

## **The Earned Income Tax Credit**

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## Abstract

Since its inception in 1975, the Earned Income Tax Credit (EITC) has grown into the largest federally funded means-tested cash assistance program in the United States. In this chapter, we review the political history of the EITC, its rules, and its goals, and we provide a broad set of program statistics on its growth and coverage. We summarize conceptual underpinnings of much of the recent economic research on the EITC and discuss participation in the credit and compliance with its provisions, as well as its effects on labor force participation and hours of work, marriage and fertility, skill formation, and consumption. We note that participation rates of the credit are high, as are rates of credit noncompliance, and that there are theoretical reasons to prefer the EITC to other antipoverty programs if the objective is to encourage work among the poor. We also note that the predicted effects of the EITC are not all pro-work, especially with respect to hours and its labor market incentives for two-earner couples. We summarize the existing empirical research on the behavioral effects of the EITC, with particular emphasis on the effects of the 1986, 1990, and 1993 expansions of the credit on labor force participation and hours of work. The literature provides consistent evidence, generated from a variety of empirical approaches, that the EITC positively affects labor force participation. The literature also finds small, negative effects on hours of work for secondary workers. We conclude the chapter with a discussion of ongoing EITC-related policy debates and highlight what, if any, critical economic issues underlie these debates.

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## I. Introduction

The Earned Income Tax Credit (EITC) grew from \$3.9 billion in 1975 (in 1999 dollars), the first year it was part of the tax code, to \$31.5 billion in 2000. No other federal antipoverty program has grown at a comparable rate. In 2000 EITC spending was within \$4 billion of the *combined* federal spending on Temporary Assistance for Needy Families (TANF) and food stamps.<sup>1</sup>

The growth of the EITC has been even more striking given the antipathy most Americans express toward welfare, at least prior to welfare reform in 1996, and the rhetoric of both political parties about recognizing the limitations of government programs.<sup>2</sup> The EITC's popularity relative to means-tested cash transfers like the former Aid to Families with Dependent Children (AFDC) and new TANF programs stems, at least in part, from the perception that the EITC rewards work.

The credit began as part of a broader effort by Senator Russell Long (D-LA) to derail congressional and presidential interest in a negative income tax (NIT) in the late 1960s and early 1970s. The initial debates highlighted a tension that exists to this day. The attraction of the NIT was that—as a universal *antipoverty* program—it would provide a guaranteed minimal standard of living to all in an administratively efficient way (though the tax system) without having the notches and high cumulative marginal tax rates that characterize a patchwork system of narrower programs. Sen. Long's primary objection to the NIT was that it provided its largest benefits to those without any earnings, and hence would dull the labor market attachment of poor families.

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<sup>1</sup>The FY2002 budget showed total food stamp spending in 2000 at \$18.3 billion and total TANF spending at \$18.4 billion.

<sup>2</sup>Views on welfare are illuminated by questions on the General Social Survey, which asks, “Are we spending too much money, too little money, or about the right amount on welfare?” In the 1972–82 surveys, 54.8 percent of the respondents replied “too much.” In the 1996 survey, 57.7 replied “too much,” though the percentage giving this response had fallen to 45.8 percent in 1998 and to 38.9 percent in 2000.

His alternative, initially called the “work bonus,” would phase in and thus increase with earnings up to a point.

Over the years, the EITC has played different tax policy, labor market, and antipoverty roles. In Section II, we review the political history of the EITC, its rules, and its goals, and we provide a broad set of program statistics that summarize its growth and coverage. Various goals of the program occasionally come into conflict. For example, when the EITC was increased as part of the 1993 budget bill, it was singled out as an important antipoverty program that has positive (relative to alternatives) labor market incentives. Around the same time, however, studies of EITC noncompliance suggested that the credit was difficult for the Internal Revenue Service (IRS) to administer. One’s view of the credit will be influenced significantly by the weight one places on its antipoverty effects, its labor market effects, and the ability of the IRS to administer the credit.

The core of this chapter is a discussion of EITC-related behavioral issues and research. Section III provides EITC program statistics. As would be expected with a program that has more than tripled in size (in real dollars) in the 1990s, a considerable amount of attention has been paid to the EITC in recent years. In Section IV, we outline the conceptual underpinnings of much of this recent work and discuss EITC participation and compliance, its effects on labor force participation and hours of work, marriage and fertility, skill formation, and consumption. In this overview, we show that there are theoretical reasons to prefer the EITC to other antipoverty programs if the objective is to encourage work among the poor. At the same time, the predicted effects of the EITC are not all pro-work, especially with respect to hours and its labor market incentives for two-earner couples. But a policy focus only on labor markets would be overly narrow, since it is clear that the EITC has the potential to affect a much broader set of

economic behaviors.

Section V reviews the evidence to date on these behavioral issues. Given the design and size of the credit, it is not surprising that it delivers significant resources to working poor families. A large set of studies examine the credit's labor market effects, as would be expected given that a central distinction between the EITC and NIT approach to antipoverty policy is the likely superiority of the EITC in encouraging labor force participation. Recent studies also have focused on the degree to which expansions of the EITC over the last 20 years can account for trends in labor force participation for single women with children in the United States.

As highlighted in Moffitt (1998), many studies over the last 10 years have examined the effects of programs like AFDC, Medicaid, and Food Stamps on family structure and children's well-being. These studies have been motivated by a growing concern that public assistance programs contributed to the rise in out-of-wedlock childbearing and female headship, two behaviors associated with the incidence of poverty, especially among children. Until very recently, however, little attention has been paid to the effects of the EITC expansions on these same behaviors. We discuss recent EITC-related studies of this issue. We also discuss recent studies of the EITC's effect on consumption patterns of the poor. Because the credit is administered through the nation's (and, in some cases, state's) income tax systems, EITC payments to low-income households are typically received once a year, as an adjustment to tax liabilities or refunds. This payment pattern contrasts to monthly payments typically associated with AFDC/TANF and food stamps, and may provide a way to gain additional insight into the nature of credit markets and consumption behavior for low-income families.

Our goal in Section V is to summarize succinctly what has been done, to evaluate the strengths of this work, and to identify areas where additional work could be useful to either

verify existing conjectures or alter what we thought was known.

In the final sections, we briefly discuss EITC-related policy debates and highlight what, if any, critical economic issues underlie these debates. We also briefly identify issues on which future research is needed.

## **II. Program History, Rules, and Goals<sup>3</sup>**

It is not surprising that fundamental tensions in the design of the safety net emerge at different points in the program's history, given the EITC's status as the largest cash or near-cash antipoverty program. In the mid-1960s and early 1970s there was a great deal of discussion about the appropriate design of antipoverty policy. At the risk of oversimplifying, one part of the policy debate focused on either direct earnings subsidies (of which the EITC is one) or on subsidies paid to employers to hire disadvantaged workers. Remnants of the latter approach are found in the current, modest Work Opportunity and Welfare-to-Work Tax Credits that are part of the federal income tax.<sup>4</sup> A problem with earnings or employment subsidies is that they do nothing for adults (and the children that live with them) who are unable or unwilling to work. Consequently, they must be matched with programs that help provide food, housing, health care, and other basic needs to those not in the labor market.

The EITC was established amidst the political debate over the negative income tax that occurred in the 1960s and 1970s. The NIT held great promise to the early designers of the War on Poverty since it would solve the difficult integration issues that arise with categorical antipoverty programs—the need for bureaucracies to administer and enforce eligibility and benefit rules and the need to mitigate potentially high marginal tax rates that recipients face as

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<sup>3</sup>Our discussion of the EITC's political history comes directly from Liebman's (1997a) and Ventry's (2000) interesting accounts.

<sup>4</sup>For further discussion of employment subsidies and a broader treatment of employment strategies for low-wage labor markets, see Killingsworth (2002), Bishop and Haveman (1978), and Haveman (1996).

earnings increase. Partly for these reasons, in 1966 an NIT was the capstone of the Office of Economic Opportunity's—the federal agency in charge of conducting the War on Poverty—plan to eradicate poverty. President Johnson, however, opposed the NIT and a leading alternative proposal at the time, a guaranteed annual income, on the grounds that both proposals undermined work effort. Without support of the president, a negative income tax was not adopted. Nevertheless, in the late 1960s and early 1970s, the government launched the first widespread social experiments, the Gary (Indiana), New Jersey, Iowa, and Seattle-Denver Income Maintenance Experiments, to examine the effects of a negative income tax.

In 1969 President Nixon introduced a negative income tax called the Family Assistance Plan (FAP) that would have replaced the AFDC program. Though it enjoyed widespread initial support, FAP was subsequently attacked by liberals as being insufficiently generous and by conservatives as being overly expensive and having insufficiently stringent work requirements.

Russell Long, then Chair of the Senate Finance Committee, opposed the FAP and, as an alternative, designed a proposal targeted at those willing to work. His 1972 proposal included a large public service jobs component and a “work bonus” equal to 10 percent of wages subject to Social Security taxation. FAP was defeated in 1972, but Sen. Long aggressively pushed his work bonus scheme over the next three years. His efforts were aided by the confluence of three events. First, from 1960 to 1970 the payroll tax rate increased to 4.8 percent from 3.0 percent (on *both* employers and employees), and it increased further to 5.8 percent in 1973, which focused attention on the rising tax burdens of low-income families. Second, fostered in part by the income maintenance experiments, there continued to be a great deal of intellectual attention paid to the NIT and NIT alternatives in think tanks, universities, and government agencies. Third, a recession started in 1974. This prompted members of Congress in 1975 to try to stimulate

aggregate demand by refunding \$8.1 billion in 1974 income taxes, and cutting 1975 income taxes by an additional \$10 billion. With passage of a tax bill in 1975, Sen. Long was able to enact a variant of his work bonus, called the EITC, on a temporary, 18-month basis. The provision added a 10 percent supplement to wages up to \$4,000 (\$12,387 in 1999 dollars) for taxpayers with children and it phased out at a 10 percent rate over the \$4,000 to \$8,000 income range.

Sen. Long undoubtedly understood that once a provision is in the tax code, it is likely to remain. Indeed, the EITC remained in the tax code each subsequent year until it was made permanent in 1978. Legislation in 1978 also added a flat range to the EITC's phase-in and phase-out ranges, as shown in Figure 1.<sup>5</sup> An "advance payment" option was also added to the credit in 1978, so that workers would be able, if they desired, to receive the credit incrementally throughout the year.

Spending on the safety net slowed in the late 1970s and shrank in the 1980s. Between 1978 and the Tax Reform Act of 1986 (TRA86), the fact that the tax credit (and tax code) was not indexed for inflation caused a substantial erosion of the EITC's real value. TRA86, as part of its provisions to eliminate income taxes on families with incomes below the poverty line, increased the EITC to the point where the maximum credit in 1987 equaled the real value of the credit in 1975. TRA86 also indexed the credit for inflation. During this period the EITC continued to be supported by liberals and conservatives, both of whom were sympathetic to the idea of reducing tax burdens on low-income families and rewarding work.

Through much of the 1980s and into the 1990s, deficits were a dominant topic in Washington economic policy discussions. By 1990, annual deficit forecasts exceeding \$300

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<sup>5</sup>The phase-in rate for the credit was 10 percent on earnings up to \$5,000, for a maximum credit of \$500. Over the flat portion of the schedule, the maximum credit was available for taxpayers with earnings between \$5,000 and \$6,000. The phase-out rate for the credit was 12.5 percent on incomes between \$6,000 and \$10,000.

billion— “as far as the eye can see”—were common, so that year President Bush agreed to abandon his “no new taxes” pledge and meet with Democratic leaders of Congress to fashion deficit-reduction legislation. The tortuous negotiations led to the 1990 tax bill, which phased out exemptions and itemized deductions on high-income taxpayers and raised the highest marginal tax rate from 28 percent to 31 percent. Whereas distributional issues have always played a role in tax policy, they played an exceptionally important role in 1990, perhaps because of the antipathy of Democratic congressional leaders toward the Republican president and the sense by those leaders that policy in the 1980s disfavored low-income families.<sup>6</sup> The EITC proved to be a straightforward way to alter the distributional characteristics of various deficit-reduction packages, and distributional tables became an important factor behind the 1990 EITC expansion that was phased in over three years. In 1991, the credit for the first time was also made larger for taxpayers with two or more children than for taxpayers with one child.

Another major change to the EITC occurred as part of the 1993 budget bill. In his first State of the Union Address, President Clinton said, “The new direction I propose will make this solemn, simple commitment: by expanding the refundable earned income tax credit, we will make history; we will reward the work of millions of working poor Americans by realizing the principle that if you work 40 hours a week and you’ve got a child in the house, you will no longer be in poverty.” This declaration completed the evolution of the EITC from Sen. Long’s modest “work bonus” to a major antipoverty initiative. President Clinton set a target for the EITC: full-time work at the minimum wage plus the EITC (and any food stamps a family is eligible for) should be enough to raise the family’s net-of-payroll-tax income above the poverty

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<sup>6</sup>Many of the newspaper articles about 1990 budget talks emphasized distributional issues. See, for example, “GOP’s Tax Proposal Said to Favor Wealthy; Budget Talks Proceeding at ‘Glacial’ Pace,” *Washington Post*, 9/14/90 (A12); and “Budget Negotiations Recess Amid Confusion on Progress; Officials Disagree on Extent of Disagreement,” *Washington Post*, 9/18/90 (A1).

line. To achieve this goal, the EITC was again increased, and increased sharply for families with two or more children.<sup>7</sup>

The 1993 budget bill (and EITC expansion) passed by one vote in the Senate and received not a single supporting Republican vote. This too marked a transformation in the EITC's political history. For the first time, the EITC became a policy linked exclusively to Democrats. In subsequent years, there have been highly partisan battles over EITC-related issues.

### EITC Rules

To receive the earned income credit, taxpayers file their regular tax return and fill out the six-line Schedule EIC that gathers information about qualifying children. The EITC is refundable, meaning that it is paid out by the Treasury regardless of whether the taxpayer has any federal income tax liability. There are several basic tests for EITC eligibility. The taxpayer must have both earned and adjusted gross income below a threshold that varies by year and by family size. Most EITC payments go to taxpayers with at least one "qualifying child." A qualifying child needs to meet age, relationship, and residence tests. The age test requires the child to be younger than 19, younger than 24 if a full-time student, or any age if totally disabled. The relationship test requires the claimant to be the parent or the grandparent of the child or for the child to be a foster child.<sup>8</sup> Under the residence test the qualifying child must live with the taxpayer at least six months during the year.<sup>9</sup> Another rule limits the sum of taxable and tax-

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<sup>7</sup> The specific goal was achieved only for families with fewer than three children, and only after the minimum wage was increased in 1996 and 1997.

<sup>8</sup> Until late 1999, a foster child was any child for whom the claimant cared for "as if the child is their own." The caring stipulation still holds, but now the child must also be placed in the home by an authorized placement agency. Prior to the 2001 tax legislation, EITC-eligible foster children also needed to live with the taxpayer for 12, rather than 6, months.

<sup>9</sup> In 1990 (tax year 1991) the residency and AGI tiebreaker (see below) tests replaced a support test, since in principle it is easier to verify where a child lives than it is to verify who supports a child. Under the support test the taxpayer had to pay for at least half the child's support, where items like transfer payments (i.e., AFDC and housing subsidies) and child support were not considered support provided by the taxpayer.

exempt interest, dividends, net capital gains, rents, royalties, and “passive” income to less than \$2,350 (indexed for inflation).

In 2001, taxpayers with two or more children could receive a credit of 40 percent of income up to \$10,020, for a maximum credit of \$4,008. Taxpayers (with two or more children) with earnings between \$10,020 and \$13,090 received the maximum credit. Their credit was reduced by 21.06 percent of earnings between \$13,090 and \$32,121. The EITC schedule in 2001 for families with two or more children is shown in Figure 1. A small credit available for childless taxpayers between the ages of 24 and 65 with very low incomes was added in 1994. The credit rate for these taxpayers is 7.65 percent, and the maximum credit in 2001 was \$364. Table 1 shows the complete evolution of income eligibility thresholds, credit rates, and phase-out (or implicit tax) rates.

Figure 2a shows total tax payments and marginal tax rates for two-parent, two-child families in Illinois (a state with relatively high tax rates on low-income families) in 1998.<sup>10</sup> We assume workers bear the full burden of payroll taxes, so the employer and employee share of payroll taxes is 14.2 percent.<sup>11</sup> The marginal tax rate line is initially at -25.8 percent, reflecting the sum of the 14.2 percent effective payroll tax rate and the -40 percent EITC rate. The flat portion of the EITC occurs around \$10,000, where the Illinois household would face a 3 percent marginal state tax rate. Effective rates are 38.3 percent over much of the phase-out range, reflecting the sum of the 14.2 percent payroll tax, the 21.1 percent EITC phase-out, and the 3 percent Illinois state income tax. Rates jump to 53.3 percent between \$25,000 and \$29,000 as this family enters

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<sup>10</sup>Nineteen states impose positive (but typically small) state income taxes on families of four with incomes below the poverty line (Johnson, 2001).

