**Expanding New York State's Earned Income Tax Credit Program:
The Effect on Work, Income, and Poverty**

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**Abstract**

Given its favorable employment incentives and ability to target the working poor, the Earned

Income Tax Credit (EITC) has become the primary antipoverty program at both the federal and state

levels. However, when evaluating the effect of EITC programs on income and poverty, governments

generally calculate the effect using simple accounting, where the value of the state or federal EITC

benefit is added to a person's income. These calculations omit the behavioral incentives created by the

existence of these programs, the corresponding effect on labor supply and hours worked, and therefore the

actual effect on income and poverty. This paper simulates the full effect of an expansion of the New York

State EITC benefit on employment, hours worked, income, poverty, and program expenditures. These

results are then compared to those omitting labor supply effects. Relative to estimates excluding labor

supply effects, the preferred behavioral results show that an expansion of the New York State EITC

increases employment by an additional 14,244 persons, labor earnings by an additional $95.8 million,

family income by an additional $84.5 million, decreases poverty by an additional 56,576 persons, and

increases costs to the state by $29.7 million. These results emphasize the importance of modeling labor

supply behavior when analyzing the impact of the EITC.

**Expanding New York State's Earned Income Tax Credit Program:**
**The Effect on Work, Income, and Poverty**

INTRODUCTION

The federal Earned Income Tax Credit (EITC) is the nation's largest antipoverty program for non-elderly individuals and is responsible for lifting millions of working families out of poverty (Meyer and Holtz-Eakin, 2001). For tax year 2004, the federal EITC program disbursed $39.2 billion[1] to over 21 million low-income workers (Center on Budget and Policy Priorities, 2007). In addition to the federal EITC, more than 20 states and the District of Columbia operate their own supplemental EITC programs. The value of a taxpayer's state EITC is generally set as a fraction of their federal EITC. The state credits vary significantly in terms of their generosity relative to the federal EITC, and not all are refundable.

New York State was an early implementer of a state EITC program and offers one of the largest fully refundable supplemental credits in the nation. Initially set at 7.5 percent of the federal credit in 1994, the New York State supplement to the federal EITC has been raised six times since then, reaching 30 percent of the federal EITC in 2003. In tax year 2004, 1.3 million New York State families received almost $670 million in state EITC credits, making it the largest state EITC in the nation in terms of the total value of tax credits provided (New York State Department of Taxation and Finance, 2005).

When evaluating the effect of both state and federal EITC programs on income and poverty, policymakers generally calculate the effect using simple accounting, whereby the value of the state and/or federal EITC benefit is simply added to a person's observed income. For example, this procedure is used by the Census Bureau in the calculation of its Alternative Poverty Rates, and also by the Congressional Research Service for the House Ways and Means Committee Green Book. However, by simply adding the value of the EITC benefits to income, these calculations omit the behavioral incentives created by the existence of these programs, the corresponding effect on labor supply and hours worked, and therefore

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[1]Unless otherwise noted, all figures are in 2004 dollars.

income and poverty. As such, these types of estimates do not capture the full effect of EITC programs on work, income, and poverty rates.

While numerous studies have evaluated the labor supply effects of the federal EITC[2], only a handful (Holtzblatt, McCubbin, and Gillette., 1994; Browning, 1995; Dickert, Houser, and Scholz, 1995; Scholz, 1996) have simulated the net of labor supply behavior effect on employment and hours worked of a potential future increase in the federal EITC. No previous study has simulated the effect of an increase in a state supplement on employment or hours worked, nor have they extended their simulation to estimating the effect on poverty rates. This study simulates the effect—including labor supply behavior— of an expansion of the New York State EITC supplement on employment, hours worked, income, and poverty using data from the 2005 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC), which covers tax year 2004. The simulation starts from the current 30 percent New York State supplement to the federal EITC and increases the value of the supplement in increments of 5 percentage points to 35 percent, 40 percent, and 45 percent of the federal EITC benefit.

This paper extends the existing literature by building on the methods employed by Dickert, Houser, and Scholz (1995) and Scholz (1996) to simulate the expansion of a state EITC supplement, and examine the effect on labor supply, income, poverty, and program expenditures. Moreover, this paper generates estimates of the impact of an EITC expansion on income, poverty, and program expenditure excluding behavioral effects, which allows for a direct comparison of estimates including and excluding behavioral effects. The major contribution of this paper is its focus on the more policy-relevant aspects of an EITC expansion, mainly its impact on those not in the labor force, poverty rates, and state EITC program expenditures. It also emphasizes the importance to policymakers of including behavioral estimates in models of the impact of the EITC.

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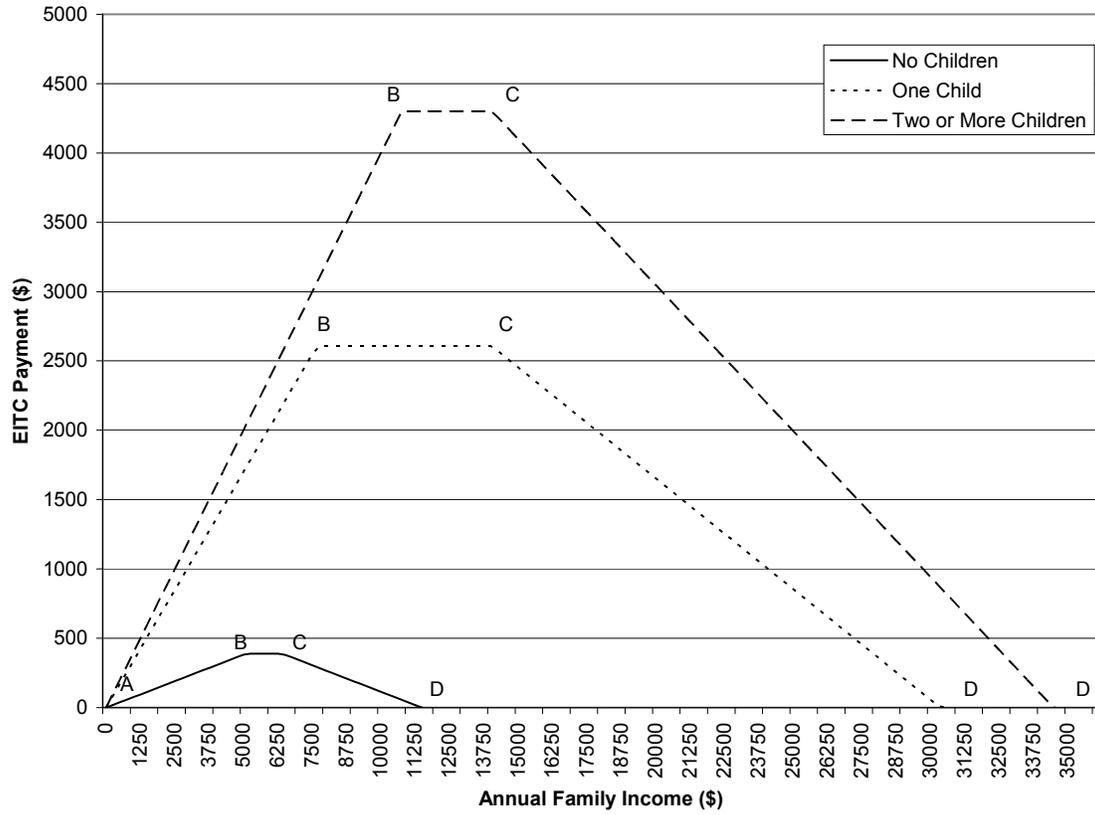[2]See Hotz and Scholz (2003) for a review of papers examining the labor supply effects of the EITC.

