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Child Benefits in the U.S. Federal Income Tax

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Abstract

This paper examines changes in, and interactions between, the major components of the U.S. federal tax code that provide substantial child benefits, including stimulus payments that depend on children. The focus is on creating a measure of total child tax benefit by income level, tax filing status, number of children, and year. From this measure, we learn that child tax benefits have more than doubled in real terms since the early 1990s and that low-income families receive larger child tax benefits than high income families for a first or second child, while the reverse is true for a third or fourth child. This paper also provides a case study of a tax policy change that lacked the intended consequences due to interactions between the child-benefit components of the tax code. Finally, this paper considers a comparison of child tax benefits to estimates of the cost of raising children.

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1 Introduction

The per-child value of child tax benefits in the U.S. federal income tax has more than doubled since 1992 in real terms. The total cost of child tax benefits provided by the federal government is large; about 150 billion dollars for 2008. This is larger than the tax expenditure from the deductibility of mortgage interest for owner-occupied homes, larger than the tax expenditure from the exclusion of pension contributions and earnings, and even larger than the tax expenditure from the exclusion of employer contributions to medical insurance premiums. The large budgetary cost of child tax benefits suggests that it should be an important topic in the public finance literature. This however, is not the case. Child benefits in the tax code have not received nearly as much attention by economists as the other tax expenditures listed.¹ If the expansion in the value of child tax benefits continues at the same rapid pace, the need for careful economic analysis will become even more urgent. This paper takes a first step by creating and analyzing a measure of total child tax benefits by income level, tax filing status, number of children, and year. I focus on describing the tax provisions, how they have changed, how they interact, and how there can be unintended consequences when individual tax provisions adjusted in isolation.

Child tax benefits in the United States are not given through a single well-designed structure. Rather, they are given by the combination of several different tax provisions that each explicitly depend on the number of children, but interact with each other in ways that are hidden in the complexity of the tax code. Tax benefits for families with children have some unusual properties that seem unintentional. The 2003 changes to the Child and Dependent Care Credit (CDCC) is an example that highlights misunderstanding by policy makers. While the CDCC expansion was clearly aimed at decreasing the after-tax cost of child care for low-income working women, the new tax code left most of the intended target

¹There are several studies that examine individual tax provisions that depend on the number of children. However, the only prior study, of which I am aware, that looks at how children are treated by the combination of provisions in the U.S. federal income tax code is Ellwood and Liebman (2001).

group with no child care subsidy. This example illustrates the importance of considering child tax benefit provisions in combination rather than individually.

Child tax benefits reduce the costs of raising children and are often seen as a way for the government to support or promote families. The greatly expanded child tax benefits are now, for some taxpayers, larger than estimates of the minimal cost of raising children, the “necessary” level of basic expenditure on children. While estimates of the level of expenditure necessary to raise a child span a wide range, child tax benefits were far below even the lowest estimates in the early 1990s; however, today this is no longer the case.

The measure of child tax benefits varies substantially over time and over families by income, marital status, and number of children. One can argue that changes to child tax benefits over time are exogenous and they could be used in a natural experiment research design to identify the effect of child subsidies on some outcome or even an income effect. A disadvantage of using this measure in a natural experiment research design is that there is no difference in child tax treatment for identical families in a particular year. The variation comes only over time or across families with different income, different marital status, or different numbers of children.

The paper is organized as follows. Section 2 describes the various tax provisions that provide child tax benefits. Section 3 describes how child tax benefits differ for families by income, marital status, and number of children. Section 4 describes how child tax benefits have changed over time and also presents the case study of the CDCC increase. Section 5 reports estimates of the cost of raising children in comparison to the child tax benefits. Section 6 concludes.

2 Tax Provisions with Child Benefits

The internal revenue code defines all income “from whatever source derived” as taxable unless there is a specific statute that exempts it from taxation (§63, §61). Claims that

expenses associated with raising a child should be deductible because they constitute a cost of earning income or an unavoidable loss to the taxpayer have been rejected by the courts.² Instead, child tax benefits were introduced gradually into the tax code by Congress in the form of several tax provisions that give favorable treatment to tax units with dependent children.³ In this section, I explain how the various federal income tax provisions combine and interact to subsidize children starting with those provisions which provide benefits to low-income families.

2.1 Earned Income Tax Credit

The modern Earned Income Tax Credit (EITC) was introduced in the Tax Reduction Act of 1975.⁴ The EITC is characterized by a phase in of the credit as income increases, followed by a plateau, and then a phase out. For its first decade, the EITC had a maximum value of \$400 to \$500 and only benefited families at the very low end of the income distribution. The purpose of the EITC was to reduce the tax burden for these low-income families (motivated as a way to offset payroll taxes) while also providing additional work incentives in the phase-in portion of the credit. The EITC is refundable meaning that the full value of the credit is paid even when the value of the credit exceeds the tax liability of the taxpayer.

The EITC was not originally designed to function as a child subsidy, but the credit was limited to those with children in order to deny benefits to students, retired people, and young part-time workers. Efforts in the early 1990s to provide increased tax relief and work

²For example, in *Smith v. Commissioner* (1940), the court found that child care expenses could not be claimed as a cost of earning income.

³Before the unified definition of a qualifying child was enacted in 2005, there were five different definitions of a child in the federal tax code. Under the unified definition, there are four requirements which must be met to claim a qualifying child: (1) The child must be the taxpayer's unmarried relative, adopted child, or foster child. (2) The child must live with the taxpayer for more than half the year (time away from home for school counts). (3) The child must be under age 19 (13 for the child care expenses credit, 17 for the child tax credit, and 24 if a full-time student for the dependent exemption and earned income credit). (4) The taxpayer must have provided over half of the child's support for the year.

⁴The Earned Income Tax Credit (EITC) is now officially called the Earned Income Credit (EIC). Because the economic literature generally uses EITC, I will follow the convention.

incentives to families with greater needs resulted in an expanded EITC that increases in family size.⁵ Because the credit increases quite substantially in value if a taxpayer goes from zero to one child and then again from one to two children, the EITC is the most important source of child tax benefits at the low end of the income distribution.

In 2008, a childless married couple with combined annual earnings of \$15,850 (placing them just above the poverty line) would have received only a \$4 credit. However, with a child they would receive a \$2,917 credit. With two children they would receive a \$4,824 credit. This couple faces a sizable child subsidy, but no wage subsidy. Regardless of the number of children, the EITC does not increase in value if they earn more income because \$15,850 places them already well beyond the phase-in portion of the credit.⁶

Taxpayers with children do not need to wait until they file their taxes to claim these child tax benefits; they can ask for the EITC to be paid by installments in advance through their employer's payroll system. The employer makes advance EITC payments to the employee throughout the year and then the taxpayer claims the remaining amount when filing the federal tax return. EITC benefits do not generally affect eligibility for welfare programs like Medicaid, supplemental security income, food stamps, or low-income housing.

The EITC is phased in at a rate of 40 percent for a taxpayer with two or more children and at a rate of 34 percent for a taxpayer with one child. Figure 1 shows how the implicit child subsidy depends on income by graphing the difference in the value of the earned income credit for a married couple with two children and the value of child tax benefits for a married couple with no children. Since the 1986 tax reform, the EITC is adjusted for inflation and thus, the values shown in Figure 1 should remain relatively unchanged in real terms unless altered by future legislation. The 2006 dollar child tax benefits are represented in Figure 1 rather than 2007 or 2008 values because of the additional difficulty in representing the

⁵In 1991, the EITC was changed so as to give a larger credit value to families with more than one child. The largest increase in the value of the EITC was due to the Omnibus Reconciliation Act of 1993. A small credit was introduced in 1994 for taxpayers without children.

⁶The phase-in portion of the 2008 EITC ended at \$5,700 for married couples with no children, \$8,550 for married couples with one child, and at \$12,050 for married couples with two children.

negative value of marginal child tax benefits from the economic stimulus payments.

