single parents with one child and \$10,100 in AGI. This number, divided by -100 , as family tax benefits are subsidies, is the marginal tax rate as a consequence of family tax benefits.¹ Finally, I add marginal tax rates as a consequence of family tax benefits to marginal tax rates as a consequence of individual income taxes based on households' AGI.

To estimate marginal tax rates under a refundable CDCC, I use a similar procedure but calculate refundable CDCC benefits using parameters from the tax code, as TAXSIM only estimates tax benefits under current tax law. Additionally, because refundable tax credits currently come after nonrefundable tax credits on federal Form 1040, I assume that a refundable CDCC would not affect tax liability used to calculate CTC benefits. Hence, making the CDCC refundable could lead to increases in CTC benefits. To estimate CTC benefits under a refundable CDCC, I simulate tax benefits for households without child care spending (who do not qualify for the CDCC) using TAXSIM and assign those benefits

¹This procedure does not yield accurate marginal tax rates for households at the income increments adjacent to kinks in the family tax schedule. I assign households on the left side of a nonlinearity in the tax schedule the marginal tax rate faced by households with \$100 less in AGI. I assign households on the right side of a nonlinearity in the tax schedule the marginal tax rate faced by households with \$100 more in AGI. I then assign households that fall between two income increments with different marginal tax rates the rate faced by households at the closest income increment.

to otherwise similar households that pay for child care. I then add CTC benefits in the absence of CDCC benefits to refundable CDCC and EITC benefits, take differences in family tax benefits across income increments, divide by -100 , and add marginal tax rates as a consequence of individual income taxes.

A2. Section 4 Simulation Procedure

If the household currently is ineligible for CDCC benefits, I assign it to the ineligible region. If the household is eligible for the CDCC, I estimate its potential CDCC benefits had the lower-earning parent earned an additional \$1 during 2017, all else equal, using TAXSIM. If the household's CDCC benefit increases with income, I assign it to the phase-in region. If the household's potential CDCC benefit decreases with income or does not change, I assign it to the phase-out/plateau region.

To estimate each household's marginal tax rate with respect to income as a consequence of federal CDCC benefits and individual income tax, I first multiply the change in CDCC benefits due to an additional \$1 of income by -1 , as the CDCC is a subsidy. I then add the marginal tax rate as a consequence of CDCC benefits to the household's individual income tax rate based on AGI. Next, I use a similar procedure to estimate each household's marginal tax rate with respect to child care expenditures as a consequence of the federal CDCC. That is, I use TAXSIM to estimate potential CDCC benefits for each household, had the household spent an additional \$1 on child care during 2017, all else equal. I then multiply the change in benefits due to the additional \$1 by -1 to obtain the household's marginal tax rate with respect to child care expenditures. Finally, to estimate potential CDCC benefits and marginal tax rates under a refundable CDCC, all else equal, I use similar procedures

but, as in Section 3, estimate refundable CDCC benefits using parameters from the tax code.

A3. Tables and Figures

Table A1: Proportion of Households by Number of Eligible Dependents and Eligibility Status

Eligibility status	1 child	2+ children
Eligible	0.14	0.21
Ineligible		
No child care expenditures	0.45	0.35
No earnings	0.01	0.03
Low income	0.02	0.02
No child care expenditures and no earnings	0.14	0.18
No child care expenditures and low income	0.09	0.07
No earnings and low income	0.01	0.01
No earnings, no child care expenditures, and low income	0.15	0.13
Total	1.01	1.00
Observations	2,538	2,912
Representative of	13,341,499	14,681,967

Notes: Proportion of households with eligible dependents, by number of eligible dependents and eligibility status for the nonrefundable CDCC.

Source: Author's calculations using TAXSIM and Wave 1 of the 2018 SIPP with sample weights.