BACKGROUND

Originally enacted in 1975 to offset the payroll taxes of workers with low earnings, the federal EITC has since been expanded in scope and size in 1986, 1990, and most recently in 1993. Available only to those with labor earnings, the EITC acts as a wage subsidy, providing an incentive for those not working to enter the labor force. It also supplements the income of those who, despite their work effort, have low labor earnings.

There are three distinct earnings ranges to this labor earnings-based tax credit (see Figure 1). Total benefits rise during the phase-in range of the credit, reaching the maximum benefit level for families with eligible children near the poverty threshold for a family of three. At some labor earnings level, called the plateau range, no new benefits are earned as labor earnings increase, but the credit is not reduced. At a still higher level of labor earnings, the phase-out range begins and total benefits fall with additional earnings. This continues until EITC benefits decline to zero; the breakeven point is reached. The EITC was designed with these three distinct regions in order to largely avoid the work disincentives present in other means-tested programs in which benefits are reduced for every dollar earned. Table 1 presents the federal EITC parameters for tax year 2004.

Results of a wide range of studies evaluating past expansions using a variety of econometric techniques show that the Earned Income Tax Credit is effective at increasing employment rates of low-wage workers (Liebman, 1998; Eissa and Liebman, 1996; Meyer and Rosenbaum, 2001; Hotz, Mullin, and Scholz, 2006), and that previous expansions of the EITC have reduced the poverty rates of children and families (Blank and Schoeni, 2000). The effect of the EITC on poverty has also been demonstrated by simply adding the credit to family income and calculating the difference this makes in the number of poor. Each year, the Census Bureau provides estimates of this type—called the Alternative Measures of Income and Poverty—for the U.S. based on data from the CPS; other researchers (e.g., Meyer and Holtz-Eakin, 2001) and organizations estimate the effects in this way from other data sources as well as from the CPS.

**Figure 1**
**Federal EITC Schedule in Tax Year 2004**

**Table 1**
**2004 Federal Earned Income Tax Credit Parameters**

| Type of Return | Maximum Eligible Earnings | Maximum Credit | Begin Phase-Out | Breakeven Point | Credit Rate | Phase-Out Rate |
|---|---|---|---|---|---|---|
| Childless | $5,100 | $390 | $6,390 | $11,490 | 7.65% | 7.65% |
| 1 Child | $7,660 | $2,604 | $14,040 | $30,338 | 34.00% | 15.98% |
| 2 or More Children | $10,750 | $4,300 | $14,040 | $34,458 | 40.00% | 21.06% |

**Source**: Downloaded March 2005 from http://www.irs.gov/pub/irs-drop/rp-03-85.pdf
**Note**: Married Filing Jointly have Phase-out and Breakeven points $1,000 above listed values.

The New York State supplement to the Earned Income Tax Credit (NYS EITC) was enacted in 1994. Designed as a fixed percentage of the federal credit for single individuals and for families, New York State's credit, like the federal credit, is totally refundable. Initially set at 7.5 percent of the federal credit, the NYS EITC has been raised six times, reaching 30 percent of the federal credit in 2003. In 2004, the addition of the NYS EITC increases the maximum benefit for a single parent with two or more children by $1,290, from $4,300 to $5,590.

DATA

This simulation uses data from the Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) March 2005 (2004 income year) to simulate the effect of an expansion of the New York State EITC supplement on employment, hours worked, income, and poverty for New York State residents. The CPS is a monthly survey of approximately 60,000 households, of which approximately 1,100 are from New York State. The CPS is a nationally representative sample of the civilian non-institutionalized population. It is administered to newly recruited households for 4 consecutive months; they then go un-interviewed for 8 months, after which they are interviewed for an additional 4 consecutive months. The CPS ASEC is a supplement to the monthly CPS, which is conducted in March of each year. The ASEC surveys approximately 100,000 households, or 200,000 persons, and provides in-depth information on employment, income, non-cash benefit receipt, and migration.

Given that the data are for tax year 2004, the EITC parameters for tax year 2004 are used in the simulation. Eligibility for the EITC, as well as the value of the federal credit, is determined by the Census Bureau using a tax simulation. To determine eligibility, the Census Bureau runs each tax unit through a tax simulation to estimate their federal tax liabilities and the value of any tax credits. The federal value of the EITC is included in the CPS as a family-level variable. The Census Bureau tax simulation assumes a 100 percent take-up rate for the EITC. That is, those deemed eligible for the credit by the tax simulation

are assumed to receive the EITC and those not eligible are assumed not to apply. The state supplemental

estimates are based on the value of the federal EITC such families receive.


METHODS

Theoretical Effect of the EITC

Labor supply models based on microeconomic theory assume that workers have a fixed amount

of time, which they divide between work and leisure. Potential workers have a reservation wage (level of

compensation) below which they will not work at all. Once an offer wage exceeds their reservation wage,

they will work, but the number of hours worked depends on the wage rate offered. Hence, the theoretical

effect of the EITC on the decision to work for unmarried individuals is unambiguously positive. Because

the EITC raises the offer wage, it can only increase the likelihood that an eligible person will work.

However, the availability of the EITC to married people results in less obvious overall employment

outcomes. While those taking advantage of the EITC may enter the workforce, the increased income to

the family could reduce the employment of other family members. Because leisure is a normal good, this

increased income could lead to another earner in the family reducing overall hours worked and possibly

leaving the labor force (Ellwood, 2001). Following Scholz (1996), it is assumed that all labor supply

decisions are made holding constant the other spouse's earnings and that all persons who enter the labor

force in response to the EITC expansion find employment, in order to simplify the analysis.[3] In other

words, in this paper labor force is equated with working status and the corresponding labels are

interchangeably used. This assumption appears reasonable given that, for example, it is unlikely that a

single mother would enter the labor force, and potentially give up her non-labor market sources of

income, unless she were able to obtain employment.