2.2 Child Tax Credit

The centerpiece of the Taxpayer Relief Act of 1997 was the introduction of a \$400 tax credit in 1998 for each child under age 17. The legislation increased the value of the credit to \$500 for 1999. The Child Tax Credit (CTC) was generally non-refundable, although a portion was refundable in some circumstances for families with three or more children by claiming the Additional Child Tax Credit.⁷

The value of the Child Tax Credit remained at \$500 in 2000 and then increased to \$600 in 2001. The Economic Growth and Tax Relief Reconciliation Act of 2001 provided for the credit level to increase gradually until it reached \$1,000 in 2010. The Jobs and Growth Tax Relief Reconciliation Act of 2003 accelerated the intended increases jumping the CTC immediately to \$1,000 per child and even making advance payments to families who had claimed the credit in 2002. These advance payments were enacted in order to increase consumer spending due to fears of an economic recession, similar to economic stimulus payments in 2008.

Another important Child Tax Credit characteristic that changed over this period was its movement from a non-refundable credit to a refundable credit. In 2001, the CTC was made partially refundable with the amount of the refund equal to 10 percent of earnings over \$10,000, up to the full credit value. The phase-in point is inflation adjusted each year so that the 2007 value is \$11,750. The rate at which the credit is phased in was increased from 10 to 15 percent in 2004. The CTC is phased out at a rate of 5 percent for income over \$110,000 for married couples and \$75,000 for single parents.

These characteristics make the CTC quite similar to the EITC. The provisions were

⁷Before 2001, a family with three or more children received a refundable child credit to the extent that the employee share of Social Security taxes plus individual income taxes exceeds its Earned Income Tax Credit.

enacted for different purposes, but have very similar properties. Both credits are refundable and provide an earnings subsidy for those with income levels in the phase-in portion. Both depend explicitly on children and provide large child tax benefits. Both credits also phase out, which increases the implicit marginal tax rate for those in the relevant income range. The major difference is the income range over which they operate, with overlap in the \$10,000 to \$40,000 range.

Figure 1 also graphs the value of the CTC for a married couple with two children. As the figure shows, the CTC phases-in quite rapidly to a value of \$1,000 per child and then phases-out slowly for incomes above \$110,000. The CTC can not be claimed by married couples with incomes above \$130,000 for one child, \$150,000 for two children, \$170,000 for three children, and so on.⁸ Because the phase-in point is inflation adjusted and the phase-out point is not, without future changes, the CTC will provide benefits to a smaller range of the income distribution over time.

2.3 Exemptions for Dependents

The exemption for dependents was the first child tax benefit in the U.S. federal income tax. It was introduced in 1917, the fifth year of the modern income tax. When the United States entered World War I, Congress had a bipartisan willingness to go along with the administration's request for revenue and the income tax provided the apparatus to raise revenue quickly. The marginal tax rates increased dramatically—the top rate increased from 7 to 67 percent—and the personal exemption level was cut in half. Over the next four years, the number of taxpayers increased by a factor of fifteen. This large increase in the number of families that would be subject to the income tax introduced concerns about the fairness

⁸There have been proposals in Congress to increase these phase-out points substantially. A common criticism of the phase-out point is that it creates a marriage penalty for couples with children. A husband and wife each making \$65,000 would not be able to claim the CTC for one child because their combined income would exceed the maximum. However, they would receive the full credit if they divorce because the credit does not begin to phase out until \$75,000 for single parents.

of the tax, which then became the motivation for the introduction of a \$200 dependent exemption in 1917. At the time, the personal exemption level was \$1,000 for adults.⁹ After World War I, the dependent exemption was increased to \$400 where it stayed until World War II.

Instead of affecting only the top 10 to 20 percent of the income distribution, the income tax continued expanding during World War II until nearly all U.S. households were subject to it. Congress argued that “the gold is in the foothills, not in the mountains” (Fox 2001, 44). To accomplish this, Congress cut the personal exemption for singles and married couples, but reduced the dependent exemption only slightly. In 1944, the dependent exemption was increased to \$500 to match the value of the personal exemption for an adult.

Between 1944 and 1984 (when inflation indexing began), the dependent exemption changed only five times, increasing in steps from \$500 to \$1,000. However, the value of the dependent exemption varied much more because unlike the EITC and the CTC, the value of the dependent exemption depends on the marginal tax rate. A \$1,000 deduction from taxable income is worth \$150 to a taxpayer in a 15 percent marginal tax bracket, but \$350 to a taxpayer in a 35 percent marginal tax bracket. This feature is illustrated in Figure 1 which graphs the tax value of the dependent exemption. The dependent exemption level jumped \$820 in the 1986 tax reform and has increased to account for inflation each year since.

Exemptions are phased out for high income taxpayers. However, in practice, the phase out is rarely binding due to the Alternative Minimum Tax (AMT). Under AMT rules certain deductions are not allowed, others are calculated differently, and a different rate schedule is applied. Taxpayers must calculate their tax liability under both the regular rules and the AMT rules and pay the maximum of the two.¹⁰ Dependent exemptions are not allowed

⁹In 1917, the exemption level was set at \$1,000 for singles and \$2,000 for married couples, however, the exemption level for married couples was not always twice the level for singles. For example, in 1921 the exemption level for married couples was increased to \$2,500 while the level for singles remained at \$1,000.

¹⁰Charitable contributions are still deductible under AMT rules as is home mortgage interest. However, state and local taxes, job related expenses, and interest on some home equity loans are not deductible under the AMT rules.

under the AMT. For a given level of income, this means that the AMT is much more likely to bind for a family with a larger number of children. The decline in value of the dependent exemption shown in Figure 1 is due to the AMT, not the built-in phase out of exemptions. The exact income point at which the AMT begins to bind depends on the type, not just the amount, of deductions. Figure 1 is calculated assuming average deduction levels as reported in the IRS Statistics of Income.¹¹ By reducing marginal tax rates, the Bush tax cuts decreased the value of the dependent exemption. In addition, the reduction in tax rates increased the importance of the AMT which further reduced the value of the dependent exemption for high-income families.

2.4 Child and Dependent Care Credit

The Child and Dependent Care Credit (CDCC) began in 1954 as an itemized deduction for work-related child care expenses. Prior to this tax provision, the courts ruled that child care expenses were not deductible (*Smith v. Commissioner*, 1940). The deduction was limited to households making less than \$4,500 annually and was limited to \$600 in total child care expenses. Congress updated the deduction in 1964 so that it would apply to households making less than \$6,000 and increased the limit to \$900, but the value of the deduction was still quite small given the low marginal tax rates in this range of the income distribution. In addition, only households that itemized their deductions were able to claim it. Thus few households claimed the deduction and those who did only benefited by an average of \$70 per year (Nelson and Warring, 1982).

In 1971, the deduction's income ceiling tripled and the maximum allowable deduction increased to \$4,800. However, this did little to increase the number of households that

¹¹The hypothetical married couple used to create the figures allocates approximately 15 percent of their income to deductible expenses under the regular rules. This implies that the couple begins to itemize deductions starting at about \$70,000 of income. By assumption, 50 percent of these expenses are charitable contributions, home mortgage interest that is deductible under the AMT, or medical expenses subject to the AMT rules. The remaining 50 percent is assumed to be not allowed under the AMT.

benefited, so in 1976, Congress replaced the child care deduction with a child care credit. The credit value was set at 20 percent of qualified expenses, up to \$2,000 per child, and the income cap was removed. As a credit, the benefits were no longer linked to itemizing, so in theory, households at any income level could receive the subsidy. However, because the CDCC is a non-refundable credit, benefits are limited to households with tax liability which excludes most low-income households. The AMT does not affect the CDCC which means that it does not decline in value for high-income taxpayers. An important feature of the CDCC is that in order for a married couple to claim the credit, both spouses must have labor earnings at or above the level of child care expenditures.

In 1981, the 20 percent rate was changed to a schedule starting at 30 percent and then moving down to 20 percent in steps occurring at specific income levels. Similar steps in the 2006 CDCC rate schedule are responsible for the small drops that are apparent in Figure 1 at about the \$40,000 income level. In 1981, the limit was increased to \$2,400 of child care expenses per child. There were no changes to the CDCC from 1981 until 2003, which, because it is not inflation indexed, caused its value to taxpayers to decline substantially. In 2003, Congress increased the limit on qualifying expenses to \$3,000 per child and adjusted the credit rate schedule so that the maximum credit rate increased to 35 percent.