<sup>11</sup>Employers and employees both contribute 7.65 percent of earnings as payroll taxes, but the standard incidence assumption for payroll taxes implies that after-tax earnings would be 7.65 percent larger in the absence of payroll taxes, so the effective payroll tax rate is  $(.153 / 1.0765)$  or 14.2 percent.

the 15 percent bracket of the federal income tax.<sup>12</sup> The corresponding average tax burdens are shown in the bars. Two-parent, two-child Illinois families would have negative combined income and payroll taxes up to roughly \$17,200.<sup>13</sup>

Figure 2b shows the analogous situation for the same type of family in 1984, before the 1986 tax reform, and the 1990 and 1993 EITC expansions, all of which reduced taxes on low-income families. The pattern of marginal and average tax rates is strikingly different from what applied in 1998. The payroll tax (7 percent on employers and employees) was almost as high as it is now, resulting in an effective rate of 13.1 percent. The EITC was only 10 percent on incomes up to \$7,844 (in 1998 dollars), so even taxpayers with very low incomes faced positive marginal rates. The EITC was phased out at a 12.5 percent rate beginning at \$9,413 (again, in 1998 dollars). In addition, the 11 percent federal marginal tax bracket started at around \$9,413 of income. Thus, all but the lowest-income families faced marginal tax rates of at least 28 percent, and some faced significantly higher marginal rates.

In calendar year 2001, 14 states and the District of Columbia had EITCs as part of their state income tax systems.<sup>14</sup> The parameters of these credits are summarized in Table 2. Most are structured as percentages of the federal credit and use the same eligibility definitions. In New York, for example, the state EITC was 25 percent of the federal credit in 2001, rising to 30 percent by 2003. Ten of the state EITCs (including D.C.) are refundable and most make the credit available to workers without qualifying children.

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<sup>12</sup>The EITC phase-out rate is lower for taxpayers with one child, but because they only receive one child credit and have one less personal exemption, one-child families in 2002 begin to pay the federal 10 percent marginal income tax rate at an income of \$22,850. Hence, EITC recipients with one child and incomes between \$22,850 and \$29,201 have cumulative marginal tax rates around 40 percent (including payroll taxes).

<sup>13</sup>Low-income families would generally file returns because their incomes exceed filing thresholds or to get back withheld taxes. With the \$600 child credit along with exemptions of \$3,000 and the standard deduction of \$7,850, a married couple with two children in 2002 will not have a positive income tax liability until their earnings exceed \$31,850, even without the EITC.

<sup>14</sup> This discussion is from Johnson (2001).

Two unusual features show up in state EITCs. Wisconsin's state EITC has a three-tiered schedule equaling 4 percent of the federal credit for taxpayers with one child, 14 percent of the federal credit for taxpayers with two children, and 43 percent of the federal credit for taxpayers with three or more children. This schedule was developed with explicit reference to the higher incomes needed to keep families with three or more children out of poverty. The Minnesota schedule includes a second phase-in range to combat the problem that increases in wages or hours for certain minimum-wage workers made them no better off because of the loss of cash assistance and food stamps and increases in taxes (see Johnson, 2001, page 21, for more details).

The state credits in combination with the federal credit can be substantial. A family with three or more children earning \$9,600 in Wisconsin, for example, could receive a combined state and federal EITC of \$5,457, or a 57 percent supplement to their earned income.

#### Interaction with Other Social Welfare Programs

The tax system operates independently of transfer programs, so there is relatively little interaction between the EITC and other programs. In 1979 (as part of a technical corrections bill) Congress required both advance and lump-sum EITC payments to be treated as earned income for AFDC, food stamp, and SSI recipients. The 1981 tax legislation went even further in requiring welfare agencies to assume that individuals eligible for both the EITC and AFDC received the EITC incrementally through the year, thus likely lowering AFDC and food stamp benefits. In 1984 this position was reversed and states were allowed to reduce AFDC benefits only when they could verify that individuals actually received the EITC. The 1990 tax legislation prohibited the counting of the EITC as income or as a resource in the month received or in the following month when determining eligibility for AFDC, Medicaid, food stamps, SSI, and low-income housing benefits. Finally, the 1993 Mickey Leland Hunger Act prohibited counting the

EITC for the first 12 months after receipt for food stamp eligibility and benefits. Beyond these time intervals, the EITC could cause potential recipients to fail program asset tests.

Since the abolition of AFDC, it has not yet become clear how the EITC will interact with state TANF programs. There are two major issues. First, states now have the authority to count the EITC as income when determining eligibility for their welfare programs. Second, many TANF programs contain employer subsidies and other job-related activities, which may or may not trigger tax obligations and potential EITC payments. The 1997 budget bill made clear that the EITC could not be claimed on income resulting from “community service” and “work experience” jobs funded under TANF. Other situations will be judged by their “facts and circumstances” under the general welfare doctrine.<sup>15</sup> The law is not yet well developed in this area.

#### Quality Control and Noncompliance

Relative to alternative delivery mechanisms, the EITC is inexpensive to administer. Most EITC recipients would be required to file a tax return even in the absence of the credit, so the marginal cost of obtaining the EITC is simply the small cost of filling out Schedule EIC. The cost to the IRS is also quite small. The IRS has a budget of roughly \$8 billion to serve some 120 million individual taxpayers and 15 million corporations. The incremental cost of administering the EITC is surely a very small fraction of this total. The costs of administering two other major income-support programs for low-income families are much higher. Administrative costs in FY1995 were \$3.7 billion for food stamps and \$3.5 billion for AFDC, though a significant portion of those costs also paid for client services.

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<sup>15</sup>A loose description of the general welfare doctrine is that if payments are made for the general welfare, meaning payments are public support for a disadvantaged family, they are not taxable and do not trigger the EITC. If payments are more job-related, they are less likely to be viewed as payments made to support the general welfare and more like compensation for services rendered. In this case they would be taxable and trigger the EITC.

A system based largely on self-assessment (like the U.S. income tax) will have lower administrative costs than a more bureaucratic approach, but it will also have higher noncompliance. The most recent study of EITC noncompliance examined returns filed in 2000 (for tax year 1999) and found that of the \$31.3 billion claimed in EITC, between \$8.5 and \$9.9 billion, or 27.0 to 31.7 percent of the total, exceeded the amount to which taxpayers were eligible (Internal Revenue Service, 2002b).

Of the errors the IRS was able to classify, roughly half involve qualifying-child errors.<sup>16</sup> About half of these arose because the child claimed was not the taxpayer's qualifying child. Of these errors, the most common problem was that EITC-qualifying children failed to live for at least six months (see footnote 8 for the rules applying to foster children) with the taxpayer who was claiming the child. Reasons for mistakes of this type can run the gamut from innocent taxpayers running afoul of complex IRS rules to fraud. Consider, for example, a divorced couple where the divorce agreement gives the dependency exemption to the noncustodial parent, who in turn is regularly paying child support. Since the noncustodial parent receives the dependency exemption, that parent could easily assume that he or she could also claim the child to receive the EITC if they are otherwise qualified. But in this case the claim would be inappropriate, since the child does not live with the claimant for more than six months. In the category of clear noncompliance, consider the situation described in the ethnographic study of Romich and Weisner (2000). They write that "one woman relies on her mother to baby-sit her younger daughter every weekend. The grandmother also buys school clothes for the child. In return for this care, the grandmother 'gets hers back at the end of the year' by (illegally) filing the child as her dependent and receiving an EITC" (page 1256).

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<sup>16</sup>Also see McCubbin (2000), Scholz (1997), U.S. General Accounting Office (1998), and Holtzblatt (1991) for discussions of earlier EITC compliance studies.

Two other sources of qualifying-child errors arise with the adjusted gross income (AGI) tiebreaker and relationship rules. The AGI tiebreaker rule stipulated that if two people could legitimately claim the same EITC qualifying child (such as a mother and grandmother in the same house), the one with the greater income was supposed to. Something like a tiebreaker rule is necessary to establish legitimacy in cases where more than one taxpayer claims the credit based on the same child. But it led to outcomes, where, for example, a parent who lived and cared for a child could not claim the child because the child's grandparent also lived in the house and had a higher income. The AGI tiebreaker rule was simplified beginning in 2002 and now applies only if two taxpayers actually claim the same EITC-qualifying child. This change should significantly reduce errors related to the AGI tiebreaker rules, which accounted for 17.2 percent of all errors in 1999. The relationship test is violated when the person claiming the EITC-qualifying child is not the child's parent (including the parent of an adopted child, stepchild, or foster child) or grandparent.

The IRS found that 21.4 percent of overclaims resulted from income-reporting errors. These problems may arise from both underreporting and overreporting income (including underreporting of investment income, which could make a taxpayer ineligible for the EITC). This category also includes situations where a married couple living together chooses to file two separate tax returns (perhaps two head of household returns, or one head of household and one single return), strategically splitting their incomes and children to maximize the EITC.

Another source of EITC errors arose in situations where the taxpayer filed as single or head of household but should have used the married-filing-separate status. Like other sources of error, these can range from the innocent to blatant. For example, the custodial parent in a married couple that separates but does not get a divorce should, in some cases, file a joint or married-

filing-separate return rather than file as a head of household, where they may be more likely to be eligible for the credit.<sup>17</sup> Only the savviest taxpayers would likely understand these rules.

Several EITC changes since the 1999 compliance study may have beneficial effects on EITC compliance. One that has already been mentioned is the change to the AGI tiebreaker test.<sup>18</sup> Another initiative was put in place as part of the 1997 budget agreement, in which Congress directed the Secretaries of Treasury and Health and Human Services to jointly use the Federal Case Registry (FCR) of Child Support Orders to improve the accuracy of EITC claims. The FCR typically identifies a child, the custodial parent, and a noncustodial parent. Since a large fraction of EITC errors arise in cases where someone other than the person living with the child is claiming the child for EITC purposes, the FCR has the potential to allow the IRS to identify a substantial number of noncompliant cases, where previously they had no useful information to scrutinize residence claims about EITC-qualifying children. It is too early to know whether the FCR's apparent potential can be realized, though the system will be used by the IRS to target pre-refund audits in 2002 and Congress has given the IRS authority to treat an EITC claim by a noncustodial parent as a "math error" during return processing beginning in 2004.<sup>19</sup>

The rate of EITC noncompliance appears higher than the overall U.S. tax gap, where it is estimated that 17 percent of total taxes are not paid (Internal Revenue Service, 1996).<sup>20</sup> Although compliance appears to be very high for wage and salary income, presumably because of third-party information reporting, compliance rates on self-employment income, sales of business

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<sup>17</sup>See Holtzblatt and Rebelein (1999, page 8) for a discussion of the "abandoned spouses" rules.

<sup>18</sup>Income and foster child definitions have also been simplified.

<sup>19</sup>Whereas the FCR would appear to be a promising compliance tool, the data in the registry could be low quality; living arrangements could be fluid, making the FCR data insufficiently up-to-date; or it could be infeasible or inefficient (from a cost-benefit standpoint) to use FCR data during processing to stop questionable refund claims before money is paid out. Once inappropriate EITC claims are paid out, it is very difficult to get the money back.

<sup>20</sup>There is some question about the reliability of the tax gap estimates since the underlying data are from 1988.

property, certain types of capital income, and income earned in the informal sector are comparable and in some cases far worse than EITC compliance rates.

### **III. Program Statistics**

Table 3 provides information on the maximum real EITC benefit (in 1999 dollars) over time, real expenditures, and caseloads since the credit was established in 1975. For the first 16 years of the credit, the real value of the maximum EITC never exceeded its 1975 value by more than \$10. Real spending on the credit increased sharply starting with the 1986 EITC expansion. Prior to 1986, the EITC cost between \$2.6 and \$4.7 billion. The 1986 expansion roughly doubled total spending on the credit by increasing the maximum credit (to make up for the loss in the value of the credit due to inflation), indexing the credit, and extending its phase-out range. The credit rate, maximum credit, and spending increased every year from 1990 through 1996 as a consequence of the three-year phase-ins of the 1990 and 1993 EITC increases. Real EITC spending more than tripled in the 1990s.

The evolution of the number of EITC claimants shown in Table 3 closely mirrors the changes in EITC statutes and, to a lesser extent, business cycle changes. Between 5.2 and 7.4 million taxpayers claimed the credit between 1975 and 1986. By extending EITC eligibility to taxpayers with incomes up to an indexed level of \$18,576 in 1988, the 1986 EITC changes increased the number of EITC recipients by roughly 50 percent. The phased-in 1990 expansions also modestly increased the income thresholds that determine EITC eligibility, so the number of recipients increased by roughly 1 million per year from 1990 to 1993. The number of claimants increased by roughly 4 million as a consequence of the childless-worker credit that became available for the first time in 1994. Possibly in part due to increased compliance efforts, the number of EITC claimants has been constant since 1995, despite the increasing labor force

participation rate of single-parent families.

It appears that the EITC reaches a large percentage of its intended beneficiaries. Scholz (1994) used matched data from tax returns and the Survey of Income and Program Participation (SIPP) to calculate that 80 to 86 percent of taxpayers eligible for the EITC appeared to receive it in 1990.<sup>21</sup> Developments since 1990 have an ambiguous effect on EITC participation rates. The maximum credit has increased sharply since then, from \$1,215 to around \$3,800 in 1999 dollars, and the credit extends further up in the income distribution, where filing propensities are high. The IRS, state agencies, and nonprofit organizations have also expanded outreach efforts. However, there has been a steady increase in labor force participation of single women with children (Meyer and Rosenbaum, 2000, 2001), and new workers in this group presumably have lower filing propensities than typical workers in the population. Hill, Hotz, Mullin, and Scholz (1999), for example, suggest that EITC participation rates for single mothers who recently had been on AFDC in California were in the range of 42 to 54 percent in 1993 and 1994. In addition, the IRS no longer will intervene (as it did until the early 1990s) and award the credit when taxpayers file and appear eligible, but do not take the credit. Instead the IRS sends a letter to taxpayers encouraging them to consider filing an amended return. EITC compliance efforts may also have discouraged some eligible taxpayers from claiming the credit.

The Internal Revenue Service (2002a) used data from the Current Population Survey (CPS) matched to tax returns and data from the SIPP for calendar year 1996 to estimate that of the households that appeared to be eligible for the EITC, between 82.2 and 87.2 percent filed tax returns and hence either claimed the EITC, or likely received a notice from the IRS telling them they may have been eligible. These calculations suggest that the EITC changes between 1990

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<sup>21</sup>Blumenthal, Erard, and Ho (1999) present similar participation rates for 1988, making use of detailed audit data from the 1988 Taxpayer Compliance Measurement Program.

and 1996 had relatively little net effect on EITC participation.

Liebman (2000) uses matched data from the 1990 Current Population Survey and tax returns to examine the characteristics of EITC-eligible taxpayers. He writes (page 1178):

50 percent of eligible 1990 EITC taxpayers are married, while 30 percent are formerly married, and 20 percent have never been married. A little more than half are white, a quarter are Black, and 18 percent are Hispanic. Of eligible EITC recipients, 74 percent have a high school education or less; 44 percent live in the South; and 36 percent live in a central city. Fifty-eight percent work 1500 hours or more, though this average is brought down by married couples in which one spouse does not work. Sixteen percent of eligible EITC tax returns are filed by individuals in households that receive welfare income during the year and 26 percent are in households receiving food stamps.

It is difficult to predict how the characteristics of EITC participants have evolved between 1990 and now. The income threshold at which the EITC is fully phased out has increased from \$20,000 to over \$30,000 (nominal) dollars since 1990. Many taxpayers have incomes in that range, so it is likely that EITC recipients appear somewhat more affluent than what Liebman found. At the same time, labor force participation rates of single women with children have increased over this period, and many of these new workers have low levels of human capital.

#### Antipoverty Effects, Target Efficiency, Distributional Impact

The EITC was available in 2001 only to taxpayers with earned income and adjusted gross income less than \$32,121 if they had more than one qualifying child, \$28,281 if they had one qualifying child, and \$10,708 if they had no qualifying children. Scholz and Levine (2001) calculate that in April 1997 over 60 percent of EITC payments went to taxpayers with pre-EITC incomes below the poverty line and roughly half of total payments directly reduced the poverty gap.<sup>22</sup> Liebman (1997a) plots density functions for EITC payments following the 1993 expansion

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<sup>22</sup>The HHS poverty guidelines for 2002 are \$8,860 for a one-person family, \$11,940 for two-person families, \$15,020 for three-person families, and \$18,100 for four-person families.

that show a right-skewed distribution, centered at roughly \$13,000, with most payments going to families with incomes between \$7,000 and \$26,000.<sup>23</sup>

Figure 3 presents data from 1999 tax returns on the distribution of EITC returns and payments by adjusted gross income class for EITC claimants with children. Roughly 23 percent of claimants are in the phase-in range of the credit and they receive 24 percent of total payments. Roughly 19 percent are in the flat range and they receive 26 percent of total payments. The remaining 58 percent of claimants are in the phase-out range of the credit; they receive roughly half of total payments. Of the 19.3 million total EITC claims in 1999, 3.2 million had no qualifying children and they claimed \$0.6 billion, 7.8 million had one qualifying child and they claimed \$12.0 billion, and 8.2 million had two or more and they claimed \$19.3 billion. Data are not available for the distribution of EITC claims by filing status.