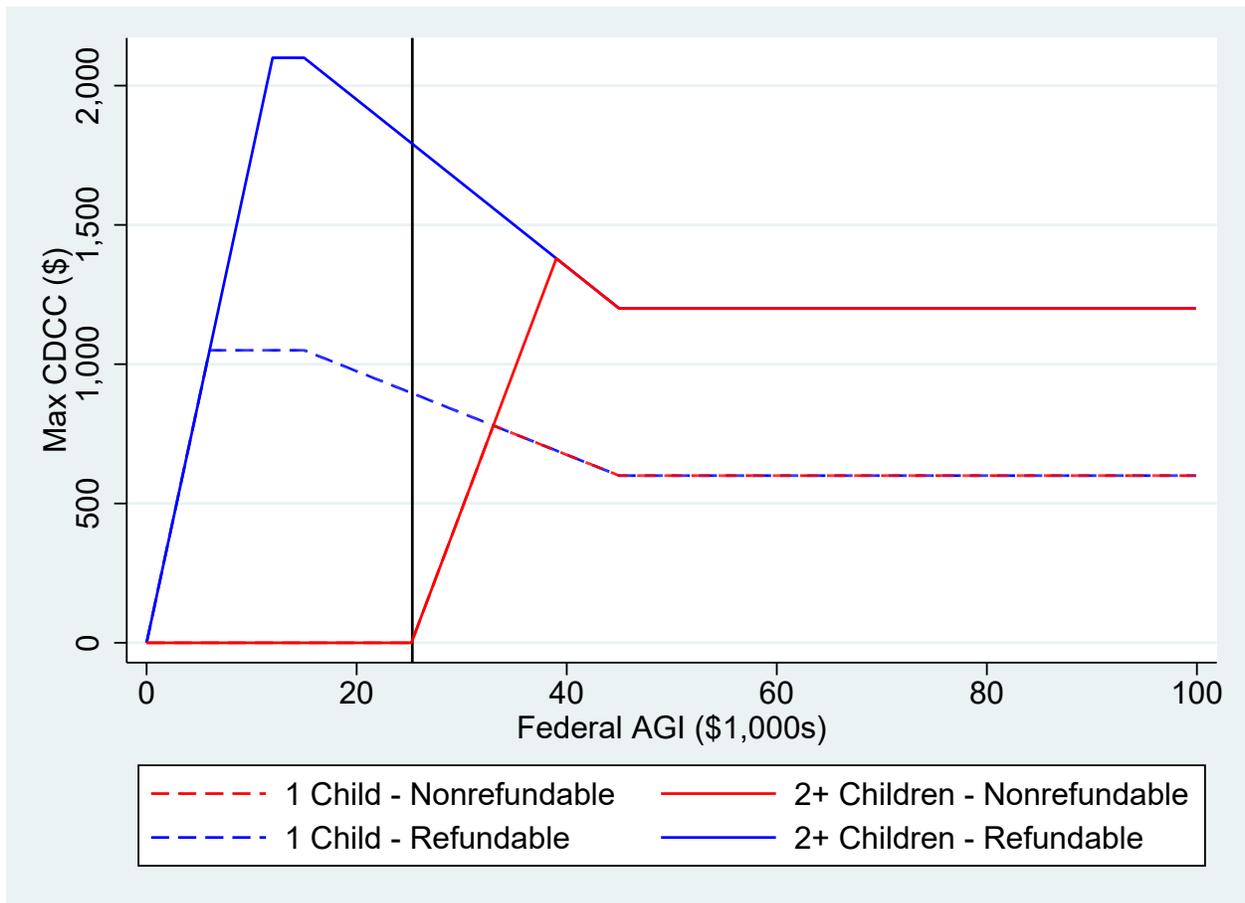
Table A2: Distribution of Working Married Households with Eligible Dependents and Child Care Expenditures

	Nonrefundable CDCC	Refundable CDCC
Phase-in		
Proportion of households	0.04	0.04
One eligible dependent	0.21	0.21
Two or more eligible dependents	0.79	0.79
Average child care expenditures (\$)	12,158	12,158
Average AGI (\$)	136,716	136,716
Average potential CDCC benefits (\$)	435	595
Average mtr with respect to income	0.09	0.05
Average mtr with respect to child care	0	-0.02
Phase-out/plateau		
Proportion of households	0.95	0.95
One eligible dependent	0.31	0.31
Two or more eligible dependents	0.69	0.69
Average child care expenditures (\$)	12,710	12,710
Average AGI (\$)	177,328	177,328
Average potential CDCC benefits (\$)	870	870
Average mtr with respect to income	0.23	0.23
Average mtr with respect to child care	-0.06	-0.06
Observations	629	629
Representative of	3,413,858	3,413,858

Notes: Average number of eligible dependents, child care expenditures, AGI, potential CDCC benefits, and marginal tax rates with respect to income and child care expenditures with and without refundability as of 2020 for working married households with eligible dependents and child care expenditures, by region of the nonrefundable CDCC. Marginal tax rates with respect to income are as a consequence of federal CDCC, CTC, and EITC benefits and individual income taxes.

