



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Policy Implications for U.S. Agriculture of Changes in Demand for Food

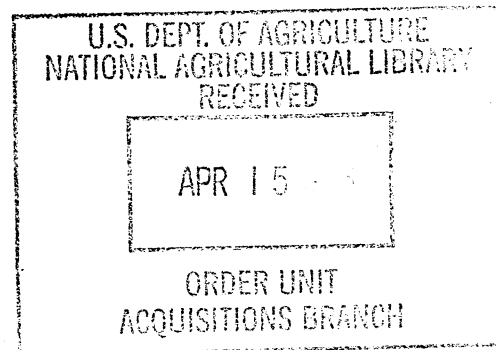
*Helen H. Jensen and James A. Chalfant*  
*Editors*

Proceedings of the S-216 Southern Regional Research Committee Symposium  
Washington, D.C.  
October 7-8, 1991

Sponsored by:  
The Economic Research Service, U.S. Department of Agriculture  
and  
The Farm Foundation

Center for Agricultural and Rural Development  
Iowa State University  
578 Heady Hall  
Ames, Iowa 50011-1070

1994



# Impact on Food Consumption of Joint Food Stamp Program and AFDC Program Participation

*Christine K. Ranney and David M. Smallwood\**

During the last decade, economists have made considerable progress in conceptually modeling and quantifying the relationship between the Food Stamp Program (FSP), the nation's largest food assistance program, and food expenditures. These research efforts have been motivated largely by questions related to program effectiveness in improving the nutritional status of the target population via increased food expenditures and to the potential effect of replacing food stamps with a cash assistance program (Fraker 1990, Trippe, et al. 1990). Another largely separate group of economists has made significant strides in modeling general assistance welfare programs. These efforts have been driven largely by questions about the effects of AFDC program participation on labor supply (Burtless 1990, Gueron 1990, Moffitt 1990). Although there is considerable overlap in participation in these two programs, there has been little effort to marry these two research efforts to examine jointly the behavioral effects of FSP and AFDC participation decisions on the food expenditure and labor supply behavior of the low income population (Moffitt 1990).

There are a number of important reasons for modeling the participation decisions and impact of these two programs jointly. First, multiple program partici-

pation tends to be the rule, rather than the exception, for eligible households. Most AFDC families are eligible for and participate in the Food Stamp Program and about one-half of all FSP participants participate in AFDC. Second, the rules of one program interact to affect eligibility and benefit levels in the other. For example, AFDC cash assistance is considered income in determining FSP eligibility. AFDC benefits also reduce FSP benefits by 30 cents for every additional dollar received. On the other hand, the in-kind benefits of FSP are not counted as income in determining AFDC eligibility and benefit levels. Both programs are means tested. Consequently, program eligibility is a function of assets and income. In addition, benefits are reduced as income rises. However, both programs allow certain deductions from income.

Means-tested programs are known to have built-in work disincentives that may influence participation decisions, labor supply, and household income. Consequently, income and benefits are determined endogenously by household behavior, as is food spending. Another factor that may add to the interaction of participation decisions is that both programs are often administered locally by the same welfare offices. "One-stop shopping" is an increasing trend in welfare program delivery.

---

\*The views expressed herein are those of the authors and do not necessarily represent those of U.S.D.A.

Many AFDC households participate in the FSP and vice versa. In 1990, approximately 83 percent of AFDC households were in FSP and approximately 50 percent of FSP households received AFDC (U.S. House of Representatives, 1991). Behind Medicaid, the FSP was the federal assistance program in which AFDC households were most often joint participants. For AFDC households, 98 percent received Medicaid, 82 percent received food stamps, 53 percent received free or reduced price school meals, and 36 percent received public or subsidized housing. For FSP households, 50.4 percent received AFDC, 22% received SSI, and 22 percent received Medicare. Households composed entirely of AFDC participants are categorically eligible for food stamps, without regard to FSP income and asset requirements.