Because the EITC is based on annual family income and not wages, it is possible that people with high hourly wages who, for some reason or another, choose to work relatively few annual hours could receive the credit. In fact, the evidence suggests that in low-wage labor markets, incomes and wages are tightly linked. Scholz (1996) describes tabulations from SIPP showing that roughly two-thirds of EITC payments go to taxpayers with wages in the bottom 25 percentile of all workers with children (below \$6.43 per hour) and more than 95 percent of all EITC benefits are paid to workers with wages below the median of \$9.42 per hour. Liebman (1997a) reports that in 1990, 75 percent of EITC recipients worked at least 1,000 hours and 60 percent worked more than 1,500 hours per year. Incomes and wages are now even more tightly linked for EITC recipients since EITC-eligible taxpayers cannot have more than \$2,350 of capital (and net capital gains) income.

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<sup>23</sup> Burkhauser, Couch, and Glenn (1996) compare the distributional effects of the EITC and minimum wage. They show the EITC is much more “target efficient” than minimum wage increases, if the objective of policy is to increase incomes of low-income workers.

Liebman (1997a) also presents calculations that provide an interesting perspective on the importance of the EITC in low-wage labor markets. Between 1976 and 1996, the share of income received by the lowest fifth of the population fell from 4.4 percent to 3.7 percent. The share received by the top 5 percent increased from 16.0 percent to 21.4 percent over that period. Liebman's calculations show that for households with children, the EITC offsets 29 percent of the decline in incomes in the first quintile of the population and 9 percent of the decline in the second quintile.

A more direct measure of the EITC's importance is that in 1997 and 1998 it removed 4.3 million persons from poverty (Council of Economic Advisers, 1998, 2000). Recalling President Clinton's antipoverty goal for the EITC, a full-time (2000 hours) minimum-wage worker heading a single-parent, two-child family would earn \$10,300 in wages and be eligible for a \$3,656 EITC in 1997. The poverty line for this family was \$12,802.<sup>24</sup> The combination of full-time minimum wage work and the EITC for a family of three in 1986 was \$7,226 while the poverty line was \$8,737. A full-time minimum-wage worker receiving the EITC and heading a family of three in 1975, the first year of the EITC, would have had an income of \$107 above the poverty line of \$4,293.

#### **IV. Review of Behavioral Issues**

In this section we consider several conceptual issues related to the behavioral effects of the EITC.

##### Program Participation: Claiming the EITC

Perhaps the most basic behavioral issue associated with the EITC is whether *eligible*

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<sup>24</sup> A married family with two children would have had an EITC and earnings of \$13,956, and the poverty line was \$16,400. We look at 1997 since this is the most recent minimum wage increase. Given the absence of minimum-wage indexing, full-time minimum-wage work supplemented by the EITC after 1997 will be a smaller percentage of the poverty line than in 1997.

taxpayers actually file tax returns to receive it. At first glance the analytic underpinnings of this decision appear straightforward: the benefit of filing for the credit is the dollar value of the EITC. The costs include the transactions costs associated with filing a return (for those who would not otherwise file) and gathering the necessary information to claim the EITC (or resources to pay a professional tax preparer). These cost-benefit considerations lead to straightforward implications. Claiming the credit becomes more likely in cases where the potential credit is larger and where the filer's familiarity with the program and the U.S. tax system is greater.

From the work of Holtzblatt (1991), McCubbin (2000), and others, however, we know that a significant fraction of taxpayers receive the EITC when they are not technically eligible. Thus, a focus on participation among eligibles may, in some circumstances, be too narrow. For policymakers and scholars interested in overall EITC participation, participation and compliance issues are intertwined. Even when thinking about participation of eligibles, participation and compliance are linked, since legitimate current-year claims, for example, may lead to scrutiny of past tax returns or the possibility that funds may be garnished to cover defaulted student loans, past taxes, or child support.

Compliance issues can usefully be thought of in the classic tax evasion framework of Allingham and Sandmo (1972). Taxpayers will adopt an optimal reporting strategy, weighing the trade-off between the return to misreporting a dollar of income and the corresponding increased risks of detection and penalty. Interestingly for the case of the EITC, some taxpayers may gain by *overreporting* income, a situation the IRS has little experience with.<sup>25</sup> Also, unlike the classic tax evasion model that focuses on income reporting, a central issue with EITC noncompliance

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<sup>25</sup>Steurele (1991) has referred to this phenomenon as the “superterranean economy.”

has to do with the residence of the qualifying child. The IRS (until perhaps recently) has had little information with which to examine these claims.

### The Decision to Work and Hours of Work

As noted in both the introduction and political history of the EITC, one of the arguments frequently given for the EITC is that it provides stronger work incentives than the negative income tax or entitlement programs like AFDC, Food Stamps, and Medicaid. This assessment, while true in a comparative sense, obscures a complicated set of work and labor supply incentives created by the EITC for different household structures and individuals at different parts of the income distribution. As a result of these complicated incentives, the overall effect of the EITC on hours of work is ambiguous.

The simplest framework in which to consider the work incentive effects of the EITC is the static labor-leisure model displayed in Figure 4. In this stylized setting, the EITC creates, for eligible households, an expanded budget constraint, shifting out the constraint from *ade* to *abcde*. The phase-in region is represented by the segment *ab*, the flat region by *bc*, and the phase-out region by *cd*. Consider the implications for individuals who do not work, whose well-being is indexed by utility level,  $U_0^I$ , in the absence of the EITC. As illustrated in Figure 4, the introduction of the EITC induces such individuals to enter the labor force and work, and their utility increases to  $U_1^I$  from  $U_0^I$ . The EITC creates an incentive for these nonworkers to enter the labor force since it increases the marginal value of working by raising the effective wage. More formally, the rise in the effective wage rate due to the EITC for individuals initially out of the labor force results in only a positive substitution effect and no income effect.

Figure 4 also displays preferences for two additional types of individuals, indexed by *II* and *III*, who, in the absence of the EITC (or other social programs), would participate in the labor

force. As can be seen, the introduction of an EITC program does not alter their decision to work. Thus, the incentive effects of the EITC with respect to labor force participation are unambiguously positive: the EITC will encourage some workers to enter the labor force and should not induce individuals, low-skilled or otherwise, to leave it. This result stands in contrast to the labor force participation predictions that arise with programs related to the negative income tax (like AFDC), where a guaranteed benefit at zero hours of work creates incentives for some people to leave the labor force.

At the same time, the predicted effect of an EITC from the simple static labor-leisure model on the *extent* of work, i.e., number of hours of work, is ambiguous. As Figure 4 illustrates, this is because of the differential effects that the credit has in its flat and phase-out regions. The EITC structure implies different marginal returns to work (i.e., effective marginal wage rates) for different parts of the preprogram income distribution. For Type *II* individuals, who would participate in the labor force in the absence of the EITC, the introduction of the EITC does not change the value of their time in the labor market and only alters the income they can receive through the tax credit. As such, there is only an income effect associated with the introduction of the EITC for Type *II* individuals. Whether this income effect is negative (leisure is a normal good) or positive is not clear a priori. The empirical evidence on income effects associated with labor supply decisions suggests that leisure is a normal good, so, as illustrated in Figure 4, the EITC may result in a reduction of hours of work for this type of individual.

The phase-out region of the EITC is relevant for the Type *III* individuals in Figure 4. These individuals, as drawn, have an incentive to reduce their hours of work enough so that they actually receive a credit. This final case illustrates the potentially negative effect on hours that is generated in the phase-out region of the EITC. There the EITC implies a *lower* effective wage

rate relative to the absence of the EITC, which, by itself, results in a negative substitution effect. In addition, there is an income effect that, if negative, will lead to a further reduction in hours of work.

The above considerations suggest that the consequences of the EITC expansions for affecting the work behavior of low-income workers are more complicated than the commonly held view that the EITC is pro-work. In particular, the labor market effects of the credit depend on the distribution of taxpayers within the credit's ranges and the degree to which people in and out of the labor market respond to incentives. On the former issue, as noted earlier, around 77 percent of EITC recipients will have incomes that fall in the flat or phase-out range of the credit, which raises the concern that the EITC may lead to a net reduction in the labor supplied by low-income workers. The latter issue concerning the responsiveness to the "effective" wage and income changes associated with the EITC expansions also cannot be resolved a priori. It is an empirical matter. Below, we discuss the empirical evidence to date on the magnitudes of these effects.

The simple model illustrated in Figure 4 focuses on the behavioral effects for individuals and ignores an important feature of the U.S. tax code applicable to the EITC. *Married* couples generally file joint tax returns and, thus, the adjusted gross income subject to taxes depends on their combined income and not the separate incomes of each spouse. The fact that families, rather than individuals, are the unit of analysis for the tax system has consequences for the effective wage rates of secondary earners, which is an issue made even more important by the EITC. To see this, consider the following example discussed in Eissa and Hoynes (1998).

Suppose that the husband earns \$11,650 (in 1997) and that the couple makes its time allocation decisions sequentially, with the wife taking actions under the assumption that her

husband's income is given. In this case, the family will receive the maximum credit of \$3,656 (assuming the couple has two children) if the wife does not participate in the labor force. If she does participate, the family's credit, at the margin, will be reduced by \$0.21 and that dollar will be subject to the Social Security payroll tax of 0.142 percent and any state taxes. As such, her marginal tax rate is at least 35 percent, i.e., her effective wage rate will be only 65 percent of her gross wage rate.

This lowering of the wife's effective wage provides an incentive for the wife *not* to participate in the labor force, even though the presence of an EITC might induce her husband to enter the labor force. Furthermore, if she works, she has an incentive to reduce her hours of work in the presence of the EITC (compared to no EITC) due to lowering of her effective wage (inducing a substitution effect) and to the higher income the family receives from the EITC (inducing an income effect). Note that the ambiguous effect of the EITC on the labor force participation choice of one of the spouses does not hinge on the sequential decision-making assumption noted above. Under a more general model of joint decision-making, the greater the disparity in the gross wage rates and/or tastes for nonwork time across spouses, the greater the incentive for an expansion of the EITC to induce one of the spouses to *not* participate in the labor force. Again, the importance of this potential work disincentive effect of the EITC depends on the magnitudes of the labor supply and labor force participation wage elasticities of husbands and wives, on the degree to which people correctly perceive tax incentives, and on the distributions of their wage rates relative to the phase-in, flat, and phase-out regions of the EITC. We examine empirical evidence on the labor force participation and labor supply effects of the EITC for married couples below.

## Marriage and Fertility

The previous discussion of the potential for differential effects of the EITC by marital status raises an important issue about the potential effects of the EITC on family structure. As noted above, the tax treatment of married couples is different from that of single parents or individuals, which leads to situations where a married couple may face larger total tax liabilities than they would pay if they separated. Similarly, two unmarried people may pay lower taxes than they would if they got married. This is the well known “marriage penalty” that has been the focus of attention in the public finance literature and policy circles.<sup>26</sup> In practice, marriage penalties tend to accrue to two-earner couples if both partners have similar earnings, and marriage bonuses tend to accrue to couples if the partners have disparate earnings or only one earner. Two recent studies have suggested that the EITC and its expansions over the last 10 years are an important contributing source of the marriage penalty.<sup>27</sup> For example, Holtzblatt and Rebelein (1999) estimated that the EITC increased the net marriage penalties in the individual income tax by between \$3.6 and \$9.9 billion in 2000, depending on the specific assumptions, and that these EITC-related net penalties accounted for 10.0 to 31.7 percent of the total net projected marriage penalties.

A natural question to ask is whether changes in the EITC are likely to affect rates of marriage and divorce among the poor. That is, the EITC may decrease the incentive for single parents to marry by providing resources to families with children. The credit also provides fairly substantial incentives for some people to marry and others to separate or not marry. This potential for the EITC to influence marital status is reminiscent of the concerns about the effects

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<sup>26</sup>See Feenberg and Rosen (1995), Alm and Whittington (1995), U.S. Congressional Budget Office (1997), Bull et al. (1999). The general statement of the problem is that the tax system cannot simultaneously be progressive, treat the family as the unit of taxation, and be neutral with respect to marriage.

<sup>27</sup>See Dickert-Conlin and Houser (1998) and Holtzblatt and Rebelein (1999).

of other public assistance programs, most notably the AFDC program, on marriage and the incidence of female headship.<sup>28</sup> To date, much less attention has been paid in the literature to the impacts of the EITC on marital status than to those of other assistance programs.

A related question arises as to whether the structure of the EITC also may affect the fertility decisions of households. As noted in Section II, the EITC was only available to families with children prior to 1994, and, even now, the maximum credit available to families with children is much larger than that available to childless taxpayers. In addition, households with two or more children were able to claim a higher EITC than households with only one child, starting in 1991. Both of these EITC features constitute a modest pronatalist incentive for taxpayers. There is a substantial literature that examines the effects of AFDC on fertility, especially on out-of-wedlock births.<sup>29</sup> Furthermore, studies have found nonnegligible effects of provisions of the tax code, namely the presence and generosity of the dependent exemptions, on fertility and the timing of birth.<sup>30</sup>

There is no direct empirical evidence on whether EITC fertility incentives have actually influenced behavior. The question, however, is important for two reasons. First, the effects of policy on fertility are of general interest as part of an effort to assess the potential for unintended consequences of tax policy. Second, many of the methods used by researchers to isolate the effects of the EITC on other behaviors, especially labor supply, hinge crucially on the assumption that the EITC expansions have had no effects on the fertility of couples. We return to this issue below.

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<sup>28</sup> See Moffitt (1998) for a discussion of this issue and a summary of the empirical evidence on it.

<sup>29</sup> Again, see Moffitt (1998) for a summary of that literature and its findings.

<sup>30</sup> See Whittington, Alm, and Peters (1990) and Dickert-Conlin and Chandra (1999).

## Consumption Behavior and Income Smoothing

The fundamental tenet of the life-cycle consumption model is that utility-maximizing households will vary their consumption and savings so as to equate the marginal utility of consumption across periods. To do this, families typically save in periods when income is unusually high and borrow when income is unusually low. EITC-eligible families generally have lower incomes and are younger than other taxpayers. Thus, one would expect EITC-eligible households to include many who would like to borrow.

There is evidence, however, that some of these families that would like to borrow are unable to do so.<sup>31</sup> For these liquidity-constrained families, the EITC could enhance utility more than it would for an otherwise equivalent consumer who was not liquidity-constrained. The EITC advance payment option might seem like a particularly important feature for credit-constrained taxpayers. By delivering a portion of the EITC incrementally with every paycheck, families presumably have an enhanced ability to smooth the marginal utility of consumption.<sup>32</sup> As we discuss below, however, only 1.1 percent of EITC recipients took advantage of the advance payment option in 1998, though “refund anticipation loans” (with very high implied interest rates) are popular.

Further evidence of credit constraints among the EITC-eligible population might be inferred from unusual patterns of seasonality in consumption. In particular, most EITC payments are received in February and March of each year (Barrow and McGranahan, 2000). Since these

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<sup>31</sup>Jappelli (1990) looks at direct measures from the 1983 Survey of Consumer Finances and finds that roughly 20 percent of the population appears to be constrained. Also see Jappelli, Pischke, and Souleles (1998).

<sup>32</sup>Taxpayers can receive a portion of their EITC incrementally throughout the year via the advance payment option. They do this by filing Form W-5 with their employer, who then includes the advance payment in their regular paycheck (the employer is held harmless as they reduce payroll tax remittances to the government). To reduce the possibility that advanced EITC payments will lead to an end-of-year tax liability, advance payments are limited to 60 percent of the maximum credit available to families with one child. Taxpayers receiving the advance payment are obligated to file at the end of the year to reconcile their tax liabilities.

payments can be a large fraction of a family's quarterly income, one might expect to see a corresponding increase in consumption for credit-constrained families. Souleles (1999), for example, presents evidence based on consumption Euler equations for the entire population that is consistent with tax refunds influencing the seasonality of consumption, which in turn is consistent with the existence of liquidity-constrained consumers.

Consumption-related issues also arise if one steps away from the canonical life-cycle model of consumption. Thaler (1994) and others have argued that self-control problems are pervasive in the economy. If rules of thumb, habit, innumeracy, or other psychological factors have a dominant influence on economic behavior, the forward-looking model of utility-maximizing consumers may not do a particularly good job characterizing economic behavior. In this case, it is possible that self-control problems or other factors prevent families from accumulating resources that might allow them to enhance their long-run economic well-being. The lump-sum EITC may therefore provide a substantial one-time payment that can be used to purchase a car, enhance human capital, or move out of an undesirable neighborhood (and in doing so break a cycle of economic deprivation). It is difficult to develop and test rigorous formulations of nonoptimizing consumption behavior.