Source: Author's calculations using TAXSIM, federal tax forms, and Wave 1 of the 2018 SIPP with sample weights.

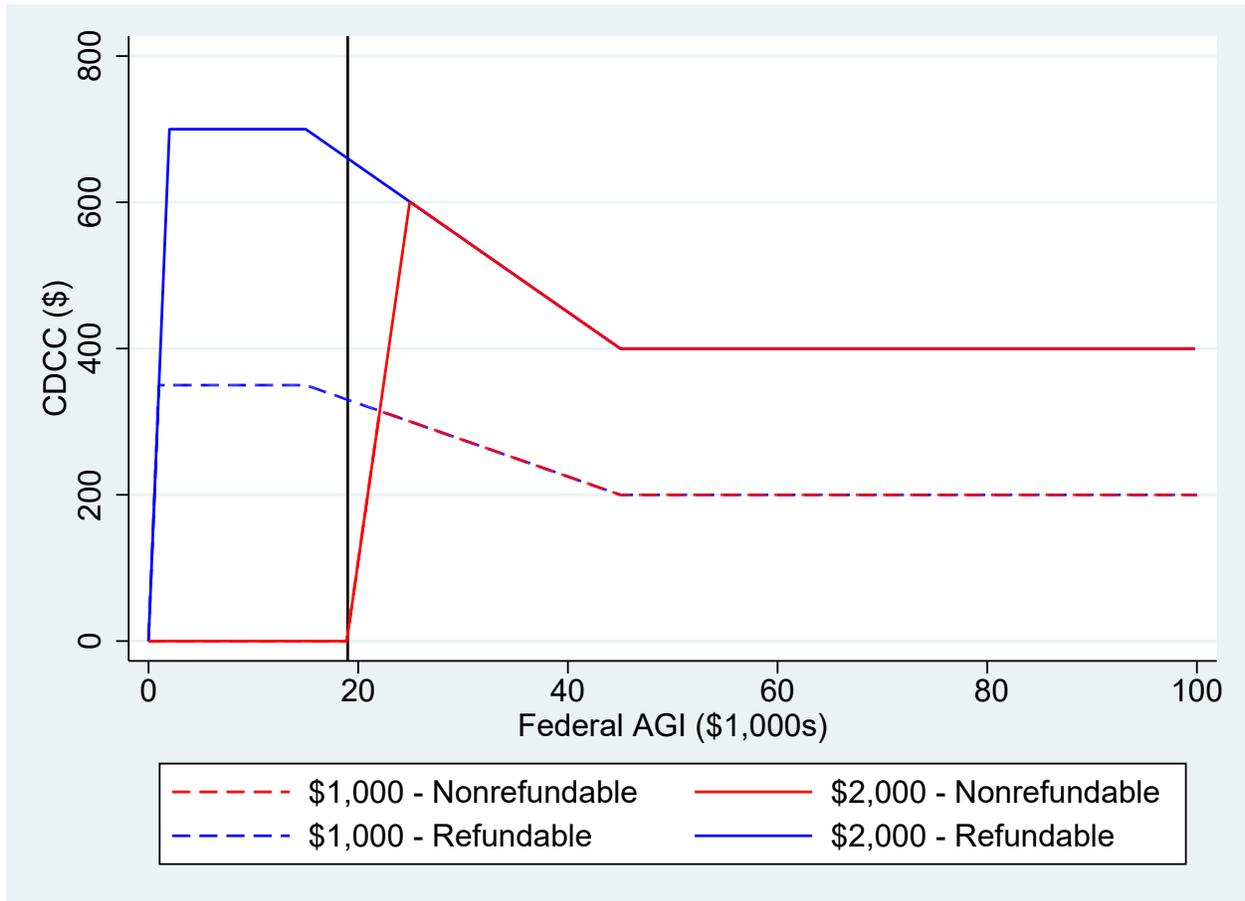
Figure A1: Maximum Federal CDCC Benefits by Federal AGI for Married Parents



Notes: Maximum federal CDCC benefits for married households with one or two or more eligible dependents and equal earnings with and without refundability as of 2020.