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[3]Though Eissa and Hoynes (2004) find evidence that increases in the EITC result in modest reductions in the employment and hours worked of married women, these effects are so small that they are unlikely to affect the results of this simulation.

The effect of the EITC on hours worked for those already in the labor force is more ambiguous. Microeconomic theory argues that if the EITC changes the value of an additional hour of work, it will also change the income associated with that additional hour of work. The change in the value of an additional hour of work is referred to as the "substitution effect" and it implies that if workers receive a higher return from an additional hour of work they will choose to work more and reduce their leisure time, all else equal. However, a change in the income associated with that additional hour of work is referred to as the "income effect" and, because leisure is a normal good, an increase in compensation will result in workers working less and taking more leisure.

The EITC program has three distinct regions—the phase-in, plateau, and phase-out—with the substitution and income effects operating differently in each region, resulting in a different impact on hours worked. Figure 1 presents the value of the federal EITC relative to family income for single individuals, individuals with one eligible child, and individuals with two or more eligible children. For those in the phase-in region of the credit, segment A to B, the effect of the EITC is ambiguous. The rise in compensation will increase work because of the substitution effect but decrease work because of the income effect. Hence, the net effect of the rise in net compensation due to the EITC in this region is uncertain.

For those in the region between the maximum eligible earnings and the beginning of the phase-out range, segment B to C, the EITC will lead to a decrease in hours worked. The value of an additional hour of work is the same as it is in the absence of the EITC so there is no substitution effect. But, because the EITC provides those in this region with greater income than they would have in the absence of the EITC, hours worked will decline due to the income effect.

For those in the phase-out region of the credit, segment C to D, the EITC will decrease hours worked. The phase-out rate of the EITC means that the value of an additional hour of work is lower than it is in the absence of the EITC because one must "pay back" part of the EITC, leading to a substitution effect that reduces hours of work. In addition, those in this region still have more income for a given

amount of work than they would in the absence of the EITC and, thus, the income effect will reduce hours worked.

In order to simulate an expansion of the NYS EITC, information is required on the extent to which an EITC increase results in non-employed people entering the labor market as well as the extent to which those already employed change their hours worked. The existing empirical literature on the impact of the EITC on employment has generated numerous estimates of the elasticity of labor force participation (LFP) to net income, which can be used to simulate the number of people entering the labor market for a given change in net income. As a simplifying assumption for the simulation, all persons who enter the labor force are assumed to become employed.

Simulating the change in hours worked for those already employed is significantly more complicated, since it requires information on both the substitution and income effects of a change in the price of labor caused by a change in the marginal tax rate, and because the change in marginal tax rate varies over the three EITC regions. Though some of the existing empirical literature on the EITC has calculated the net change in hours worked after previous expansions of the EITC, these estimates cannot be directly used to simulate future changes to the EITC. Instead, simulating the change in hours worked requires using estimates of the substitution effect and the income effect from the labor supply literature as done in GAO (1993), Dickert, Houser, and Scholz (1995), and Scholz (1996).

Following Dickert, Houser, and Scholz (1995) and Scholz (1996), this paper uses the MaCurdy, Green, and Paarsch. (1990), Triest (1990), and Hausman (1981) substitution and income elasticities to simulate low, medium, and high estimates of the effect of an expansion of the New York State EITC supplement on work, income, and poverty for those currently in the labor force. For those not currently in the labor force, the elasticities of labor force participation to net income estimated in Meyer and Rosenbaum (2001), Keane and Moffitt (1998), and Eissa and Liebman (1996) are used to simulate low, medium, and high estimates of the effect of an expansion of the New York State EITC supplement on work, income, and poverty.

Simulation Methods for Those Persons Not in the Labor Force at the Time of the Expansion

Because, by definition, the data contains far less information on the labor force characteristics of those not in the labor force, a significant number of assumptions are required in order to simulate the effect of a state EITC supplement expansion on the employment, number of hours worked, income, and poverty status of those not in the labor force. Specifically, we do not observe the wage that these individuals would receive should they choose to enter the labor force, nor do we observe the annual number of hours they would choose to work. Thus three key assumptions are made regarding the characteristics single mothers would have should they enter the labor market. The first assumption is that all those not in the labor force who choose to enter the labor force as a result of the EITC expansion would earn the current New York State minimum wage of $7.15.

The second assumption is that labor market entrants would work the same number of hours as the average person of similar characteristics who is currently in the labor force. For example, the average single mother works 1,633 hours per year in the 2005 CPS ASEC, and so single mothers outside the labor force are assumed to work 1,633 hours per year should they choose to enter the labor force.

Lastly, given the complexity of calculating benefit receipt from the numerous income support programs available to low-income working families, it is simply assumed that all persons who choose to join the labor force as a result of an EITC expansion had been poor and become non-poor. Though the assumption that all persons who join the labor force as a result of an EITC expansion become non-poor may seem rather strong, it is actually quite reasonable given that just by counting wages, current combined New York State and federal EITC benefits, and the refundable portion of the federal Child Tax Credit, and by subtracting FICA taxes for a single mother with two or more children who works 1,633 hours per year at the minimum wage of $7.15, family income would be $15,733—just beyond the poverty line of $15,670 for a family of three. Moreover, the inclusion of the value of in-kind benefits such as housing subsidies, food stamps, home energy subsidies, and school lunches—as is done when calculating alternative family income—would push the family even further above the poverty line. On average, a

family with two or more children earning approximately $11,500 in wages received about $800 worth of in-kind benefits.[4]

Given the assumptions cited above, the primary simulation method for the effect of an EITC expansion on those not in the labor force at the time of the expansion involves determining the number of these persons who would enter the labor force for a given change in the EITC supplement. This is done using elasticities of labor force participation to net income drawn from the existing literature on the effect of the EITC on labor supply.

Separate elasticity estimates exist for men, married women, and single mothers, as their labor supply decisions are fundamentally different. Back-of-the-envelope calculations using an elasticity of labor force participation to income of 0.03 for men and 0.26 for married women from Eissa and Hoynes (2004) and the EITC program parameters indicated that an EITC supplement expansion would induce labor force entry only by single mothers. Men are excluded as a result of their very low elasticity, implying minimal changes in participation even for large changes in the EITC benefit. Married women are excluded because a married woman entering the labor force faces a very high marginal tax rate, as the EITC program only extended the phase-in and plateau regions by $1,000 for a married couple in 2004, which make changes in net family income small or even zero. Lastly, though single childless persons can be eligible for the EITC, they can only earn a maximum state and federal benefit of $507, which is completely phased out if they earn more than $11,490. These EITC parameters for the childless yield very small changes in net income for any reasonable number of annual hours worked. Therefore, with the exclusion of these three groups, the simulation for those not in the labor force is conducted only for single mothers.

