

Promoting Economic Security among Low Income Families in the United States: The Effects of Food Stamps on Labor Supply, Income, and Poverty

Udaya R Wagle

Western Michigan University, Kalamazoo, MI

Abstract

Using a combination of family level micro data and state level macro indicators, this analysis examines roles of the Food Stamps Program (FSP) in promoting economic security during 2004 and 2007 in the United States. To account for endogeneity and self-selection bias likely in models of labor supply, income, and poverty using survey data, panel data models are estimated by instrumenting FSP receipts with TANF receipts at the family level and FSP participation rate at a broader geographic level as instruments. While substantiating the widely recognized work disincentive effects of FSP, results support its income-enhancing effects on one hand and poverty-increasing effects on the other. These seemingly contradictory results affirm that FSP supports are typically inadequate to make a significant dent on economic insecurity of 'poor' families even though they help promote economic security among low income but 'non-poor' families.

Keywords: Food Stamps Program; Employment; Income; Poverty; United States; Survey data

1. Introduction

Established to increase food purchasing power and nutrition among low-income families, the United States Food Stamps Program (FSP)¹ experienced greatly fluctuating participation rates around the turn of the century. One major factor was the 1996 welfare reform, restructuring the Aid to Families with Dependent Children program (AFDC) into Temporary Assistance to Needy Families (TANF), that caused almost 60 percent decline in welfare caseloads by 2005 (DDHS, 2007). Since the AFDC/TANF eligibility automatically qualified families for Food Stamps, the dwindling welfare participation also caused a declining FSP participation (from 9.5 percent in 1996 to 6.1 percent by 2001), even though this rebounded almost to the pre-reform level by 2006 (Currie & Grogger, 2001; DHHS, 2007, 2008; Oliveira, 2007; Tschoepe & Hinder, 2001).

The 1996 welfare reform has now been implemented for more than a decade affecting the way participation interacts among different welfare and transfer programs such as FSP, TANF, and Earned Income Tax Credit (EITC)². Directly, the near-cash assistance provided in Food Stamps seeks to increase food security among needy families. In doing so, the program also promotes economic security as families can reallocate resources between their food and non-food needs. The question of ‘why’ FSP participation greatly fluctuated after 1996 with 2001 as the nadir goes beyond the interplay of programmatic and economic changes, as whether people are likely to increase labor supply and not seek public support like Food Stamps may depend on factors both internal and external to families. While public assistance programs are designed to help low income people escape poverty, whether or not FSP is doing so effectively depends on how it impacts labor supply and income situations of poor families. Given the potential of FSP to increase income and yet dis-incentivize work, understanding its impact on economic security necessitates consistency of its effects on determining work, income, and poverty.

Given that the period of 2004 to 2007 witnessed implementation of the 1996 welfare reform mature without notable policy changes, the influence of FSP on behavioral responses of low income families can be expected to be relatively stable and predictable. Capturing this more recent context, this paper examines the effects of FSP on reducing poverty and determining labor supply and income. While many studies have examined these effects, a comparative analysis of these effects is needed to understand the role of FSP in promoting economic security. To correct for endogeneity and self-selection bias likely in models of labor supply, income, and poverty using survey data, this analysis employs panel data instrumental variables (IV) approach in which FSP is instrumented using TANF supports at the family level and FSP participation rate at a broader geographic level. This comparative analysis of the effects of FSP on various indicators of economic security helps better understand the value-added of this program in promoting economic security of low income families, contributing to rethinking social policies in future.

The rest of this paper is organized as follows. Next section surveys relevant literature highlighting whether and how FSP may affect labor supply, income, and poverty and how this effect may depend on other factors that are internal and external to families. Section three introduces relevant hypotheses and

discusses the data. Section four develops empirical strategies appropriate to accurately model the effects of FSP with and without incorporating IVs. Results on the effects of FSP are presented and discussed in the following three sections, suggesting that the program may not have meaningfully benefitted low income, poor families, the group that needs its support the most. Final section concludes with policy implications and directions for future research.

2. Theoretical Observations

While FSP seeks to increase food security among a broad range of low income people, more vulnerable are the families with children especially when adult members cannot work fulltime or find fulltime jobs. This vulnerability makes a large number of FSP participants qualify for other public assistance programs such as EITC, TANF, Supplemental Security Income (SSI), and Medicaid. In 1996, for example, over five percent of the population jointly participated in FSP, AFDC, and SSI (DHHS, 2007), the three major programs providing nutritional and other general public supports. Although the joint participation declined considerably since 1996, close to three percent of the population (almost nine million) was still participating in more than one of these three programs by 2004 (DHHS, 2007, 2008).

The near-cash, in-kind nature of the FSP support helps target nutrition and food security much more specifically compared to other general purpose welfare supports. While the propensity of increasing food consumption out of Food Stamps varies between single and multiple adult families depending on who makes consumption decisions (Breunig & Dasgupta, 2005), many studies have documented the consistently positive effects of FSP on food expenditures and security (dePolt, Moffitt, & Ribar, 2009; Greder & Brotherson, 2002; Johnson, Hotchkiss, Mock, McCandless, & Karolak, 1999; Ratcliffe & McKernan, 2010; Wilde & Nord, 2005; Yen, Andrews, Chen, & Eastwood, 2008). In addition to increasing food security, Food Stamps help increase economic security, as the ‘fungible’ nature of support allows substitution for general family consumption and expenditures (Greder & Brotherson, 2002). But the amounts of Food Stamps supports are typically small³ and may not be sufficient to lower poverty incidence even though they help lower the degree of poverty experienced.⁴ This is consistent with the evidence of increasingly less effective roles of welfare programs documented in the rapidly expanding

welfare research literature since the 1970s (Fording & Berry, 2007; Moffitt, 1992).

For the most part, Food Stamps are available to households meeting non-financial and financial requirements. Work registration with a proof of employment or availability for employment is a major non-financial requirement for all households unless the household members are outside of the working age, disabled, unemployed, student, or taking care of young children or incapacitated persons (DHHS 2007; GAO 2001; 7 CFR.§ 273). The financial requirements include income and asset-holding criteria with gross household income being limited to 130 percent of the federal poverty level unless the household members include elderly or disabled persons. Because incomes largely depend on hours of work, one can expect people to make calculated decisions about participation in FSP vis-à-vis that in the labor market. For those without employment, the decision to participate in the program is straightforward as they may not have other means of support. For others with employment, however, the decision may be more complicated as it likely causes distortions in labor supply and earnings and affects their eligibility for other cash and non-cash welfare supports. Yet, while the ‘income-enhancing’ effect of Food Stamps may not be large enough to entirely shun employment, studies have shown that the availability and amount of FSP supports significantly affect labor supply (Blank, 1997; Fording & Berry, 2007; Huffman & Jensen, 2005, 2008; Huffman & Kilkenny, 2007; Moffitt, 1992). This potential ‘work-disincentive’ effect can be more important when FSP participants qualify for other forms of cash assistance including TANF and EITC that increase their effective marginal tax rates and reduce labor supply (Meyer & Rosenbaum, 2001; Moffitt, 2002). Given historical evidence on small but significant effects of welfare programs on labor supply (Duncan, 2000; Hagstrom, 1996; Keane & Moffitt, 1998; Moffitt, 1992, 2002), the 1996 welfare reform sought to encourage work and reduce work-disincentive effects as TANF supports were subjected to efforts in finding and retaining employment.

Despite persistent declines in TANF caseloads causing significant reductions in its joint participation with FSP, the increasingly diverging participation trends emanate partly from their programmatic differences. The cash assistance component of TANF has been replaced with work-related assistance including childcare, transportation, and other transitional services especially targeted at single mothers. The federally imposed lifetime limits of five years have also caused TANF caseloads to decline. Research also shows that the necessary weaning of households off TANF without much support on education, skills, and childcare has caused continuous poverty spells for welfare leavers, making them increasingly likely to participate in FSP (Bryner & Martin, 2005; Danziger, Corcoran, Danziger, & Heflin, 2000; Lemke, Witt, and Witte, 2007; Scott, Edin, London, & Kissane, 2004). Even so, the current FSP participation is estimated to hover around 50 percent of the eligible families, with a possibility to increase if the information outreach were to be greater and the transaction costs of participation to be lower (Cody, Schrim, Stuart, Castner, & Zaslavsky, 2008; Farrell, Fishman, Langley, & Stapleton, 2003; Kaiser, 2008; Nord, Andrews, & Carlson, 2009).