## **V. Review of Evidence on the Behavioral Effects of the EITC**

In this section, we summarize the empirical evidence concerning the effects of changes in the EITC on a range of behavioral outcomes. We begin by discussing empirical studies of EITC take-up (or participation) decisions and what is known about the extent of non-compliance in actual claims of the credit. We then summarize the literature on the effects of the EITC expansions on labor force behavior, including labor force participation and labor supply decisions. Most of the empirical investigations of the EITC have focused on the latter set of

behaviors. We discuss the econometric approaches taken in these studies and consider their potential shortcomings. We then provide a summary of the less-extensive literature on the effects of the EITC on other behaviors, including marriage and living arrangements, human capital investment decisions, and consumption decisions, commenting on the importance of expanding on these studies in future work.

#### Evidence on EITC Participation and Noncompliance

It would be helpful to policymakers to know what fraction of EITC nonparticipation (among eligible taxpayers) is due to information barriers and what fraction is due to purposeful nonparticipation. The decision of individuals or households to participate in the EITC entails at least two choices: households must work and have income below the EITC break-even thresholds and households must file a tax return to claim the credit.

As mentioned in Section IV, there are three studies of EITC participation among eligibles, Scholz (1994) for 1990, Blumenthal, Erard, and Ho (1999) for tax year 1988, and Internal Revenue Service (2002) for tax year 1996. None of the studies model the EITC participation decision based a formal optimizing model. Scholz (1994) presents reduced-form regressions of factors correlated with nonparticipation. He finds some evidence, based on his analysis of linked data from the 1990 SIPP and tax returns, that factors like working in the household service sector or being eligible for a small EITC were positively correlated with not claiming the credit when eligible. The question is still open, however, about the degree to which EITC participation can be increased by additional outreach and information.

Formally modeling the decision to claim the EITC will require one to confront several information and noncompliance issues. There is mixed anecdotal evidence on the degree to

which taxpayers are aware of the EITC.<sup>33</sup> The only systematic evidence comes from Phillips (2001), who presents tabulations from the 1999 National Survey of America's Families showing that roughly two-thirds of Americans have heard about the EITC. Past welfare recipients and parents with incomes near the poverty line were among the most knowledgeable.

The degree of awareness of the credit is critical for some issues and less important for others. The credit could, for example, significantly increase labor force participation even if people know little about it as long as workers have some understanding that the tax system rewards work at low levels of earnings. The link between the marginal incentives of the credit shown in Figure 2 and the labor supply decisions discussed in Figure 4 depends on people understanding the specific incentives inherent in the credit's structure. Given the lag between labor market decisions and receipt of the credit, which can be as much as 16 months, informational considerations suggest that the credit's effect on participation may be larger than its effect on hours, compared to a world where taxpayers have perfect knowledge of the credit.

Informational issues are probably less fundamental when thinking about EITC participation among taxpayers eligible for the credit. Scholz (1997) reports that roughly 95 percent of EITC claimants are either legally required to file tax returns or would file to recover over-withheld taxes, so most eligible taxpayers would get into the system even in the absence of the EITC. In 1996, 56.5 percent of claimants used paid tax preparers, who surely are aware of the credit. The IRS also has a policy of notifying all taxpayers who do not claim the credit but appear to be eligible for it based on their filing information, that they may be eligible and can file an amended return to claim the credit.

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<sup>33</sup> Liebman (1997a) suggests that awareness of the credit might be quite low. Smeeding, Ross-Philips, and O'Connor (2000) and Romich and Weisner (2000) find greater awareness, though the former study is based on a sample seeking help with tax preparation and the latter is based on a small sample from Project New Hope, a work-based welfare reform project in Milwaukee.

Behavioral work on overall EITC participation and noncompliance must take into consideration three central facts. First, there appears to be little scope for overstating EITC claims by systematic, ongoing misreporting of wage and salary income. The IRS, using information returns filed by employers, can in principle corroborate wage and salary reports.<sup>34</sup>

Second, there appear to be ample opportunities to misreport self-employment income to strategically manipulate the size of the available EITC, since most forms of self-employment do not include information reporting. McCubbin (2000), however, reports that only a small fraction of EITC noncompliance in 1994 involved self-employment income. In addition, only 17.6 percent of all EITC filers claim any self-employment income and 54.3 percent of those reporting self-employment income have incomes in the phase-out range of the credit (Internal Revenue Service, 1999), so it appears that strategic misreporting of self-employment income is not currently a dominant feature of EITC noncompliance. Perhaps this is because EITC incentives can be complicated for those wishing to strategically manipulate self-employment income. To be effective, would-be tax cheats need to be sophisticated enough to *overstate* self-employment income in the phase-in range of the credit or *understate* self-employment income in the phase-out range.

Third, as pointed out by Liebman (1997a), Liebman (2000), and McCubbin (2000), among others, the major area of EITC noncompliance—particularly participation by ineligibles—has to do with qualifying-child errors. This is a particularly difficult area for the IRS to enforce, since information on children (beyond ages and Social Security numbers) is not collected in the tax

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<sup>34</sup> The Internal Revenue Service (1996) reports that, in aggregate, net underreporting on wage and salary income was 0.9 percent, lower than any items other than state tax refunds (at 0.8 percent). EITC-related wage and salary errors can still occur because claimants may not realize that employers provide independent information to the IRS, may unintentionally omit a Form W-2 for a second job, may wish to use the IRS as a “loan shark” for the period between submitting a claim and being audited (Andreoni, 1992), or may wish to take the chance that the IRS will be unable to recover money once it is paid out (and spent).

system.<sup>35</sup> Liebman (1997b) develops the following intuitive idea: If noncompliance is inadvertent, it should not respond to the size of the available credit. He examines this by looking at whether the probability of erroneously claiming a dependent child depends on the tax gain to such a claim (McCubbin, 2000, pursues a similar strategy). He estimates that roughly one-third of ineligible claimants in 1988 did so in response to the EITC incentive.

Good compliance studies will be difficult to conduct outside of Treasury, the IRS, or Census Bureau because of data-access limitations. An interesting question for public servants and affiliated scholars at these agencies is whether data gathered for one purpose—for example, administering child support laws—could be useful in reducing erroneous EITC claims. To be useful for tax administration, ways to identify erroneous payments before money goes out must be developed, since once payments are made they are rarely recovered. In addition, the IRS has limited resources, so research is also needed on the cost-effectiveness of alternative ways of improving compliance, focusing on both the EITC and the broader tax system. Although EITC compliance has received considerable scrutiny in recent years, comparable work on other areas of the tax code is badly dated or nonexistent.

New studies documenting changes in EITC participation rates of eligible taxpayers in the late 1990s are needed, given the sharp changes in the credit over the decade and changes in low-wage labor markets. Greater detail on the characteristics of nonparticipants would also be useful, both for outreach and for understanding linkages between programs. These studies would be straightforward, though to do them, data rich enough to determine eligibility need to be linked

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<sup>35</sup> Despite some evidence that error rates are high for certain subgroups—for example, Liebman (2000) reports that roughly one-third of male heads of households did not appear to have children in matched CPS data—audits are expensive, so “hit rates” need to be much higher than 1 in 3 for compliance initiatives to pass any sensible cost-benefit test. The U.S. General Accounting Office (2000), for example, reports that 86 percent of EITC claims selected for audit in fiscal year 1999 were, in fact, noncompliant.

with data indicating whether or not a potentially eligible taxpayer files a return and receives the credit.

### Effects of EITC on Labor Force Participation and Labor Supply

Most of the existing empirical investigations have focused on the consequences of the expansion of the EITC for labor force participation rates and hours of work. Most of these studies have sought to estimate the overall, or “reduced-form,” effects of the historical expansions of this program on these labor market outcomes. Another strand of these studies focuses on estimating the effects of the EITC with now-standard labor supply models by exploiting the fact that the EITC expansions have varied the effective wages and incomes confronting individuals and households over the last 25 years. We also provide a brief discussion of the evidence derived from more structural optimizing models of time allocation and program participation decisions in which household preferences and budget and time constraints are explicitly parameterized.

#### *Reduced Form Effects of EITC*

Reduced-form studies typically exploit statutory EITC changes to assess their effects on behavior. This approach is a time-honored strategy in policy analysis and applied economics, and is often referred to as “natural experiments” or “difference-in-differences.”<sup>36</sup>

Consider the following framework to help clarify the underlying identification issues. Suppose we are interested in estimating the effect of a policy (or bundle of policies) on some outcome,  $y$ . In most of the reduced form studies of the EITC, the identifying variation used come from the periodic legislative expansions and other changes in the credit. For example, Eissa and Liebman (1996) study the effects of the changes in the EITC contained in the Tax Reform Act of

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<sup>36</sup> The following discussion draws heavily on Moffitt and Wilhelm (2000). Also see Blundell and MaCurdy (1999), Meyer (1995), and Angrist and Krueger (1999) for other discussions of approaches to estimating the effects of policy interventions.

1986. Furthermore, as noted above, these changes were not always applicable to everyone in the population. Prior to 1994, childless adults were not eligible to claim the EITC and adults with qualifying children were eligible for the same schedule of credits, while, starting in 1994, childless adults were eligible and adults with two or more children were eligible for a more generous credit than adults with only one child. To characterize these sources of policy variation, let  $d_t(Q_{it})$  denote the EITC regime prevailing as of period  $t$ , where the particular features of the EITC code applicable to the  $i^{\text{th}}$  individual or household depends on their characteristics,  $Q_{it}$  (e.g., presence and number of children). That is:

$$d_t(Q_{it}) = \begin{cases} 1 & \text{if individual } i \text{ is "eligible" for a policy reform that prevails in period } t \\ 0 & \text{otherwise} \end{cases} . \quad (1)$$

Finally, consider the following linear specification of the determinants of behavioral outcomes,  $y_{it}$ , such as labor force participation or hours of work,

$$y_{it} = \beta d_t(Q_{it}) + \lambda_t X_{it} + \alpha_t + u_{it} , \quad (2)$$

where  $X_{it}$  is a vector of individual and household characteristics that may include  $Q_{it}$ ,  $u_{it}$  is an error term, and  $\beta$ ,  $\lambda_t$ , and  $\alpha_t$  are parameters to be estimated.

To understand what is required to identify  $\beta$ , the overall effect of the policy change, consider what would be learned if one could assign the values of  $d_t(Q_{it})$  by a controlled experiment, where some individuals (experimentals) would face a new policy regime [ $d_t(Q_{it}) = 1$ ] and others (controls) would not have access to this new regime ( $d_t(Q_{it}) = 0$ ). It would follow, by design, that  $d_t(Q_{it})$  would be uncorrelated with (orthogonal to)  $u_{it}$  and, for that matter, to  $X_{it}$ . In this case, the standard conditions for consistently estimating the parameters in (2) would apply. In fact, in this case, the mean difference in outcomes for experimentals and controls would consistently estimate  $\beta$ .

In the absence of random assignment of individuals to policy regimes, we must rely on temporal changes (or, possibly, locational differences) in policies *and/or* variation in  $d_t(Q_{it})$  due to individual differences in  $Q_{it}$ . However, these sources of variation, in general, are not sufficient for identifying  $\beta$ . For example, reliance only on the changes in the EITC over time to identify the credit's effect is confounded with other temporal changes in the economy (or environment) that may have influenced the labor supply of the low-income population. Thus, additional assumptions, in conjunction with the availability of certain types of data, are required in order to identify the effects of the EITC. Existing studies of the EITC, and studies of related tax and public assistance policy changes, make use of alternative data sources and assumptions.

Suppose  $d_t$  is defined as in (1) and assume we have data, either repeated cross-section or panel data, on households for periods  $t''$  and  $t'$ , where  $t'$  denotes a period before an EITC expansion and  $t''$  is a period after the expansion. Furthermore, recall that prior to 1994, the EITC required claimants to have children present to be eligible for the credit. This implies that households without children both *before* and *after* EITC expansions (such as occurred in 1986) were not eligible for the EITC, while households with children faced a change in the credit with the expansion. In this case  $Q_{it}$  can be represented as an indicator variable, where  $Q_{it} = 1$  if children are present in household  $i$  and in period  $t$  and  $= 0$  if not, and  $d_t(0) = 0$  for  $t'$  and  $t''$ . The difference-in-differences estimator of  $\beta$  results from differencing equation (2) for periods  $t'$  and  $t''$  for each individual/household:

$$y_{it''} - y_{it'} = \beta[d_{t''}(Q_{it''}) - d_{t'}(Q_{it'})] + \lambda_{t''}X_{it''} - \lambda_{t'}X_{it'} + (u_{it''} - u_{it'}). \quad (3)$$

The validity of the difference-in-differences estimator for  $\beta$  relies on several additional assumptions about  $Q_{it}$  and its effects on  $y$  in (2). The first concerns the nature of independent effects of  $Q_{it}$  on  $y$ . Recall that we allowed for the possibility that  $X_{it}$  includes  $Q_{it}$ . In the current

context, this amounts to assuming that the presence of children affects the labor supply decisions of parents, an assumption consistent with various behavioral models of optimal time allocation.<sup>37</sup> The standard difference-in-differences estimator maintains the assumption that either  $Q_{it}$  is excluded from  $X_{it}$  or the less restrictive, but not innocuous, assumption that  $\lambda_t = \lambda$ , i.e., the effect of children on  $y$  does not vary with time. Second, the standard difference-in-differences estimator typically assumes that  $Q_{it}$  is uncorrelated with  $u_{it}$  in (2). Note that strict exogeneity of  $Q_{it}$  in (2) is not required. The consistency of the difference-in-differences estimator holds under weaker assumptions, especially if one is willing to maintain that  $Q_{it}$  is a time-invariant variable. (See Moffitt and Wilhelm, 2000, for details.) Under these two sets of assumptions, the difference-in-differences estimator of  $\beta$  will be consistent.

As noted earlier, the difference-in-differences studies rely on explicit comparisons between groups that are and are not affected by changes in the EITC. Figure 5 plots trends in the labor force participation between 1984 and 1996 (from the March CPS, taken from Meyer and Rosenbaum, 2000) for six groups in the population—including households with and without children—that are commonly used to examine the effects of the EITC. It is these trends that the difference-in-differences studies of labor force participation seek to explain.

It is clear from Figure 5 that labor force participation of three groups commonly used as “controls” has no discernible trends. Single women with no children and black men, the top two lines in the figure, have high and unchanging rates of labor force participation. Single women who dropped out of high school but have no children also have steady (or even declining) rates of labor force participation. The three groups of women eligible for the EITC all had rising rates of labor force participation, particularly after 1992. These are all single women with children,

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<sup>37</sup> See Browning (1992) for a discussion of such models and the effects of children.

single women who dropped out of high school and have children, and single women with children under 6.

Selected EITC studies of the estimated impacts of the EITC on labor force participation and hours of work are summarized in Table 4. We first discuss papers adopting the difference-in-differences approach.

Eissa and Liebman (1996) estimate the effects of the 1986 EITC expansion on labor force participation of single women and, conditional on working, their hours of work. To isolate those affected by the policy from those who are not, they treat single women with children as being in the experimental group, and single women without children as being in the control group. They find that the 1986 tax reform (including the EITC changes) increased labor force participation among all single women with children by as much as 2.8 percentage points (from a base of 74.2 percent). The effects are much larger (on the order of 6 percentage points) for women with children and less than a high school education.

Eissa and Hoynes (1998) use a similar difference-in-differences estimator to examine the EITCs labor market effects on couples, in addition to an alternative quasi-structural approach discussed below. Recall that the EITC would be expected to have *negative* labor market effects for secondary workers. They find modest negative effects of the EITC on married women's labor force participation, estimating that the EITC expansions between 1984 and 1996 reduced the likelihood of labor market participation by around 1.2 percentage points (or 2 percent).

Ellwood (2000) exploits the difference-of-differences approach in which he classifies parents according to their position in the distribution of predicted wages, comparing women in the lowest (predicted) wage quartile with those in higher quartiles to distinguish groups that are likely to be affected by the EITC (the lowest quartile) from those that are not (the higher

quartiles). He concludes that it is “perilous to impossible” to decompose the relative impacts of welfare reform, the strong economy and EITC changes in the 1990s on the labor force participation patterns of low-skilled workers, but notes that the combination has led to a “truly unprecedented increase in labor market activity by low-income single parents” (p. 1100).<sup>38</sup>

To the extent that changes in policies other than the EITC or other “environmental” factors are coincident with the EITC expansions, there is the potential for bias in difference-in-differences estimates. Many states, for example, implemented changes in their welfare programs during the latter part of the 1980s, including reducing the growth in guarantees and the imposition and tightening of work rules for recipients (see Moffitt, this volume). Given the AFDC eligibility criteria, these changes are likely to have differentially affected single women with children relative to those without children. Furthermore, there is potential for the composition of the treatment and control groups in these studies to have changed over time.<sup>39</sup>

These concerns are addressed by Hotz, Mullin, and Scholz (2002a), who assess the employment effects of the EITC changes in the 1990s using data on a sample of families who received welfare benefits in California during the early part of the 1990s. Their study has four distinctive differences from previous work. First, their sample is composed of former (or current) welfare recipients, a more disadvantaged population examined in other papers. Second, they used administrative data from the welfare, unemployment insurance, and federal tax systems and

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<sup>38</sup> Neumark and Wascher (2001) examine correlations between income and income-to-needs ratios and state and federal EITC parameters. They find small effects of the federal EITC on earnings but large effects of state EITCs. They emphasize the state-level results, but variation in state EITC policy is somewhat limited in the years spanned by their data, so the discrepancy is puzzling.