Source: Author's calculations using federal tax forms.

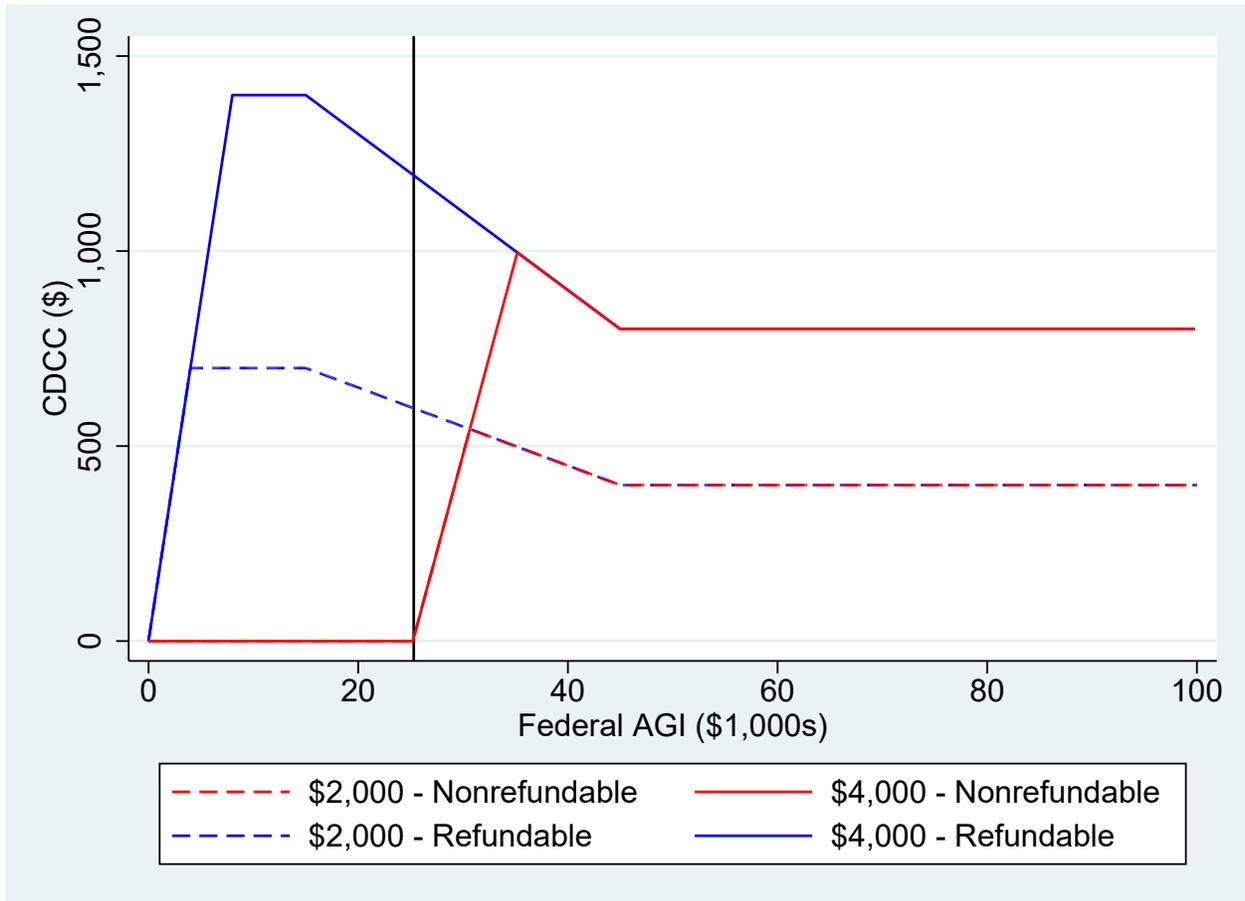
Figure A2: Maximum Federal CDCC Benefits by Federal AGI for Single Parents with Lower Child Care Expenditures



Notes: Federal CDCC benefits for single households with one eligible dependent and \$1,000 or \$2,000 in child care expenditures with and without refundability as of 2020.

Source: Author's calculations using federal tax forms.

