FOOD STAMP PROGRAM IMPACTS ON HOUSEHOLD FOOD PURCHASES: THEORETICAL CONSIDERATIONS

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The model for analyzing the impact of the Food Stamp Program on food purchased for use at home indicates that no continuous relationship exists between at-home food expenditures and income of food stamp participant households As previous studies have not allowed for this fact, they may have measured the program's impact inaccurately Elimination of the purchase requirement likely decreased food-at-home purchases by some participant households However, elimination of the purchase requirement probably did not affect food-at-home purchases of food stamp households with incomes near the upper income eligibility bound

Keywords

Food expenditures
Food Stamp Program
Income

INTRODUCTION

The principal objective of the Food Stamp Program (FSP) is to promote the general welfare of the Nation's population by raising levels of nutrition among low-income households To accomplish this objective, the Food Stamp Act authorizes the distribution of food coupons (stamps) to households which meet certain income eligibility requirements, thereby enabling these households to buy more food to improve their diets

Numerous researchers have attempted to measure the impact of the FSP on participant households' food purchases They concur that participation in the FSP increases household food purchases But there are wide variations in the estimated magnitude of the program's impact For example, estimates of the marginal propensity to spend on food at home from bonus food stamps range from 0 30 (*10*) to 0 72 (*6*) [1]

This article presents a theoretical framework for estimating empirically the impact of participation in the FSP on food purchased by household members for use at home Previous studies by Southworth (*8*) and Mittle hammer and West (*4*) provided the basis for developing this framework

PREVIOUS STUDIES

Previous studies have used indifference curves to analyze the theoretical implications of the FSP on houshold food purchase behavior Prior to the work of Mittlehammer and West, these analyses focused primarily on explaining the level of participation and the FSP's impact on food-at home purchases for a household with a given level of income Little attention was given to explaining the FSP's impact over alternative levels of household income Mittlehammer and West used indifference curves to analyze the impact of the FSP on household food at-home purchases, given alternative levels of household income

The theoretical framework presented here assumes some functional relationship exists between household food-at-home purchases and household income Indifference curves are not examined explicitly But if we assume households allocate their income optimally, the theoretical framework will produce the same results as would examining the FSP's impact with indifference curves

Indifference curves have also been employed to explain nonparticipation of eligible households in the FSP These analyses were conducted before the purchase requirement was eliminated and cannot explain non participation under current FSP provisions Furthermore, the theoretical framework presented here cannot explain wh households eligible for the FSP would not participate Instead, it analyzes the impact of participation on household food-at-home purchase behavior

THEORETICAL FRAMEWORK

Figure 1 presents the theoretical framework for analyzing the impact of the FSP on participant food at home purchases Line AB represents the assumed functional relationship between household food-at home expenditures and household income prior to participation in the FSP [2]

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[1] Italicized numbers in parentheses refer to items in References at the end of this article

[2] A linear relationship between income and food at-home expenditures was assumed, but is not necessary to derive the results presented here Figure 1 assumes that factors other than income, such as household size, are held constant

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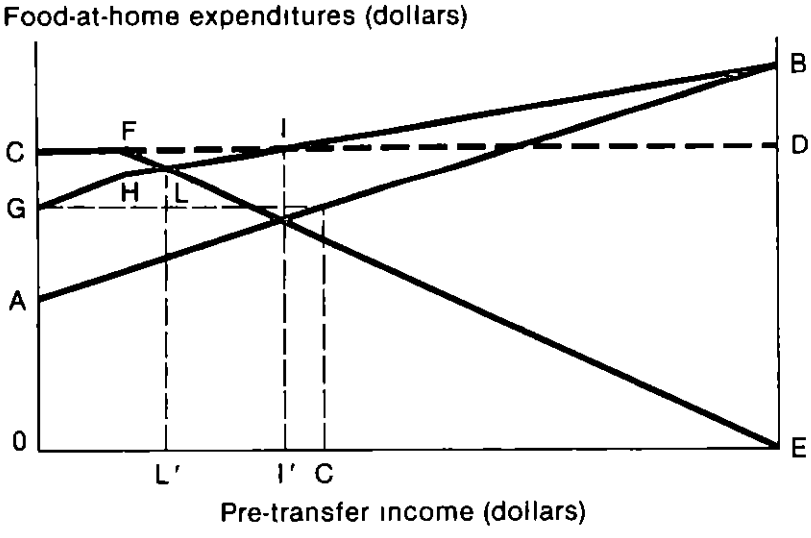
Figure 1

Impact of Food Stamp Program on Household Food-at-Home Purchases



CFE shows the relationship between the cash (face) value of food coupons the household is eligible to receive and the household's income