<sup>39</sup> Ellwood (2000) raises similar concerns (with different language), pointing out that with comparisons of single women with and without children, one cannot disentangle the separate effect of policy changes and everything else going on in the economy. One can only hope to test the overall impact of the combination of policies in a strong economy. He also notes that the temporal pattern of labor force participation of the two groups is often different before the enactment of the EITC, so drawing inferences from differential trends afterwards is troubling. Moreover a large fraction of childless single women were already workers even before EITC expansions, so their employment cannot grow much.

focused on four counties in California that were part of a welfare demonstration (see Hotz, Mullin, and Scholz, 2002b, for a more complete description). The data allow the authors to account more directly than other studies for potentially confounding changes in local labor markets and welfare reform. Third, the authors identify the employment effects of the EITC by comparing families with two or more children to families with one child, since after 1994 the EITC increased substantially for the former group relative to the latter. They argue that this approach focuses on groups that are likely to be more similar than studies that compare, for example, families with and without children.

They find the EITC has large, positive effects on employment of adults from welfare families in California. Employment rates of families with two or more children increased 6 to 8 percentage points more than the employment rates of one-child families. The implied elasticity of labor force participation with respect to net income ranges from 0.97 to 1.69 depending on assumptions used in the underlying elasticity calculations. Most of this range exceeds the next highest estimate reported in Table 4. Larger elasticity estimates are consistent, however, with the previously mentioned result for Eissa and Leibman (1996) for women with children and less than a high school education. The fourth distinctive feature of the Hotz et al. study is that through a special arrangement with the California Franchise Tax Board, the authors were able to request grouped tabulations from the federal tax returns filed by the sample members. If the EITC accounts for the relative employment increase of families with two or more children, they should be filing tax returns and claiming the EITC at a significantly greater rate than their one-child counterparts. In fact, they do.

Estimates from the natural experiment (or difference-in-differences) studies described above are limited in their ability to assess the effects of alternative EITC designs. As can be seen in

Table 1, all major expansions in the EITC entailed simultaneous changes EITC phase-in rates, phase-out rates, and the maximum credit. In Section III, we noted that a simple labor-leisure model predicts that households in the phase-out region of the credit would reduce their labor supply in response to an increase in the phase-out rate, all else equal, while the effect of increases in the phase-in rate on hours of work depend on the relative strength of the substitution and income effects associated with this change. Determining the direction and magnitude of the behavioral responses to changes in each of these parameters is useful for assessing the validity of this model and for assessing the likely impacts of alternative designs of the EITC beyond those actually implemented.

#### *Effects of the EITC Based with Standard Labor Supply Models*

As noted above, several studies have analyzed the effects of the EITC on labor force participation and hours of work with standard labor supply models, using the fact that the EITC alters the effective wage or effective tax rates that certain types of individuals and/or households face.<sup>40</sup> The Dickert, Houser, and Scholz (1995); Eissa and Hoynes (1998); and Meyer and Rosenbaum (2001) are studies based on this approach.<sup>41</sup>

Dickert, Houser, and Scholz (1995) measure labor force participation elasticities using data from the 1990 SIPP. They construct a detailed tax and transfer simulation model that reflects precise estimates of state and federal income taxes, payroll taxes, AFDC, food stamps, and Supplemental Security Income. The simulation model allows them to characterize the enormous variation in budget sets that families face in different states. They use an instrumental variables approach (described below), calculating the after-tax change in incomes that would result from

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<sup>40</sup> The approach builds on the neoclassical labor supply and labor force participation models. See Pencavel (1986), Killingsworth and Heckman (1986), and Blundell and MaCurdy (1999) for surveys of this work.

<sup>41</sup> Also see the simulation studies of Hoffman and Seidman (1990); U.S. General Accounting Office (1993); Holtzblatt, McCubbin, and Gillette (1994); and Browning (1995).

taking a half-time (and in some specifications, full-time) job at the predicted wage relative to being out of the labor market. The intuition underlying the study is that in high-benefit states (like New York at the time), the after-tax return to work is fairly low since substantial benefits are clawed back, while in low-benefit states (like Texas at the time), the after-tax return to work is high since there are few benefits to lose. Thus, if labor market participation decisions are sensitive to the after-tax returns to work, participation rates should be higher in low-benefit states than in high-benefit states, all else being equal.

Dickert, Houser, and Scholz find that a 10 percent increase in the after-tax wage results in a 2 percentage point (or 3.5 percent) increase in labor market participation among single parents (they also jointly estimate a reduced-form equation for the welfare participation decision), which suggests that EITC-induced changes in the returns to work increase labor market participation. Their estimates also show that participation of secondary wage earners will fall as a consequence of the EITC. Their new empirical work on participation, coupled with simulation work on the effect of the EITC on hours for those already in the labor market suggest the aggregate positive participation effects of the 1993 EITC expansions likely outweighed the negative hours effects, resulting in a net increase in aggregate hours of work.

A potential problem with the Dickert, Houser, and Scholz (1995) study is that EITC effects are inferred from correlations of employment with other aspects of the tax and transfer system.<sup>42</sup> Moreover, idiosyncratic state-level factors correlated with family budget sets and labor market decisions could bias estimates. Hoynes (1997), for example, shows that including state fixed effects can significantly alter estimates of the effects of AFDC on female headship.

Meyer and Rosenbaum (2001) significantly advance the literature in their analysis of the

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<sup>42</sup> The data are a cross-section and the EITC is a uniform federal program, so EITC effects are inferred from the cross-state variation in net wages generated by state-level differences in tax and transfer rules.

effects of the EITC and other policy changes on the labor force participation of single women. They develop an econometric model of labor force participation, calculating the probability that the utility of working exceeds the utility associated with not working. That is, the probability of working is given by

$$\Pr(U(Y_w, L_w, P_w, X, \varepsilon_w) > U(Y_{nw}, L_{nw}, P_{nw}, X, \varepsilon_{nw})) \quad (4)$$

where  $U(Y_k, L_k, P_k, X)$  are the indirect utility functions associated with the work ( $w$ ) and nonwork ( $nw$ ) states,  $Y_k$  is the income the woman receives in the  $k^{\text{th}}$  state,  $L_k$  is her leisure time in alternative states,  $P_k$  denotes her participation in welfare programs (to capture potential transaction costs and stigma associated with participation in such programs),  $X$  denotes observable characteristics, and  $\varepsilon_k$  represent unobserved, stochastic components of tastes. The influence that the EITC and other programs have on wages and income enters through the specifications of the incomes associated with the work and nonwork states.

Meyer and Rosenbaum specify  $Y_w$  and  $Y_{nw}$  as functions of parameterizations of the EITC, federal and state tax rules, and the characteristics of other welfare programs facing women at different times and in different states, utilizing an exhaustive set of data on the tax structure and welfare programs. Linearizing  $U(\cdot)$  with respect to its arguments and using a nonparametric strategy to calculate *expected* values of income associated with the work state for women in their data, they use a probit specification to estimate their labor force participation model.

They find that EITC changes account for roughly 60 percent of the increase in the employment rate of single mothers from 1984 to 1996 and roughly 31 percent of the increase from 1992 to 1996. Given the changes in employment rates and the size of the EITC changes over this period, their results are broadly consistent with the earlier papers, though as we show in Table 4, their estimated elasticities of labor force participation with respect to net income are the

smallest of the range of existing studies (though all estimates are quite close, with the exception of the larger estimate of Hotz, Mullin, and Scholz, 2002a).

There are at least two notable features of Meyer and Rosenbaum's work. First, they account for EITC changes that occurred between 1984 and 1996, making use of time-series variation in the credit to identify employment effects. Second, they construct an elaborate simulation model of the tax and transfer system that allows them to net out the influence of changes in other policies, both over time and across place of residence. Dealing with the influence of other policy changes is potentially important, especially to the extent that such changes had differential impacts on households with and without children.

#### *Structural Choice Models of Time Allocation and Program Participation*

The nonlinear or kinked nature of the budget set induced by the EITC program, can result in nonmarginal changes in behavior that complicate efforts to rely on wage and income elasticities drawn from other econometric studies. This can be seen in Figure 4 for the Type *III* individuals. The optimal pre-EITC labor supply choice for a Type *III* individual would generate labor earnings that exceed the upper threshold for EITC eligibility. Because of the nonconvexity introduced with the EITC phase-out range, one could observe individuals reducing their labor supply and earnings so as to be eligible for a credit. Such nonconvexities in the phase-out region require one to know more than just the income and substitution effects in order to assess the response to EITC changes. It requires knowledge of the underlying preferences for work versus leisure to determine whether such behaviors are likely to occur.

The structural approach explicitly parameterizes the preferences and constraints facing individuals and then exploits the theory of optimal decision-making to characterize the likelihood function used to reconcile observed labor supply and program participation behaviors. This

approach is exemplified in the work of Hausman (1985) on the effects of income tax structure on the labor supply and Moffitt (1990) and Keane and Moffitt (1998) in the study of the labor supply impacts of welfare and other social programs.

Keane and Moffitt (1998) and Keane (1995) (based on the Keane and Moffitt model) use their model estimates to examine a wide range of policy reforms, including changes to AFDC and food stamp tax rates, a variety of wage and work subsidies, and changes to the EITC. Their EITC simulations find that the expansions between 1984 and 1996 increased labor force participation by 10.7 percentage points, from a base of 65.4 percent. They also find that the aggregate effect of the EITC expansions was to increase hours of work. This paper is notable as the only EITC study to recover underlying household preference parameters.

A study by Blundell, Duncan, McCrae, and Meghir (2000) sought to estimate the likely impact of alternative implementations of an EITC-like tax credit scheme in the United Kingdom (called the Family Working Tax Credit) before it was actually implemented. This type of application is one of the most valuable uses for structural estimates. In general, greater knowledge of the “structure” of individual and household preferences and their choice processes is required to predict the behavioral responses to complicated, hypothetical policy changes than is needed to assess the net impacts of straightforward, observed changes in the credit. At the same time, identification of these structural features of decision-making is inherently more difficult than estimating net effects of observed expansions.

#### Estimates of the EITC and Hours of Work

Studies estimating the effects of the EITC on hours of work for those households that are working find small, negative effects. These studies are summarized in the second panel of Table 4. Liebman (1997a) finds no bunching of taxpayers at the beginning and end of the phase-out

range, as might be expected if the EITC significantly affects hours and taxpayers are cognizant of the discontinuities in implied marginal tax rates generated by the credit. As Liebman notes, it is not surprising that negative effects on hours for people already in the labor market are small because the precise relationship between the EITC and hours worked is likely to be poorly understood by most taxpayers. The majority of EITC recipients pay a third party to prepare their tax returns, and it is difficult to infer the implicit tax rates embodied in the credit from the look-up table that accompanies the EITC instructions. This confusion is less likely to mitigate positive participation effects, since for these to be operative, taxpayers only need to understand that there is some tax-related bonus to work. Abundant anecdotal evidence indicates that taxpayers have this understanding (see, for example, DeParle, 1999).

The standard approach to estimating the effects of policies on hours of work is based on the labor supply equation that takes that following generic form:

$$h = \alpha_0 + \alpha_1 w^* + \alpha_2 Y^* + \beta X + u, \quad (5)$$

given  $h > 0$ , where  $h$  is the number of hours worked,  $w^*$  is the effective wage rate,  $Y^*$  is the individual's effective nonlabor income, the  $X$ s are again used to capture observable differences, and  $u$  is an error term. The parameters  $\alpha_1$  and  $\alpha_2$  in (5) represent the uncompensated wage effect and income effect, respectively, and  $\alpha_1 - \alpha_2 h_0$  represents the compensated wage, or substitution, effect, evaluated at some level of hours of work,  $h_0$ . In the context of estimating the effects of taxes and other social programs on hours of work, one crucial issue is how to deal with the potential endogeneity of  $w^*$  and  $Y^*$  when estimating  $\alpha_1$  and  $\alpha_2$ . The endogeneity of effective wages and incomes facing individuals arises because of the nonlinearities in the budget sets in the presence of taxes and transfer programs that individuals face. Even if before-tax and transfer wages and before-tax sources of unearned income are assumed to be exogenous (which are

controversial assumptions), effective wages and income levels are presumed to be endogenous. This due to the fact that an individual's choice of the segment of the budget constraint may depend upon their tastes and preferences, which are, in part, reflected in their value of  $u$ , giving rise to endogeneity bias in the estimation of  $\alpha_1$  and  $\alpha_2$ . Such bias is likely to be more problematic when individuals face nonconvex budget sets created, for example, by the phase-out region of the EITC.

Several econometric strategies have been employed in an attempt to mitigate these biases. They differ in the sources of variation they use to identify the effects of tax and transfer programs, the degree to which the estimates can be used to estimate more general sets of counterfactual regime changes, and the extent to which they rely on maintained assumptions about unobserved components of preferences and their distributions. The most common strategy in papers examining the EITC and hours is to use instrumental variables (IV) methods. Eissa and Hoynes (1998) use the IV strategy to estimate variants of  $\alpha_1$  and  $\alpha_2$ , which they then use to simulate the effects of changes in the EITC on hours of work. The IV approach also has the benefit of its relative simplicity and holds the promise of obtaining wage elasticities that can be used to analyze more general policy changes. At the same time, these methods are vulnerable to the concerns raised above about reliance on wage and income elasticities to make inferences about the effects of program changes characterized by nonlinear, and especially nonconvex, budget sets. Furthermore, the usefulness of these estimates depend on the validity and power of the instrumental variables themselves, i.e., that the variation in the instrument reflects variation that is exogenous to the (endogenous) net wages and incomes of individuals.

#### *Summary of Studies of Effects of the EITC on Labor Market Outcomes*

We draw four broad conclusions from the empirical work on the EITC and labor force

participation and hours. First, based on the evidence from many studies, the EITC positively affects the labor force participation of single-parent households. Second, in aggregate, the positive participation effects appear to be fairly substantial. Meyer and Rosenbaum (2001), for example, suggest that as much as 62 percent of the increase in single mothers' labor force participation between 1984 and 1996 could be attributed to the EITC, while as much as 35 percent of the increase from 1992 to 1996 could be attributed to the credit. Labor force participation elasticities with respect to net-of-tax income reported in Table 4 range from 0.69 to 1.16, and could be as large as 1.7 for former and current welfare recipients. Third, as would be expected given the tax treatment of secondary workers in two-earner couples, the EITC has a modest, negative effect on labor force participation for secondary workers in two-parent families. Fourth, the EITC appears to have a small negative effect on hours worked by those in the labor force, but some studies (Dickert, Houser, and Scholz, 1995; Keane and Moffitt, 1998; and Meyer and Rosenbaum, 2001) suggest that the aggregate hours effect of the EITC, once participation effects are accounted for, is positive.

Labor market issues have received more attention than other EITC-related issues, but more could usefully be done. First, Hotz, Mullin and Scholz (2002a) find employment elasticities with respect to EITC changes is significantly higher for welfare recipients than they are for others. Further work on the EITC and employment, particularly for subpopulations, may be useful. Second, additional attention could be paid to augmenting the labor market proxies employed in the studies. Some evidence suggests that state unemployment rates, the variable typically used, are too blunt, which makes it hard to disentangle business cycle effects from policy changes. Third, the behavioral responses to the EITC *may change* over time. This possibility is suggested by Moffitt (1999), who finds that welfare participation appears to be more sensitive to changes in

labor market conditions during the 1990s than was the case in earlier decades. Ellwood (2000) also emphasizes the fact that the “combination of welfare sticks, EITC carrots, and a remarkably strong economy had a multiplicative effect that is far greater than any one or two of these policies would have had on their own” (p. 1084). Work would be valuable that helps policymakers better anticipate the effects of policy changes, adopted individually and in packages, in different economic environments.

### Estimates of the Effects of the EITC on Other Behavioral Outcomes

#### *Marriage and Family Formation*

As noted earlier, the EITC can lead to large marriage penalties and bonuses depending on the relative incomes between potential partners. Once these incentives have been clearly documented, as is done by Dickert-Conlin and Houser (1998) and Holtzblatt and Rebelein (1999), it is natural to ask whether they affect behavior.

Three recent papers examine whether the EITC encourages the existence of female-headed families.<sup>43</sup> Dickert-Conlin and Houser (2002) look at correlations between EITC changes and female headship. They account for the fact that couples affect their EITC through their marital and labor supply choices, and find little effect of the EITC on marriage decisions. Eissa and Hoynes (1999) also find modest or nonexistent effects on family formation.