In order to provide low, medium, and high estimates of the effect of an EITC supplement expansion on the employment of single mothers, three different elasticities of labor force participation to net income are employed in the simulation. The three elasticities are: 0.69 from Meyer and Rosenbaum

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[4]Calculated by the author using the CPS ASEC 2005.

(2001) for a lower bound; 0.96 from Keane and Moffitt (1998) for the medium; and 1.16 from Eissa and

Liebman (1996) for an upper bound. These elasticities were selected as they covered the range of

estimates found in the existing EITC literature. These and other elasticities of labor force participation to

net income are presented in Table 2 in order to give the reader a sense of the range of estimates produced

by the EITC literature.

The next step involved producing the labor force participation rates for single mothers. Given that

mothers with one child and mothers with two or more children participate in the labor force at different

rates, labor force participation rates were estimated separately for each of these two groups. Estimates

from the 2005 CPS ASEC indicate that there were 394,915 single mothers with one child in New York

State, and their labor force participation rate was 79.47 percent; and that there were 321,611 single

mothers with two or more children, and their labor force participation rate was 70.88 percent. With labor

force participation rates for these two groups, the simulated changes in employment among those not in

the labor force were obtained by applying the above mentioned elasticities of labor force participation to

net income to changes in net income due to an expansion of the NYS EITC.

Simulation Methods for Those Persons in the Labor Force at the Time of the Expansion

The simulations of the effect of increases in the New York State EITC supplement for those not

in the labor force presented begin by determining who is currently eligible for the EITC and their EITC

region—phase-in, plateau, or phase-out. EITC eligibility is determined using the Census Bureau-derived

variable *eit_cred*, which is the estimated value of the family's federal EITC, in the CPS data. If the

eit_cred value is positive, a person is eligible for the EITC. Their region is then assigned based on their

own wages, or their wages plus their spouse's wages where appropriate, and their number of children.

As with the simulation for those not in the labor force, low, medium, and high estimates of the

changes in hours worked, income, and poverty in response to a change in the EITC supplement are

provided by using three sets of uncompensated wage and income elasticities drawn from the previous

literature. Specifically, estimates of the uncompensated wage elasticity and income elasticity are obtained

**Table 2**
**Labor Supply Parameters for EITC Simulation**

| | Elasticity of Labor Force Participation to Net Income | | | Uncompensated Wage Elasticity | | | Income Elasticity | | |
|---|---|---|---|---|---|---|---|---|---|
| | Men | Married Women | Single Women | Men | Married Women | Single Women | Men | Married Women | Single Women |
| **Elasticities for those working:** | | | | | | | | | |
| Low: MaCurdy et al (1990) | | | | 0 | 0.11 | 0.11 | 0 | -0.01 | -0.01 |
| Medium: Triest (1990) | | | | 0.06 | 0.27 | 0.27 | 0 | -0.16 | -0.16 |
| High: Hausman (1981) | | | | 0.02 | 0.78 | 0.78 | -0.17 | -0.1 | -0.1 |
| | | | | | | | | | |
| **Elasticities for those not working:** | | | | | | | | | |
| Low: Meyer and Rosenbaum (2001) | | | 0.69 | | | | | | |
| Medium: Keane and Moffitt (1998) | | | 0.96 | | | | | | |
| High: Eissa and Liebman (1996) | | | 1.16 | | | | | | |
| | | | | | | | | | |
| **Other elasticities from the literature:** | | | | | | | | | |
| Dickert, Houser, and Scholz (1995) | | | 0.85 | | | | | | |
| Eissa and Hoynes (1998) | 0.03 | 0.29 | | 0.06–0.07 | 0.08–0.52 | | 0.0 | -0.04–0.41 | |
| Hotz, Mullin, and Scholz (2002) | | | 0.97–1.69 | | | | | | |
| Keane and Moffitt (1991) | | | | | | 0.66 | | | -0.24 |

from MaCurdy et al. (1990), Triest (1990), and Hausman (1981) for both women and men as lower-

bound, medium, and upper-bound estimates, respectively, as done in Dickert et al. (1995) and Scholz

(1996). These elasticities are presented in the last six columns of Table 2.

For the substitution effect, the change in hours worked is calculated by applying the

uncompensated wage elasticity to the percent change in the marginal tax rate an individual faces as a

result of a change in the New York State EITC supplement. The numerator is the change in the EITC and

the denominator includes all taxes, not simply the EITC.[5] An individual's marginal tax rate is calculated

as the 15.3 percent FICA rate, minus their federal EITC rate, plus their federal tax rate, minus their state

EITC rate, plus their state tax rate. Though the New York State EITC benefit is a set percentage of the

federal benefit, this implicitly alters the rate at which the credit is accumulated in the phase-in region and

withdrawn in the phase-out region.

Since everyone in a given EITC eligibility category—childless, one child, two or more children—

and region of the EITC faces the same percentage point change in their marginal tax rate with an

expansion of the EITC supplement, changes in marginal tax rates are calculated and then assigned by

eligibility category and credit region for an expansion to a 35 percent, 40 percent, and then 45 percent

supplement. As the marginal tax rate for each tax unit is provided in the CPS, calculating the percent

change in the marginal tax rate faced by a person after each simulated expansion of the EITC supplement

involves simply dividing the assigned percentage point change in the marginal tax rate by the CPS-

assigned current marginal tax rate. With the percent change in marginal tax rate calculated, each of the

three uncompensated wage elasticities are then applied to each of the three expansions of the credit,

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[5]Many families that receive the EITC also receive in-kind benefits, such as food stamps, which are phased
out as income increases. Hence, changes in the EITC program that increased countable income in these programs,
reducing their value would affect the implicit marginal tax rate faced by a worker. However, the EITC benefit itself
is not counted in the calculation of in-kind benefits. But any labor earnings increase caused by a change in the EITC
benefit rules would be affected because labor earnings are countable income in such programs. The denominator
used to calculate the percent change in the marginal tax rate here does not include the implicit tax rates on labor
earnings from lost benefits from these in-kind programs. The microsimulation required to capture those rates is
beyond the scope of this paper. However, given the relatively small change in labor earnings the simulation
produces, the addition of these implicit taxes is unlikely to substantially affect the results presented here.

which yields low, medium, and high estimates of the change in hours worked due to the substitution

effect at a supplement rate of 35 percent, 40 percent, and 45 percent.