Cash Transfer Program

Initially, let us assume households participating in the FSP receive the transfer as cash rather than food coupons Under these conditions, eligible households need not spend their FSP transfer on food to consume at home Instead, they can allocate the transfer between food at home and other goods in the same fashion as they would do with additional income

A household with pretransfer income of 0 dollars would receive C dollars of cash by participating in the FSP Assuming this household allocates the transfer between food at home and other goods in the same fashion as additional income, it would spend a total of G dollars on food at home after participation in a cash transfer program Thus, this household would expand food at home purchases by G minus A dollars and increase other purchases by C minus G plus A dollars Selecting successively higher pretransfer income levels, one can determine the upward shift in food-at-home purchases resulting from participation in a cash transfer program GHB shows the relationship between household food-at-home purchases and household (pretransfer) income after participation in a cash transfer program

Current Food Stamp Program

The Food Stamp Program distributes food coupons rather than cash to participant households Assuming the marginal utility derived from food is positive (that is, a household desires to spend more on food than its income permits), a participant household will not spend less on food at home than the cash value of food coupons it receives Thus, if a participant household's income is 0 dollars, it would receive C dollars worth of food coupons and increase its food-at-home purchases to C dollars after participation in the FSP Purchases of other goods would be increased by A dollars, or the level of expenditure on food at home prior to participation in the FSP Compared with participation in a cash transfer program, this household would expand food at-home purchases by C minus G dollars and reduce other purchases by that same amount In other words, distributing the transfer as food coupons rather than cash will cause this household to spend more on food at home and less on other items This is because a transfer in the form of food coupons forces participant households to allocate at least the value of the transfer to food at home

Analyzing successively higher income households reveals that households with incomes below L' will spend more on food at home (and less on other items) if they receive coupons not cash Households with incomes at or above L' can allocate the same amount of income to other items as under a cash transfer program Thus, CFLB defines the relationship between household food-at-home expenditures and household

Distributing the transfer as food coupons rather than cash will cause this household to spend more on food at home and less on other items

income for FSP participants (fig 1) The difference between CFLB and GHB denotes the increase in food-at-home purchases resulting when the transfer is in the form of food coupons rather than cash, at each level of household income

Food Stamp Program with a Purchase Requirement

Prior to January 1, 1979, house holds participating in the Food Stamp Program were required to spend a specified amount of their income to receive their allotment of food coupons The cash value of this allotment did not vary with household income But the amount of income the household had to spend to receive this allotment increased as household income rose

In figure 1, line CD represents the cash value of food coupons an eligible household could purchase The difference between CD and CFE represents the amount of income the household must spend to obtain the allotment of food coupons at each level of household income Under this program all participant households will spend at least C dollars on food at home, if the marginal utility derived from food at home is assumed to be positive Thus, the relationship between food-at-home purchases and household income for participants in this program is given by CIB in figure 1 Households with incomes below I′ are forced to spend more on food at home (and less on other items) under this program than under a cash transfer program However, the purchase behavior of households with incomes above I′ would be the same under all three programs The theoretical framework also suggests that the impact of the FSP on food-at home purchases depends on the income distribution of participants

Alternative placements of AB, the income-expenditure relationship for households before participation, yield slightly different interpretations of the three programs' impacts on food at home purchases For example, if AB is shifted upward by an amount equal to GC, then GHB would be equal to or above CD, the value of the food stamp allotment In this case, elimination of the purchase requirement or adoption of a cash transfer program would not alter food purchases by food stamp households Or, stated differently, a FSP with or without a purchase requirement would be no more effective in increasing food purchases than a cash transfer program providing the same benefits If this situation exists, empirical estimates of the marginal propensity to spend on food from bonus food stamps and ordinary income would not be statistically different But a number of empirical studies indicate that these marginal propensities to spend differ statistically For example, studies by Benus, Kmenta, and Shapiro (*1*), by Hymans and Shapiro (*2*), by Smeeding (*7*), and West and Price (*10*) all indicate that the marginal propensity to spend on food from bonus food stamps exceeds that from ordinary income Information in figure 1 coincides with these findings

CHANGING THE VALUE OF FOOD COUPONS DISTRIBUTED

Suppose the cash value of food coupons distributed to participants was increased by a specified amount Figure 2 analyzes the impact of such an increase on household food purchase behavior [3] Let AB define the relationship between food-at-home purchases and income prior to participation in the FSP and let CFE represent the value of food coupons distributed at each level of household income Then CFLB is the relationship between food-at-home purchases and household (pretransfer) income for participant households Now let us assume the value of food coupons distributed is increased by C′ minus C dollars at each level of household income Under these conditions C′F′L′B′ gives the relationship between food-at-home purchases and income for participant households Notice that the difference between C′F′L′B′ and CFLB varies with income, or equivalently, that the impact of an increase in the value of food coupons distributed varies by household income