By the very nature of the policy, larger incomes make families increasingly ineligible for welfare supports. In 2004, for example, over 41 percent of EITC recipients were single women with children compared to less than 46 percent comprising relatively better-earning, married-couple families with children (Meyer, 2008). The same year, 28 percent of the TANF recipients were in families with at least one full time worker, with a comparable but larger figure (37%) for FSP (DHHS, 2007). Since income eligibility thresholds are larger for FSP than for TANF, the former is more likely to include families with full time workers. Even among households with full and part time workers, however, the specific number of work hours and its likely effect on income and program participation depend on family composition such as headship and presence of children as well as other demographic and human capital profiles (Cody et al. 2008; Edin & Lein, 1997; Scott et al., 2004).

No doubt, some of the variations in program participation would also be related to business cycles with economic expansion enabling people to earn higher market incomes and higher unemployment resulting in lower incomes (Currie & Grogger, 2001; Fording & Berry, 2007; Hanson & Gundersen, 2002; Page,

2000). Variations occur, however, across states not only due to the levels of economic performance such as economic growth, unemployment, minimum wage, and median wage for low skilled jobs (Fording & Berry, 2007; Page, Spetz, & Miller, 2002). But more importantly, they also occur due to differences in the specific social welfare policies and practices including in benefit level, eligibility, work requirement, and time limits determined largely by individual states (Blank, Card, & Robins, 1999; Bryner & Martin, 2005; Danaher, 2001; Fording & Berry, 2007; Meyer & Rosenbaum, 2001). Even with the FSP, administrative attitudes, practices, and processes as well as transaction costs of getting support can be significantly different across states resulting in variable participation rates (Bartlett, Burstein, & Hamilton, 2004; Currie & Grogger, 2001; Daponte, Sanders, & Taylor, 1999).

3. Hypotheses and Data

This analysis seeks to test if poverty reducing effects of the FSP are consistent with any evidence on affecting labor supply and income. Only if the FSP support is likely to increase incomes for families that the poverty reducing effects can be considered sustainable. The question becomes whether or not participation in the program has improved family incomes significantly compared to what they would be able to derive from the labor market. Given that more stringent eligibility requirements for TANF benefits caution families against counting them as a form of social insurance, however, this analysis is expected to detect increasingly negative roles of FSP on labor supply. But this notion of negative impact on labor supply is more complicated because, in most cases, FSP benefits are provided without specific work requirements. Even though FSP participation is likely to interact with TANF for qualifying families, the difficulties experienced by those exiting welfare due to expiration of lifetime limits in finding jobs (Blank, 1997; Danziger et al., 2007; Edin & Lin, 1997; Lemke et al., 2007; Meyer & Rosenbaum, 2001) suggest that the specific labor supply effects can be unpredictable. Partly because of these challenges, welfare supports are aimed at increasing income and ensuring economic security especially for families with children. These welfare supports can be profoundly important for families if their adult members cannot work or find jobs due to inadequate human capital and other structural barriers. It is true that both income enhancing and work dis-incentive effects of the program would be operational simultaneously. In

the end, however, the effects are expected to be positive and large on income and negative and small on both labor supply and poverty.

Data for this analysis come from the Survey of Income and Program Participation (SIPP) conducted by the US Census Bureau. The comprehensive coverage of the SIPP on participation in federal and state programs allows for a meaningful analysis of FSP and other transfer programs. Its relatively large sample size⁵ also allows for meaningful cross-sectional comparisons even when families with children are used as a specific subsample. Even though underreporting of public transfer receipts in survey data is well-documented when compared with administrative sources (Bitler, Currie, & Scholz, 2003; Bollinger & David, 1997), the SIPP is more likely than other surveys (such as CPS) to minimize these underreporting problems (Meyer, Mok, & Sullivan, 2009; Wheaton, 2007). A more important reason for using SIPP data, however, has to do with their panel structure making possible an examination of changes over time following a consistent set of families. The iso-frequent waves of the survey also make possible the use of panel data techniques, helping to minimize potential omitted variables bias.

The 2004 panel of the SIPP provides data on 12 waves covering 2004 to 2007 (US Census Bureau, 2009a). The specific focus here is on the first, fourth, eighth, and twelfth waves so that annual data can be created allowing for meaningful analysis and comparisons across the four years covered.⁶ Variables relevant to address the above hypotheses include income,⁷ employment, program participation, and demographic characteristics of families. Some person level data such as employment, experience, hours of work, and education are also relevant not only to characterize families socio-demographically but to derive their employment and other appropriate economic indicators as well.

In addition to these micro-data, this analysis uses some macro indicators focusing on variations across states to efficiently model the effects of FSP. Data on overall program participation and benefit levels are drawn from such administrative sources as the Departments of Health and Human Services and Agriculture. The Department of Labor is the source of data on economic conditions such as unemployment, income, minimum wage, and median wage across states.

Families, within which resources are pooled among members related by birth, marriage, and adoption,

constitute the appropriate units of analysis. While data from the SIPP include household, family, and person records, family and some person level information will prove particularly useful. A part of the analysis also requires merging data from multiple waves of the panel to obtain longitudinal, panel data structure, which are accomplished by linking person records of the appropriate family reference persons by sample unit, entering address, person, family, and wave and month identifiers used within or across the different waves as detailed in the SIPP Users Guide (US Census Bureau, 2009b).

Descriptive data are summarized in Table 1 for each of the annual samples separately. Especially notable are the increases in average income and FSP participation rate as well as FSP receipts, and declining poverty rates irrespective of whether FSP receipts are included in calculation.⁸ These statistics are consistent with the expanding Food Stamps participation stemming from increasingly challenging labor market and food security situations (Cunnyngham, 2008; Nord et al. 2009).

(Table 1)

4. Empirical Strategy

Modeling and identifying the effects of FSP on labor supply, income, and poverty invokes three important theoretical issues. First, FSP reciprocity can be highly interrelated with those of TANF and EITC, with some of the FSP participants simultaneously receiving other supports.⁹ This interconnectedness appears to be waning especially in case of the more stringent TANF program as it seeks to encourage people to work and minimize potential work-disincentive effects. Historically, research has suggested that one's decision to participate in a specific program like FSP depends on expected benefits from other sources of public transfer including TANF that provide cash assistance to families with children (Huffman & Jensen, 2005, 2008).¹⁰ While the need for childcare and low earning potential make families with children more likely to seek public assistance, research frequently attaches some voluntary component to making program participation decisions. Incorporating TANF receipts, therefore, is important to accurately identify the effects of FSP on economic security.

Second, labor supply and income are highly interrelated, as whether to work and how many hours to work depend on the expected incomes from labor market vis-à-vis those from participating in transfer

programs. The goal is to optimize income. While whether or not one’s labor supply at a specific time reflects her willingness to work is debatable, the magnitude of labor supply measured as work hours is typically used to identify income-enhancing and work-disincentive effects of transfer programs (Fording and Berry, 2007; Huffman & Jensen, 2005, 2008; Moffitt, 2002). Since not all eligible families receive Food Stamps, however, enormous self-selection bias can exist. This is especially important in analyses using survey data, as the observed measure of FSP participation at the family level can vary considerably from the predicted likelihood of participation based on other observed data.

Third, economic security of families depends on both poverty status and income, which further depend on their labor supply. This complicated web of endogeneity with work hours depending on FSP suggests a structural framework to accurately disentangle these relationships. Even though this framework has been applied in some of the more recent research (e.g., Huffman & Jensen, 2005, 2008), these models have focused exclusively on labor supply issues with estimations occurring outside of the panel data structure that in turn increase potential omitted variables bias.