AFDC and the FSP have a number of features in common. Both programs have a benefit guarantee or maximum benefit, an implied tax or benefit reduction rate (BRR), allowable deductions (adjustments) from income, and limits on assets. The benefit guarantee and the BRR generally receive the most attention from economists studying labor supply or work disincentives of the programs (Moffitt 1990, Burtless 1990). Theoretically, both factors work to reduce labor supply. Increases in the maximum benefit have a positive income effect on the demand for leisure and hence, a negative effect on labor supply. Increases in the BRR effectively reduce the net wage rate and hence, there is a substitution effect away from work and toward leisure. Changes in the benefit reduction rate also affect the break-even point, i.e., the point where benefits are completely reduced because of income. Lowering the BRR raises the break-even point and, hence, potentially increases program participation. Thus, there is a potential for welfare reform activities to result in budget conflict. While lowering the BRR encourages workforce participation and increases labor supply, it increases outlays for a given level of earnings, and may increase outlays due to increased program participation.

Knowledge of how AFDC and the FSP interact to define the economic environment facing potential program participants is a necessary first step in

understanding and analyzing consumer response and behavior. The next step is to model and quantify the response parameters, including participation decisions, labor supply response, and consumer food and nonfood spending.

### **The Food Stamp Program**

The Food Stamp Program is a federal entitlement program in which benefits are available to all those who meet established monthly income and liquid asset criteria. Uniform regulations and benefit levels apply to all states. Some adult household members must also meet job training and employment requirements. Eligibility for food stamps is determined by a function of countable income, household size, and assets. Households composed solely of AFDC and/or SSI recipients are categorically eligible for FSP and do not have to meet the asset or income eligibility requirements. Benefits are a function of household size and countable income. FSP benefits are reduced by 30 cents for every dollar over a minimum amount. Certain deductions from income are allowed, including a standard deduction, 20 percent of earned income for related expenses and taxes, child care expenses, and shelter expenses that exceed 50 percent of countable income up to \$160 in 1991. Additional adjustments are allowed for households with elderly or disabled members. Income, including AFDC benefits, is used in determining FSP benefits levels. Thus, some households that are categorically eligible may receive only the minimum benefit amount of \$10 per month. In FY 1991, monthly participation in the FSP reached an all-time high, exceeding 23 million persons and benefits near \$17 billion per year, or about \$64 per person per month.

### **AFDC Program**

AFDC was initiated with the Social Security Act of 1935 as a program to provide cash assistance to needy families with children where one parent was absent or incapacitated for work. In 1988, the program was revised to include some two-parent families where the primary earner was temporarily unemployed or working less than 100 hours per month. AFDC is administered by states under federal guidelines and federal reimbursement. Reimbursements range from

50 to 80 percent for benefits and 50 percent for administrative costs. Lower income states are provided higher reimbursement rates. Program benefits are determined by levels of need and countable income. Unlike FSP, AFDC benefits vary widely by state because each state is allowed to determine its own level of need.

Before 1968, many states had an official BRR of 100 percent, meaning that AFDC benefits were reduced by one dollar for every additional dollar of income. However, in practice, the effective BRR ranged around 50 percent because case workers applied various deductions from income for payroll taxes, child care costs, and work-related expenses. In 1967, the official BRR was reduced to 75 percent, with an effective rate estimated to be around 25 percent (Fraker, Moffitt, and Wolf 1985).

Work disincentives arising from the implicit tax rates on earnings vary widely by state and year (U.S. House of Representatives 1991). In 1972, the marginal tax rate for a mother with two children, with income between 50 and 75 percent of the poverty level, ranged from 31 to 67 percent with the average being 59 percent. In 1990, the marginal tax rate for the same group ranged from 16 to over 90 percent, with the average decreasing slightly to 56 percent. Five states (California, Connecticut, Maine, Massachusetts, and Minnesota) had marginal tax rates exceeding 90 percent in 1990. This means that each additional dollar of earnings increased net income by only 10 cents.