For the income effect, determining the change in hours worked is similar to the process used to

determine the change in employment for those not in the labor force. As with those not in the labor force,

calculations are made on the basis of net income, which is defined as income after state and federal taxes,

including EITC benefits, and FICA taxes. However, for those in the labor force it is possible to calculate

actual net income based on income and taxes reported in the CPS. In order to apply the income elasticities

a person's percent change in net income is calculated by determining the change in the value of the New

York State EITC supplement for a given increase in the supplement rate at their current CPS-determined

income level and dividing this change in their supplement by their net income. The variable eit_cred is

used as the basis for the estimate of the value of the New York State EITC supplement. Beginning in the

March 2004 CPS, the Census Bureau included the value of the state EITC supplement in the variable for

total state taxes. However, given that the state tax is a net value, the amount of the state EITC is not

directly available.[6] Therefore, estimates of a tax unit's New York State EITC value are obtained by

multiplying the value of the federal credit provided in the CPS by 0.30. The value of a change in the New

York State EITC supplement to 35 percent, 40 percent, and 45 percent of the federal credit was then

calculated by multiplying each family's eit_cred value by 0.05, 0.10, and 0.15, respectively.

In order to determine the percent change in hours worked due to the income effect, the percent

change in net income that we determined for each person at each of the three expansions of the EITC

supplement is taken and applied to the gender-appropriate low, medium, and high income elasticities.

With both the income and substitution effects now estimated for all three simulated EITC supplement

expansions using the low, medium, and high elasticities, the effects on hours worked are added together

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[6]Unless the value of the state EITC supplement exceeds a person's total tax liabilities, the net state tax
variable will show a positive amount of taxes owed. The value of the state EITC supplement is not provided as a
separate variable. Therefore it is necessary to impute the value of the state EITC supplement from the value of the
federal EITC, which is reported.

to determine the net percent change in hours worked by each person. This is then converted into actual hours by multiplying the percent change in hours worked by the number of hours worked per year.

Based on the net change in hours worked per year, a person's net income is recalculated by multiplying their net of tax wage rate by the change in the number of hours they worked and adding this value to their previous net income. Given that this change in income may have resulted in a person moving into, or out of, poverty, poverty status is recalculated using the new value for net income.

*Alternative Definitions of Family Income*

One component of the simulation is estimating changes in poverty that would result from changes in the generosity of New York State's EITC supplement program. The standard definition of poverty adds up labor earnings and cash welfare payments and compares this to a family-size adjusted poverty line. However, given that this analysis focuses on the EITC, it would be inappropriate to use a definition of income for determining poverty that excluded the substantial contribution of the EITC to the incomes of low-income families. The Census Bureau has developed several alternative income measures, which are used to examine the change in the official poverty rate that would result from the inclusion of income from programs, such as the EITC, in the income-to-needs calculation.[7] Here an expanded definition of income is used that adds the value of in-kind transfers (food stamps, school lunch, housing subsidies, and home energy subsidies), as well as the federal and state EITC to family income, but subtracts state, federal, and FICA tax payments from family income.

RESULTS

Table 3 presents the change in employment based on the low, medium, and high elasticities of LFP to net income, and hours worked, labor earnings, and NYS EITC benefits based on the low, medium, and high labor supply parameters, respectively. This table divides the effect between those in the labor force (initially working) and those not in the labor force (those not initially working). With regards to

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[7]See Dalaker 2005 for a more detailed description of the alternative poverty measures.

**Table 3**
**Changes in Employment, Hours Worked, Earnings, and State EITC Cost**

| State Supplement as a Percent of the Federal EITC | Change in Number Employed Ages 18–64 | | | Change in Hours Worked (in 1000s) | | | Change in Labor Earnings (in $1000s) | | | Change in State EITC Benefits (in $1000s) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| | Working | Not Working | Total | Working | Not Working | Total | Working | Not Working | Total | Working | Not Working | Total |
| Low Estimate:† | | | | | | | | | | | | |
| 35% | — | 4,238 | 4,238 | -121 | 6,921 | 6,799 | -5,994 | 49,482 | 43,488 | 79,644 | 5,138 | 84,783 |
| 40% | — | 5,896 | 5,896 | -347 | 9,629 | 9,281 | -12,912 | 68,845 | 55,933 | 159,477 | 7,149 | 166,626 |
| 45% | — | 7,125 | 7,125 | -563 | 11,635 | 11,071 | -19,775 | 83,187 | 63,413 | 238,900 | 8,638 | 247,538 |
| Medium Estimate:‡ | | | | | | | | | | | | |
| 35% | — | 8,473 | 8,473 | -1,201 | 13,836 | 12,635 | -18,368 | 98,927 | 80,559 | 80,864 | 11,742 | 92,605 |
| 40% | — | 11,788 | 11,788 | -2,425 | 19,250 | 16,825 | -37,710 | 137,637 | 99,928 | 162,267 | 16,336 | 178,603 |
| 45% | — | 14,244 | 14,244 | -3,867 | 23,260 | 19,393 | -70,497 | 166,312 | 95,815 | 245,392 | 19,740 | 265,131 |
| High Estimate:* | | | | | | | | | | | | |
| 35% | — | 12,707 | 12,707 | -1,460 | 20,751 | 19,291 | -47,205 | 148,372 | 101,167 | 86,799 | 19,812 | 106,611 |
| 40% | — | 17,680 | 17,680 | -3,742 | 28,871 | 25,129 | -101,393 | 206,430 | 105,037 | 174,929 | 27,565 | 202,493 |
| 45% | — | 21,363 | 21,363 | -5,951 | 34,886 | 28,935 | -155,180 | 249,436 | 94,256 | 260,294 | 33,307 | 293,601 |

**Source**: Author's Calculations using Current Population Survey Annual Social and Economic Supplement (ASEC), 2005.
**Note**: The estimated values at the current 30 percent NY State EITC Supplement are: 10.0 million persons employed; 1.5 billion hours worked; $11.8 billion in labor earnings; and 471.0 million in NY State EITC benefits paid.
† The low estimates are simulated using the MaCurdy et al. (1990) elasticities for those initially working and the Meyer and Rosenbaum (2001) elasticities for those not initially working.
‡ The medium estimates are simulated using the Triest (1990) elasticities for those initially working and the Keane and Moffitt (1998) elasticities for those not initially working.
* The high estimates are simulated using the Hausman (1981) elasticities for those initially working and the Eissa and Liebman (1996) elasticities for those not initially working.

changes in employment, under no set of parameters would anyone currently in the labor force exit the

labor force (column 1), as those who originally chose to work would not stop working as working

becomes even more rewarding. However, there are a significant number of persons who enter the labor

force (column 2) as a result of an EITC expansion. As discussed above, the only persons induced to enter

the labor force given the assumptions of this model are single mothers. Focusing on an expansion of the

NYS EITC to 45 percent of the federal credit, it is estimated that at the low end an additional 7,125 single

mothers would enter the labor force, 14,244 would enter under the medium estimate, and 21,363 would

enter under the high estimates (column 3).