Ellwood (2000) takes a different strategy. Rather than isolating the specific effect of marriage on tax and transfer payments, he looks at data from the Panel Study of Income Dynamics (PSID) and focuses on 1,671 marriages that women in the sample entered between 1983 and 1991. He measures penalties and bonuses by income in the last year prior to marriage and in the first year after marriage to look at whether families would be net winners or losers had

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<sup>43</sup> Also see Dickert-Conlin (1999) for a more general look at taxes, transfers and separations.

the 1996 EITC provisions been in place when they married. Clearly other factors (like postmarital child-bearing or other changes in income) can affect these comparisons. Ellwood then looks at patterns of marriage incentives over time across wage and skill groups, and the corresponding marriage patterns. He finds no evidence that EITC marriage penalties or bonuses affected marriage.

The evidence on the EITC's effects on marriage and fertility mirrors the broader evidence from the literature on transfer programs. Moffitt (1998) surveys studies of the effects of welfare on marriage and fertility and concludes that "a neutral weighing of the evidence still leads to the conclusion that welfare has incentive effects on marriage and fertility," but the effects tend to be small and cannot explain time-series increases in nonmarital fertility and declines in marriage rates. Moffitt also notes that results tend to vary significantly based on the methodology used and other specification differences.

#### *Human Capital Formation*<sup>44</sup>

Until now, we have ignored the potential impacts of the EITC on an important issue related to the ability of the EITC to alleviate poverty, namely its effect on human capital or skill development among workers. The argument is sometimes made that prowork programs provide a double bonus, because they induce people to work and, by going to work, low-skilled individuals can acquire productive skills that can enhance their future earnings. Drawing from the literature on human capital investment, the issue is what effect does the EITC have on skill formation and wage growth among low-skilled populations?

Formal models of human capital investment emphasize that the decision of workers to invest in skill formation depends on the comparison of the opportunity cost associated with time

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<sup>44</sup>This section draws heavily on Heckman, Lochner, and Cossa (2002).

spent acquiring skills with the future returns to wages that result from the acquired human capital. As noted by Heckman, Lochner, and Cossa (2002), programs that affect the value of market work, such as the EITC, may affect these costs and returns. The effect of the EITC is further complicated by the differential impacts it has on effective wage rates. As noted above, the EITC raises the effective wage rate in the phase-in region, leaves it unchanged in the flat region, and lowers the effective wage rate in the phase-out region. Thus, whether the opportunity costs of human capital investments and the returns from such investments are raised or lowered by the EITC depends critically on which part of the EITC applies and over what time intervals.

Moreover, exactly how programs like the EITC affect skill acquisition and life-cycle wage growth depends on what model characterizes the human capital accumulation, or production, process. In particular, if one assumes that work-related skills are largely acquired as a by-product of work, i.e., via “learning by doing” (LBD), then programs that encourage greater labor force participation and hours of work will tend to encourage skill acquisition.<sup>45</sup> In contrast, if learning, either via formal schooling or while on the job, is rivalrous with working, as is the case with a “on the job training” (OJT) model, policies that encourage work may discourage skill acquisition.<sup>46</sup>

Using data from the 1980 CPS, Heckman, Lochner, and Cossa (2002) estimate the structural parameters for hours of work and wage equations profiles for OJT and LBD models of life-cycle human capital investment and time allocation. Based on these models, the authors simulate the effects of the presence of an EITC on life-cycle labor supply decisions, human capital investments, and wage growth. Their simulations imply very different patterns of EITC effects

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<sup>45</sup> See, for example, Weiss (1972) for an exposition of the formal model of learning-by-doing applied to the human capital investment context.

<sup>46</sup> This is true in the human capital models of Becker (1964) and Ben-Porath (1967).

on these decisions across the OJT and LBD models of human capital formation, even though the models do not appreciably differ in their fit of the data. For example, their simulations show that while the two models yield similar predictions of the effects of the EITC on human capital formation via its effect on labor market entry by females, they yield different effects on the intensive labor supply margins. In particular, the EITC has large effects on training in an OJT model but weak effects on labor supply. It has little effect on skills and larger labor supply effects within the LBD model they examine.

These provocative findings by Heckman, Lochner, and Cossa suggest the need to devote attention to the life-cycle implications of EITC changes in order to understand the potential for the credit to improve the skills, and thus the well-being, of disadvantaged populations in the United States.

### *Consumption*

A central issue when thinking about the EITC and consumption is the degree to which the credit allows people to smooth the marginal utility of consumption. One would think that the advance payment option might help people do this. However, in 1998 only 185,027 of 16,118,328 (1.1 percent) of EITC claimants with qualifying children took advantage of this option.

Barrow and McGranahan (2000) examine whether consumption appears to increase for EITC-eligible families in months, particularly February, when they are likely to receive the EITC. The topic is an interesting one, since the models economists typically use to think about consumption would predict that families would not immediately spend their EITC upon receipt, but rather would spread EITC-financed consumption over the year (or lifetime). Hence, standard models would predict no discernible effect. Yet there is some evidence that significant portions

of the population are liquidity-constrained, and hence have consumption patterns that track income receipt very closely.

The authors use monthly data from the Consumer Expenditure Survey of nondurables and durables from 1982 through 1996. Using regression models of monthly consumption with month dummies, month dummies interacted with (simulated) EITC eligibility, and family economic and demographic characteristics, they find that EITC-eligible households spend approximately 9 percent more on durable goods in February, the modal month of EITC refund, than do households not eligible for the credit. They show that these results are not driven by income differences or differences in family size between EITC-eligible and EITC-ineligible families. They also show that the seasonal effects are larger after the 1990 EITC expansions, as would be expected. The estimated magnitudes suggest that EITC recipients spend roughly one-fifth of the full amount of their refund in the month of receipt.

Smeeding, Ross-Phillips, and O'Connor (2000) fielded a survey of low-income taxpayers who used tax preparation services at a neighborhood legal clinic in Chicago and solicited detailed information about the anticipated and actual uses of the EITC. The study provides information on how the EITC is used by families, such as purchasing a car, paying tuition, changing residences, paying bills or purchasing food. A next step in this research program would be to examine what families would do at the margin with, say, an additional \$100 a month through regular earnings (or welfare) and compare that to the uses to which the lump-sum EITC is put. The authors suggest that the lumpiness of the EITC might allow people to make investments that enhance social mobility. Further work examining this conjecture would be valuable.

## **VI. Assessing Proposed and Potential Modifications to the EITC**

Given the central role played by the EITC in the nation's antipoverty programs, it is not surprising that a broad range of possible credit modifications have been raised. Like the historical forces shaping the credit, these ideas tend to push the credit toward improving behavioral incentives or toward enhancing its antipoverty effectiveness. In this section we discuss some of these issues.

### Marriage Penalties

Proposals regularly address EITC-related marriage penalties. Several things should be kept in mind when thinking about these. First, the tax system cannot simultaneously be progressive (have increasing average effective tax rates), treat the family (as opposed to individuals) as the unit of taxation, and be neutral with respect to marriage. Hence, either penalties for singles or marriage penalties are inevitable, unless the structure of individual income taxation is dramatically altered. Second, as noted by Holtzblatt and Rebelein, 62 percent of EITC-related marriage penalties are borne by couples with incomes above the amount necessary to be eligible for the EITC. We suspect that policymakers are considerably less concerned about the marriage penalty that arises for a worker with earnings of \$40,000 and his spouse with earnings of \$10,000 (if they split and the spouse took the children, she could get a large EITC) than they are about the family-formation incentives that apply to unemployed or sporadically employed workers with or without children. Third, an extensive literature has examined the effects of antipoverty programs on marriage and fertility generally and has found relatively small effects.

### Administering the EITC through the Tax System and Other Issues of Credit Design

During debates over restructuring the IRS,<sup>47</sup> the EITC was sometimes referred to as a “non-

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<sup>47</sup>See, for example, “The New IRS Law,” *Washington Post*, July 23, 1998, Albert Crenshaw, A6.

tax function of the IRS.” The rationale for this sentiment is that tax rules are sufficiently complex that it is already beyond the IRS’s ability to effectively administer the laws required to accurately collect taxes. By asking the IRS to administer the EITC, resources are diverted that could help the IRS better collect taxes.

There is, of course, a clear relationship between all tax expenditures and spending programs so that any deviation from a comprehensive income tax could be viewed as a situation where the IRS is being asked to carry out some function other than tax collection to achieve some social purpose.<sup>48</sup> The practical question to pose in optimally configuring the tax system and spending programs is what is the marginal cost of providing specific incentives through the tax system relative to the best alternative delivery mechanism. In the case of the EITC, there are strong arguments in support of running the EITC through the tax code. Because filing thresholds are fairly low and because of overwithholding, most low-income families with earnings already file tax returns. Consequently, they are already in the system, so the incremental cost of claiming the EITC is low. The IRS collects income information from both employers and employees, so it is straightforward in most circumstances to verify income eligibility. The IRS has little ability to document living arrangements, however, so a significant number of errors arise in determining who is able to claim an EITC-qualifying child. New developments with the Federal Case Registry of Child Support Orders may improve the IRS’s ability to handle this aspect of EITC eligibility.

Just because a case can be made that an EITC-like subsidy may appropriately be delivered through the tax code does not mean that the EITC is optimally designed. Liebman (1999) examines the optimal phase-out rate of the EITC. A more rapid phase-out will reduce the utility

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<sup>48</sup>See Surrey (1973) for an early discussion of the concept of tax expenditures.

of some EITC recipients and may cause some taxpayers to leave the labor market. At the same time, it will reduce the cost of the program, which, if the marginal excess burden of tax collections is high enough, may lead to an increase in overall welfare given specific social welfare weights on different income groups. Liebman uses simulation analyses to highlight the magnitudes of the various behavioral issues in question. Results are naturally sensitive to the compensated labor supply, the marginal excess burden of taxes, and the characteristics of the assumed social welfare function. His simulations tend to result in optimal phase-out rates that bracket the current rates for families with one child and two or more children.

#### Adjusting Further for Family Size and Tighter Integration with the Tax System

In 1998 the child poverty rate for families with three or more children was 28.5 percent, twice the 11.9 percent rate for children in smaller families. A way to address the higher poverty rates of families with three or more children is to add a third tier to the federal EITC schedule for these families, which would result in an EITC schedule similar to the structure of the Wisconsin state EITC. One specific proposal implemented this idea by increasing the phase-in rate to 45 percent from 40 percent, adding nearly \$500 to the maximum EITC available to a taxpayer with three or more children. The potential drawbacks of the idea are that it costs money and it further increases incentives for people to have children and, in some circumstances, to become single parents.

The Minnesota state EITC also may have worthwhile lessons for the federal credit. Recall that Minnesota adjusts its phase-ins and phase-outs of the state credit to smooth notches that are generated by features of the federal and state tax and transfer programs. As is clear when plotting the budget sets facing families with one child and two children, there are unusual notches and kinks, particularly when the effects of transfer programs are taken into account. It would be

straightforward to alter the phase-out rates to smooth marginal tax rates at the income levels around which families begin to pay positive levels of federal income taxes (in the absence of the EITC). This would increase headaches for people trying to describe the structure of the credit, but it would have little practical consequence for people taking the credit since the credit amount is invariably found from look-up tables in the EITC instructions or by requesting the IRS to calculate the credit. At the same time, while smoothing the phase-out rates would have clear aesthetic value, it might have very little practical consequence, since it is unlikely that any but the most sophisticated workers would recognize the link to incremental labor market decisions and the size of their lump-sum EITC after filing tax returns.

Cherry and Sawicky (2000) and Ellwood and Liebman (2000) go well beyond the Minnesota model and develop more systemic policy proposals that would, under some options, integrate the EITC, dependent exemption, and child credit. The Cherry-Sawicky “unified universal child credit,” for example, would rise for an initial range of earnings, flatten out over an additional range, and then phase down to a minimum benefit of \$1,270 per child, an amount that equaled the value of the dependent exemption and child credit for a taxpayer in the 28 percent bracket when their proposal was designed. The unified universal child credit would cost more than \$30 billion per year, but the modification would reduce some of the labor market disincentives and marriage penalties that arise in the current EITC, significantly increase benefits available to low- and moderate-income families with many children, and provide considerable additional tax benefits to families with children and incomes between roughly \$25,000 and \$50,000.<sup>49</sup> Though a complete analysis of this idea is well beyond the scope of this chapter, both

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<sup>49</sup> Somewhat thorny technical issues would need to be worked out, such as who would receive the unified universal child credit in situations where a noncustodial parent is currently paying child support and receiving the dependent exemption and the custodial parent is receiving the EITC. Integrating the dependent exemption and EITC could result in pressure to rewrite many divorce settlements.

papers offer far-reaching ways to improve the tax system.

### EITC and TANF Interactions

As state TANF programs evolve, clear rules need to be made about what kinds of state-subsidized activities will trigger EITC eligibility and what activities will not. The polar cases are easy to identify: TANF payments that are like payments made under AFDC would not qualify as income for the purposes of the EITC. Wages earned while a single mother works and receives a TANF grant for child care will be considered income for the EITC. Congress explicitly has indicated that “work-experience” and “community-service” jobs will not trigger the EITC. But there is a vast gray area of other TANF-supported activities that need to be clarified. The trade-offs in clarifying the rules are apparent: making as many people engaged in work-like activities eligible for the EITC as possible will be more costly than having more restrictive rules, but will also provide an additional source of support to poor families, and the EITC may help reinforce the work-expectation message that is at the core of many state TANF programs. Attention might also be paid to the link between the EITC and TANF-based asset tests.

### The Advance Payment Option

Only 1.1 percent of EITC recipients with children used the advance payment option in 1998. Low use of the advance payment option has generated considerable discussion in policy circles, though we think this attention is somewhat misplaced. Simple calculations suggest that eschewing the advanced payment option, as currently designed, costs the taxpayer at most \$52.77 (assuming the taxpayer could receive the maximum available advance payment each month, earns 8 percent interest, and does not receive his or her refund until May). Given that low-wage workers may change jobs frequently, the transactions costs associated with setting up advanced payments can be fairly high. This, coupled with the possibility that someone will

receive too much in advance payments and have to pay it back at tax time,<sup>50</sup> suggests that the utility cost of failing to take advantage of the advance payment option is probably small.

It is sometimes suggested that greater use of the advance payment option would reinforce the prowork message of the EITC. Partly for this reason, officials in the United Kingdom designed their EITC-like program, the Working Families Tax Credit (WFTC), to include incremental receipt of payments throughout the year. There are significant differences between the U.S. and U.K. experiences, however.<sup>51</sup> The WFTC is paid through the employer, retrospectively based on earnings, hours worked, and family income during the six-week period prior to the beginning of the payment period (the previous six months). So, someone could have a job, become eligible for the WFTC, and then leave the job and still receive the WFTC for the duration of the six months. Rules are in place to curb efforts to manipulate income to maximize the WFTC, but there is not yet any evidence of their effectiveness. Other aspects of the British tax system suggest that less emphasis is placed on compliance (and perhaps that greater emphasis is placed on minimizing the intrusiveness of tax authorities and associated forms) than occurs in the United States, which may result in a greater willingness to tolerate overpayments or underpayments that might arise with the WFTC. The WFTC replaced the Family Credit, which was also delivered incrementally through the year.

## **VII. Summary and Conclusions**

Over the last 25 years, the EITC has become, by a considerable margin, the country's largest cash or near-cash program directed at low-income families. Its popularity is fairly easy to

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<sup>50</sup> Holtzblatt and Liebman (1998) note that taxpayers are less likely to receive too much in EITC advance payments if income is only from wages. Only about one in four EITC claimants has income from only one source during the year, however. Advance payments also lengthen the time between when money is paid out and when the IRS is able to verify eligibility.

<sup>51</sup> See Holtzblatt and Liebman (1998) for a more detailed discussion.

account for. Unlike safety net programs such as AFDC, TANF, and Food Stamps, the EITC gives no benefits to those without labor earnings. Thus, it subsidizes the incomes of people who in some sense are “doing the right thing.” The appeal of this reaches across party lines. In addition, unlike the safety net programs, the EITC has unambiguously positive labor market participation incentives. By virtue of the fact that it provides no benefits for the most destitute, the EITC is not a *substitute* for the safety net. But its desirable labor market effects (relative to other safety net programs) and its targeting of the working poor undoubtedly account, at least in part, for its rapid growth.

Research on the EITC has been a growth industry in the last decade. In our review we have been struck by the variety of different topics and approaches taken by researchers. We can think of no major EITC-related topic that has not received at least some attention from serious scholars, possibly with the exception of the economic incidence of the credit. But that is not to say that we know everything necessary about the credit. We lack information about the participation rate of the credit since the mid-1990s. Research on the labor market effects of the credit have pushed quasi-experimental and IV repeated cross-sectional analyses using the CPS to their logical limits, but there have not been utility-based structural analyses of the EITC. Nor have there been any longitudinal analyses of the EITC, which hold considerable promise for controlling for unobservables in ways that are impossible with the CPS. Research on the EITC and family structure and fertility is in its infancy. Work initiated by Heckman, Lochner, and Cossa (2002) also has considerable potential for enhancing understanding of the effects of the EITC and other policies directed at low-wage labor markets.