Using a combination of family-level, micro data and state-level, macro data, this analysis adopts structural approach to modeling with panel data. While panel data approaches help to mitigate omitted variables bias when combined with time specific effects, one set of models does not include instrumental variables (IVs). These models estimated with heteroskedasticity robust standard errors will serve as base models, the estimates of which will be compared with those from the second set of models that use IVs. Following is the fixed effects regression model of family work hours, H .

$$H_{it} = \beta_0 + \beta_1 F_{it} + \beta_2 \mathbf{x}_{it} + \alpha_{1,i} + \varepsilon_{it} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

Where, H is the combined hours of work for all adults in the family¹¹; F is the total FSP benefits received; \mathbf{x} is the vector of state programmatic conditions (including FSP participation rate and maximum possible TANF receipts relative to the state minimum wage), state economic conditions (including unemployment, minimum wage, and GDP per capita and its growth), and demographic and human capital characteristics (including family size and number of children applicable to families and age, race, gender, marital status, nativity, education, experience, industry, and occupation applicable to family heads). Given that work

hours are one of the major determinants of family income, following fixed effects structural model of family income, I , adds hours to the right hand side of equation (1).

$$I_{it} = \gamma_0 + \gamma_1 H_{it} + \gamma_2 F_{it} + \gamma_3 \mathbf{x}_{it} + \alpha_{2,i} + \varepsilon_{it} \dots \dots \dots (2)$$

It is safe to assume that the determinants of income and hours are common as they both derive mostly from the same production function. Albeit having similar specifications, the dichotomous measurement of poverty status of families, S , requires that its modeling framework depart from the above classical OLS regression. Following panel data Logistic model of S applies.

$$Pr(S = 1 | H_{it}, F_{it}, \mathbf{x}_{it}, \mathbf{t}) = \frac{1}{1 + e^{-(\lambda_0 + \lambda_1 H_{it} + \lambda_2 F_{it} + \lambda_3 \mathbf{x}_{it} + \alpha_{3,i})}} \dots \dots \dots (3)$$

Where \mathbf{t} is the vector of time specific dummy variables. Slightly different from the first two equations, the goal here is to predict the likelihood of being poor for families given their work hours, FSP benefits, and other state and family level characteristics.

It must be noted that the underlying assumption, uniformly applied across all three models, that each of the explanatory variables is exogenous is not realistic. Particularly important is the endogeneity of F since its value depends on a number of family level and other geographic characteristics, causing enormous self selection bias. Operationally, this variable may be correlated with disturbance terms making estimates from the above models biased and inconsistent. To mitigate these problems, the next set of models will be estimated by instrumenting F with the use of FSP participation measured at a broader geographic level and TANF receipts measured at the family level as instruments.¹² The process will involve two stages with the second stage regression using the values of F^* that are predicted from the first stage regression of FSP.

The intent in adopting the IV approach is to use instruments that are partially correlated with F and uncorrelated with the disturbance terms, so that the first stage regression predicting F is unbiased. In practice, however, finding perfect instruments is difficult. None of the usual predictors of labor supply, income, or poverty are relevant since they are correlated with the dependent, outcome variables. One

possible candidate, following the logic of neighborhood or spatial effects, is FSP participation rate at the level of primary sampling units (PSUs). Even though FSP operates under national guidelines, variations are likely to occur across states as well as counties or cities due to differential emphasis on operational policies and practices. Some states, counties, and cities, for example, encourage FSP participation as they benefit from this resource available from the federal government whereas others discourage them tacitly as a sign of good economic performance or adherence to principled social and economic practices. Attitudes about Food Stamps are also likely to vary across cities, counties, or regions, affecting participation rates. Operationally, PSUs are also the lowest identifiable geographic units that are likely to group many socioeconomic characteristics and Food Stamps participation rates. It must be noted that the public-use SIPP data do not include information on the actual identification of PSUs used in sampling. Something comparable to PSUs are the variance strata and units with their combination dividing the entire sample into 228 units that are much more specific than other divisions along 48 states (US Census Bureau, 2009b). As Table 2 shows, while the participation rates center around 10 percent and while almost all variance strata and units—hereinafter referred to as PSUs—have positive, non-zero participation, these rates vary quite widely.

(Table 2)

Whereas incorporating family level information as an IV is important in this analysis of family level data, the FSP participation rate measured at the PSU level does not go deeper in explaining variations at the family level. A second good candidate for instrument therefore is the amount of TANF receipts for families. Theoretically, TANF receipts are likely to interact with labor supply, income, and poverty with benefit eligibility depending on income. Following this logic, TANF is likely to be correlated with the applicable disturbance terms making its selection for IV inappropriate. Research focusing on data from the 1990s also indicates that TANF is likely to significantly affect labor supply decisions and income (Huffman & Jensen, 2005, 2008; Kang, Huffman, & Jensen, 2004). It must be noted, however, that the use of IV is more an empirical strategy rather than a theoretical construct with appropriateness justified in terms of whether or not the chosen variable is correlated with the applicable disturbance terms. For one,

the traditionally observed strong relationship of TANF with work hours and income is fading, together with the changed welfare context in which low income and lack of work are not sufficient to qualify for TANF supports. Data suggest, for example, that less than nine percent of the close to eight thousand poor families included in the survey received TANF benefits in 2004. The value added of using TANF as an instrument rests in the fact that for some families it serves as a gateway to Food Stamps since TANF recipients automatically qualify for them. Of the 3,500 families receiving Food Stamps, for example, less than 700 received TANF benefits in 2004.

Admittedly, these two variables do not represent the most ideal instruments for Food Stamps receipts as the correlation coefficients presented in Table 3 indicate. It is interesting, however, that TANF receipts measured at the family level are much less correlated with income and work hours than does the FSP participation rate measured at the PSU level, making former a more preferred choice for instrument. In fact, both instruments pass the endogeneity test at five percent or smaller level of significance for all three models (Wooldridge, 2009).¹³ Even more importantly, the suspicion of overidentifying restrictions involving two variables does not appear to be operational as indicated by the very small size of respective X^2 statistics (Wooldridge, 2009) suggesting that a combination of these two instruments form a reasonable basis for instrumentation. Theoretically, using these two variables is not only justified but necessary since each compliments the explanatory power of the other focusing on both PSU and family level variations.

(Table 3)

5. Effects on Labor Supply

Table 4 reports results from the fixed effects panel data regressions of work hours estimated with and without the use of IVs. The models without IVs are estimated with heteroskedasticity robust standard errors whereas those with IVs are not, given their use of panel data IV framework complicating the computation of robust standard errors.¹⁴ The models perform relatively well, yielding signs and significance of the coefficients as expected on both explanatory variables of interest and control variables even though the associated R-squares are relatively low, a case typical with panel data regressions. The

coefficients on control variables are consistent across all families and families with children as well as across the models with and without IVs. While there are some differences in the coefficient estimates and their significance across all families and families with children, they may have partly depended on the competing demand of families with children for child care and labor supply. The roles of state economic and especially programmatic conditions appear to be very small if any, reinforcing the idea that cross-state variations in labor supply may not be systematic.

(Table 4)

The coefficients on FSP for work hours are consistently significant and negative reaffirming the widely perceived work-disincentive effects. First, these are consistent across all families and families with children, a suggestion that presence of children does not impact the way FSP affects labor supply. This provides further evidence that the estimates are not sensitive to the use of a specific subset of the population. Second, albeit consistent in sign and significance, the coefficient on FSP grows quite considerably in size when moving from the model without IVs to that with IVs. With the assumption that the IV approach helps to efficiently mitigate the endogeneity problem and minimize the self-selection bias, results suggest that a one percent increase in FSP receipts reduces work hours for families by about one half of one percent. This effect attenuates to less than one-sixth of one percent when models are estimated without IVs.

The evidence found here is consistent with some of the previous research, concluding that FSP and other welfare supports provide important work disincentive effects with the expectation that increasing work hours disqualifies them for further support (Blank et al. 1999; Duncan, 2000; Fording & Berry, 2007; Keane & Moffitt, 1998; Meyer & Rosenbaum, 2001; Mofitt, 1992, 2002). But some of the research focusing on micro-level survey data has also failed to detect these negative effects indicating that their presence if any would be relatively weak (Hagstrom, 1996; Huffman & Jensen, 2005, 2008; Mofitt, 2002). The renewed welfare context of this research especially with increasing FSP participation amidst declining welfare supports and worsening labor market conditions especially close to the end of the period helps understand the findings with relatively large, negative effects. Despite this, however, we

cannot be fully confident if increasing FSP participation is a cause of or response to declining labor supply since FSP participation and labor supply decisions may happen simultaneously. Moreover, the measured work hours may not have fully captured the actual labor supply behavior of families that experienced rising unemployment and other labor market constraints especially at the end of the period.

