

food stamp participation, then we should observe a larger decline in participation per dollar of earnings over this range of earnings for families with two or more children than for one-child families. The third range is the area where EITC remains constant with each \$1 of earnings. In the subsequent two segments, EITC declines with each added \$1 of earnings, but phases out more quickly for one-child families. Under the spline function, the slopes are constrained in a way that insures continuity. With the regression strategy, we can simultaneously test for separate earnings effects while holding constant for other independent factors influencing food stamp participation.

IV. Data

Survey of Income and Program Participation

We use the 1996 panel of the Survey of Income and Program Participation (SIPP) as our primary data source. The SIPP is a large-scale, national survey sponsored by the U.S. Census Bureau. The SIPP collects information about sources and amounts of income, labor force information, program participation, and demographic characteristics. The SIPP is designed “to measure the effectiveness of existing federal, state, and local programs; to estimate future costs and coverage for government programs, such as food stamps; and to provide improved statistics on the distribution of income in the country.”²⁰ In addition to the SIPP, we supplement our analyses with state-level information including: state EIC implementation, monthly state unemployment rates, annual state employment growth rates, Electronic Benefits Transfer (EBT), TANF implementation, and political affiliation of states’ governors. These additional variables and their sources are discussed in greater detail below.

The SIPP’s core survey collects monthly information from a stratified sample of the U.S. civilian noninstitutionalized population. The core questions collect information pertaining to the labor force participation, program participation, and income questions which help measure the nation’s economic situation. The 1996 panel includes interview data from December 1995 through March 2000 and has a sample size of 40,188 households. Household members are interviewed in four-month intervals—where each 4-month period is called a “wave”—and information is collected for each of the preceding four months.

The SIPP supplements the core survey in each wave with detailed topical modules that provide information including but not limited to past participation in the Food Stamp Program. Another

three topical modules ask questions about taxes (in waves four, seven, and ten in the 1996 panel) including two questions about the EITC: (1) Did you claim an earned income credit on your federal income tax return?; and (2) What was the amount of earned income credit claimed? The 1996 SIPP panel gathers EITC information as part of the tax topical models in tax filing years 1996, 1997, and 1998.

The unit of analysis is individual household heads ages 18 through 60. Although individuals are our unit of analysis, many of our variables are measured at the household level. We use monthly data, and our unit of observation is the person-month.²¹

Underreporting of Food Stamp Receipt in the SIPP. Underreporting of FSP participation is an issue when using the SIPP survey data as it is for other transfer programs (e.g., AFDC/TANF, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Medicaid). Bitler et al. (2002) compare transfer program participation as measured in Food and Nutrition Service administrative data and 1996 SIPP panel data. Bitler et al. (2002) find that the SIPP underreports food stamp participation by about ten percent annually. Cody and Tuttle (2002) estimate the underreporting of food stamp receipt in the SIPP to be between seven and 19 percent. Therefore, while underreporting of food stamp receipt is an issue to be noted, we cannot correct for it in our analysis and any bias introduced is likely to be randomly distributed.

Low Response Rate for EITC Participation in the SIPP. The 1996 SIPP panel measures whether EITC was claimed in 1997, 1998, and 1999. Unfortunately, much of these data are missing or unreported. Of our study population,²² approximately 65 percent of respondents either refused, don't know, or did not answer the question asking about whether the EITC was claimed. The remaining approximately 35 percent of respondents answered "yes" or "no." Of those respondents who answered yes, approximately 51 percent reported the actual amount of EITC claimed, while the remaining 49 percent either refused or said don't know. These missing data affect our independent variable of interest in model 1—actual EITC claimed—and led us (along with concerns about endogeneity) to compute the EITC a household would be eligible for—the primary independent variable of interest for model 2. Although we know of no systematic bias introduced by these missing data, they should be kept in mind when considering our results.

²⁰ U.S. Census Bureau. *Overview of the Survey of Income and Program Participation (SIPP)*. <http://www.sipp.census.gov/sipp/overview.html> (Accessed August 2003).

²¹ One issue in using the SIPP is how to treat data from multiple months for a given case. Multiple observations for the same case are likely correlated and thus need to be accounted for in calculating the standard errors. We obtain standard errors that account for non-independence of the cases using Stata's cluster option.