Columns 4, 5, and 6 of Table 3 present the estimated change in hours worked. As expected from

the theoretical assumptions, the number of hours worked by those currently in the labor force declines

with an expansion of the NYS EITC. Estimates of the decline in hours worked with an expansion to a 45

percent NYS EITC range from 563,000 hours per year to 5.951 million hours per year for those currently

in the labor force (column 4). However, the decline in hours worked by those in the labor force is more

than offset across all specifications by the increase in hours worked by those not in the labor force prior to

the expansion. The increase in hours worked by those not previously in the labor force is estimated to

range from 11.635 million to 34.886 million (column 5). The net effect is an increase in hours worked of

between 11.071 million and 28.935 million (column 6).

Columns 7, 8, and 9 of Table 3 present the estimated change in labor earnings. Owing to the

decline in hours worked by those in the labor force, an expansion to a 45 percent NYS EITC is estimated

to reduce their labor earnings by between $19.775 million and $155.180 million (column 7). Again, this is

more than offset by the estimated increase in the labor earnings of those entering the labor force of

between $83.187 million and $249.436 million (column 8). On net, this implies that an expansion to a 45

percent NYS EITC yields an increase in the labor earnings available to low-income families of between

$63.413 million and $94.256 million (column 9).

Columns 10, 11, and 12 of Table 3 present the estimated change in the New York State EITC

benefits paid. With an increase in the EITC supplement rate, benefit payments increase to both those in

the labor force and not in the labor force. For those in the labor force, the increase in EITC benefits due to the expansion of the credit rate offsets the decline in hours worked. Again taking the example of a 45 percent NYS EITC supplement, payments to those in the labor force increase by between $238.900 million with the low estimate and $260.294 million with the high estimate. For those not in the labor force, increasing the NYS EITC supplement to 45 percent results in an increase in benefits of between $8.638 million and $33.307 million. This results in a net increase in NYS EITC expenditures (benefits received) of between $247.538 million and $293.601 million.

Table 4 presents the simulated effect of an EITC expansion on hours worked, labor earnings, combined NYS and federal EITC benefits, and alternative family income separately for the average person initially in the labor force and not initially in the labor force. With an expansion to a 45 percent NYS EITC supplement, the average person in the labor force decreases their hours worked by between 0.53 and 5.6 hours per year (column 3), while the hours worked of those not initially in the labor force increases by the assumed 1,633 hours (column 6). As a result, the average labor earnings of those initially in the labor force decline by between $19 and $147 (column 3), while average labor earnings of those initially in the labor force decline by the assumed $11,676 (column 6).

For those initially in the labor force, the decline in labor earnings is more than offset by increased federal and state EITC benefit payments, which range from an additional $240 to $347 (column 3). The net effect on family income is shown in the average alternative family income rows, which indicate that average family income changes by between $228 and $214 relative to its pre-EITC expansion value of $27,399.

For those not initially in the labor force, they are assumed to go from $0 in state and federal EITC benefits to the combined maximum benefit at a 45 percent state supplement rate, which, averaged between women with one child and women with two or more children, yields $5,035 (column 6). Adding the assumed annual labor earnings and the assumed EITC benefit together yields an income of $16,711. However, as most single mothers not initially in the labor force report some family income, the average

**Table 4**
**Simulated Changes in Average Hours Worked, Average Earnings, Average EITC Benefits, and Average Alternative Family Income**
**for Various Increases in the NY State EITC Supplement**

| | | Working State Supplement as a Percent of the Federal EITC(a) | | | Not Working State Supplement as a Percent of the Federal EITC(b) | | |
|---|---|---|---|---|---|---|---|
| | | (1) 35% | (2) 40% | (3) 45% | (4) 35% | (5) 40% | (6) 45% |
| Average Change in Hours Worked Per Year Per Person | Low Estimate† | -0.11 | -0.33 | -0.53 | 1633.00 | 1633.00 | 1633.00 |
| | Medium Estimate‡ | -1.14 | -2.30 | -3.67 | 1633.00 | 1633.00 | 1633.00 |
| | High Estimate* | -1.38 | -3.55 | -5.64 | 1633.00 | 1633.00 | 1633.00 |
| Average Change in Annual Labor Earnings | Low Estimate† | -$6 | -$12 | -$19 | $11,676 | $11,676 | $11,676 |
| | Medium Estimate‡ | -$17 | -$36 | -$67 | $11,676 | $11,676 | $11,676 |
| | High Estimate* | -$45 | -$96 | -$147 | $11,676 | $11,676 | $11,676 |
| Average Change in Federal and State EITC Benefits | Low Estimate† | $80 | $160 | $240 | $4,688 | $4,862 | $5,035 |
| | Medium Estimate‡ | $86 | $173 | $272 | $4,688 | $4,862 | $5,035 |
| | High Estimate* | $116 | $230 | $347 | $4,688 | $4,862 | $5,035 |
| Average Change in Alternative Family Income | Low Estimate† | $77 | $152 | $228 | $7,765 | $7,939 | $8,112 |
| | Medium Estimate‡ | $73 | $144 | $215 | $7,765 | $7,939 | $8,112 |
| | High Estimate* | $75 | $144 | $214 | $7,765 | $7,939 | $8,112 |

**Source**: Author's Calculations using Current Population Survey Annual Social and Economic Supplement (ASEC), 2005.
**Notes**:
(a) For those initially working the average values at the current 30 percent NY State EITC Supplement are: 1467 hours worked; $11,214 in labor earnings; $1,936 in EITC benefits; and Alternative Family Income of $27,399.
(b) For those not initially working the assumed values at the current 30 percent NY State EITC Supplement are: 0 hours worked; $0 in labor earnings; $0 in EITC benefits; and Alternative Family Income of $8,599 (calculated from CPS).
† The low estimates are simulated using the MaCurdy et al. (1990) elasticities for those initially working and the Meyer and Rosenbaum (2001) elasticities for those not initially working.
‡ The medium estimates are simulated using the Triest (1990) elasticities for those initially working and the Keane and Moffitt (1998) elasticities for those not initially working.
* The high estimates are simulated using the Hausman (1981) elasticities for those initially working and the Eissa and Liebman (1996) elasticities for those not initially working.

value of family income for single mothers not initially in the labor force of $8,599 is subtracted from the $16,711 they are assumed to earn in the labor force in order to get a change in family income of $8,112.