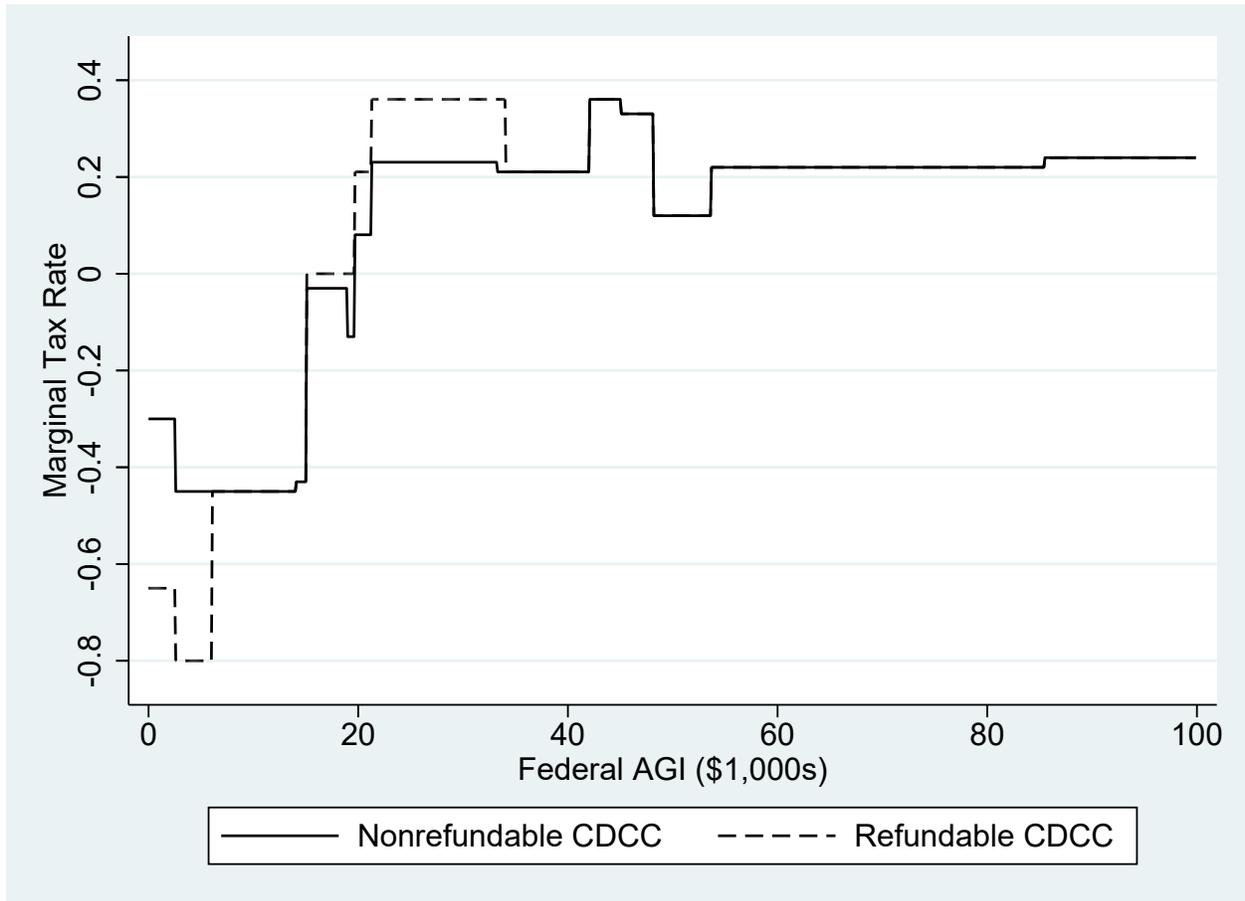
Figure A3: Maximum Federal CDCC Benefits by Federal AGI for Married Parents with Lower Child Care Expenditures



Notes: Federal CDCC benefits for married households with two or more eligible dependents, \$2,000 or \$4,000 in child care expenditures, and equal earnings with and without refundability as of 2020.

Source: Author's calculations using federal tax forms.