Seam Bias in the SIPP. We use monthly data rather than wave-specific (every four months) data. We note that using the monthly data does not allow us to avoid the “seam bias”—SIPP participants tend to report the same information for all four months of a reference wave. Therefore, in cases where seam bias is problematic, we do not expect to see a change in information within a wave but do expect information changes between waves with the start of the new reference month 1. Past research using the SIPP has addressed the seam bias by using wave-specific data, using only data from month four of every wave (Grogger 2003), or controlling for seam bias by using an indicator for the reference month one (Blank and Ruggles 1996). Since many of our SIPP and non-SIPP variables (e.g., state unemployment rate, state waiver program implementation, TANF implementation, etc.) are available monthly, we believe that the additional information obtained from the monthly data outweigh the concerns about seam bias. We control for seam bias by using an indicator variable for reference month one in our models.

Attrition in the SIPP. The 1996 SIPP panel is 48 months long which makes it susceptible to attrition. The initial response rates for SIPP panels are about 80 percent with final response rates about 67 to 74 percent (Logan et al. 2002). The 1996 SIPP Panel oversamples economically disadvantaged groups (e.g., African Americans, Hispanic whites, and female-headed households) (Logan et al. 2002). While attrition is a concern in the SIPP as it is in other longitudinal survey data, the data are weighted to account for attrition, nonresponse, and differential sampling rates.

Weighting the Data. We use SIPP person weights for our descriptive analyses and our multivariate analyses.

Variables Used in the Analysis

Using the 1996 SIPP panel, we define our dependent and independent variables as described in our empirical approach. Our dependent variable is Food Stamp Program participation which equals one if a household head or spouse participates in the FSP during a given month and zero otherwise.²³

Federal EITC Measures. Federal EITC participation is measured in two ways. First, the *actual* amount of EITC claimed for tax years 1996, 1997, and 1998 is used as measured in the tax topical module. Actual EITC claimed is used as the primary independent variable of interest in

²² Recall that our study population includes households below 130 percent of the poverty line with assets less than or equal to \$2,000, or \$3,000 if at least one household member is age 60 or older.

²³ FSP child-only cases are not measured in the SIPP.

model 1. Actual EITC is measured in three variables that indicate whether the amount received was low (\$1-\$999), medium (\$1,000-\$1,999), or high (\$2,000+). Actual EITC indicators were created because actual EITC claimed is measured as a categorical variable in the SIPP. Actual EITC claimed is *linked to data for the household in the year in which the credit was received not the tax year for which it was claimed*—the previous year. For example, EITC claimed for income earned in tax year 1996 is linked to data for the household in 1997 when the credit was received. We do this because we believe the income received from EITC affects behavior of the household (e.g., food stamp participation) when it is received. Although it is also plausible to believe that households alter their working behavior during the tax year to change the amount of EITC received the following year, we believe this effect is less influential on food stamp participation.

Second, given the amount of missing data for the actual EITC claimed in the tax module, we compute the amount of EITC a household *should be eligible for*. We use the computed EITC amount as the primary independent variable of interest in model 2. We use the following characteristics of the household to compute the amount of EITC a household is eligible for in each tax year: number of children,^{24,25} earned income,²⁶ phase-in rate, phase-out rate, income at which phase-out begins, and the minimum and maximum earned income in each year for EITC eligibility

The total income excluding cash assistance is computed by adding together the total monthly income of the head and spouse, if any, over the calendar year and subtracting the amount of cash assistance received by the household head's family during the year. If this total income is larger than the value for income at which phase-out begins then the difference between the total and the phase-out value is multiplied by the phase-out rate, and subtracted from the maximum amount of credit the household is eligible for. The remaining amount is the estimated value of the EITC for which the household is eligible.

²⁴ Number of children in the household during the year was calculated by taking the average number of children present during each month of the year, and rounding that value up at .25 to account for children who are born during the year (for example 1.2=1 and 1.25=2). We concluded that households have children for part of the year if a new child joins or leaves the household due to birth or changing household composition. In the case of birth, the household may claim the child for EITC, in the case of a child joining or leaving the household, the household may or may not be able to claim the child.

²⁵ The number of children and tax year are used to match the phase-in rate, phase-out rate, income at which phase-out begins, minimum and maximum earned income for EITC eligibility, and maximum credit to each household.

²⁶ Earned income is calculated by adding the monthly earnings of the household head and spouse, if any, for the calendar year. The earned income is used to determine the maximum amount of EITC the household is eligible for before phase-out.