Table 5 presents the simulated effect of an EITC expansion on poverty by combining the low, medium, and high estimated change in poverty for those initially in the labor force with the low, medium, and high estimated change in poverty for those not initially in the labor force who enter the labor force. Table 5 also presents the estimated change in poverty without any behavioral assumptions.

As a result of increased labor force participation and increased EITC benefit receipt, the expansion of the NYS EITC has a significant effect on the number of persons in poverty. With an expansion of the credit to 45 percent, poverty is decreased by approximately 33,000 persons (adults and children) among those in the labor force, and approximately 35,000 persons among those who enter the labor force under the low estimate (column 4). Under the medium estimates, poverty is decreased by approximately 38,000 persons among those in the labor force, and by approximately 49,000 persons among those who enter the labor force (column 7). Under the high estimates, poverty is decreased by approximately 39,000 persons among those in the labor force, and by approximately 59,000 persons among those who enter that labor force (column 10). Thus total poverty is estimated to fall by between 68,000 and 98,000 persons with a 45 percent increase in the NYS EITC supplement rate.

With an expansion of the NYS EITC credit to 45 percent, the total poverty rate declines from the current 11.75 percent to 11.39 percent under the low parameters (column 5); 11.29 percent under the medium parameters (column 8); and 11.23 percent under the high parameters (column 11). As the effect on poverty rates for those in the labor force varies little by low, medium, or high estimates, the child poverty rates are only presented for the medium estimate. With an expansion of the NYS EITC from 30 percent to 45 percent, it is estimated that the child poverty rate would decline from the current 15.07 percent to 14.01 percent (column 14).

Table 5 also presents poverty rates using a model with no behavioral effects. The model without behavioral effects understates the reduction in poverty relative to even the low estimate using behavioral effects. Moreover, it completely misses the even greater reductions in poverty for those who enter the

**Table 5**
**Various Estimates of Reductions in Alternative Poverty Rates of All New York Residents as a Result of Expansion of State EITC**

| State Supplement as a Percent of the Federal EITC(a) | Estimated Changes in Alternative Total Poverty-No Behavioral Effects | | | Estimated Change in the Alternative Poverty with Behavioral Effects | | | | | | | | | Medium Estimates of Changes in the Alternative Child Poverty | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Low Estimates† | | | Medium Estimates‡ | | | High Estimates* | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
| | Change in Poverty Count (in 1000s) | Poverty Rate | Change in Poverty Rate | Change in Poverty Count (in 1000s) | Poverty Rate | Change in Poverty Rates | Change in Poverty Count (in 1000s) | Poverty Rate | Change in Poverty Rates | Change in Poverty Count (in 1000s) | Poverty Rate | Change in Poverty Rates | Change in Poverty Count (in 1000s) | Poverty Rate | Change in Poverty Rates |
| **Working:** | | | | | | | | | | | | | | | |
| 35% | -3 | | | -3 | | | -6 | | | -16 | | | -1 | | |
| 40% | -12 | | | -15 | | | -35 | | | -30 | | | -8 | | |
| 45% | -30 | | | -33 | | | -38 | | | -39 | | | -17 | | |
| **Not Working** | | | | | | | | | | | | | | | |
| 35% | — | | — | -12 | | | -16 | | | -20 | | | -10 | | |
| 40% | — | | — | -23 | | | -33 | | | -39 | | | -21 | | |
| 45% | — | | — | -35 | | | -49 | | | -59 | | | -31 | | |
| **Total:** | | | | | | | | | | | | | | | |
| 35% | -3 | 11.75% | 0.00 | -15 | 11.67% | -0.08 | -22 | 11.63% | -0.12 | -35 | 11.56% | -0.19 | -12 | 14.82% | -0.25 |
| 40% | -12 | 11.65% | -0.10 | -38 | 11.55% | -0.20 | -67 | 11.39% | -0.35 | -69 | 11.39% | -0.36 | -29 | 14.43% | -0.64 |
| 45% | -30 | 11.55% | -0.20 | -68 | 11.39% | -0.36 | -86 | 11.29% | -0.45 | -98 | 11.23% | -0.52 | -48 | 14.01% | -1.06 |

**Source:** Author's Calculations using Current Population Survey Annual Social and Economic Supplement (ASEC), 2005.

b:

(a) Alternative poverty count for all persons in NY State in 2004 was 2,233,000 and the poverty rate was 11.75%. The poverty count for all children in NY State in 2004 was 686,000 implying a child poverty rate of 15.07%.

† The low estimates are simulated using the MaCurdy et al. (1990) elasticities for those initially working and the Meyer and Rosenbaum (2001) elasticities for those not initially working.

‡ The medium estimates are simulated using the Triest (1990) elasticities for those initially working and the Keane and Moffitt (1998) elasticities for those not initially working.

* The high estimates are simulated using the Hausman (1981) elasticities for those initially working and the Eissa and Liebman (1996) elasticities for those not initially working.

labor force. With an expansion of the NYS EITC from 30 percent to 45 percent, and assuming no

behavioral effects, the total number of people in poverty is estimated to fall by 30,000 (column 1), or

from the current poverty rate of 11.75 percent to a poverty rate of 11.55 percent (column 2), for a

reduction of 0.20 percentage points (column 3). For the medium estimates of behavioral change, the

number of people in poverty is reduced by 49,000 from those who enter the labor force, and by 38,000 for

those who were initially in the labor force for a total of 86,000 (column 7). Thus, overall poverty

reduction is underestimated by approximately 56,000 when behavioral changes are not considered.

Table 6 presents side-by-side comparisons of the results using the medium parameters for

behavioral effects and results omitting behavioral effects for all outcomes of interest. In terms of

employment, hours worked, and labor earnings, the model with no behavioral effects estimates no change

in these outcomes by definition. In contrast, the simulation results using the medium parameters for

behavioral effects estimates an increase in employment of 14,244 persons, a net increase in hours worked

of 19.393 million, and a net increase in labor earnings of $95.815 million.

With regards to program expenditures, Table 6 shows that omitting behavioral effects, an increase

in the NYS EITC supplement rate from 30 percent to 45 percent will result in additional program

expenditures, or benefits paid, of $235.513 million. Based on the medium estimates, this is $9.879 million

less than the estimated benefits paid to those in the labor market at the time of the EITC change using the

behavioral model, and misses completely the $19.787 million in estimated additional benefits paid to the

new labor market entrants. Thus, the model without behavioral effects understates the increased costs of

expanding the EITC program by a total of $29.666 million.