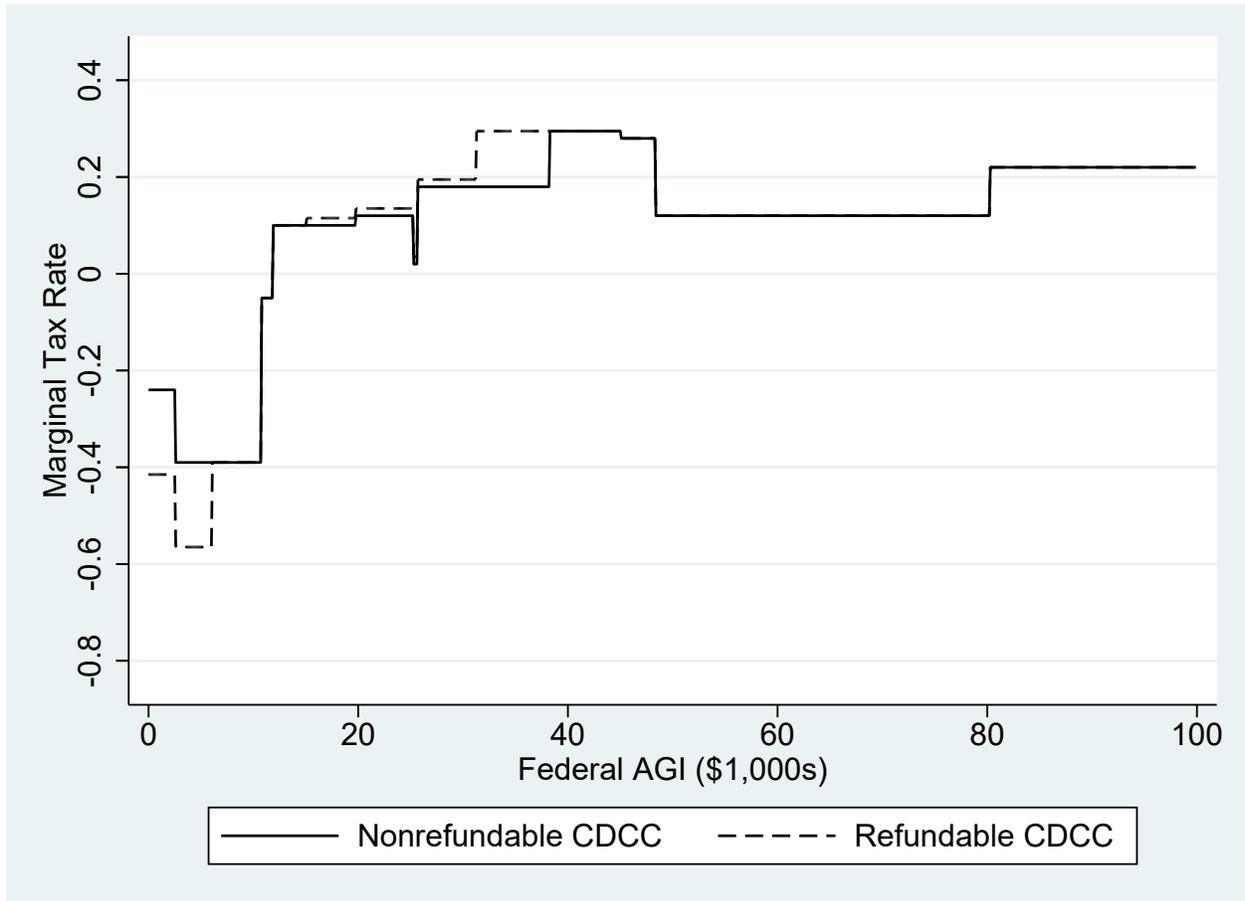
Figure A4: Marginal Tax Rates due to Federal CDCC, CTC, EITC, and Individual Income Taxes for Single Parents with Two Children



Notes: Marginal tax rates with respect to earnings due to federal CDCC, CTC, and EITC benefits and federal individual income taxes among single parents with two eligible dependents and no older children with and without refundability as of 2020.

Source: Author's calculations using TAXSIM.

