Participation in Food Assistance, Maternal Employment, and Child Obesity

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With the recent welfare reform, the Food Stamp Program (FSP) and other food assistance programs have become the major components of the social safety net for low-income households. The goal of these food assistance programs is to mitigate food insecurity and related health problems among vulnerable populations, especially impoverished children. One measure of health outcome directly linked to food consumption is obesity. Child obesity has become a very serious public health issue as the percentage of overweight children in elementary school had more than tripled from 4% in 1960's to 13% in 1999. Overweight children are at risk for cardiovascular diseases, diabetes, and other serious health problems in childhood (see Allison, 1999; Bouchard, 1997; Diezs, 1997) as well as negative outcomes on education and earnings (see Averett and Korenman, 1996; Gortmaker et al., 1993; Cawley, 2000). Given the dramatic trends in the overweight status of the U.S. in past few decades, certain socio-economic factors other than genetics must play a significant role as well. For instance, food insecurity may actually play a role in the onset of obesity among low-income groups.[1] Despite its volume, few empirical studies link the participation in FSP to the risk of obesity among participants, especially children. In addition, the impact analyses of general food program participation on children's well-being have also suffered from significant selection problems. Not all eligible women take up benefits, so if FSP selects the neediest women, then studies that compare FSP participants to non-

[1] A lack of adequate resources for food could result in weight gain in at least two ways: first, low-income families may consume lower-cost foods with relatively higher levels of calories per dollar to avoid hunger; second, physiological changes may occur to help the body conserve energy when foods are periodically inadequate.

participants without adjusting for differences in “need” may underestimate the effects of the program. In contrast, if the FSP participants are more highly motivated than non-participants are, then studies that fail to account for motivation may overestimate the program’s effects.

The effects of FSP participation on mitigating child obesity are likely confounded with maternal employment decisions. Parents’ participation in labor market increases family incomes; at the same time, parental employment can also alter their potential income eligibility and, in turn, becomes less desirable for mothers who would be eligible otherwise. On the other hand, supplemental food subsidies from FSP may also free up mothers’ time spent in home production, especially food preparation, and enable them to work away from home. It remains unclear that which effect will dominate among the eligible single-mother households. Furthermore, working mothers are likely to have less time and energy to invest in their children, such as preparing nutritious foods and getting children engaged in various healthy activities.

The objective of this study is to evaluate the roles and relationships between public food assistance programs and maternal labor supply in affecting child health outcomes among single-mother families. This study first develops a behavioral framework to guide the empirical models used for estimating the FSP participation and maternal employment choice function and their impacts on child health outcomes. Suppose a single mother draws utility from consumption, leisure, and the quality of her children. The mother has to allocate her time between leisure and work given the time constraint. The quality of her children is a function of their health status, which is determined by a series of historical maternal time inputs, proxied by her leisure time, and health investments, proxied by FSP participation.

The mother is assumed to simultaneously choose her labor supply and FSP participation status to maximize family utility subject to her time and budget constraints. Based on this

theoretical model, it can be derived that the mother values FSP since it increases the family utility by improving children's food security and health status. If participating in FSP were completely costless, all eligible families would take up the coverage. To account for the non-participation among the eligible families, a "stigma" term is introduced to the utility function, as suggested by Moffitt (1983). The labor supply choice set is simplified into three discrete choices: not to work, to work part-time, and to work full-time. In conjunction with FSP participation decision, the choice set faced by the mother has 6 alternatives. As the behavioral model indicates, the joint decision on FSP participation and labor supply is a function of family structure, ethnicity, family non-labor income, local market conditions, the health status of mother and child, and state welfare policy parameters.

To address the potential bias caused by the endogeneity and sample selection of FSP participation and parental labor supply decisions, I use a semi-parametric specification proposed by Heckman and Singer (1984) to help control for the unobserved parental and children characteristics. In a bid to identify parameters in individual decision-making process (function), several exclusion conditions are utilized. First, only eligible families participate in FSP, hence the participation choice among eligible families may be able to help researchers to identify the impacts of food stamps on child health outcomes. This factor is proxied by the participation rate in each family's residing state. Second, I assume that local labor market characteristics are exogenous and they are included in the labor supply function. Finally, various state-level policy environmental parameters are included in labor supply decision and FSP participation function, such as unemployment rates for females, income eligibility for child care subsidies, TANF earnings eligibility for a single parent family of three, percentage of female-headed households

with children living under poverty, percentage of eligible families served in the state, and median income for a family of three.

The statistical model follows the simultaneous equation system described above and the likelihood function of the sample can be derived and the parameters are estimated using the maximum likelihood method (ML). Policy implications are then obtained by simulating the behavior responses using the empirical economic model with estimated parameters.

The empirical analysis mainly uses the matched mother–child data from the 1986-2002 National Longitudinal Survey of Youth (NLSY). The NLSY provides crucial and detailed information for research on the Food Stamp Program's effectiveness. Its longitudinal design, in particular, allows for an accurate determination of obesity over years. Children who are adolescents and older are to be excluded from the estimation sample because the younger children are likely to have less choice about the composition of their diet than do adolescents.

Using the Geocode version of the NLSY, individual records are linked to aforementioned state-level policy environmental parameters. Furthermore, the county-level identifier further allows the incorporation of local labor market conditions (underlying wage rates for women with different demographic characteristics), which are important for maternal employment decisions. These variables are extracted from various sources, including data collected by U.S. Census Bureau, State Policy Documentation Project, Bureau of Labor Statistics, and U.S. Department of Health & Human Resources.

The preliminary results suggest that FSP participation is negatively associated with childhood obesity while maternal employment is positively linked to the risk of obesity. Both findings are statistically significant. Moreover, estimation methods without adequate control for endogeneity of FSP participation and maternal employment yield biased results.