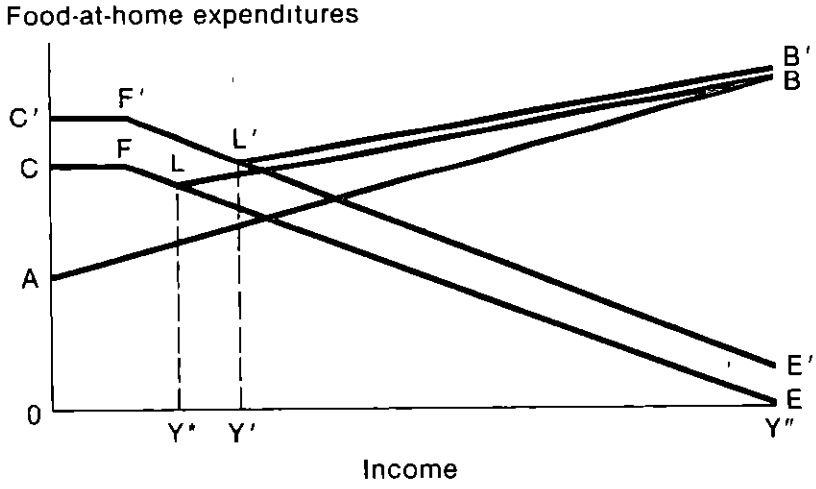
The effect of a $1 increase in the value of food coupons distributed can be shown to range between $1 and the marginal propensity to spend on food at home out of ordinary income If household income is between 0 and Y*, a $1 increase in

[3] Figure 2 is for a FSP without a purchase requirement A similar figure for a FSP with a purchase requirement can be easily derived

A transfer in the form of food coupons should be more effective in increasing food purchases than would a cash transfer of the same value for very low income households

Figure 2

Increase in Value of Food Coupons Distributed to Participant Households



the value of food coupons distributed will result in a $1 increase in food at-home purchases Between income levels Y* and Y', the effect of a $1 increase in the value of food coupons distributed declines as household income increases It ranges between $1 and the marginal propensity to spend on food at home out of ordinary income Between income levels Y' and Y'' the impact of a $1 increase in the value of food coupons distributed on household food-at home purchases equals the response resulting from a $1 increase in household income

IMPLICATIONS FOR ESTIMATION

Figure 1 indicates that the relationship between food-at-home expenditures and income for participant households is discontinuous, contrary to assumptions of past empirical studies Spline functions could be used to capture the discontinuity between food at-home expenditures and household income for FSP participant households (9) Alternatively, food stamp households spending no more than the cash value of food coupons received on food at home could be excluded from the total sample of participants Both approaches require identifying FSP-participant households spending no more than the cash value of food coupons received on food at home However, existing household survey data are inadequate for this purpose

Another approach is to segment households into participants and eligible nonparticipants Food-at-home purchase data for eligible nonparticipant households could be used to estimate the relationship between food at-home purchases, household income and other household characteristics prior to participation in the FSP This relationship could provide estimates of participants' food-at home purchases prior to participation in the FSP A comparison of these estimates with data on actual food-at-home purchases of participants would provide an estimate of the FSP's impact on food-at-home purchases This approach does not ignore the discontinuity between food-at home purchases and household income for FSP participants Thus, it should provide better estimates of the FSP's impact on household food at-home purchases

CONCLUSIONS

A transfer in the form of food coupons should be more effective in increasing food purchases than would a cash transfer of the same value for very low income households, based on this study's findings For households with incomes at the upper income eligibility bound, a transfer in the form of food stamps would probably be no more effective than a cash transfer In addition, a FSP containing a purchase requirement is likely to be more effective in increasing food purchases per dollar distributed among participants than one without such a requirement

Increasing the value of food coupons distributed has impacts that vary depending on household income For very low income households, a $1 increase in the value of food coupons received will increase food-at home purchases by $1

For very low income households, a $1 increase in the value of food coupons received will increase food-at-home purchases by $1

For participant households with incomes at the upper eligibility bound, such an increase will likely result in an increase in food-at-home expenditures equal to the marginal propensity to spend on food at home out of ordinary income

Previous estimates of the impact of the FSP on household food-at-home purchases may be misleading because earlier studies did not allow for the possibility that the relation ship between participants' food-at-home expenditures and their income is not continuous A household food-expenditure survey containing monthly food purchases or the value of food stamps used to purchase food would provide more accurate estimates of the overall impact of the FSP on household food pur chases and also of the FSP's impact on food purchases of particular sub groups of participants Analyses which segment households into participants and eligible nonparticipants should also provide more accurate estimates of the FSP's impact on household food-at-home purchases

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