### Modeling Joint Participation and Labor Supply

Even without considering food expenditures, the behavioral model of joint AFDC and FSP participation and labor supply is conceptually complex because the income-leisure budget constraint is highly nonlinear due to the interdependence of program rules and labor supply decisions. In Figure 1 the income-leisure tradeoffs under various combinations of FSP and AFDC participation illustrate just how complex these constraints can be. The original (no program) budget constraint is BA. For the FSP alone, the budget

constraint is BJIHC. The notch and kinks arise from the FSP benefit formula and depend upon the household's other income, shelter expenditures, and other factors. For AFDC alone, the budget constraint is BDK. The two programs together yield budget constraint BJIHL. Note that the actual constraints will be even more complicated when various taxes are accounted for. Also, because wage rates are likely to be lower for part-time work than for full-time work, another nonlinearity is introduced.

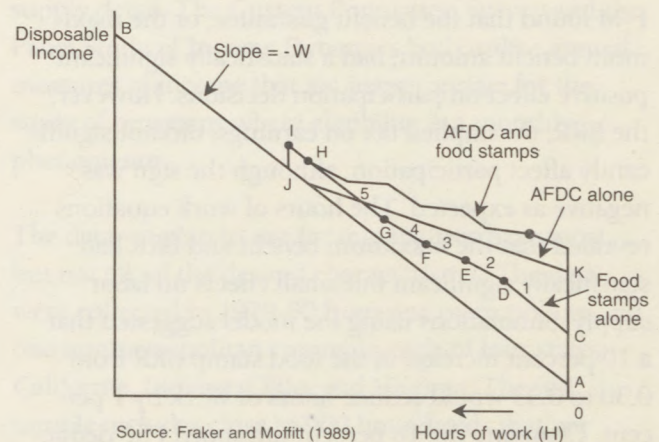


Figure 1. Representative Budget Constraints under Food Stamps and AFDC

There is a vast literature on the work disincentives of cash welfare programs on labor supply. Almost all of this literature has focused on either negative income tax programs or AFDC. Few studies have examined the relationship between the FSP and labor supply. Fraker and Moffitt (1985, 1988, 1989) (F-M) have pioneered the inclusion of the AFDC and FSP joint participation decisions on labor supply in two studies: one examined single-female heads of household and the other examined households headed by unmarried adults without dependents.

Their model is based upon a utility-maximizing framework with endogenous labor supply and joint program participation decisions. The F-M model is

outlined in the top portion of Table 1. Because of the complexities of a highly nonlinear, kinked budget constraint, F-M simplified the econometric specification by restricting the set of viable work alternatives from a continuous scale to three discrete alternatives: full-time work, part-time work, and unemployed. The female-head model was made up of three equations: labor supply, FSP participation, and AFDC participation. Some 358 female-headed households, from the 1979 Survey of Income and Program Participation (SIPP) test panel data known as the Income Survey Development Program (ISDP), were analyzed by F-M.

F-M found that the benefit guarantee, or the maximum benefit amount, had a statistically significant positive effect on participation decisions. However, the BRR, the implied tax on earnings, did not significantly affect participation, although the sign was negative as expected. The hours of work equations revealed that the maximum benefit and BRR had statistically significant but small effects on labor supply. Simulations using the model suggested that a 10 percent increase in the food stamp BRR from 0.30 to 0.33 would reduce hours of work by 1 percent. Changing the 18 percent uncapped FSP deduction for earned income to a 100 percent deduction, up \$75 per month, was found to decrease hours of work by 2 percent.

The effects of these program changes on average household benefits and total FSP benefits to all sample households were also simulated, first by holding participation and labor supply constant and then by allowing household behavior to adjust to the program changes. Adjustments in household behavior caused the average household's benefit to decline 3 to 12 percent less than if household behavior remained unchanged under the simulated program changes. However, total benefits declined 1 to 3 percent more with behavior change than under the no-change scenario. The two results differ because of household participation responses. The reductions in participation (and hence total benefits) caused by the program changes overwhelmed the increased benefits associated with a reduction in labor supply.