There is an alternative tax provision that provides tax benefits to families with child care expenses. Dependent Care Assistance Plans (child care flex spending accounts) are an employee benefit that allows families to pay for child care with pre-tax income. Participation in this program excludes a taxpayer from claiming the Child and Dependent Care Credit, so taxpayers must choose one or the other. Dependent Care Assistance Plans allow an employee to place up to \$5,000 of pre-tax income into a flexible spending account for child care expenses. Paying for child care with pre-tax income means that this benefit will be worth more to taxpayers in higher marginal tax brackets and little or nothing to low-income taxpayers. One feature common to both programs is that low-income families do not receive any child care subsidies. For middle and high-income families, the differences between the two

tax provisions means that families with children face a tax planning problem. A comparison of the two provisions is given in Madrian (1996). The Madrian (1996) analysis was performed before the CDCC expansion and the Bush tax cuts and so while the specific calculations no longer apply, the underlying analysis is still helpful in understanding which program provides larger benefits. In general, high-income families may have slightly larger benefits if they participate in an employer plan. Therefore, the value of the CDCC as graphed in Figure 1 is a lower bound for the value of child care tax benefits for high-income families.

2.5 Head of Household Filing Status

The head of household filing status was created by Congress in 1951 in order to give single parents more favorable tax treatment than single individuals with no dependents. While the head of household status is not exclusively given to single taxpayers with children, it is the presence of a child that most often puts a taxpayer in this category. To claim head of household status, a taxpayer must provide at least half the cost of maintaining the household and be unmarried or an abandoned spouse with at least one dependent.

The benefit of the head of household filing status is a larger standard deduction and a more generous tax schedule than those with single filing status. Figure 2 shows the 2006 tax schedule for each filing status. Those with single filing status reach higher tax brackets at lower levels of taxable income than those with head of household status. Figure 3 graphs the value of child tax benefits by tax provision for a single parent with two children. The value of the head of household status (shaded in black) increases in those income ranges where the tax rate for single filers is higher than the tax rate for head of household filers. It begins to decline at the point where the taxpayer begins itemizing (shown at about \$60,000 in Figure 3). Then at slightly more than \$140,000 of income, the value of head of household status declines again because there is no difference in the treatment of single filing status and head of household filing status in the AMT.

3 The Distribution of Child Tax Benefits

The five tax provisions discussed in Section 2 are the major source of child tax benefits in the U.S. federal income tax. Here we will look at the combined effect of these tax provisions as well as the 2008 stimulus payments in providing child tax benefits. In addition, there are other tax provisions which provide child tax benefits including education benefits like the hope and lifetime learning credits as well as adoption benefits. However, these and other child tax benefits are much smaller in terms of their aggregate tax expenditure and are excluded from this analysis.

Nearly all married couples with dependent children receive a child subsidy through the federal income tax. However, the size of the subsidy is heavily influenced by income and the number of children. Figure 4 illustrates this by graphing the combined value of the five major child tax benefits by annual adjusted gross income and number of children. About 95 percent of married (filing jointly) taxpayers have an annual adjusted gross income of less than \$200,000 and thus faced the child subsidy level shown in Figure 4 (U.S. Internal Revenue Service, 2007).

As shown in the figure, there are large (relative to income) subsidies for low-income couples with one or two children. A married couple with adjusted gross income of \$20,000 receives child tax benefits worth about 20 percent of income with one child and about 30 percent of income with two children. However, the subsidy does not increase if this low-income couple has more than two children. This is also true at the high end of the income distribution; married couples with an income above \$200,000 receive little or no additional subsidy for a third or fourth child. It is not clear that Congress intentionally restricted child tax benefits for a third or higher child for high and low-income couples.

Figure 4 shows a dip in the value of child tax benefits for a married couple with one or two children and income between about \$25,000 and \$90,000. Those with higher earnings receive larger child tax benefits than those in this middle income range. This dip in child benefit

levels was named the “middle-class parent penalty” by Ellwood and Liebman (2001). The intuition for the middle-class parent penalty is that low-income families receive large child tax benefits through the EITC and that high-income families receive large child tax benefits because the value of dependent exemptions increases for higher tax brackets. However, middle-income families receive no EITC benefits and do not benefit as much from their dependent exemptions as higher income families. While there have been several important changes to child tax benefits since Ellwood and Liebman (2001), their analysis of this dip in child tax benefits is still valid. However, for families with more than 2 children, the benefits shown in Figure 4 follow an inverted-U shape with benefits rising for low-income families and then falling for high-income families. In general, the value of child tax benefits peaks for couples earning around \$100,000 annually.

From the IRS Statistics of Income (2007) we can get a rough picture of how many taxpayers fall in each range of the income distribution. About 30 percent of joint filers have an adjusted gross income of less than \$40,000, which places them in the range where there are little to no additional child tax benefits for third or higher children. About 35 percent of joint filers report incomes that place them in the middle-class parent penalty region where benefits are lower for families with one or two children. Another 35 percent of joint filers report incomes above \$80,000, with only slightly more than 5 percent of the total reporting incomes above \$200,000.

Not shown in Figure 4 is the value of child benefits in welfare programs. Taxpayers with no income receive no child tax benefits, but may receive child benefits from welfare programs if they choose to participate. Some welfare benefits, such as the benefits from the Women, Infants, and Children program (WIC) do not decrease with income until income exceeds a fixed eligibility threshold at which point benefits go to zero. However, many welfare benefits do decline as the participant’s income increases, such as, benefits from the Food Stamps Program (FSP) and Temporary Aid for Needy Families program (TANF). Over the income range where these welfare benefits are phased out, child tax benefits are phased in. Generally,

the value of child benefits in welfare programs do continue to increase for third and higher children. A full analysis of child welfare benefits would require a detailed review of the eligibility requirements, benefit formulas, and participation choices of families with children. States also have their own programs that provide benefits to families with children. This analysis is outside the scope of the paper and will be left for future research.

There is less evidence for the stylized middle-class parent penalty pattern of benefits when considering single parents. Figure 5 shows the total value of child tax benefits for single parents by number of children and annual income. Rather than U-shaped, single parents seem to face a zigzagged pattern of child tax benefits for their first child. The first dip is due to the phase out of the EITC. The subsequent rise in benefits is primarily due to the head of household tax status. The second dip occurs for taxpayers that itemize deductions because they lose the value of the increased standard deduction for head of household filing status and the following rise is due to the advantage of the head of household tax schedule over that of the single tax schedule. However, this advantage is eliminated for high-income taxpayers because the AMT treats taxpayers with head of household filing status identically to those with single filing status. It seems unlikely that Congress intentionally created the zigzagged pattern of benefit shown in Figure 5.

Compared to married couples, low and middle-income single parents generally have larger child tax benefits. For many single parents, the benefits are substantially larger; in some cases a single parent would receive twice the child tax benefits as a married couple with the same income. Thus the number of children can have an important effect on the size and even the sign of the “marriage penalty”.¹² Child tax benefits for single parents also phase in at the low end of the income distribution and then phase out at the high end. However, child tax benefits phase out much earlier in the income distribution for single parents. Rather than reaching a maximum at around \$100,000 of income, the benefits for single parents reach a

¹²Alm, Dickert-Conlin, and Whittington (1999) provide an analysis of the marriage penalty in the U.S. federal income tax.

maximum at about \$60,000 of income.

Tax provisions that provide benefits to families with children also have an important effect on the marginal tax rate that these families face. Having a child can either greatly increase or decrease the marginal tax rate depending on prior family size and income level. This is a potentially important factor in the labor supply decisions of parents, particularly secondary workers. Figure 6 shows the marginal tax rate by income level for a married couple with either one or four children. In general, low-income families face lower marginal tax rates if they have more children, while high-income couples face higher marginal tax rates if they have more children.

The value of child tax benefits for low and middle-income families is quite robust to alternative assumptions on itemized deductions used in calculating the tax bill for the representative families used in generating the proceeding figures. However, the level of itemized deductions has a strong effect on the value of child tax benefits for high-income families. In general, larger deductions imply lower child tax benefits because the AMT binds earlier in the income distribution and reduces the value of the dependent exemption. Because some deductions are allowed in computing the AMT while others are not, the value of child tax benefits for high-income families depends on the type of deductions and not only on the total amount. However, regardless of the type, deductions are phased out when adjusted gross income exceeds \$150,500 for each filing status.