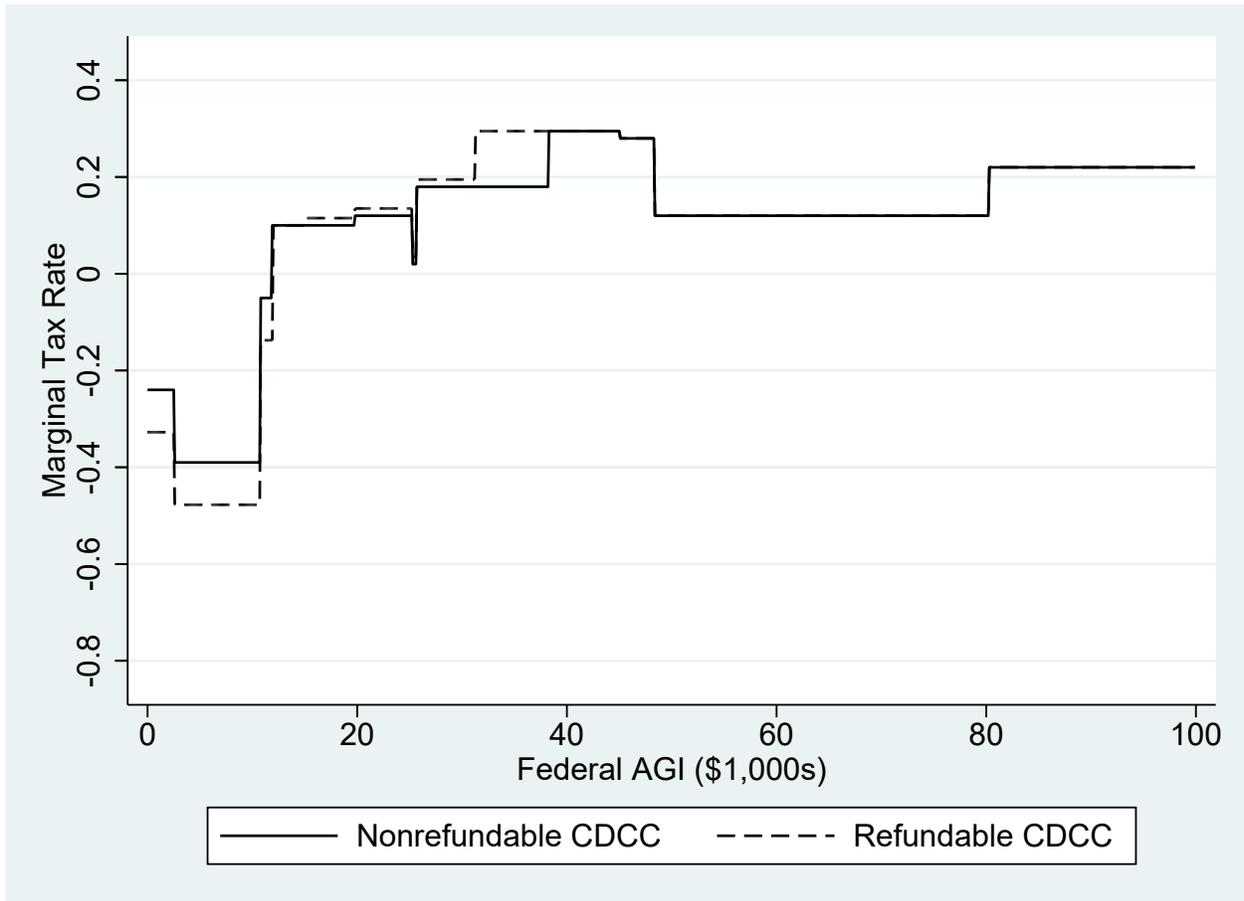
Figure A5: Marginal Tax Rates due to Federal CDCC, CTC, EITC, and Individual Income Taxes for Married Parents with One Child



Notes: Marginal tax rates with respect to the lesser earner’s earnings due to federal CDCC, CTC, and EITC benefits and federal individual income taxes among married parents with one eligible dependent, no older children, and equal earnings with and without refundability as of 2020.

Source: Author’s calculations using TAXSIM.