**Table 1. Comparative model structure**

**Fraker and Moffitt Model**

- (1)  $U = u(H, Y)$
- (2)  $Y(H_i) = W(H_i)H_i + N - T(H_i) + P_A B_A(H_i) + P_S B_S(H_i), i = 0, 1, 2$
- (3)  $P_A^* = (\text{utility if on AFDC}) - (\text{utility if not on AFDC})$   
 $P_S^* = (\text{utility if on FSP}) - (\text{utility if not on FSP})$   
 $P_A = 1 \text{ if } P_A^* \geq 0; 0 \text{ otherwise}$   
 $P_S = 1 \text{ if } P_S^* \geq 0; 0 \text{ otherwise}$

The household chooses  $H, P_A,$  and  $P_S.$

**Ranney and Smallwood Model**

- (1\*)  $U = u(H, F, S, G)$
- (2\*)  $p_F F_i + p_G G_i = W(H_i) + N - T(H_i) + P_A B_A(H_i), i = 0, 1, 2$   
 $p_F S_i = P_S B_S(H_i), i = 0, 1, 2$
- (3\*) Same as (3) above

The household chooses  $H, P_A, P_S, F, S,$  and  $G.$

**Variable Definitions**

- $U$  = utility  
 $H$  = zero, part-time, or full-time hours of work  
 $W$  = wage rate  
 $N$  = nonwage income  
 $T$  = taxes  
 $F$  = food purchased with cash  
 $S$  = food purchased with stamps  
 $G$  = all other goods  
 $P_A, P_S$  = participation in AFDC (A) and FSP (S)  
 $B_A, B_S$  = benefits from AFDC (A) and FSP (S)  
 $p_F, p_G$  = prices of food (F) and all other goods (G)

### **Adding Food Expenditures to the Model**

While Fraker and Moffitt's work adds to our understanding of how AFDC and FSP participation and labor supply are jointly determined, an important policy issue, their model does not address the simultaneous decisions on household food expenditures. No studies that we are aware of have attempted to do so. We propose to rectify this by extending the F-M model to include food expenditures.

For comparison purposes, our theoretical framework is also outlined in Table 1. The models differ in two important respects. First, we include commodity groups directly in the utility function (1\*). F-M's formulation (1) implies that an additional dollar of disposable income ( $Y$ ) affects utility identically, regardless of whether that dollar was in the form of food stamps or cash AFDC benefits. For a related reason, we specify the budget constraint (2\*) with two equations, a cash constraint and a stamp constraint. We do so because stamps are restricted to food purchases and households are free to supplement their stamp food purchases with cash food purchases.

Separability assumptions provide another, more technical, reason for specifying both goods and hours of work in the decision-making framework. Preferences are commonly assumed to be (weakly) separable between goods and leisure. This assumption allows the exclusion of wage rate variables when estimating commodity demand systems. Likewise, relative price variables can be excluded when estimating labor supply curves. If, however, separability is not appropriate and the omitted wage or price variables are correlated with included variables, parameter estimates and elasticities will be biased. Blundell and Walker (1982) have explored this issue and statistically rejected the separability restriction in their study. Given the complex interconnections between programs, labor supply, and food expenditures in our model, the assumption of separability should not be imposed.

### **Data Needs**

The ideal data set would be a recent nationally representative cross-section of low- to moderate-income households. Such a set would include detailed information on household income, assets, wages, hours of work, program participation, program benefits, taxes, expenditures, and sociodemographic characteristics. Unfortunately, no such data exist; the SIPP comes closest in terms of detail but collects no expenditure data. In contrast, the Continuing Consumer Expenditure Survey and the Nationwide Food Consumption Survey collect expenditure information but lack the requisite programmatic assets and labor supply detail. The Current Population Survey and the Panel Study of Income Dynamics both utilize annual measures of income that are inappropriate for the study of programs where eligibility is a monthly phenomenon.

The data we plan to use for our analysis have most, but not all, of the desired characteristics. The data were collected in 1979-80 from one metropolitan and one nonmetropolitan county in each of four states: California, Indiana, Ohio, and Virginia. The full sample includes close to 900 households that are eligible for participation in the Food Stamp Program based upon an evaluation of their income and assets. Given that the FSP eligibility criteria are less stringent than for AFDC, we observe households that are potentially eligible for AFDC within the sample. We do not observe households that may be asset-eligible for food stamps, but whose gross income raises them above the income-eligibility cutoff of roughly 130 percent of the poverty line. From the sample of 900 households, we will select only single-parent households because only households that contain children are categorically eligible for AFDC and, in 1979, very few states allowed two-parent families to receive benefits. Our subsample for analysis will be similar to that of Fraker and Moffitt, allowing us to compare our results to theirs.