Except for small shifts in the location of kink points, the effects of using alternative deduction assumptions are only visible above \$190,000 for married couples. For single parents, the size of itemized deductions influences child tax benefits earlier in the income distribution. However, for those making less than about \$130,000, there is no meaningful difference in the value of child tax benefits between assuming that the individual does not itemize and the assumptions used in Figure 5. High income single parents that do not itemize and only take the standard deduction have larger child tax benefits. The IRS reports that only about 8 percent of single parents with annual income above \$100,000 take the standard deduction

(U.S. Internal Revenue Service, 2007). Still, this illustrates a point that is also true for married couples (although only at even higher income levels); high-income parents receive lower child tax benefits if they increase their itemized deductions. For example, high-income parents that live in states with high state taxes (either income or sales) face lower child tax benefits than those living in states with low state taxes.

4 How Child Tax Benefits Have Changed

Child tax benefits have grown substantially in value. As shown in real terms in Figure 7, the increase in the early 1990's benefited low-income families. This was due to the expansion of the Earned Income Tax Credit. The increase in the late 1990's benefited middle-income families and was due to the introduction of non-refundable Child Tax Credit. The increases since 2002 have benefited a wide range of low and middle-income families (those with \$20,000 to \$140,000 annual incomes). None of the child tax benefit increases since 1992 have gone to high-income families. Figure 7 illustrates these points by graphing the value of child tax benefits in real 2006 dollars for selected years for a married couple with two children.

The sharp drop in the 2008 value of child tax benefits for families earning about \$35,000 is due to the 2008 economic stimulus payment's interaction with other child tax benefits. As shown in Figure 8, the 2008 stimulus payment for a married couple is \$600 if that couple has no tax liability. It increases by another \$600 with tax liability and an additional \$300 per child. The stimulus rules count tax liability before the EITC or the Child Tax Credit are applied. However, they do not make any adjustment for the tax value of the additional personal exemption per child. This makes the value of the stimulus payment higher for couples with no children in the \$25,000 to \$35,000 income range. Figure 7 shows the difference in tax liability for a married couple with two children as compared to no children. The stimulus payment creates a negative \$600 difference between the two-child and no-children families at low incomes and a positive \$600 difference at high incomes.

Table 1 reports the budgetary cost estimates by child tax provision for selected years.¹³ As the table shows, the growth in child tax benefits has been very expensive; the annual budgetary cost of child tax benefits increased by nearly 100 billion dollars from 1992 to 2006. An important component of the increasing cost of providing child tax benefits is the more than 15 percent increase in the number of children over the period. However, even when measured on a per-child basis, the budgetary cost of child tax benefits, in real terms, went from \$940 in 1992 to \$1,904 in 2006, approximately doubling in just 15 years.

Pro-natalist concerns are the primary motivation for child benefits in many countries today including France, South Korea, and Russia. In contrast, the political dialogue concerning child tax benefits in the United States avoids any discussion of the effect on fertility.¹⁴ Rather, child tax benefits in the U.S. are generally justified as a way to reduce the incidence of child poverty, provide incentives for parents to seek employment or increase their employment hours, foster a more family-oriented society, or simply help families with the financial burden of raising children. Proposals for increases in child tax benefits over the past few years have generally been accompanied by an assertion that the government should “help families rear and support their children.”¹⁵

The child tax credit’s rapid expansion to \$1,000 per child was a quick way of cutting taxes and getting money into consumer’s hands at a time of low consumer confidence and fears of a recession (advanced child tax credit checks were sent in 2003 as a way to get the child tax credit to families sooner). Even with the dramatic increase in the value of child tax benefit, there is continued pressure from pro-family groups that actively lobby Congress to increase child tax benefits. In a New York Times article dated September 10, 2006,

¹³The budgetary cost of child tax benefits is the government expenditure on refundable child tax benefits combined with the tax expenditure of child tax benefits. The tax expenditure for a tax policy is a measure of the loss of government revenue due to the policy.

¹⁴In the United States, supporters of the legislation increasing child tax benefits over the past 15 years have not, to my knowledge, made any public statements advocating child tax benefits as a way to increase fertility rate. However, Powell (1999) presents some evidence, gleaned from memos and reports, that a few of the key supporters of the 1997 child tax credit hoped that it would increase fertility rates for taxpayers.

¹⁵George W. Bush, 2001 State of the Union Address

David Brooks described a growing push by some pro-family groups to increase the child tax credit to \$5,000. Many politically-active religious groups also promote the expansion of child tax benefits. Recently proposed legislation in both the Senate and the House, called the Parents' Tax Relief Act of 2007 (S 816 IS & HR 1421 IH), would allow a stay-at-home parent to claim the Child and Dependent Care Credit for the at-home care they provide for their own children, increase the dependent exemption to \$5,000, and allow a deduction or credit for a home-based business (to encourage stay-at-home parenting). With strong support and no open opposition, it seems likely that the real value of child tax benefits will continue to increase in future years.

On the other hand, lawmakers can pass laws that appear to increase tax benefits for families with children, without actually increasing budgetary cost. As an example, consider the 2003 increase of the Child and Dependent Care Credit. There were no changes to the CDCC from 1981 until 2003, which, because it is not inflation indexed, caused its tax value to decline substantially. In 2003, Congress increased the limit on qualifying expenses from \$2,400 to \$3,000 per child and the maximum credit rate was increased from 30 to 35 percent. This means that the maximum tax value for a family with two children went from \$1,440 to \$2,100. As shown in Figure 9, the rate increase was designed to increase the child care subsidy rate for low-income working women.

As mentioned in the introduction, this policy change in 2003 is evidence that the structure of child tax benefits is not well understood by policy makers. The expansion of the credit rate for the CDCC was enacted in order to decrease child care costs for low-income families, making it easier for mothers to enter the workforce. However, because the CDCC is non-refundable, most low-income families were unable to benefit from the CDCC expansion.

Non-refundable credits, like the CDCC, can only reduce tax liability. In contrast, refundable credits, like the EITC and the CTC, can be paid out in cash to taxpayers who have no remaining tax liability. Thus, once a taxpayer has subtracted the value of exemptions and deduction from the adjusted gross income and calculated the resulting tax liability, the

value of the CDCC cannot be greater than this amount. Increasing the statutory value of the CDCC does not increase its value to the taxpayer if the tax liability constraint is binding. A married couple with two children child can earn about \$24,000 without tax liability. But this does not mean that all couples with annual incomes greater than \$24,000 were able to benefit from the CDCC expansion. For many taxpayers, the CDCC statutory value was greater than their tax liability under the pre-2003 rules.

Figure 10 graphs the value of the CDCC in 2006 under both the pre-2003 and post-2003 rules for a married couple with two children and shows that most low-income families did not benefit from the CDCC expansion. The statutory changes to the CDCC made it appear that most of the increase would go to low-income families who would be able to take advantage of both the higher limit on qualifying expenses and higher credit rates. High-income families, would only be able to take advantage of the higher limit on qualifying expenses as their credit rate would stay fixed at 20 percent. However, in reality, the credit rate increase (particularly the increase of the maximum rate from 30 to 35 percent) benefited very few taxpayers, and not those with the lowest income.

The CDCC may be misunderstood by taxpayers. For example, a low-income married couple with two children earning about \$22,000 annually may believe that the CDCC offers a \$1,860 subsidy on \$6,000 of child care costs. Many of the “child care tax tips” that one finds on websites and newsletters during tax season show the CDCC rules and suggest that low-income families would qualify for this child care subsidy. But, this couple has no tax liability because they can claim the standard deduction and dependent exemptions and thus cannot benefit from the CDCC. It is the interaction with other income tax provisions that render the CDCC worthless to low income families. These families also have nothing to gain from participation in employer provided child care flexible spending accounts because they have no tax liability. Many families with children are in the range of the income distribution where the CDCC is worthless. Nearly 10 percent of taxpayers with dependent children have an annual income of less than \$20,000 and another 12 percent make between

\$20,000 and \$30,000 (U.S. Internal Revenue Service, 2007). In addition, low-income families are more likely to have young children (under age 5) than middle or high-income families. Recall, however, that welfare benefits are excluded from this analysis and that some welfare programs make special provisions for child care expenses. Thus, child care subsidies do exist for low-income families that participate in certain welfare programs.