6. Effects on Income

Presented in Table 5 are the results from the corresponding income models. While the associated R-squares are lower than those reported in Table 4, the model estimates including coefficient signs and significance are reasonable across all families and families with children as well as across the models with and without IVs. Just like in Table 4, the coefficient signs and significance of state economic and programmatic and family level variables are largely consistent. The state programmatic conditions do not appear to help explain variations in family income whereas many of the state economic conditions do, uncovering the fact that the latter, which can vary depending on economic growth and development policies of states, is likely to impact the overall income positions of families. Given that FSP and other welfare supports signify only a part of family income, any variation in programmatic conditions of welfare programs across states is unlikely to significantly affect family incomes. It is interesting to note, however, that coefficients of many of the family level characteristics lose significance when moving from all families to families with children especially in case of models without IVs. This result may have depended on the fact that families with children are likely to share some commonalities including in marital status and education, making their roles in determining family incomes largely indistinguishable.

(Table 5)

The result that family work hours are likely to positively affect income is not only consistent across the samples and techniques, with all models yielding very similar magnitude and significance of coefficients. With other things equal, for example, a one percent increase in work hours is likely to cause between 0.11 and 0.16 percent rise in family income. This is consistent with the fundamental labor market theory that suggests income to increase as a result of rising labor supply with more demanding full-time jobs paying greater compensation. More important than this is the result relating to the effects of FSP on family

income, with its ability to shed light on the roles of Food Stamps on economic security. And this is precisely where the specific empirical approach makes a difference. While the results do not vary between all families and families with children, the models with IVs produce significantly larger coefficients on FSP. The models without IVs, for example, suggest negligible effects of FSP on income whereas those with IVs attribute about 0.16 percent increase in income to one percent increase in FSP supports. It is noteworthy that these effects are consistently significant and positive, providing more specific evidence for the income-enhancing effects of FSP (Fording & Berry, 2007; Bishop, Formby, & Zeager, 1996; Jolliffe et al., 2003; Moffitt, 1992). The relatively large size of the effect also indicates that FSP may have provided a significant relief to low income families, especially at a time when they experience difficulties in fully harnessing the labor market. The result with no observable difference between the models focusing on all families and families with children suggests that the presence of children does not impact how FSP helps low income families stay afloat. Yet, a major difference in result between the models with and without IVs suggests that FSP is likely to significantly interact with other welfare programs like TANF which makes families qualify for Food Stamps and a part of the story of why some families are able to increase their incomes has to do to with FSP as well as other welfare programs.

7. Effects on Poverty

The goal of providing public supports like FSP is to increase income and, by extension, reduce poverty. While FSP is not designed as an anti-poverty program, the ability to reduce poverty defined in a more inclusive way like this would be desirable. From the practical standpoint, the income-enhancing impact of the program is considered meaningful only if it also helps to reduce poverty. Results from the models of poverty status reported in Table 6 help assess whether or not FSP confers systematic poverty-reducing effects.

(Table 6)

Interestingly, most of the state level economic and family level socio-demographic characteristics appear to have significant roles in predicting poverty status of families. This as well as the result that state programmatic conditions do not have significant effects appear to be consistent across the models with all

families and families with children as well as those with and without IVs. At the aggregate level, this serves as evidence that state experiences as a result of their economic growth and development policies matter in determining poverty status as do the various socio-demographic endowments that families bring to the labor market and other income generating processes.

Results on the effects of labor supply and FSP on poverty status are also consistent across different sample groups and models with and without IVs. While the model with IVs is capable of detecting greater magnitude of impact in case of FSP, these changes are not as large as those from the earlier tables.¹⁵ Consistent with poverty reducing hypothesis, labor supply is likely to affect poverty status negatively, a suggestion that increasing work hours reduces the likelihood of poverty. This is clearly in line with income-enhancing effects of labor supply as it helps generate greater amount of labor market income. What is more surprising when compared with results from Table 5, however, is the suggestion that FSP receipts positively affect poverty status, with greater Food stamps supports associated with an increased log of the odds of poverty. On the face value, this result goes against the notion of income-enhancing effects found in Table 4, allowing one to question whether the direct poverty reducing effects of the program found by some studies (e.g., Jolliffe et al. 2003; Bishop et al. 1996) are systematic.

More substantively, however, this provides evidence going beyond increasing income as some of the income-enhancing effects may have depended on low income but non-poor families. For those who are considered to have income below extreme poverty, defined as the official poverty lines, this positive effect of FSP may have suggested that the program does not necessarily enable them to escape poverty. Understandably, FSP supports are extended, albeit at a decreasing rate, to families that are slightly above the official poverty line income. As figure 1 depicts, for example, the size of FSP receipts relative to applicable poverty line incomes does not directly depend on whether family incomes are above or below poverty lines. This observation of significant Food Stamps receipts even for families above poverty line incomes also remains unchanged over time (data not shown). Nevertheless, a combination of poverty-increasing effect and income-enhancing effect suggests that the program may have helped increase incomes of low income but non-poor families. This further points to inadequacy of the support provided

under FSP, with those receiving Food Stamps likely to remain poor even after these near-cash receipts are included. The finding that these poverty-increasing effects further augment under the IV approach indicates that those likely to receive other welfare supports are even more likely to remain poor.

(Figure 1)

8. Conclusion

This analysis shows how FSP may have affected labor supply, income, and poverty among families during 2004 and 2007. While poverty defined in the traditional sense using cash income from the market and other public transfers slightly declined during the period, the near-cash, Food Stamps supports played consistently significant roles in reducing poverty. The fact that almost 50 percent of the eligible population has not participated in the FSP suggests that the effects on poverty reduction depend on the degree of program participation, an issue that has historically carried stigma (Bird, 1996; Daponte et al., 1999; DeParle & Gebeloff, 2009; Kaiser, 2008).

The use of panel data IV regressions is assumed to mitigate the widely documented endogeneity and self-selection problems facing models of labor supply, income, and poverty especially when survey data are used. Findings on the role of FSP in determining economic security as indicated by these recent data are interesting. Given that increasing labor supply can cause significant welfare benefit cuts and at the same time increase marginal tax rates for families (Duncan, 2000; Keane & Moffitt, 1998; Meyer & Rosenbaum, 2001; Moffitt, 2002), findings conform to the widely understood work-disincentive effect of FSP. Despite this work-disincentive effect, however, the perceived income-enhancing role of FSP appears to stand out even after controlling for the extent of labor supply measured as work hours reflecting on the fact that FSP reciprocity helps increase incomes of low income families, who would otherwise have no gainful alternative in the labor market. There is very little consistency between how the FSP affects poverty and how it affects income, however. Intuitively, the program increases family incomes helping to lower poverty incidence. Once the extent of their labor supply is incorporated, however, these poverty-reducing effects do not appear to sustain in any meaningful way. While FSP participation increases incomes of low income families, the small size of FSP supports may have worked against the perceived

poverty-reducing effects. In the end, FSP may not have been large enough to make a significant dent on the deteriorating economic security situation of low income, poor families.

Designed to improve nutritional well-being of low income families, the impact of the program on labor supply, income, and poverty may be thought of more consequential than intended. The benefits provided today help improve the nutritional and economic well-being of families as well as their future generations. When it comes to improving economic security of low income families, however, the current eligibility criteria as well as the graduated benefits structure need to be rethought so that the benefits can be extended without increasing work disincentive effects. It is important to ensure that families that cannot work or are struggling to find jobs are provided with enough supports so that the poor can count on the program as a form of support to relieve extreme poverty. But the current practice of encouraging low income families to make greater work efforts would have to be continued to the extent that their FSP participation and benefits do not adversely affect their own economic security by limiting labor supply.

It is important to recognize that this analysis has not been able to incorporate the involuntary component of labor supply, income, and thus FSP participation. In today's increasingly sophisticated labor market, whether one is likely to be employed and to what extent depend on such factors as the demand for labor, skills required, and flexibility of labor supply. Since market incomes partly depend on work hours, how much incomes families are likely to have and whether they participate in public transfer programs such as FSP depend on factors beyond their control and calculated decisions. The results can be valid only to the extent that the behavioral response calculus hypothesized here does not involve any involuntary component. Even though this analysis incorporates potential roles of TANF, more effectively incorporating this involuntary component and interaction of FSP with other means-tested public transfer programs would be a fruitful direction for future research.

Notes

¹ The program was renamed the Supplemental Nutritional Assistance Program (SNAP) in October 2008. But the term FSP is used in this paper as it was the official name during the study period.