## Econometric Issues

The econometric specification of our model is problematic, at best, and is currently in the development phase. Again, the work of Fraker and Moffitt may provide a basis for our modeling effort. First, wages must be estimated for nonworkers, so that potential earnings, benefits, and taxes at part-time and full-time labor supply can be calculated. A maximum likelihood formulation that simultaneously accounts for all four decisions (FSP and AFDC participation, labor supply, and food expenditures) is under consideration. Such an approach will be computationally difficult. A two-stage estimation procedure is also under consideration, where the first stage involves joint estimation of the program participation and labor supply decisions, and the second stage focuses on estimating the demand or expenditure system with appropriate linkages between the two stages.

## Conclusions and Policy Implications

We have outlined a research program to jointly examine the FSP and AFDC participation, labor supply, and food expenditure decisions of low-income households. This endeavor wedds the findings of two largely separate research efforts, one which focuses on the link between the Food Stamp Program and food expenditures and the other which considers the joint determination of AFDC participation and labor supply. Details on how each program works and the structural linkages between them have been identified. A theoretical framework that correctly accommodates the endogeneity of AFDC and FSP participation and household income has been augmented to incorporate food expenditure decisions. Data requirements were identified and directions for the empirical specification were suggested. Estimation of the appropriate augmented model should yield a clearer picture of the decision making of low-income households.

Model parameters specifying the links between program characteristics and behavioral responses should be particularly useful for policymakers concerned with providing a social safety net in a cost-effective manner that simultaneously provides needed

resources and discourages dependency. Understanding the role of household food preferences is of particular relevance when an important portion of safety-net benefits come in the form of a transfer restricted to food purchases. If households value food stamps differently than cash transfers, the interlinked program participation and labor supply decisions may well be affected. It seems clear that the evaluation of alternative policy scenarios can no longer rely on back of the envelope analyses or even single-equation parameter estimates. The interrelationships between program parameters, household behavior, and program costs require simultaneous consideration of a number of household choices.

## References

- Blundell, R., and I. Walker. "Modeling the Joint Determination of Labour Supplies and Commodity Demands." *Econ. J.* 92(1982):351-4.
- Burtless, G. "The Economist's Lament: Public Assistance in America." *J. of Econ. Perspec.* 4(1990):57-78.
- Fraker, T. "The Effects of Food Stamps on Food Consumption: A Review of the Literature." Report prepared by U.S. Department of Agriculture, Food and Nutrition Service, Alexandria, VA, October 1990.
- Fraker, T., and R. Moffitt. "The Effects of Food Stamp Benefits on the Labor Supply of Female Heads of Households." Report prepared by Mathematica Policy Research for U.S. Department of Agriculture, Food and Nutrition Service, Alexandria VA, 1985.
- Fraker, T., and R. Moffitt. "The Effects of Food Stamps on the Labor Supply of Unmarried Adults Without Dependent Children." Report prepared by Mathematica Policy Research for U.S. Department of Agriculture, Food and Nutrition Service, Alexandria VA, March 1989.
- Fraker, T., R. Moffitt, and B. Wolf. "Effective Tax Rates and Guarantees in the AFDC Program, 1967-82." *J. Hum. Res.* 20(1985):251-63.



Fraker, T., and R. Moffitt. "The Effect of Food Stamps on Labor Supply: A Bivariate Selection Model." *J. of Public Econ.* 35(1988):25-56.

Gueron, J. M. "Work and Welfare: Lessons from the Past." *J. Econ. Perspect.* 4(1990):79-98.

Moffitt, R. "Incentive Effects of the U.S. Welfare System." Special Report 48, Institute for Research on Poverty, University of Wisconsin-Madison, 1990.

Trippe, C., N. Heiser, and H. Beebout. (eds.) *Food Stamp Policy Issues: Results from Recent Research*. U.S. Department of Agriculture, Food and Nutrition Service, Alexandria, VA. January 1990.

U.S. House of Representatives. Committee on Ways and Means. *1991 Green Book: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means*. Washington DC: U.S. Government Printing Office, 1991.

## **International Implications**