5 How do Child Tax Benefits Compare to the Cost of Raising Children?

The estimated \$140 billion annual cost of child tax benefits is large when compared to other tax expenditures. For example the tax expenditure from the deductibility of mortgage interest for owner-occupied homes is estimated at \$85 billion, the tax expenditure from the exclusion of pension contributions and earnings is estimated at \$115 billion, and child tax benefits are even slightly more expensive than the tax expenditure from the exclusion of employer contributions for medical insurance and care, which is estimated at \$134 billion (Analytical Perspectives, 2007). However, raising children can be very expensive, and that \$140 billion is spread over the 74 million children in the United States. This puts the annual subsidy at a little less than \$2,000 per child. How does this compare to the cost of raising children?

There is some ambiguity about what is meant by the cost of raising children. Consumer Expenditure Survey data can be used to determine the average level of spending for a household on goods and services for children. The U.S. Department of Agriculture (USDA) does just this by publishing annual estimates of average level of expenditure on children for U.S. households by income level. However, there is concern that not all spending categorized as spending on children by the USDA is actually a required cost of raising a child. Some spending on children is probably better defined as discretionary or a form of consumption by

the parents. Thus, researchers can turn to measures of the minimal cost of raising children, defined as the level of expenditure on children necessary to maintain some minimum standard of living. U.S. poverty thresholds and guidelines and equivalence scales can be used to back out the implied minimal cost of raising children.

The USDA, in calculating its estimates of average expenditure on children, includes spending on child care, children's clothing, and certain education expenses. The survey data does not identify how much of the total spending on food and health care is due to children, so these values are assigned using budget shares from a 1994 food expenditure survey and a 1987 medical expenditure survey. Total spending on housing and transportation is simply divided among household members on a per-capita basis so that, for example, one-half of housing expenditure is attributable to the children in a two-parent family of four. For 2006, the USDA estimates that the average level of expenditure on children for middle-income married couples is about \$11,000 per child (Lino, 2007). Thus the expansion of child tax benefits represents an increase in the subsidy value as a percentage of average expenditure from 8.5 percent to 17.3 percent.

The USDA estimates provide some rough evidence on the marginal propensity to spend on children. As shown in Table 2, the total expenditure on children by married couples increases by about \$9.50 for every \$100 increase in income. This marginal propensity of expenditure on children is lower than the share of total income spent on children, consistent with the idea of some necessary level of expenditure, where expenditure on children does not fall below a minimum level as total family income falls. Assuming a constant 0.095 marginal propensity of child expenditure, the implied minimum level of expenditure is about \$5,000. This marginal propensity of spending on children suggest that the nearly \$1,000 real increase in child tax benefits per child since 1992 likely resulted in less than a \$100 annual increase in expenditure on children in real terms. Note however, that both the real increase in child tax benefits and the marginal propensity of expenditure on children implied by the USDA estimates are higher for single parents.

Equivalence scales can be used to impute an estimate of the minimal cost of raising a child. The Congressional Budget Office (CBO) uses a simple equivalence scale to adjust for family size in its annual computations of effective federal tax rates by income quintile.¹⁶ The CBO adjusts for family size by dividing household income by the square root of the household size, often called the root-n equivalence scale. If we know the minimal level of expenditure needed to maintain a basic standard of living for a reference household (the poverty line), one can then use the root-n equivalence scale to compute the level of expenditure needed to maintain that same standard of living for households of different size. Using the 2006 poverty guideline for a family of four of \$20,000 as the reference value, the cost of raising a child implied by the root-n equivalence scale is easily calculated and given in the “Root-N Scale” column of Table 3.

There are also more complex equivalence scales, such as the three-parameter equivalence scale suggested by Betson (1996).¹⁷ The three parameters are α , which measure the needs of secondary adults relative to single adults, β , which measures the relative needs of children to the single adult and f , which measures the economies of scale in consumption. The scale maps the number of adults in the household, A , and the number of children in the household, K , to a scale index:

$$(1 + \alpha(A - 1) + \beta K)^f \tag{1}$$

An adjustment is made for a single parent’s first child and for childless couples. The parameters are then estimate from expenditure data resulting in the following equivalence scale:

$$\begin{aligned} (1.8 + 0.5(K - 1))^{0.7} & \text{ for a single parent} \\ (2 + 0.5K)^{0.7} & \text{ for two parents} \end{aligned} \tag{2}$$

¹⁶The CBO defines income categories by ranking all people by their comprehensive household income adjusted for family size, so that each quintile contains an equal number of people instead of an equal number of households.

¹⁷Betson’s three-parameter equivalence scale was later incorporated into the experimental poverty measure reports published by the U.S. Census Bureau. The development of alternative measure of poverty including the Betson scale is described in Short and Garner (2002).

where a single adult with no children is assigned a scale value of 1 and a childless couple is assigned a scale value of 1.41. Again, taking the 2006 poverty guideline value for a family of four of \$20,000, the cost of raising a child implied by the three-parameter equivalence scale is quite similar to the cost implied by the root-n scale and is given as the “3 Parameter Scale” column in Table 3.

Similar to these equivalence scales, the U.S. poverty thresholds also be used to back out the implied cost of raising children for a family near the poverty level. The poverty threshold increases in the number of children, so one can easily calculate the amount of additional expenditure required for a family with an additional child to remain at the poverty level. The cost of raising a child implied by the 2006 poverty thresholds is reported in the “Poverty Thresholds” column in Table 3. One would expect the implied cost for a first child to be larger than the implied cost for a second child, and the implied cost of a second child to be larger than the implied cost of a third child; however the poverty thresholds do not have this property. Their non-monotonic nature has lead to widespread criticism.¹⁸

As illustrated by Table 3, the minimal cost of raising a child is in the \$2,000 to \$5,000 range. The average value of child tax benefits is about \$1,900, but for many families, the value of child tax benefits per child is much higher and falls within this range. Child tax benefits make up a large fraction of the minimal cost of raising children and a non-trivial fraction of average family expenditure on children. It may be noted that in addition to these annual expenses, families also set aside savings for their children, such as college funds. Of course there are also important tax benefits to lower the cost of saving for a child’s education and tax credits which reduce the cost of paying a child’s tuition. These tax benefits are excluded from the analysis.

¹⁸The poverty thresholds were originally developed in the 1960s by Mollie Orshansky of the Social Security Administration. They are adjusted for inflation each year by the Census Bureau, but are generally used only for computing national poverty statistics. Welfare offices use the U.S. poverty guidelines as issued each year by the Department of Health and Human Services rather than the poverty thresholds to determine welfare program eligibility. The 2006 poverty guidelines increase by \$3,400 per child regardless of household composition.

6 Conclusion

Child subsidies in the United States tax code are not given through a single well-designed structure; instead, child tax benefits come from various provisions that interact with each other and other federal income tax features. The resulting subsidy for families with children has some unusual properties (particularly for single parents) that seem unintentional. Particularly important is the arguably unintentional interaction between the personal exemption, standard deduction, and the tax value of the Child and Dependent Care Credit which eliminates child care subsidies for many low-income families. A similar unintentional relationship with the value of the personal exemption made the 2008 stimulus payment more valuable for low-income taxpayers with fewer children even though the stimulus was supposed to increase by \$300 per child. A simplified family credit, such as the one proposed by the 2005 President's Advisory Panel on Federal Tax Reform to replace the hodgepodge of tax provisions discussed in this paper, would be an effective way of eliminating both the peculiar characteristics of child tax benefits and the unintentional interaction of the various provisions.

Child tax benefits in the U.S. have grown dramatically, more than doubling in value in real terms since the early 1990s. The value of child tax benefits increased slightly more for low-income families than for middle-income families, and not at all for high-income families. As arguably exogenous, changes to the value of child tax benefits may represent an opportunity for researchers looking for a natural experiment. Although this paper does not identify cross-state variation, there is considerable variation across time and across family income and family types.