² Established in 1975 to lower Social Security payroll tax burdens, this program has expanded into a major transfer program providing earned income credits for low income working families (Hoffman & Seidman, 2003).

³ According to the data compiled by the DHHS (2007), for example, the typical food stamps supports averaged \$1,113 per person in 2005, which represented less than two percent increase in real terms since 1996.

⁴ As the computations by Jolliffe, Tiehen, Gundersen, and Winicki (2003) using data from the Current Population Survey (CPS) show, for example, Food Stamps receipts helped reduce poverty headcount ratios by three to six percent during 1988 and 2000 compared to nine to 17 percent reduction in poverty gap, defined as income shortfall from the applicable poverty lines.

⁵ This comes close to 50,000 family records to begin with in 2004. However, there was a significant amount of attrition during the succeeding waves of the Survey, with slightly over 17,000 family records remaining by 2007 (US Census Bureau, 2009a, 2009b).

⁶ The intent is to maintain representation throughout different waves. While it captures cyclical, the hours and income estimates may be somewhat inconsistent. To be more comprehensive, data could be used from all 12 waves representing changes every four months. Given the intent to examine annual changes together with the use of annualized, state-level macro indicators, however, including these intra-annual estimates would not provide the best option.

⁷ Incomes used in the form of gross income include market income (e.g., employment, self employment, interest, dividends, rent, and retirement), entitlement income (e.g., social security, disability, and Veteran's payments), means-tested cash income (e.g., TANF and housing assistance), and other cash incomes (e.g., child support and alimony).

⁸ Poverty here is defined in 'unconventional' terms as the near cash transfers received under FSP are included in family incomes used in determining poverty status. This approach is justified because Food Stamps increase purchasing power and consumption among low income families, helping them to escape poverty or reduce the degree of poverty experienced.

This is also to note that this analysis uses official poverty lines without any other changes to the definition of income. While various experimental measures of poverty have been proposed and while the role of near-cash incomes received in Food Stamps may alter the way these official poverty lines are determined and used (Citro & Michael, 1995; Iceland & Kim, 2001), the purpose here is not to examine these potential implications. Also, poverty researchers have witnessed the entire concept of poverty broaden with measurement efforts focusing on such concepts as economic well-being, capability, and social inclusion (Wagle, 2008a, 2008b, 2009). This analysis, however, exclusively focuses on the economic approach to measuring poverty as captured in income.

⁹ Using state level data for 1990, Tschoepe and Hinderer (2001) show that FSP participation was positively related to the levels of AFDC participation. Clearly, the availability of AFDC supports without time constraints would have encouraged families to seek supports from multiple programs before the 1996 welfare reform.

¹⁰ The role of EITC can be more limited since families do not typically have access to this form of support until after filing their tax return. The estimates of EITC receipts were not also directly available in the SIPP data utilized here. Other potential sources of assistance (e.g., SSI, Medicaid, National School Lunch Program, and Special

Supplemental Nutrition Program for Women Infant and Children) are less relevant due to their in-kind nature of supports and/or specific disability or pregnancy requirements.

¹¹ The hours currently spent at work can be thought of as an imperfect measure of labor supply as it cannot capture the hours available. This unmeasured difference that can be large particularly when unemployment is high can have important implications for analyses like this and their findings.

¹² While H also enters as an endogenous variable in equations (2) and (3) and while its entry would ideally be in the form of predicted (rather than the actual) labor supply, its use as an IV will complicate the identification further, necessitating multiple exogenous instruments, which are difficult to find.

¹³ The wage rates variable that is used as an instrument in various analyses (Huffman & Jensen, 2005, 2008; Kang, Huffman, & Jensen, 2004; Huffman & Kilkenny, 2007) failed the test of endogeneity, making it an unlikely choice for use here.

¹⁴ The software (STATA) used to carry out the analysis does not directly allow for such computation. Despite this, however, the coefficient estimates remain unchanged with possible effects only on their standard errors and thus significance.

¹⁵ Unlike in the two previous tables, however, it is difficult to provide a precise quantification of the effects of FSP since the coefficients here indicate changes in the log of the odds due to unit changes in the explanatory variable.

References

- Bartlett, S., Burstein, N., & Hamilton, W. (2004). *Food Stamp Program Access Study Report*. E-FAN Report, Economic Research Service, USDA.
- Bird, E.J. (1996). Exploring the Stigma of Food Stamps. University of Wisconsin Madison Institute for Research on Poverty Discussion Paper # 1097-96.
- Bishop, J.A., Formby, J.P., & Zeager, L.A. (1996). The Impact of Food Stamps on US Poverty in the 1980s: A Marginal Dominance Analysis. *Economica*, 63(250), S141-S162.
- Bitler, M. Currie, J., & Scholz, J. (2003). WIC Eligibility and Participation. *Journal of Human Resources*, 38, 1139-79.
- Blank, R. (1997). *It Takes a Nation: A New Agenda for Fighting Poverty*. Princeton, NJ: Princeton University Press.
- Blank, R., Card, D., & Robins, P. (1999). Financial Incentives for Increasing Work and Income Among Low Income Families. NBER Working Paper #6998.

- Bollinger, C. & David, M. (1997). Modeling Discrete Choice with Response Error: Food Stamp Participation. *Journal of the American Statistical Association*, 92(439), 827-35.
- Breunig, R. & Dasgupta, I. (2005). Do Intra-Household Effects Generate the Food Stamp Cash-Out Puzzle? *American Journal of Agricultural Research*, 87(3), 552-68.
- Bryner, G. & Martin, R. (2005). Innovation in Welfare Policy: Evaluating State Efforts to Encourage Work Among Low-Income Families. *Review of Policy Research*, 22(3), 325-43.
- Citro, C. & Michael, R. (1995). *Measuring Poverty: A New Approach*. Washington, DC: National Academy Press.
- Cody, S., Schirm, A., Stuart, E., Castner, L., & Zaslavsky, A. (2008). *Sources of Variation in State-Level Food Stamp Participation Rates*. E-FAN Report, Economic Research Service, USDA.
- Cunningham, K. (2008). *Trends in Food Stamp Program Participation Rates: 2000 to 2006*. Mathematica Policy Research Inc.
- Currie, J. & Grogger, J. (2001). Explaining Recent Declines in Food Stamp Program Participation. *Brookings-Wharton Papers on Urban Affairs*, 2001(1), 203-29.
- Danaher, W. (2001). AFDC and Work: Magnets or Anchors for the Poor? *Sociological Spectrum*, 21, 33-59.
- Danziger, S., Corcoran, M., Danziger, S., & Heflin, C. (2000). Work, Income, and Material Hardship After Welfare Reform. *Journal of Consumer Affairs*, 34(1), 6-30.
- Daponte, B., Sanders, S., & Taylor, L. (1999). Why Do Low Income Households Not Use Food Stamps? Evidence from an Experiment. *Journal of Human Resources*, 34(3), 612-28.
- DeParle, J. & Gebeloff, R. (2009). Food Stamp Use Soars Across U.S., and Stigma Fades. *The New York Times* (November 29), A1.
- DePolt, R.A., Moffitt, R.A., & Ribar, D.C. (2009). Food Stamps, Temporary Assistance for Needy Families and Food Hardships in Three American Cities. *Pacific Economic Review*, 14(4), 445-73.
- DHHS. (2007). *Indicators of Welfare Dependence: Annual Report to Congress*. US Department of Health and Human Services.