Stepping back further from current thrusts of the literature, two potentially promising new ways for research to develop are apparent. First, Smeeding, Ross-Phillips, and O’Connor (2000)

raise an important issue. To what extent and through what channels can the EITC enhance economic well-being? Are there nonlinearities associated with the EITC, possibly through its lumpiness, that allow the credit to enhance well-being in a way that differs significantly from equivalent-sized (in total) payments received throughout the year?

Second, it is easy for researchers to focus on narrow, well-defined questions that lend themselves to standard (or possibly innovative) methodological tools. Perhaps as a consequence, however, less attention has been paid to the design of the constellation of public policies that are or could be directed at low-wage labor markets. Questions along these lines would include: What are the relative merits of the EITC and employer-based wage subsidies, of the EITC, and of the minimum wage? Do the answers differ given existing tax and transfer provisions? Can the broader tax and transfer system be altered or more tightly integrated in welfare-enhancing ways? The specific research questions that have dominated the EITC agenda are critical stepping stones for satisfactory answers to these more global issues, but it would be inappropriate as research evolves to study only the narrower issues at the expense of the broader.

**Table 1: Earned Income Tax Credit Parameters, 1979-2001 (in nominal dollars)**

Year	Phase-in Rt %	Phase-in Range	Max Credit	Phase-out Rte (%)	Phase-out Range
1975-78	10.0	\$0-\$4,000	\$400	10.0	\$4,000 - \$8,000
1979-84	10.0	0-5,000	500	12.5	6,000 – 10,000
1985-86	11.0	0-5,000	550	12.22	6,500 – 11,000
1987	14.0	0-6,080	851	10.0	6,920 – 15,432
1988	14.0	0-6,240	874	10.0	9,840 – 18,576
1989	14.0	0-6,500	910	10.0	10,240 – 19,340
1990	14.0	0-6,810	953	10.0	10,730 – 20,264
1991 <sup>a</sup>	16.7 <sup>1</sup>	0-7,140	1,192	11.93	11,250 - 21,250
	17.3 <sup>2</sup>		1,235	12.36	11,250 – 21,250
1992 <sup>a</sup>	17.6 <sup>1</sup>	0-7,520	1,324	12.57	11,840 - 22,370
	18.4 <sup>2</sup>		1,384	13.14	11,840 – 22,370
1993 <sup>a</sup>	18.5 <sup>1</sup>	0-7,750	1,434	13.21	12,200 - 23,050
	19.5 <sup>2</sup>		1,511	13.93	12,200 – 23,050
1994	23.6 <sup>1</sup>	0-7,750	2,038	15.98	11,000 - 23,755
	30.0 <sup>2</sup>	0-8,245	2,528	17.68	11,000 - 25,296
	7.65 <sup>3</sup>	0-4,000	306	7.65	5,000 - 9,000
1995	34.0 <sup>1</sup>	0-6,160	2,094	15.98	11,290 - 24,396
	36.0 <sup>2</sup>	0-8,640	3,110	20.22	11,290 - 26,673
	7.65 <sup>3</sup>	0-4,100	314	7.65	5,130 - 9,230
1996	34.0 <sup>1</sup>	0-6,330	2,152	15.98	11,610 - 25,078
	40.0 <sup>2</sup>	0-8,890	3,556	21.06	11,610 - 28,495
	7.65 <sup>3</sup>	0-4,220	323	7.65	5,280 - 9,500
1997	34.0 <sup>1</sup>	0-6,500	2,210	15.98	11,930 - 25,750
	40.0 <sup>2</sup>	0-9,140	3,656	21.06	11,930 - 29,290
	7.65 <sup>3</sup>	0-4,340	332	7.65	5,430 - 9,770
1998	34.0 <sup>1</sup>	0-6,680	2,271	15.98	12,260 - 26,473
	40.0 <sup>2</sup>	0-9,390	3,756	21.06	12,260 - 30,095
	7.65 <sup>3</sup>	0-4,460	341	7.65	5,570 - 10,030
1999	34.0 <sup>1</sup>	0-6,800	2,312	15.98	12,460 - 26,928
	40.0 <sup>2</sup>	0-9,540	3,816	21.06	12,460 - 30,580
	7.65 <sup>3</sup>	0-4,530	347	7.65	5,670 - 10,200
2000	34.0 <sup>1</sup>	0-6,920	2,353	15.98	12,690 - 27,413
	40.0 <sup>2</sup>	0-9,720	3,888	21.06	12,690 - 31,152
	7.65 <sup>3</sup>	0-4,610	353	7.65	5,770 - 10,380
2001	34.0 <sup>1</sup>	0-7,140	2,428	15.98	13,090 - 28,281
	40.0 <sup>2</sup>	0-10,020	4,008	21.06	13,090 - 32,121
	7.65 <sup>3</sup>	0-4,760	364	7.65	5,950 - 10,708

Source: 1998 Green Book, Committee on Ways and Means, U.S. House of Representatives, U.S. Government Printing Office, page 867. 1998 through 2001 parameters come from Publication 596, Internal Revenue Service

<sup>a</sup> Basic credit only. Does not include supplemental young child or health insurance credits.

<sup>1</sup> Taxpayers with one qualifying child.

<sup>2</sup> Taxpayers with more than one qualifying child.

<sup>3</sup> Childless taxpayers.

**Table 2: State Earned Income Tax Credits, Tax Year 2001**

	State (year adopted)	Percentage of Federal Credit
Refundable Credits	Colorado (1999)	10
	District of Columbia (2000)	25
	Kansas (1998)	10
	Maryland (1987) <sup>a</sup>	16 (rising to 20 in 2003)
	Massachusetts (1997)	15
	Minnesota (1991)	Averages 33%, varies by earnings <sup>b</sup>
	New Jersey (2000)	15 (20% by 2003), limited to families with incomes below \$20,000
	New York (1994)	25 (30% by 2003)
	Vermont (1988)	32
	Wisconsin (1989)	4% one child 14% 2 children 43% 3 children
Nonrefundable Credits	Illinois (2000)	5
	Iowa (1990)	6.5
	Maine (2000)	5
	Oregon (1997)	5
	Rhode Island (1975)	25.5

Source: Nicholas Johnson, 2001, "A Hand Up: How State Earned Income Tax Credits Help Working Families Escape Poverty in 2001: An Overview," Center on Budget and Policy Priorities, December, Particularly Table 4. Adoption years are from Dickert-Conlin and Houser (2002), which in turn are from Johnson.

<sup>a</sup>A Maryland taxpayer may claim a refundable credit or a non-refundable credit (equal to 50 percent of the federal credit), but not both.

<sup>b</sup>Minnesota's credit for families with children, unlike the other credits shown in the table, is not expressly structured as a percentage of the federal credit. Depending on income levels, the credit may range from 22 percent to 46 percent of the federal credit.

**Table 3: Maximum Real EITC Credit, Real Spending and Number of Participants**  
(in 1999 dollars)

<b>Year</b>	<b>Real Maximum EITC</b>	<b>Real EITC Spending (millions)</b>	<b>Number of Claimants (thousands)</b>
1975	1,239	3,871	6,215
1976	1,171	3,792	6,473
1977	1,100	3,098	5,627
1978	1,022	2,678	5,192
1979	1,147	4,709	7,135
1980	1,011	4,015	6,954
1981	916	3,504	6,717
1982	863	3,064	6,395
1983	836	3,002	7,368
1984	802	2,626	6,376
1985	852	3,233	7,432
1986	836	3,054	7,156
1987	1248	4,973	8,738
1988	1231	8,303	11,148
1989	1223	8,861	11,696
1990	1215	9,614	12,542
1991	1511	13,584	13,665
1992	1643	15,470	14,097
1993	1742	17,913	15,117
1994	2842	23,725	19,017
1995	3400	28,374	19,334
1996	3776	30,607	19,464
1997	3795	31,800	19,490
1998	3839	31,959	19,516
1999	3816	32,270	19,419
2000	3762	31,471	19,363

Source: 1998 Green Book, and general IRS Statistics of Income data on individuals available at [http://www.irs.ustreas.gov/prod/tax\\_stats/soi/ind\\_gss.html](http://www.irs.ustreas.gov/prod/tax_stats/soi/ind_gss.html). The data reflect claims (allowed through math error processing) and do not reflect subsequent IRS enforcement actions after math error processing

**Table 4: Summary of Empirical Evidence on the Effects of the EITC on Labor Force Participation and Hours of Work**

Study	Data Source and Population Covered	Years Covered	Estimation Method Used and Source of Identification	Impact Estimates
<b>Labor Force Participation:</b>				
Dickert, Houser and Scholz (1995), "DHS"	SIPP data. Cross-sectional, using state-level variation. Focus on participation effects of single parents and couples. Drop cases with high assets.	1990 calendar year file.	Variation in budget sets is measured by the effects that cross-state variation in tax and transfer rules have on the returns to moving from 0 to 20 (40) hours in the labor market. The responsiveness of LFP to the cross-state variation in budget sets is used to make inferences about EITC expansions.	The OBRA93 expansions would increase labor force participation by 3.3 percentage points for single women from a base of 56.4 percent. This implies the elasticity of labor force participation (LFP) with respect to net income is roughly 0.85, see note 1.
Eissa and Liebman (1996)	Repeated cross sections of the CPS. Focus on single women with children.	1985-87 March CPS for the "pre" period, 1989-1991 March CPS for the "post" period	Difference-in-difference. "The difference between the change in labor force participation of single women with children and single women without children is our estimate of the effect of TRA86 on participation."	TRA86 resulted in a 2.8 percentage point increase in labor force participation from a base of 74.2 percent. This implies the elasticity of LFP with respect to net income is roughly 1.16, see note 2.
Keane and Moffitt (1998) and Keane (1995)	SIPP data. Cross-sectional. The sample is single women with children. Drop cases with high assets.	Fourth wave of the 1994 SIPP.	Estimate a structural model taking detailed account of the tax and transfer system on budget sets. Families make hours decisions moving from 0 to 20 to 40, and participation decisions for food stamps, AFDC and housing programs.	Changes in the EITC between 1984 and 1996 would increase labor force participation rates by 10.7 percentage points, from a base of 65.4 percent. This implies the elasticity of LFP with respect to net income is roughly 0.96, see note 3.
Meyer and Rosenbaum (2001)	Repeated cross sections of the CPS. Focus on single women with children.	1985-1997 March CPS and Merged Outgoing Rotation Group data from 1984-1996.	Cross-state variation in budget sets as measured by the effects that cross-state variation in tax and transfer rules have on after-tax wages, where wages are randomly drawn from empirical distributions and over-time variation in these rules.	\$1000 reduction in income taxes if a woman works, increases employment by 2.3 to 2.9 percentage points. These imply elasticities of LFP with respect to net income of 0.69 and 0.70. See footnote 35 of Meyer and Rosenbaum (1999).
Eissa and Hoynes (1998)	Repeated cross sections of the CPS. Focus on married couples, with fewer than 12 years of schooling.	1985-1997 March CPS.	Two approaches: difference-in-difference, and intertemporal variation in tax rates caused by tax reforms. The latter is captured by using predicted net of tax wages for everyone in the sample assuming a full-time, full-year job.	The EITC expansions between 1984 and 1996 increased LFP of married men by 0.2 percentage points and reduced the LFP of married women by 1.2 percentage points. The elasticity of LFP w/ respect to net wages is 0.03 for husbands and 0.29 for wives (page 22).
Hotz, Mullin, and Scholz (2002a)	Longitudinal administrative data from the California welfare, unemployment and federal income tax systems	1987-1998	Rely on the phased-in EITC expansions beginning in 1990 that, beginning in 1994, disproportionately benefited families with two or more children relative to one child.	LFP increased by 6 percentage points and EITC claimed by \$439 for families with two or more children relative to those for with one child. The elasticity of LFP w/ respect to labor market earnings is between 0.97 and 1.69, depending on what year is used to estimate average LFP and earnings.

**Table 4: (Continued)**

Study	Data Source and Population Covered	Years Covered	Estimation Method Used and Source of Identification	Impact Estimates
<b>Hours of Work:</b>				
Hoffman and Seidman (1990), U.S. General Accounting Office (1993) and Dickert, Houser and Scholz (1995) – “DHS”	PSID for Hoffman and Seidman, CPS (?) for GAO and SIPP for DHS	1990 Calendar year file for DHS	Each study <i>simulates</i> hours responses using parameters from the negative income tax experiments, and, in the DHS study, parameters from the kinked budget set literature.	DHS simulate labor supply responses to the 1993 EITC expansion (1993-96) of –0.09 to –4.04 percent. These range from 0 to –3.17 percent for husbands, –1.47 to –11.36 percent for wives and –0.53 to –4.02 percent for single women heads. See Note 4.
Eissa and Liebman (1996)	Repeated cross sections of the CPS. Focus on single women with children.	1985-87 March CPS for the “pre” period, 1989-1991 March CPS for the “post” period	Difference-in-difference. Regression of annual hours on characteristics and dummy variables for kids, post-86 and their interaction.	Statistically insignificant effect on hours (the 1986 expansions were associated with an increase of 25.2 hours, with a standard error of 15.2).
Keane and Moffitt (1998) and Keane (1995)	SIPP data. Cross-sectional. The sample is single women with children. Drop cases with high assets.	Fourth wave of the 1994 SIPP.	Estimate a structural model taking detailed account of the tax and transfer system on budget sets. Families make hours decisions moving from 0 to 20 to 40, and participation decisions for food stamps, AFDC and housing programs.	The estimates show a modest increase in aggregate hours worked from the EITC expansions between 1984 and 1996. Mean weekly hours increase to 26.5 from 24.1. These changes are not broken into the contribution of new labor market participants and potential reductions of hours of those already in the labor market.
Eissa and Hoynes (1998)	Repeated cross sections of the CPS. Focus on married couples, with fewer than 12 years of schooling.	1985-1997 March CPS.	Instrumental variables with two sets of instruments. One has EITC parameters and interactions with birth cohort and education. The second uses imputed marginal tax rates for incomes in \$5k increments from \$0 to \$100k.	The EITC expansions between 1984 and 1996 reduced hours of married men by 45 (or 2 percent) and reduced hours of married women between 13 and 93 (or 0.8 to 6 percent). Uncompensated wage elasticities are 0.06 to 0.07 for men and 0.08 to 0.52 for women. Income elasticities for men were –0.03 and for women, –0.04 to –0.41.

Note 1: The paper reports that the EITC increases the probability of working by 3.3 percentage points. Table 3 of the paper shows the mean labor force participation rate of single parents was 56.4 percent. Meyer and Rosenbaum (1999), Appendix Table 1 shows that taxes fell by \$732 for single women with children in their sample between 1992 and 1996. Mean wages in DHS (1995) are \$6.55. Data from Table 1 of Eissa and Liebman (1996) imply that single women with children worked 1,620 hours (conditional on working). This implies the elasticity of labor force participation with respect to the net-of-tax wage is  $(3.3/56.4) / (732/[6.55*1620]) = 0.85$ , as shown in the table. The sample used in DHS differs somewhat from the samples used in Eissa and Liebman, and Meyer and Rosenbaum primarily in that they drop families that would not be eligible for transfer program benefits even if they did not work (because they fail asset tests).

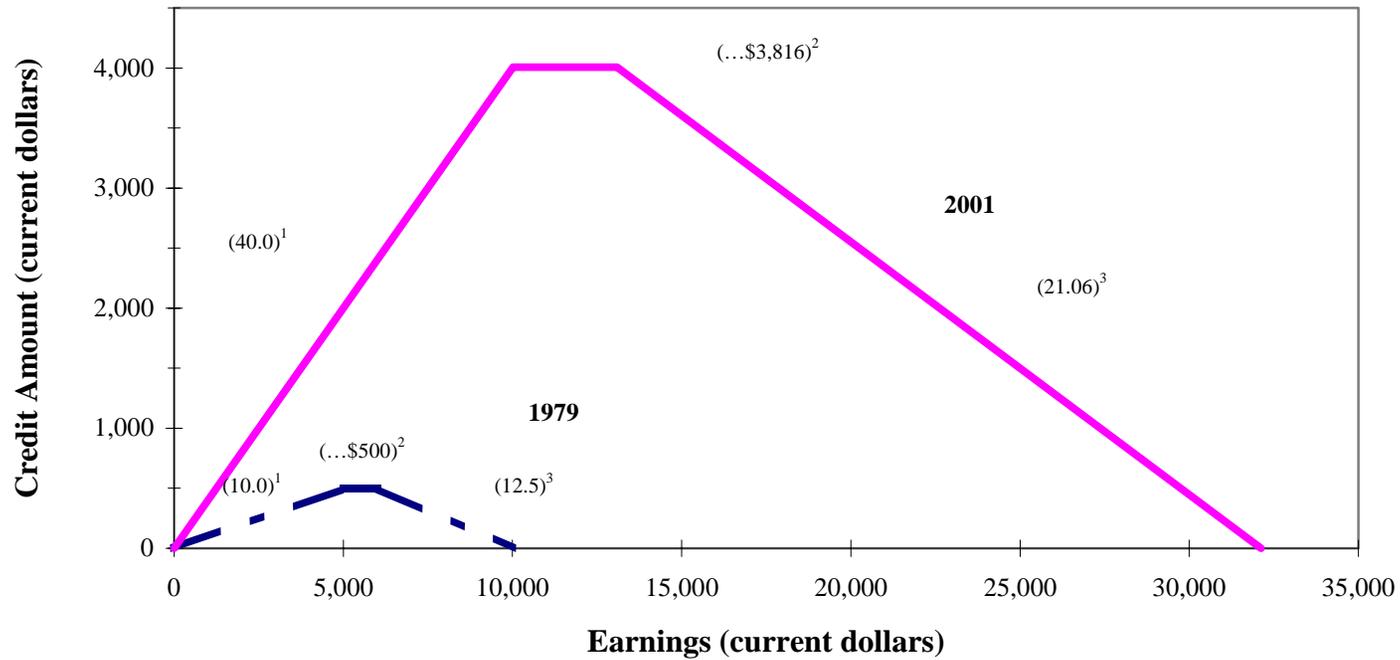
Note 2: The 1986 Tax Reform (TRA86) altered many aspects of the tax system in addition to expanding the EITC. From 1984-

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86, the pre-period, the maximum EITC was between \$500 and \$550. From 1988 to 1990, the maximum EITC ranged between \$874 and \$953. TRA86 also increased the standard deduction for head of households to \$4,400 in 1988 from \$2,480 in 1986; increased the dependent exemption to \$1,950 in 1988 from \$1,086 in 1986, and extended the 15 percent bracket for head of household filers. Meyer and Rosenbaum (1999), Appendix Table 1 shows that taxes fell by \$492 for single women with children in their sample between 1984 and 1988. Eissa and Liebman report that earnings, conditional on working in their sample were \$15,188. This implies the elasticity of labor force participation with respect to the net-of-tax wage is  $(2.8/74.2) / (492/15188) = 1.16$ , as shown in the table.