As a fraction of the estimated cost of raising a child, child tax benefits are large, yet the increase in child tax benefits has likely increased expenditure on children by only a small amount, about \$10 for every \$100 of child tax benefits. Child tax benefits generally face little open political opposition and have been a popular way to cut taxes. There are still

a large number of pro-family groups lobbying for additional child tax benefit increases and it seems likely that the trend will continue. This makes further research on the incentives associated with child tax benefits very important.

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Figure 1: 2006 Incremental Tax Benefit from 2 Children to a Married Couple

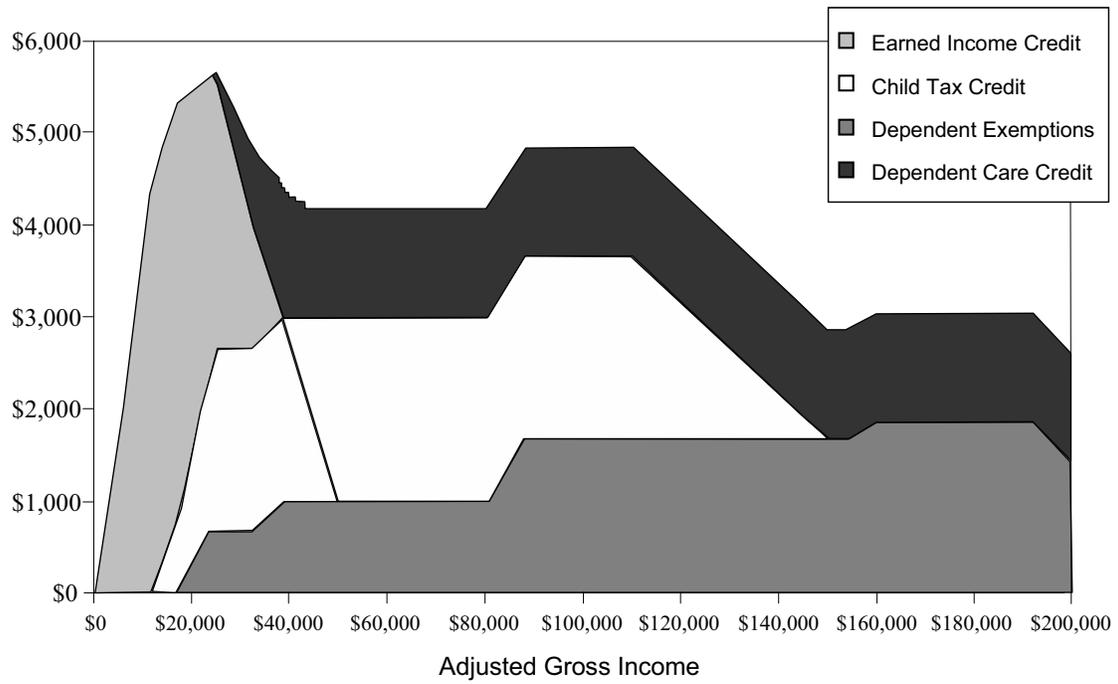


Figure 2: 2008 Tax Rate Schedules

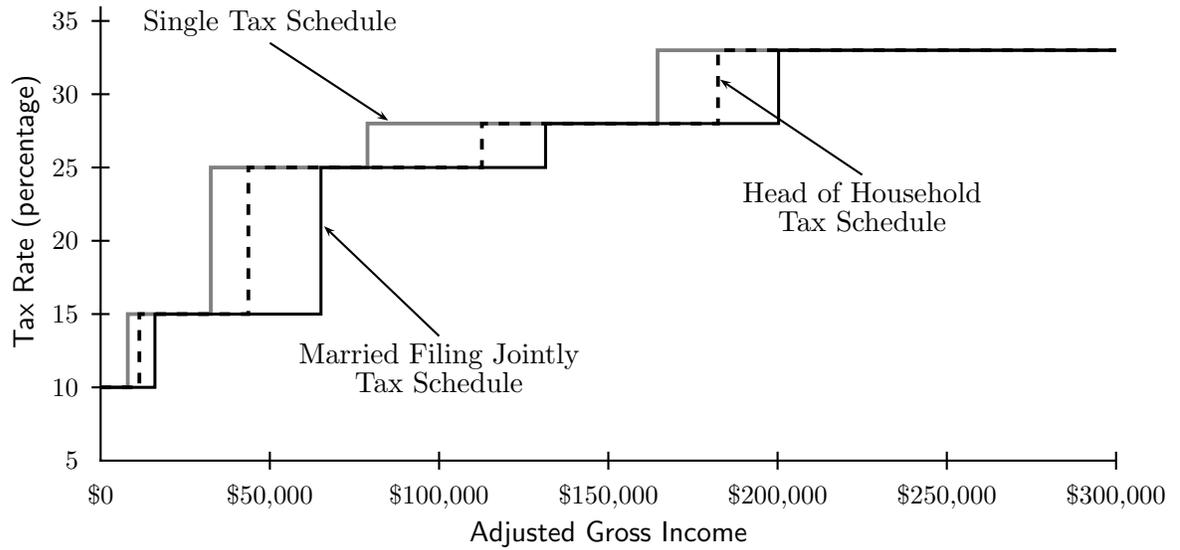


Figure 3: 2006 Child Tax Benefits for a Single Parent with 2 Children
 (difference in tax liability for 2 children and no children)