- DHHS. (2008). *Indicators of Welfare Dependence: Annual Report to Congress*. US Department of Health and Human Services.
- Duncan, K. (2000). Incentives and the Work Decisions of Welfare Recipients: Evidence from the Panel Survey of Income Dynamics, 1981-1988. *American Journal of Economics and Sociology*, 59(3), 433-49.
- Edin, K. & Lein, L. (1997). *Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work*. New York, NY: Russell Sage Foundation.
- Farrell, M., Fishman, M., Langley, M., & Stapleton, D. (2003). *The Relationship of Earnings and Income to Food Stamp Participation: A Longitudinal Analysis*. E-FAN Report, Economic Research Service, USDA.
- Fording, R. & Berry, W. (2007). The Historical Impact of Welfare Programs on Poverty: Evidence from the American States. *Policy Studies Journal*, 35(1), 37-60.
- GAO. (2001). Food Stamp Program: Implementation of the Employment and Training for Able-Bodied Adults Without Dependents. A Report to the US Senate, US General accounting Office.
- Greder, K. & Brotherson, M. (2002). Food Security and Low-Income Families: Research to Inform Policy and Programs. *Journal of Family and Consumer Sciences*, 94(2), 40-47.
- Hagstrom, P. (1996). The Food Stamp Participation and Labor Supply of Married Couples: An Empirical Analysis of Joint Decisions. *Journal of Human Resources*, 31, 331-58.
- Hanson, K. & Gundersen, C. (2002). How Unemployment Affects the Food stamp Program. *Food Assistance and Nutrition Research Report*, 26(7), 1-6.
- Hoffman, S. & Seidman, L. (2003). *Helping Working Families: The Earned Income Tax Credit*. Kalamazoo, MI: Upjohn Institute for Employment and Research.
- Huffman, S. & Jensen, H. (2005). Linkages among Welfare, Food Assistance Programs, and Labor Supply: Evidence from the Survey of Program Dynamics. *Applied Economics*, 37, 1099-1113.
- Huffman, S. & Jensen, H. (2008). Food Assistance Programs and Outcomes in the Context of Welfare Reform. *Social Science Quarterly*, 89(1), 95-115.

- Huffman, S. & Kilkenny, M. (2007). Regional Welfare Program and Labour Force Participation. *Papers in Regional Science*, 88(2), 215-239.
- Iceland, J. & Kim, J. (2001). Poverty Among Working Families: New Insights from an Improved Poverty Measure. *Social Science Quarterly*, 82(2), 253-67.
- Johnson, F., Hotchkiss, D., Mock, N., McCandless, P., & Karolak, M. (1999). The Impact of the AFDC and Food Stamp Programs on Child Nutrition: Empirical Evidence from New Orleans. *Journal of Health Care for the Poor and Underserved*, 10(3), 298-312.
- Jolliffe, D., Tiehen, L., Gundersen, C., & Winicki, J. (2003). *Food Stamp Benefits and Child Poverty in the 1990s*. E-FAN Report, Economic Research Service, USDA.
- Kaiser, L. (2008). Why do low-income women not use food stamps? Findings from the California Women's Health Survey. *Public Health Nutrition*, 11(12), 1288-95.
- Kang, G., Huffman, S., & Jensen, H. (2010). An Empirical Analysis of Joint Decisions on Labour Supply and Welfare Participation. *Applied Economic Letters*, 11(14), 869-72.
- Keane, M. & Moffitt, R. (1998). A Structural Model of Multiple Welfare Program Participation and Labor Supply. *International Economic Review*, 39, 553-89.
- Lemke, R., Witt, R., & Witte, A. (2007). The Transition from Welfare to Work. *Eastern Economic Journal*, 33(3) 359-73.
- Meyer, B. & Rosenbaum, D. (2001). Welfare, the Earned Income Tax Credit, and Labor Supply of Single Mothers. *Quarterly Journal of Economics*, 116(3), 1063-1114.
- Meyer, B. (2008). The US Earned Income Tax Credit, Its Effects, and Possible Reforms. Institute for Labour Market Policy Evaluation Working Paper #2008:14.
- Meyer, B., Mok, W. & Sullivan, J. (2009). The Under-Reporting of Transfers in Household Surveys: Its Nature and Consequences. University of Chicago Harris School Working Paper #09.03
- Moffitt, R. (1992). Incentive Effects of the U.S. Welfare System: A Review. *Journal of Economic Literature*, 30(1), 1-61.
- Moffitt, R. (2002). Welfare Programs and Labor Supply. NBER Working Paper # 9168.

- Nord, M., Andrews, M., & Carlson, S. (2009). *Household Food Security in the United States, 2008*. US Department of Agriculture Economic Research Report #83.
- Olivera, V. (2007). The Food Assistance Landscape: FY 2006 Annual Report. *Economic Information Bulletin* (6-4), Economic Research Service, USDA.
- Page, M. (2000). The Food Stamp Program in an Era of Welfare Reform: Discussion. *American Journal of Agricultural Research*, 82(3), 656-58.
- Page, M., Spetz, J., & Miller, J. (2002). Does Minimum Wage Affect Welfare Caseloads? University of California, Davis. (Mimeo)
- Ratcliffe, C. & McKarnan, S.M. (2010). How Much Does SNAP Reduce Food Insecurity? Urban Institute Working Paper.
- Scott, E., Edin, K., London, A., & Kissane, R. (2004). Unstable Work, Unstable Income: Implications for Family Well-Being in the Era of Time Limited Welfare. *Journal of Poverty*, 8(1), 61-88.
- Tschoepe, G. & Hinderer, J. (2001). Explaining State AFDC and Food Stamp Caseloads: Has Welfare Reform Discouraged Food Stamp Participation? *Social Science Journal*, 38, 435-43.
- US Census Bureau. (2009a). Survey of Income and Program Participation. (<http://www.census.gov/sipp/>)
- US Census Bureau. (2009b). *SIPP Users Guide* (revised). (<http://www.census.gov/sipp/usrguide.html>)
- Wagle, U. (2008a). *Multidimensional Poverty Measurement: Concepts and Applications*. New York, NY: Springer.
- Wagle, U. (2008b). Multidimensional Poverty: An Alternative Measurement Approach for the United States? *Social Science Research*, 37(2), 559-80.
- Wagle, U. (2009). Capability Deprivation and Income Poverty in the United States, 1994 and 2004: Measurement Outcomes and Demographic Profiles. *Social Indicators Research*, 94(3), 509-33.
- Wheaton, L. (2007). Under-reporting of Means-Tested Transfer Programs in the CPS and SIPP. 2007 Proceedings of the American Statistical Association (CD-ROM), 3622-29.
- Wilde, P. & Nord, M. (2005). The Effect of Food Stamps on Food Security: A Panel Data Approach. *Review of Agricultural Economics*, 27(3), 425-32.

Wooldridge, Jeffrey. (2009). *Introductory Econometrics: A Modern Approach*. Mason, OH: Thompson South-Western.

Yen, S., Andrews, M., Chen, Z., & Eastwood, D. (2008). Food stamp Program Participation and Food Insecurity: An Instrumental Variables Approach. *American Journal of Agricultural Economics*, 90(1) 117-32.

7 CFR.§ 273 (2012).

Figures

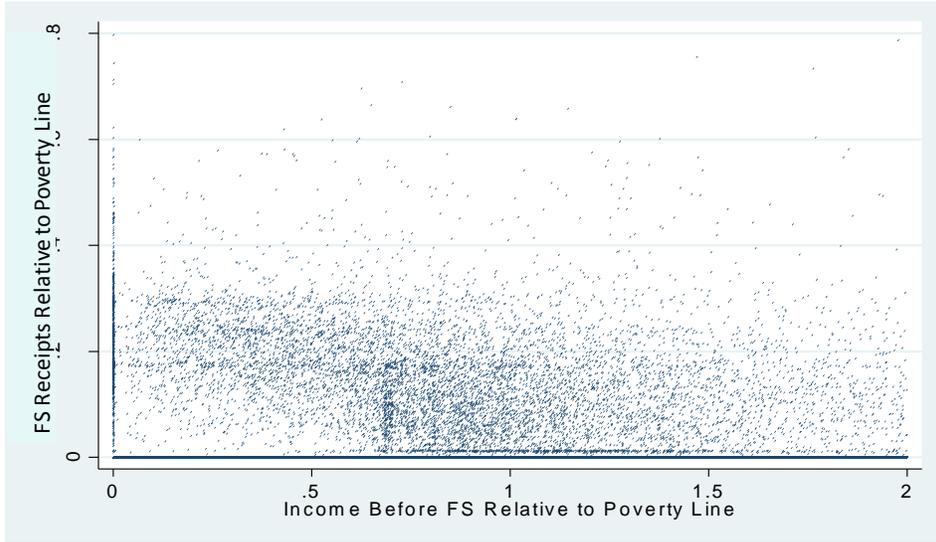


Figure 1, Food Stamps Receipts Relative to Poverty Line for Families at Different Degrees of Poverty (All families and all years)