State EIC. To measure the impact of state earned income credit programs, we include an indicator variable measuring whether and in what year a refundable EIC was implemented in every state.²⁷ It is important to include refundability as part of the variable definition, rather than simply noting whether or not a state has an EIC program. This is because a state with a refundable EIC provides greater benefit to low-income workers than does a state without an income tax. And, a state without income tax, in turn, provides greater benefit to low-income workers than does a state with a non-refundable income tax (see textbox on page 3-4).²⁸

Food Stamp Program Characteristics. We include an indicator measuring whether and in what month the Electronic Benefits Transfer (EBT) was implemented statewide in every state.²⁹

Employment Characteristics. Several measures of employment status and labor force participation of the household head and spouse are included. Employment is measured for the household head with indicator variables for whether the individual is employed or in the labor force but unemployed, with out of the labor force as the omitted category.

Welfare Reform Conditions. We include measures for both the implementation of welfare reform and the presence of state waiver programs. TANF implementation is measured using an indicator that equals one when TANF was implemented statewide. The waiver indicator equals one if a major waiver program was in effect; the indicator equals zero before the waiver program was implemented and when TANF was implemented and replaced the waiver program. To estimate the impact of TANF benefits on household behavior, we include both an indicator measuring household head participation in TANF and the amount of benefits a household received.

Macroeconomic Conditions. To estimate the impact of the economic conditions on food stamp participation, we use the seasonally adjusted monthly unemployment rate for each state as reported in the Local Area Unemployment Statistics data series by the U.S. Bureau of Labor Statistics. We also use the annual state employment growth rate for the non-institutionalized

²⁷ State EIC information taken from “A Hand Up: How State Earned Income Tax Credits Help Working Families Escape Poverty in 2001” by Nicholas Johnson, Center on Budget and Policy Priorities, December 2001.

²⁸ Maine and Vermont have the same state FIPS code in the SIPP. Vermont has a refundable EIC for 1996 through the present while Maine has a non-refundable EIC for 2000 only. Twenty-nine percent of the total 86,964 federal EITC tax claimants from both states in 2001 were from Vermont (Source: Internal Revenue Service special tabulations for USDA Economic Research Service). Thus, on balance, the joint EIC benefit for Vermont/Maine is calculated as closer to zero than one and is set to zero.

²⁹ EBT implementation information was collected from USDA’s Food and Nutrition Service website http://www.fns.usda.gov/fsp/ebt/ebt_status_report.htm.

civilian population over 16 years of age³⁰ using data available through the U.S. Bureau of Labor Statistics.

Demographic Characteristics. Demographic characteristics are measured for the household head in each month. Age is measured as a continuous variable. Race and ethnicity are measured with indicators for whether the household head is non-Hispanic black, non-Hispanic other, and Hispanic, where non-Hispanic white is the omitted category. Education level is measured with two indicator variables for whether the household head has a high school education or greater than a high school education, where less than a high school education is the omitted category. A binary indicator variable is included to measure whether the household head is female. Region of residence is measured with indicator variables for East, Central, and West, where South is the omitted category.

Several variables are included to describe the household composition including household size, whether there are two adults in the household,³¹ and the ages of any children in the household. Children are measured using indicator variables for whether the children are ages 0 to 2 or ages 3 to 5, with ages 6 to 17 being the omitted category.

Other Measures. To determine if the timing of the receipt of EITC benefits impacts food stamp receipt, we measure whether federal EITC receipt has a seasonal effect. Since over 98 percent of EITC claimants receive their benefits in a lump sum,³² it is plausible that any effect on food stamp participation is greater in the months around when the lump sum is received. To test this, we interact a variable for each of the three trimesters of the year with the three indicators measuring actual EITC claimed.

To isolate the impact, if any, of state government, we include indicator variables for whether a state has a governor who is a Democrat or an Independent, with Republican being the omitted category.

V. Findings

Our empirical results indicate there are many significant determinants of FSP program participation. First, we present the results of the descriptive analyses identifying patterns of

³⁰ The employment growth rate for year t is defined as $t = \text{Log}(\text{EMP}_t) - \text{Log}(\text{EMP}_{t-1})$, where $\text{Log}(\text{EMP}_t) = \text{Log}(\text{state employment}/\text{state total population})$.

³¹ We used an indicator for whether there are two adults in the household instead of marital status because it more accurately captures the existence of two potential wage earners in the household.