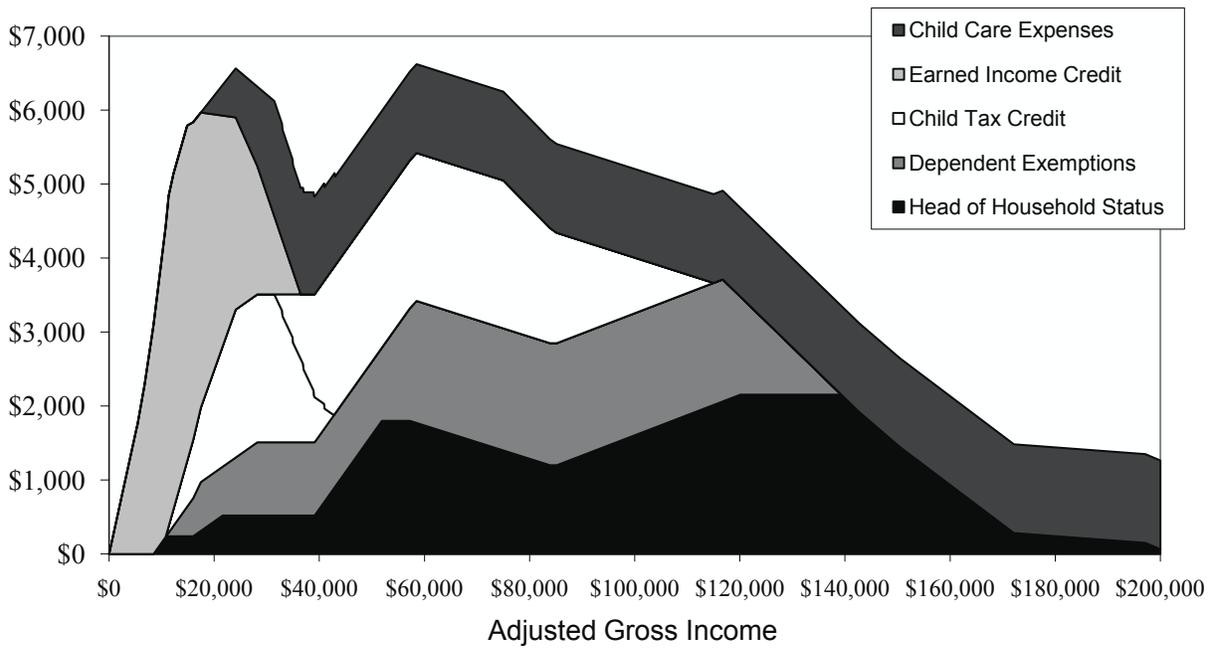


Figure 4: 2008 Total Value of Child Tax Benefits for Married Couples

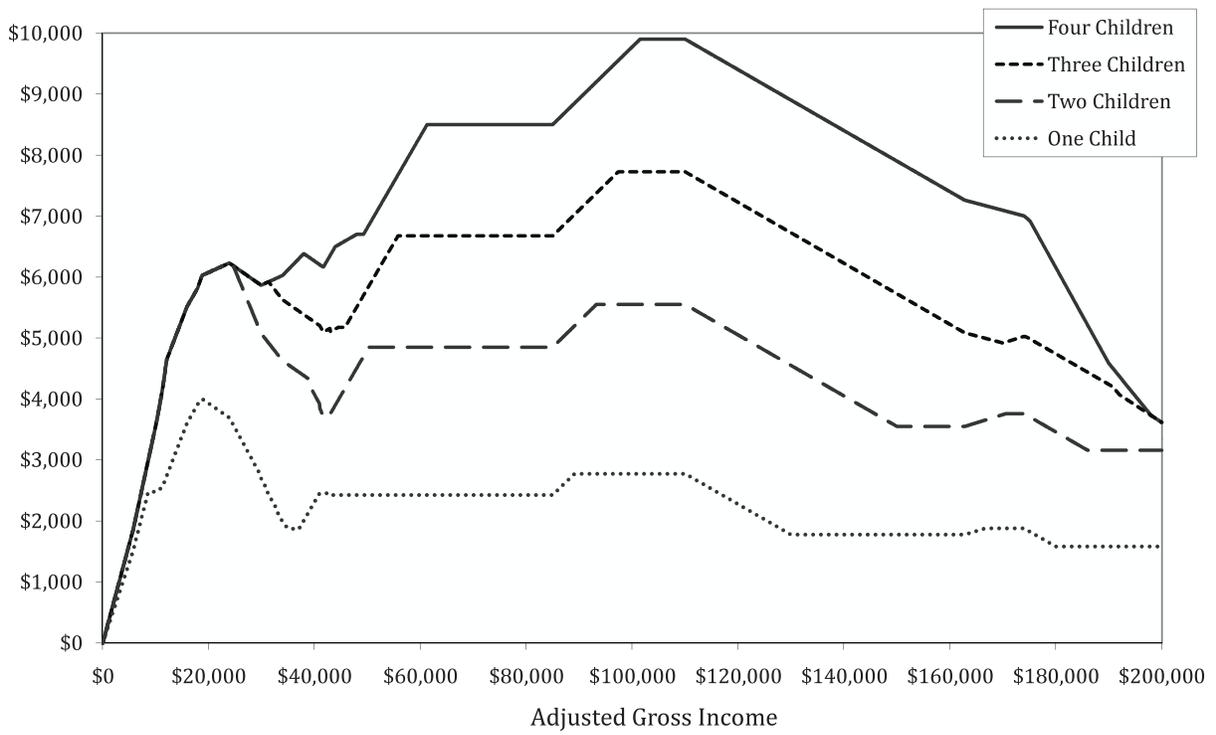


Figure 5: 2006 Child Tax Benefits for Single Parents

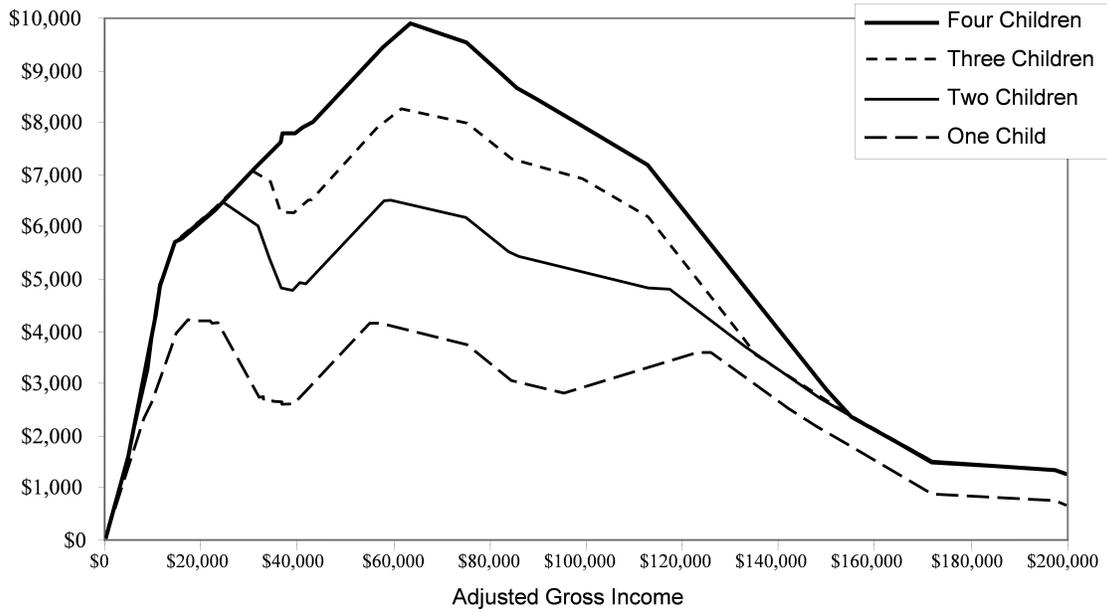


Figure 6: 2006 Marginal Tax Rates for Married Couples

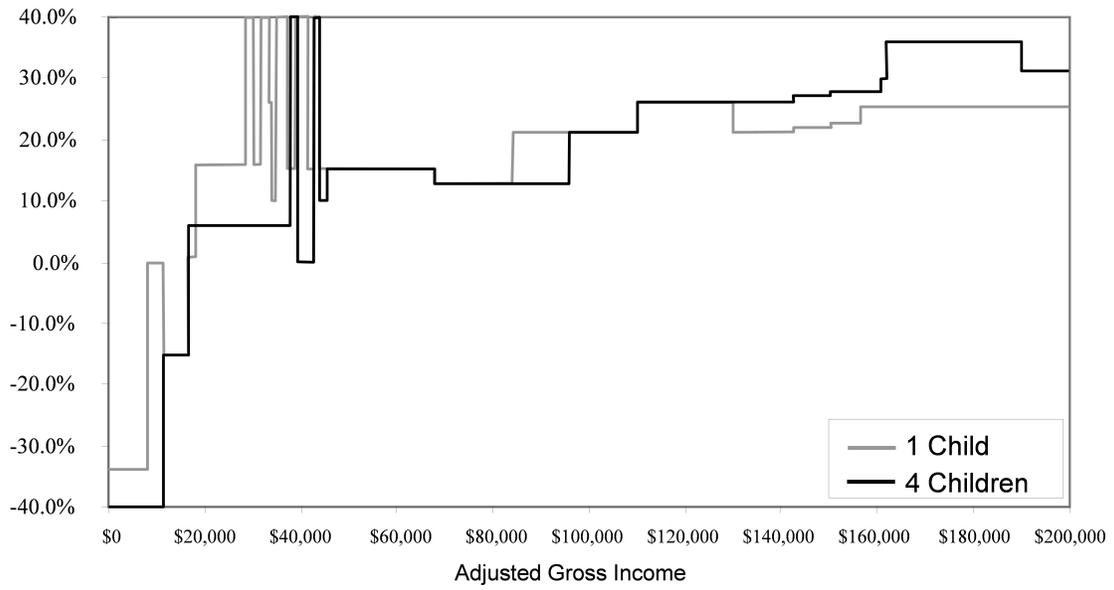


Figure 7: Real Change in Child Tax Benefits
(Married Couple with Two Children, 2008 dollars)