Tables

Table 1, Descriptive Statistics by Year

	2004 (N = 47590)		2005 (N = 41602)		2006 (N = 38873)		2007 (N = 17147)	
	Mean	Std. Dev.						
State Characteristics								
TANF relative to median wage ^a (%)	44.30	15.08	44.11	15.11	44.04	15.07	43.60	14.47
State Food Stamps participation rate (%)	8.222	2.829	8.796	3.053	9.039	3.123	8.928	2.838
State Unemployment rate (%)	5.466	0.818	5.096	0.894	4.620	0.844	4.582	0.826
State GDP per capita (\$)	35818	6085	36487	6565	37053	6610	37657	7340
State GDP per capita growth (%)	2.472	1.565	2.032	1.579	1.585	1.844	0.874	1.485
Family Characteristics								
Family Income after Food Stamps receipts (\$)	4215	5112	4297	5070	4558	5070	4753	5081
Total family work hours	2297	2018	2247	2001	2290	2062	2213	2023
Food Stamps participation rate (%)	7.352	--	8.187	--	8.229	--	8.211	--
Poverty rate before Food Stamps receipts (%)	16.730	--	15.449	--	13.740	--	13.629	--
Poverty rate after Food Stamps receipts (%)	16.12	--	14.63	--	13.02	--	13.00	--
Food Stamps receipts (\$)	14.60	66.73	17.10	74.33	17.06	75.69	17.71	77.69
TANF receipts (\$)	4.75	48.00	4.48	45.63	4.08	44.30	4.14	46.03
Family Size (#)	2.318	1.446	2.350	1.463	2.351	1.457	2.378	1.485
Children under 18 (#)	0.619	1.052	0.623	1.057	0.603	1.044	0.601	1.049
Householder Characteristics								
Age (years)	48.11	16.98	48.95	17.01	49.98	17.07	51.03	17.15
Single mothers (%)	9.03	--	9.05	--	8.61	--	8.28	--
Black (%)	12.88	--	12.53	--	12.31	--	12.13	--
Asian and Pacific Islander (%)	2.89	--	2.57	--	2.51	--	2.72	--
Hispanic (%)	8.23	--	7.79	--	7.64	--	9.27	--
Naturalized citizen (%)	5.65	--	5.78	--	5.39	--	6.42	--
Foreign born non-citizen (%)	6.10	--	5.25	--	5.39	--	6.28	--
Never married (%)	21.83	--	21.15	--	20.41	--	19.64	--
Divorced/separated (%)	20.09	--	20.09	--	20.28	--	20.11	--
Widowed/widower (%)	10.47	--	10.81	--	11.27	--	11.80	--
Less than high school education (%)	14.60	--	10.62	--	8.78	--	7.67	--
Some college education (%)	35.88	--	35.47	--	35.22	--	34.86	--
Bachelor's degree (%)	15.94	--	16.29	--	16.44	--	16.39	--
Graduate degree (%)	8.54	--	8.74	--	9.07	--	9.30	--
Unemployed (%)	1.23	--	1.08	--	0.84	--	0.87	--
Mining, construction, & manufacturing industry (%)	12.20	--	11.80	--	11.90	--	11.17	--
Trade industry (%)	8.33	--	8.14	--	7.95	--	7.59	--
Finance, investment, & real estate industry (%)	3.72	--	3.67	--	3.82	--	3.56	--
Service industry (%)	30.14	--	30.67	--	30.57	--	30.58	--
Managerial and professional occupation (%)	11.24	--	11.22	--	11.18	--	11.00	--
Other service occupations (%)	33.89	--	33.95	--	33.92	--	32.97	--

Note:

a. Maximum possible TANF receipts for a family of three with two children relative to state minimum wage.

Table 2, FSP and TANF Participation (All years combined)

Variable	Sample Size	Participants (With Non-Zero Value)	Participation Rate	Mean	Std. Dev.
Rate of FSP participation at the PSU level					
All Families (rate)	145212	144476	0.995	0.096	0.055
Participation in TANF					
All Families (\$)	145212	1890	0.013	340	223
Families with Children (\$)	47144	1578	0.033	356	221

Table 3, Correlation of Instruments with Income and Work Hours (All years combined)

Variable	Income with Food Stamps	Work Hours
FSP Participation Rate at the PSU level	-0.117	-0.076
TANF receipts	-0.039	0.069

Table 4, Fixed Effects Regressions of Family Work Hours with and Without Instrumental Variables

Variables	Without Ivs				With IVs ^a			
	All Families		Families with Children		All Families		Families with Children	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Food Stamps receipts (log)	-0.136	0.006 **	-0.147	0.007 **	-0.452	0.035 **	-0.450	0.041 **
TANF relative to median wage ^b	0.042	0.240	0.080	0.386	0.120	0.244	0.144	0.397
State Food Stamps participation rate	-0.017	0.008	0.029	0.014	-0.012	0.008	0.039	0.014 **
State Unemployment	0.008	0.011	-0.002	0.019	0.010	0.011	0.005	0.019
State GDP per capita (log)	0.069	0.155	0.535	0.264	0.061	0.157	0.580	0.272 *
State GDP per capita growth	0.010	0.003 **	-0.005	0.005	0.010	0.003 **	-0.005	0.006
Family Size	0.781	0.015 **	0.481	0.023 **	0.833	0.016 **	0.541	0.025 **
Children under 18	-0.619	0.020 **	-0.431	0.026 **	-0.605	0.020 **	-0.418	0.027 **
Age	-0.041	0.004 **	-0.023	0.008 *	-0.039	0.004 **	-0.025	0.008 **
Single mothers	-0.154	0.045 *	-1.215	0.094 **	-0.019	0.048	-0.997	0.100 **
Black	0.088	0.171	-0.197	0.249	0.139	0.174	-0.209	0.256
Asian and Pacific Islander	-0.150	0.347	-0.103	0.622	-0.044	0.352	0.286	0.643
Hispanic	-0.155	0.153	-0.417	0.213	-0.107	0.155	-0.263	0.220
Naturalized citizen	-0.007	0.060	0.069	0.087	-0.025	0.061	0.038	0.090
Foreign born non-citizen	-0.003	0.067	-0.019	0.090	-0.017	0.068	-0.047	0.092
Never married	-0.279	0.048 **	0.005	0.105	-0.223	0.049 **	0.012	0.108
Divorced/separated	-0.200	0.041 **	0.186	0.084	-0.128	0.043 **	0.206	0.086 *
Widowed/widower	-0.033	0.061	0.257	0.169	0.009	0.062	0.191	0.174
Less than high school education	-0.089	0.034 *	-0.055	0.056	-0.106	0.034 **	-0.075	0.057
Some college education	-0.026	0.069	0.056	0.116	0.015	0.070	0.142	0.120
Bachelor's degree	0.289	0.092 *	0.151	0.166	0.298	0.093 **	0.165	0.171
Graduate degree	0.541	0.118 **	0.234	0.210	0.546	0.120 **	0.255	0.216
Unemployed	-1.691	0.053 **	-1.653	0.085 **	-1.664	0.054 **	-1.587	0.088 **
Mining, construction, & manufacturing industry	2.171	0.035 **	1.540	0.053 **	2.123	0.036 **	1.488	0.055 **
Trade industry	1.927	0.040 **	1.241	0.061 **	1.891	0.041 **	1.204	0.064 **
Finance, investment, & real estate industry	1.732	0.056 **	1.381	0.086 **	1.680	0.058 **	1.288	0.090 **
Service industry	1.979	0.033 **	1.461	0.051 **	1.937	0.034 **	1.404	0.053 **
Managerial and professional occupation	0.653	0.037 **	0.268	0.058 **	0.649	0.038 **	0.257	0.060 **
Other service occupations	0.745	0.031 **	0.492	0.048 **	0.729	0.031 **	0.469	0.049 **
_Constant (log)	4.425	1.596 *	0.490	2.718	4.271	1.620 **	-0.172	2.801
N	145212		47144		145212		47144	
Groups	55310		19382		55310		19382	
R ² (combined)	0.5465		0.3834		0.5451		0.401	

Notes:

* p < 0.05; ** p < 0.01.

a. Food Stamps Receipts instrumented using percentage of people in PSU's receiving Food Stamps and TANF receipts for families as instruments.

b. Maximum possible TANF receipts for a family of three with two children relative to state minimum wage.