In the model with no behavioral effects, the only change in family income occurs through the

change in the amount of the state EITC benefit received. However, in the behavioral model labor supply,

and the values of labor earnings, state taxes, and federal taxes/EITC benefit are allowed to vary in

addition to the state EITC benefit. Using the medium behavioral effects, the family incomes of those

initially in the labor force are estimated to increase by $226.276 million, while the family incomes of

those not initially in the labor force are estimated to increase by $93.757 million, for a total increase in

**Table 6**
**Comparison of Effects of EITC Expansion from 30 to 45 Percent**
**with and without Behavioral Responses**

|  |  | (1) Behavioral Effects (Medium Estimates)‡ | (2) No Behavioral Effects | (3) Difference |
|---|---|---|---|---|
| Employment |  |  |  |  |
|  | Working | 0 | 0 | 0 |
|  | Not Working | 14,244 | 0 | 14,244 |
|  | Total | 14,244 | 0 | 14,244 |
| Hours Worked (In 1000s) |  |  |  |  |
|  | Working | -3,867 | 0 | -3,867 |
|  | Not Working | 23,260 | 0 | 23,260 |
|  | Total | 19,393 | 0 | 19,393 |
| Labor Earnings (In 1000s) |  |  |  |  |
|  | Working | -70,497 | 0 | -70,497 |
|  | Not Working | 166,312 | 0 | 166,312 |
|  | Total | 95,815 | 0 | 95,815 |
| State EITC Benefits (In 1000s) |  |  |  |  |
|  | Working | 245,392 | 235,513 | 9,879 |
|  | Not Working | 19,787 | 0 | 19,787 |
|  | Total | 265,179 | 235,513 | 29,666 |
| Family Income (In 1000s) |  |  |  |  |
|  | Working | 226,276 | 235,513 | -9,237 |
|  | Not Working | 93,757 | 0 | 93,757 |
|  | Total | 320,033 | 235,513 | 84,520 |
| Persons in Poverty |  |  |  |  |
|  | Working | -37,535 | -29,776 | -7,759 |
|  | Not Working | -48,817 | 0 | -48,817 |
|  | Total | -86,352 | -29,776 | -56,576 |

**Source**: Author's Calculations using Current Population Survey Annual Social and Economic
Supplement (ASEC), 2005.
‡ The medium estimates are simulated using the Triest (1990) elasticities for those initially working and
the Keane and Moffitt (1998) elasticities for those not initially working.

family income of $320.033 million (column 1).[8] Without behavioral effects, the family incomes of those initially in the labor force increases by the $235.513 million increase in the state EITC supplement (column 2). There is no increase in the family incomes of those not initially in the labor force. On net, the model with no behavioral effects understates the change in family income resulting from an expansion of the NYS EITC by $84.520 million.

CONCLUSIONS

Using a variety of parameters drawn from the labor supply and EITC literature, this paper provides low, medium, and high estimates of the effect of expanding the NYS EITC on employment, hours worked, income, poverty, and the cost of the program. It then compares these estimates with those obtained from a model of the effect of expanding the NYS EITC that omits behavioral effects. Overall, an expansion of the NYS EITC from 30 percent to 45 percent of the federal credit is estimated to increase employment by between 7,125 and 21,363 single mothers. Hours worked are estimated to decline by between 563,000 hours per year and 5.951 million hours per year for those in the labor force at the time of the expansion, and increase by between 11.635 million and 34.886 million hours for those not in the labor force at the time of the expansion. Therefore, on net, hours worked by New York State residents would increase by between 11.071 million and 28.935 million hours.

These results clearly demonstrate that expanding state EITC supplements will significantly increase the labor force participation of single mothers, increase the total income of low-income families, and reduce their risk of poverty. The labor supply incentives created by the EITC program will move

[8]Based on the assumptions specified for persons not in the labor force who enter the labor force in response to the EITC increase, a single mother with one child would have a family income of $13,912 and a single mother with two children would have a family income of $16,378 with an expansion of the NYS EITC to 45 percent. With an expansion of the NYS EITC to 45 percent of the federal credit, 7,017 single mothers with one child, and 7,227 single mothers with two children would enter the labor force. Based on the CPS, the average family income in the CPS of a single mother with one child not in the labor force is $8,047 and the average family income of a single mother with two children is $9,124. Taking the difference between average incomes in and out of the labor force and multiplying these values by the respective number of people who enter the labor force yields an aggregate increase in family income of $93.757 million.

people not currently in the labor force into the labor force. And it will move workers currently in the phase-in region to work more. This will increase their income via both greater labor earnings and higher EITC payments. Hence, each additional dollar of EITC benefits to these families will mean more than a dollar of additional income. Since these are predominantly poor families to begin with, the EITC program has its greatest impact on poor families.

This paper further demonstrates the importance of including behavioral effects in estimating the impact of EITC program changes. Using the medium estimates, an increase in the NYS EITC Supplement from 30 percent to 45 percent will induce 14,244 more people into the labor force. While it will decrease the hours of work of those in the labor force at the time of enactment by 3.867 million hours, this will be offset by the 23.260 million hours of work by new entrants. Likewise, ignoring behavioral effects will miss the decline of $70.497 million in the earnings of those in the labor market at the time of enactment, but also the more than offsetting $166.312 million increase in the earnings of new labor market entrants.

Behavioral effects also impact the estimated cost of the EITC program. The 14,244 people who were not in the labor force prior to the enactment of the EITC will now be counted as receiving EITC benefits. But benefits will also rise on average for those who were employed because those in the phase-in region will work more and those in the phase-out region will work less.

Taken together, these differences between models with and without behavioral effects suggest that cost-benefit analyses of expanding the EITC program made based on estimates from models without behavioral effects would understate both the costs and benefits of the expansion. Moreover, estimates of the effect of current EITC programs on income and poverty that omit labor supply responses to the program—such as the Census Bureau's Alternative Poverty Estimates— fail to capture the complete impact of the EITC.

This study demonstrates why policy research on the effect of the EITC on income understates both the costs and benefits of EITC expansion when it simply adds the increased value of EITC benefits to existing income. Doing so ignores the fact that the major labor supply response to the EITC is for persons not in the labor force to enter the labor market, and that those currently in the labor market will

seek to maximize their EITC benefit, which will disproportionately reduce poverty, as most persons below poverty will be induced to increase their labor earnings.

The extension of the existing simulation framework to state EITC programs and more rigorous analysis of outcomes for those not in the labor force is an innovation to the academic literature. Previous simulations have focused primarily on the effect of an EITC expansion on those currently in the labor force, which, as this paper demonstrates, represents only a fraction of the total effect of the EITC. The use of estimates of the elasticity of labor force participation to net income from previous studies of the EITC to simulate changes in employment is a straightforward yet powerful addition to the existing framework. Moreover, extending the outcomes examined to income, poverty, and costs to the state, which were omitted from previous studies, expands the policy relevance of this literature.

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