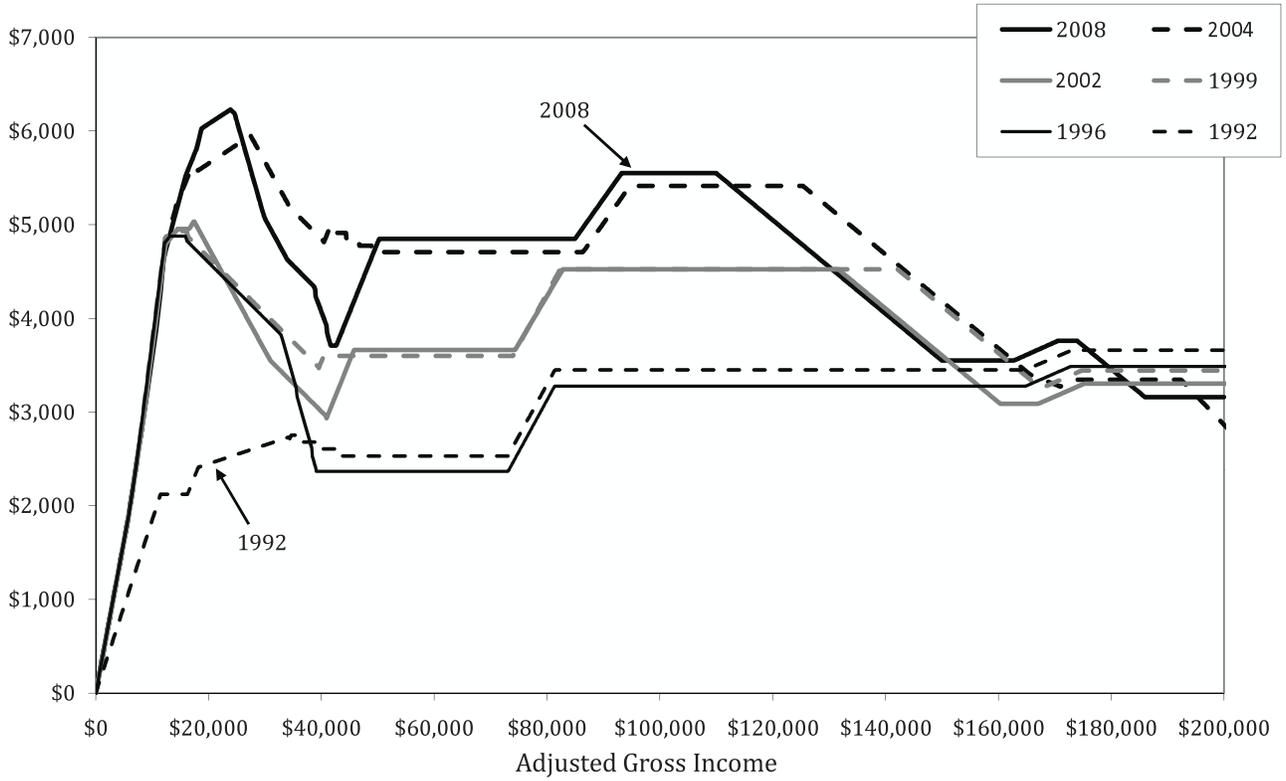


Figure 9: Child and Dependent Care Credit Rate Increase

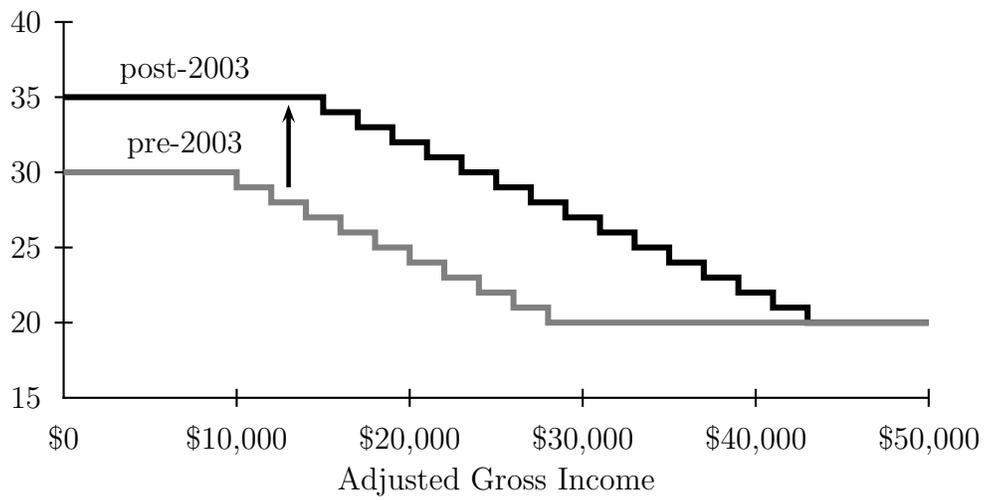


Figure 10: Value of the CDCC under the Pre-2003 and Post-2003 Rules
(2006 married couple with two children)

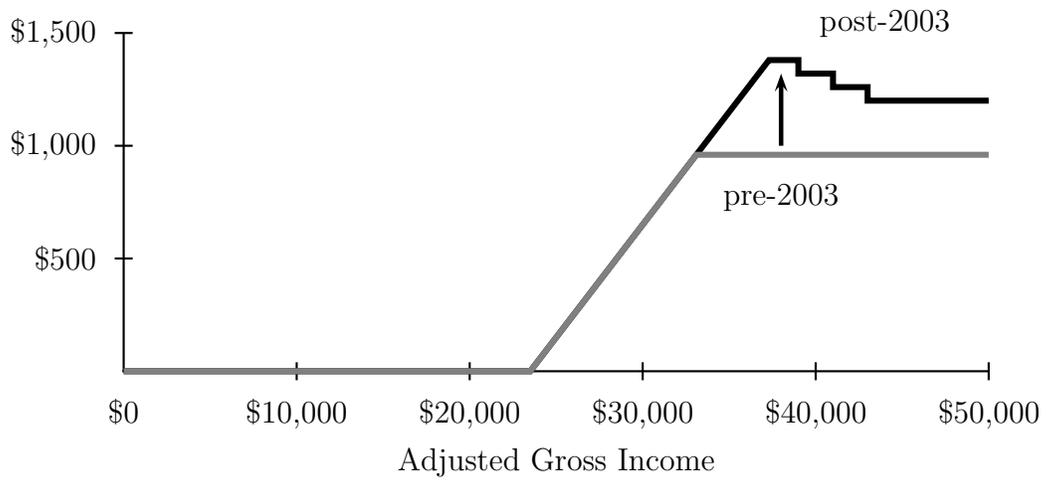


Table 1: Estimated Budgetary Cost of Child Tax Benefits
(billions of dollars)

	1992	1996	1999	2004	2006
Dependent Exemption	24.1	30.7	35.8	36.4	35.9
Earned Income Credit	13.0	28.2	31.3	38.0	40.2
Child Tax Credit	–	–	19.9	31.2*	56.2
Child Care Expenses	3.4	3.4	3.1	3.6	3.9
Head of Household Status	3.0	3.5	3.7	3.9	4.1
TOTAL	43.5	65.8	93.8	113.1	140.3
Number of Children (millions)	66.5	70.2	71.9	73.3	73.7
Expenditure per Child	\$654	\$937	\$1,305	\$1,543	\$1,904
Real Expenditure per Child	\$940	\$1,204	\$1,579	\$1,647	\$1,904

* does not include the early child tax credit payments made in 2003

Sources: OMB analytical perspectives tables 5-1 and 19-1 various years, IRS statistics of income publications 1304, U.S. Census Bureau Table CH-1 (2007) Living Arrangements of Children Under 18 Years Old, and author's calculations.

Table 2: Estimated Marginal Propensity of Child Expenditure

Income Group	Average Income	Per Child Expenditure	Budget Share	Implied Marginal Propensity of Child Expenditure
Married Couples				
Low-Income	\$27,800	\$7,988	0.287	–
Middle-Income	\$59,300	\$10,983	0.185	0.095
High-Income	\$112,200	\$16,077	0.143	0.096
Single Parents				
Low-Income	\$18,600	\$7,567	0.407	–
High-Income	\$67,600	\$16,097	0.238	0.174

Source: USDA, Expenditure on Children by Families, 2005

Table 3: Implied Minimum Cost of Raising a Child

Number of Children	Married Couples			Single Parents		
	Minimum Cost of Child Implied by:			Minimum Cost of Child Implied by:		
	Poverty Thresholds	Root-N Scale	3 Parameter Scale	Poverty Thresholds	Root-N Scale	3 Parameter Scale
1	\$2,727	\$3,178	\$4,534	\$3,408	\$4,142	\$4,718
2	\$4,217	\$2,679	\$2,396	\$2,346	\$3,178	\$2,618
3	\$3,615	\$2,361	\$2,279	\$4,274	\$2,679	\$2,451
4	\$2,879	\$2,134	\$2,183	\$3,175	\$2,361	\$2,323

Source: 2006 Poverty Thresholds, 2006 Poverty Guidelines, U.S. Census Publication P60-205, and author's calculations.