Table 5, Fixed Effects Regressions of Family Income with and Without Instrumental Variables

Variables	Without Ivs				With IVs ^a			
	All Families		Families with Children		All Families		Families with Children	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Total family work hours (log)	0.152	0.002 **	0.156	0.003 **	0.124	0.019 **	0.113	0.022 **
Food Stamps receipts (log)	0.012	0.003 **	0.018	0.004 **	0.158	0.002 **	0.168	0.004 **
TANF relative to median wage ^b	0.224	0.123	0.288	0.193	0.197	0.124	0.276	0.195
State Food Stamps participation rate	0.010	0.004	0.013	0.007	0.008	0.004 *	0.010	0.007
State Unemployment	-0.020	0.006 **	-0.014	0.009	-0.021	0.006 **	-0.016	0.009
State GDP per capita (log)	0.453	0.078 **	0.378	0.131	0.458	0.079 **	0.359	0.132 **
State GDP per capita growth	-0.008	0.002 **	-0.006	0.003	-0.008	0.002 **	-0.006	0.003 *
Family Size	0.185	0.008 **	0.135	0.011 **	0.163	0.009 **	0.111	0.013 **
Children under 18	-0.118	0.010 **	-0.078	0.013 **	-0.120	0.010 **	-0.077	0.013 **
Age	0.028	0.002 **	0.021	0.004 **	0.028	0.002 **	0.022	0.004 **
Single mothers	0.053	0.023 *	-0.342	0.047 **	0.007	0.024	-0.400	0.049 **
Black	-0.005	0.088	-0.076	0.124	-0.024	0.089	-0.073	0.125
Asian and Pacific Islander	-0.024	0.181	-0.572	0.306 *	-0.073	0.182	-0.693	0.311 *
Hispanic	0.198	0.078	0.141	0.108	0.182	0.079 *	0.090	0.109
Naturalized citizen	-0.011	0.030	-0.072	0.044	-0.005	0.030	-0.064	0.044
Foreign born non-citizen	-0.016	0.034	-0.055	0.045	-0.012	0.034	-0.047	0.045
Never married	-0.355	0.025 **	-0.130	0.053	-0.376	0.025 **	-0.137	0.054 **
Divorced/separated	-0.273	0.021 **	-0.011	0.042	-0.298	0.021 **	-0.018	0.042
Widowed/widower	-0.208	0.030 **	0.158	0.084 *	-0.220	0.031 **	0.177	0.085 *
Less than high school education	-0.045	0.017 *	-0.054	0.028	-0.039	0.017 *	-0.049	0.028
Some college education	-0.044	0.036	-0.091	0.059	-0.062	0.036	-0.129	0.060 *
Bachelor's degree	0.209	0.047 **	0.116	0.083	0.200	0.048 **	0.097	0.084
Graduate degree	0.448	0.061 **	0.093	0.105	0.438	0.061 **	0.068	0.106
Unemployed	-0.325	0.030 **	-0.094	0.044	-0.340	0.030 **	-0.101	0.044 *
Mining, construction, & manufacturing industry	0.168	0.018 **	0.120	0.027 **	0.175	0.018 **	0.124	0.027 **
Trade industry	0.075	0.021 **	0.021	0.031	0.080	0.021 **	0.024	0.031
Finance, investment, & real estate industry	0.131	0.029 **	0.130	0.043 **	0.143	0.029 **	0.147	0.044 **
Service industry	0.048	0.017 **	0.031	0.026	0.055	0.017 **	0.037	0.026
Managerial and professional occupation	0.220	0.019 **	0.185	0.029 **	0.218	0.019 **	0.185	0.029 **
Other service occupations	0.051	0.016 *	0.053	0.024 *	0.053	0.016 **	0.055	0.024 *
Constant (log)	0.464	0.807	1.738	1.344	0.451	0.813	1.925	1.361
N	141875		46536		141875		46536	
Groups	54310		19234		54340		19234	
R ² (combined)	0.3436		0.3582		0.3132		0.296	

Notes:

* p < 0.05; ** p < 0.01.

a. Food Stamps Receipts instrumented using percentage of people in PSU's receiving Food Stamps and TANF receipts for families as instruments.

b. Maximum possible TANF receipts for a family of three with two children relative to state minimum wage.

Table 6, Random Effects Logist Regresions of Poverty Status with and Without Instrumental Variables

Variables	Without Ivs				With IVs ^a			
	All Families		Families with Children		All Families		Families with Children	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Total family work hours (log)	-0.416	0.006 **	-0.459	0.012 **	-0.431	0.007 **	-0.471	0.014 **
Food Stamps receipts (log)	0.217	0.009 **	0.204	0.011 **	0.322	0.058 **	0.320	0.064 **
TANF relative to median wage ^b	-0.175	0.137	-0.275	0.223	-0.228	0.140	-0.344	0.229
State Food Stamps participation rate	-0.001	0.008	0.014	0.013	0.006	0.008	0.018	0.013
State Unemployment	0.084	0.016 **	0.067	0.027 *	0.076	0.016 **	0.056	0.027 *
State GDP per capita (log)	-0.901	0.121 **	-1.060	0.204 **	-0.854	0.123 **	-1.078	0.208 **
State GDP per capita growth	0.033	0.007 **	0.030	0.012 *	0.030	0.007 **	0.025	0.013 *
Family Size	-0.315	0.028 **	-0.232	0.037 **	-0.323	0.030 **	-0.243	0.040 **
Children under 18	0.637	0.034 **	0.614	0.043 **	0.647	0.034 **	0.631	0.044 **
Age	-0.073	0.001 **	-0.042	0.003 **	-0.078	0.001 **	-0.045	0.003 **
Single mothers	0.161	0.055 **	0.716	0.091 **	0.197	0.062 **	0.737	0.102 **
Black	0.472	0.045 **	0.320	0.070 **	0.491	0.047 **	0.402	0.072 **
Asian and Pacific Islander	0.449	0.102 **	0.363	0.152 *	0.377	0.106 **	0.014	0.178
Hispanic	0.395	0.059 **	0.417	0.081 **	0.367	0.061 **	0.267	0.091 **
Naturalized citizen	0.492	0.068 **	0.609	0.102 **	0.503	0.069 **	0.589	0.105 **
Foreign born non-citizen	0.671	0.064 **	0.967	0.090 **	0.648	0.066 **	0.937	0.093 **
Never married	0.924	0.054 **	0.569	0.103 **	0.989	0.056 **	0.660	0.105 **
Divorced/separated	1.001	0.052 **	0.278	0.098 **	1.048	0.054 **	0.294	0.100 **
Widowed/widower	0.051	0.065	-0.994	0.175 **	0.052	0.066	-1.043	0.181 **
Less than high school education	0.636	0.045 **	0.486	0.073 **	0.713	0.046 **	0.584	0.075 **
Some college education	-0.216	0.037 **	-0.388	0.060 **	-0.300	0.039 **	-0.540	0.063 **
Bachelor's degree	-0.745	0.055 **	-0.765	0.092 **	-0.859	0.056 **	-0.930	0.094 **
Graduate degree	-0.827	0.074 **	-1.122	0.134 **	-0.935	0.075 **	-1.289	0.138 **
Unemployed	1.292	0.108 **	1.285	0.198 **	1.282	0.111 **	1.296	0.203 **
Mining, construction, & manufacturing industry	-1.516	0.061 **	-1.231	0.086 **	-1.563	0.062 **	-1.283	0.088 **
Trade industry	-0.896	0.070 **	-0.562	0.103 **	-0.901	0.071 **	-0.546	0.104 **
Finance, investment, & real estate industry	-1.253	0.111 **	-1.088	0.165 **	-1.300	0.113 **	-1.135	0.170 **
Service industry	-0.671	0.059 **	-0.513	0.087 **	-0.673	0.060 **	-0.503	0.088 **
Managerial and professional occupation	-1.116	0.081 **	-1.117	0.128 **	-1.152	0.083 **	-1.172	0.130 **
Other service occupations	-0.126	0.055 *	-0.173	0.082 *	-0.130	0.055 *	-0.185	0.083 *
Constant	11.973	1.297 **	12.619	2.184 **	11.785	1.319 **	13.052	2.233 **
N	145212		47144		145212		47144	

Notes:

* p < 0.05; ** p < 0.01.

a. Food Stamps Receipts instrumented using percentage of people in PSU's receiving Food Stamps and TANF receipts for families as instruments.

b. Maximum possible TANF receipts for a family of three with two children relative to state minimum wage.