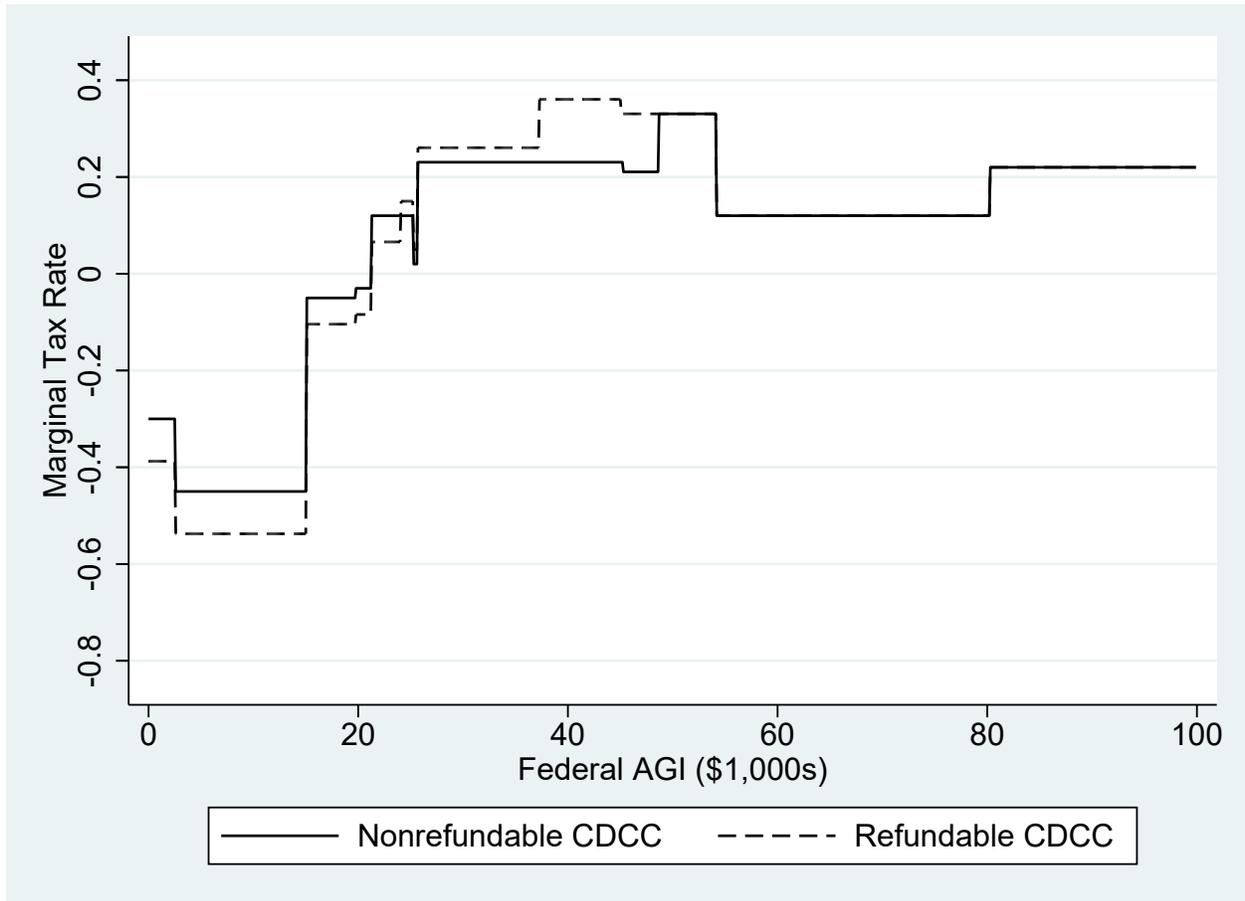
Figure A6: Marginal Tax Rates due to Federal CDCC, CTC, EITC, and Individual Income Taxes for Married Parents with One Child and Unequal Earnings



Notes: Marginal tax rates with respect to the lesser earner's earnings due to federal CDCC, CTC, and EITC benefits and federal individual income taxes among married parents with one eligible dependent and no older children with and without refundability as of 2020, where one spouse garners 75 percent of household earnings.

Source: Author's calculations using TAXSIM.

Figure A7: Marginal Tax Rates due to Federal CDCC, CTC, EITC, and Individual Income Taxes for Married Parents with Two Children and Unequal Earnings



Notes: Marginal tax rates with respect to the lesser earner’s earnings due to federal CDCC, CTC, and EITC benefits and federal individual income taxes among married parents with two eligible dependents and no older children with and without refundability as of 2020, where one spouse garners 75 percent of household earnings.

Source: Author’s calculations using TAXSIM.