- Note 3: Table 5 of Keane (1995), which is based on Keane and Moffitt (1998) shows that increasing the EITC to 40 percent increased labor force participation rates by 10.7 percentage points from a base of 65.4 percent. In the text, this experiment is characterized as increasing the EITC to its 1996 level from its 1984 level. Meyer and Rosenbaum (1999), Appendix Table 1 shows that taxes fell by \$1,443 for single women with children in their sample between 1984 and 1996. Mean wages in Keane and Moffitt (1998) are \$5.20. Data from Table 1 of Eissa and Liebman (1996) imply that single women with children worked 1,620 hours (conditional on working). This implies the elasticity of labor force participation with respect to the net-of-tax wage is  $(10.7/65.4) / (1443/[5.20*1620]) = 0.96$ , as shown in the table. Like DHS the sample drops families that would not be eligible for transfer program benefits even if they did not work (because they fail asset tests). This elasticity calculation may be biased downward if the Keane and Moffitt model did not take into account other features of TRA86 (see note 2). That would make the implied average change in after-tax income smaller than \$1,443, which would increase the elasticity estimate.
- Note 4: The high end of the range of these estimates come from the study of Hausman (1981) who reported much larger elasticities than have been reported elsewhere. If instead, we focus on the mean parameters from the Negative Income Tax Studies and the preferred parameters from the study by Triest (1990), which adopts the Hausman methodology, Dickert, Houser and Scholz (1995) report labor supply responses to the 1993 EITC expansion (1993-96) of -0.54 to -1.17 percent. These range from -0.34 to -1.32 percent for husbands, -2.64 to -3.03 percent for wives and -1.08 to -1.11 percent for single women heads. See Table 2 of Dickert, Houser and Scholz (1995). Triest (1990) finds uncompensated wage elasticities of around 0.05 for men and 0.25 for women, and his estimates of virtual income elasticities are 0.0 for men and -0.15 for women.

**Figure 1. The Earned Income Tax Credit for a Family with Two or More Children in 1979 and 2001**



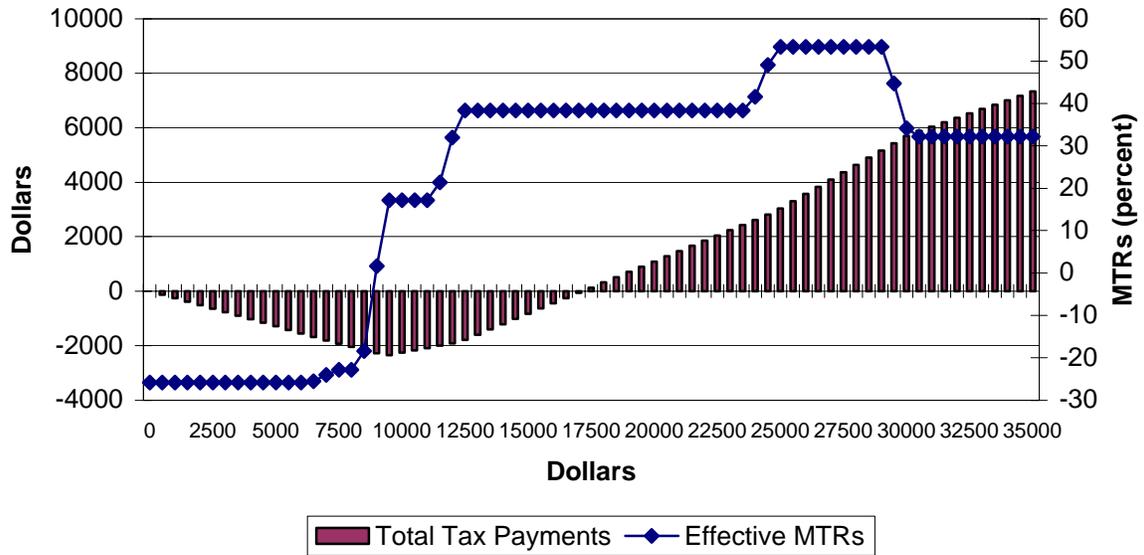
Notes:

<sup>1</sup> Subsidy rate.

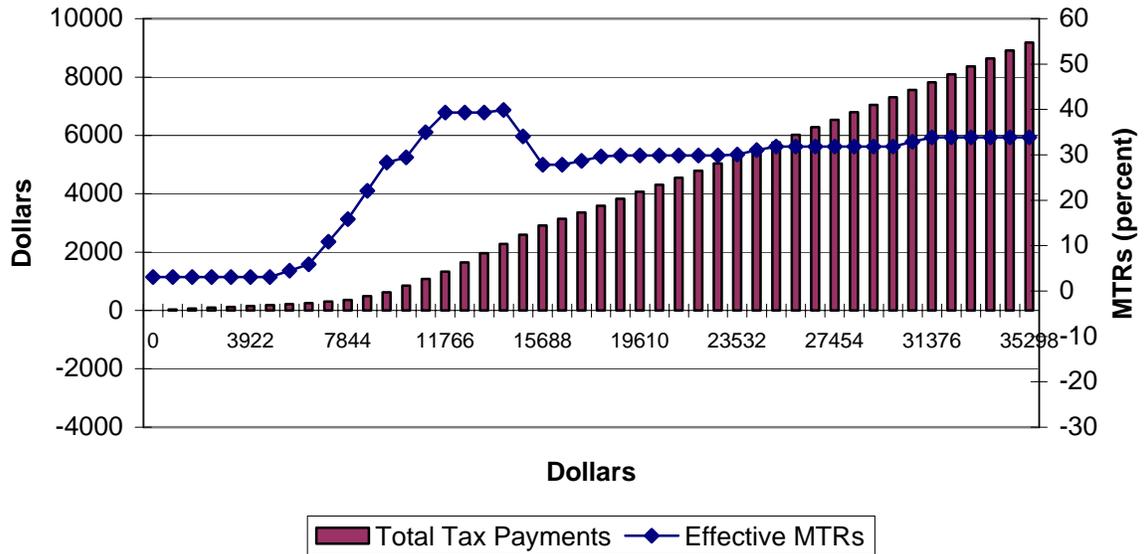
<sup>2</sup> Maximum benefit for two or more children.

<sup>3</sup> Benefit reduction (implicit tax) rate.

**Figure 2a: Taxes and Marginal Rates, Family of 4, Illinois, 1998**

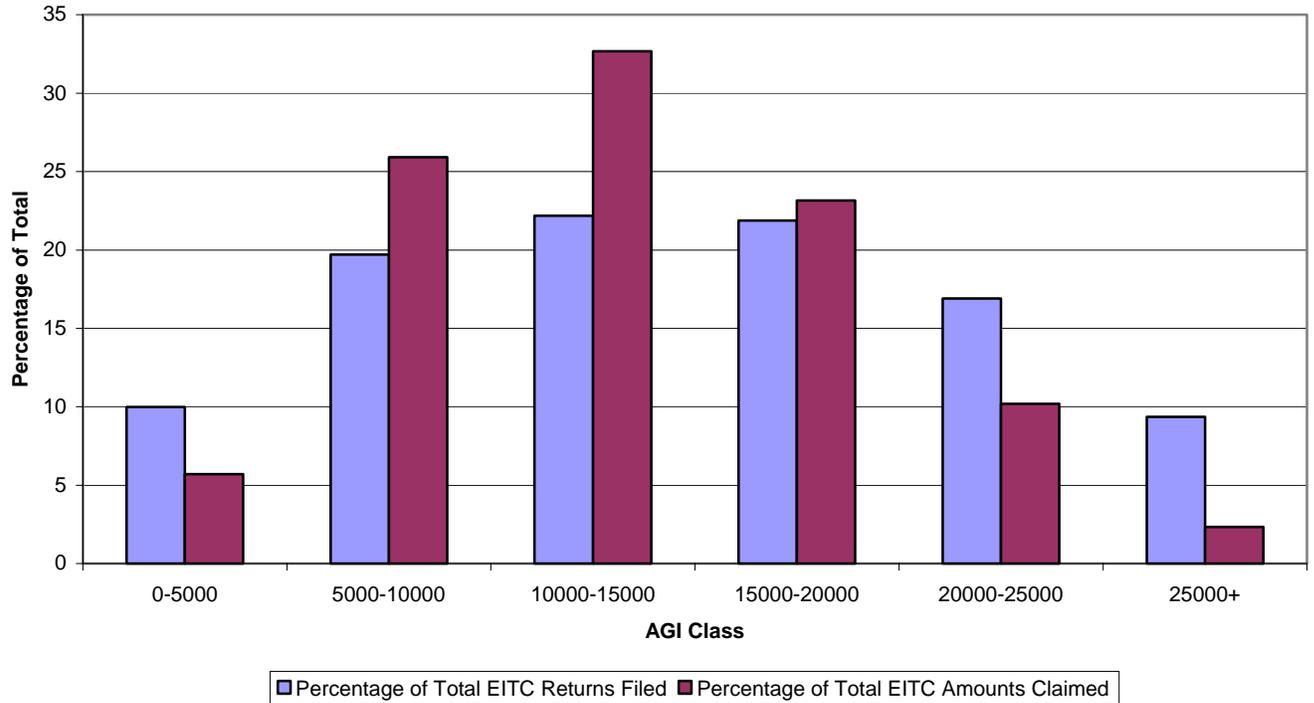


**Figure 2b: Taxes and Marginal Rates, Family of 4, Illinois, 1984 (in 1998 \$)**



Note: Calculations only reflect the effects of the state and federal tax system and do not include the effects of transfer programs. See Feenberg and Coutts (1993) for details of the NBER's TAXSIM model used for these calculations.

Figure 3: Distribution of Total EITC Returns and EITC Payments of Families with Children, by AGI, 1999



Source:

<http://www.irs.gov/taxstats/display/0,,i1%3D40%26genericId%3D16882,00.html>,

(99INDTR.EXE, posted 1-28-02), "Individual Income Tax Returns, 1999" and authors' calculations.

**Figure 4: Effects of the EITC on Labor Force Participation and Hours of Work**

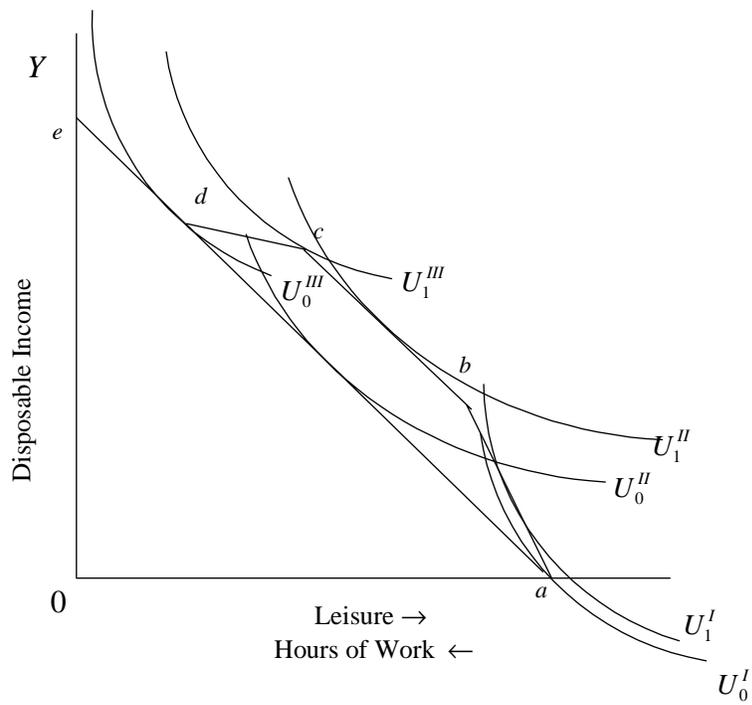
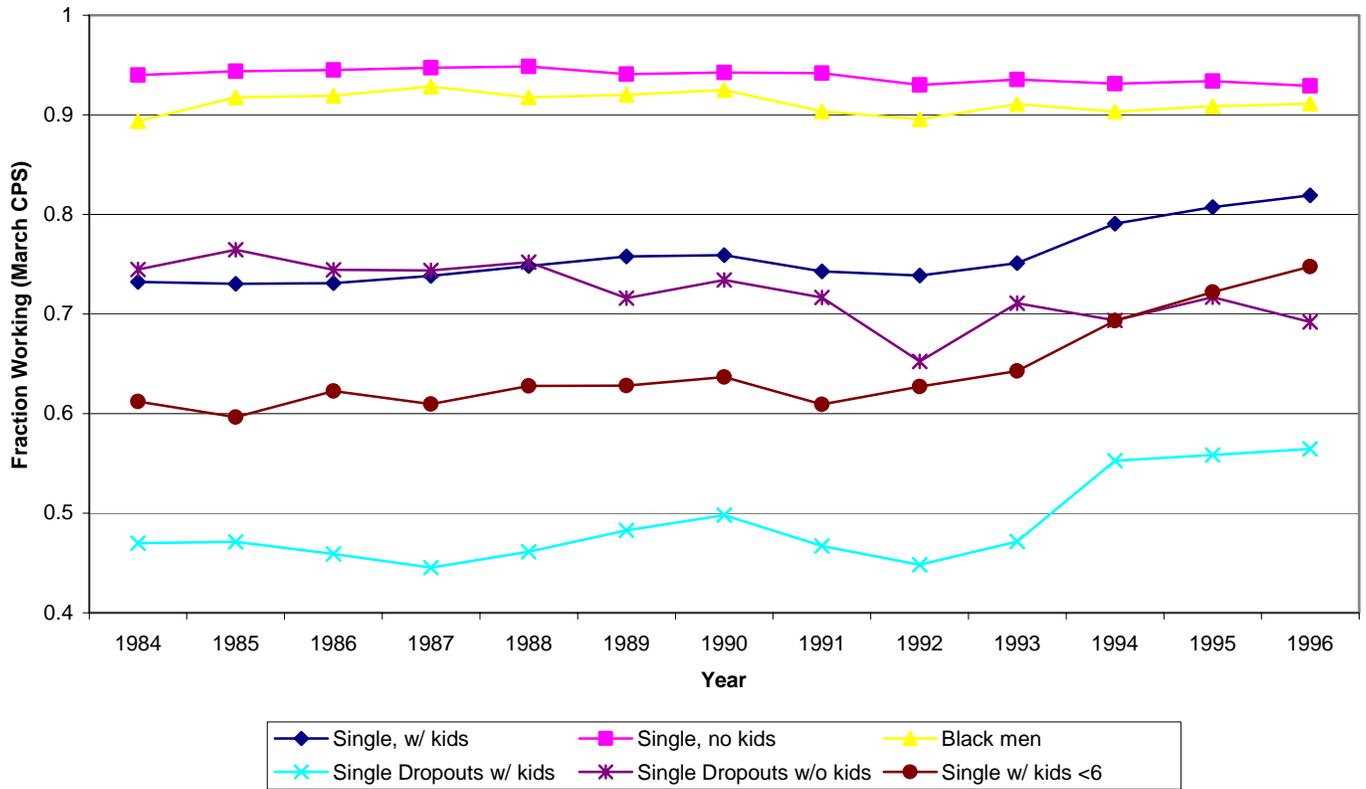


Figure 5: Labor Force Participation Rates, 1984-1996, March CPS, From Meyer and Rosenbaum (2000)



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