EFFECTS OF FOOD STAMPS ON THE EXPENDITURES

FOR FOOD BY LOW INCOME FAMILIES IN THE SOUTH

By

W. Keith Scearce*

*Assistant Professor of Agricultural Economics, Oklahoma State
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ABSTRACT

The paper focuses on the food expenditures of low income families in the Southern Region of the United States. Regression models are developed that explain the impacts of various socio-economic factors on food expenditures. A primary factor in the analysis is the affect of participation of the families in the Food Stamp Program.

BIOGRAPHY

W. Keith Scearce is an Extension Economist -- Agricultural Policy and Assistant Professor at Oklahoma State University. He received a Ph.D. in Agricultural Economics in March 1978 from Virginia Polytechnic Institute and State University in Blacksburg, Virginia.

The passage of the Food and Agriculture Act of 1977 instituted major changes in the Food Stamp Program (FSP), the nation's largest food assistance program. As of January 1979, eligible families no longer have to purchase food stamp certificates. The elimination of the purchase requirement is expected to increase the food stamp roll by several million persons.

Since the F.S.P. was enacted into law in 1961, economists, nutritionists, and policymakers have debated the major benefits and faults of the program. A recent U.S.D.A. report indicated that because of the F.S.P., an additional two billion dollars is spent on food annually in the U.S. (Boehm and Nelson). Although this is far short of the six billion annual bonus offered by the F.S.P., it does indicate that food stamp families buy more food than they would without the stamps.[1/] A follow-up of the U.S.D.A. research is needed in order to examine the F.S.P. impacts on the purchased food expenditures of low income families.

A question that has been asked through the years is, "What food item expenditures are increased due to a family's participation in the F.S.P.". Many reported stories persist that food stamp families purchase "steak" or other luxury food items with their stamps. The purpose of this paper is to empirically examine the effects of food stamp participation on the food expenditures of low income families.

The relationship between expenditures and changes in income is embodied in economic theory in the concept of an Engel curve. In theory the Engel curve is derived from the income - consumption function. This research uses the Engel curve concept to evaluate the impacts of the food stamp program on the expenditures for selected food items. Participation

in the food stamp program is treated as a dummy variable in the economic model.

DATA AND PROCEDURES

The data utilized in this study comes from the 1972-1973 Consumer Expenditure Survey completed in June 1974 by the Bureau of Labor Statistics (B.L.S.) of the U.S. Department of Labor. The survey contains a comprehensive source of detailed information on family expenditures and income as related to socio-economic and demographic characteristics of the families. Background concerning the design, conduct, and uses of the survey appears in "The 1972-73 Consumer Expenditure Survey," published in the December 1974 issue of the Monthly Labor Review (Carlson).

For the purposes of this study, it was decided that low income respondents in the southern region of the United States provided an adequate test case for the analysis. (Figure 1)

Table 1 shows the mean monthly income of food stamp participant families. Also shown is the standard deviation and the calculated value of two standard deviations above the mean income values. The maximum net monthly income allowed the respective family of a given size by the food stamp coupon issuance schedule is also reported. It was observed that the maximum net income allowed from the coupon issuance schedule was approximately 75 percent of the calculated value of two standards deviations above the mean gross monthly income. In order to choose a low income sample population, it was decided that a family would be chosen only if the gross family income was less that 133 percent of the maximum value allowed by the coupon issurance schedule. Using this criterion, the sample families were sorted and 1,144 families were
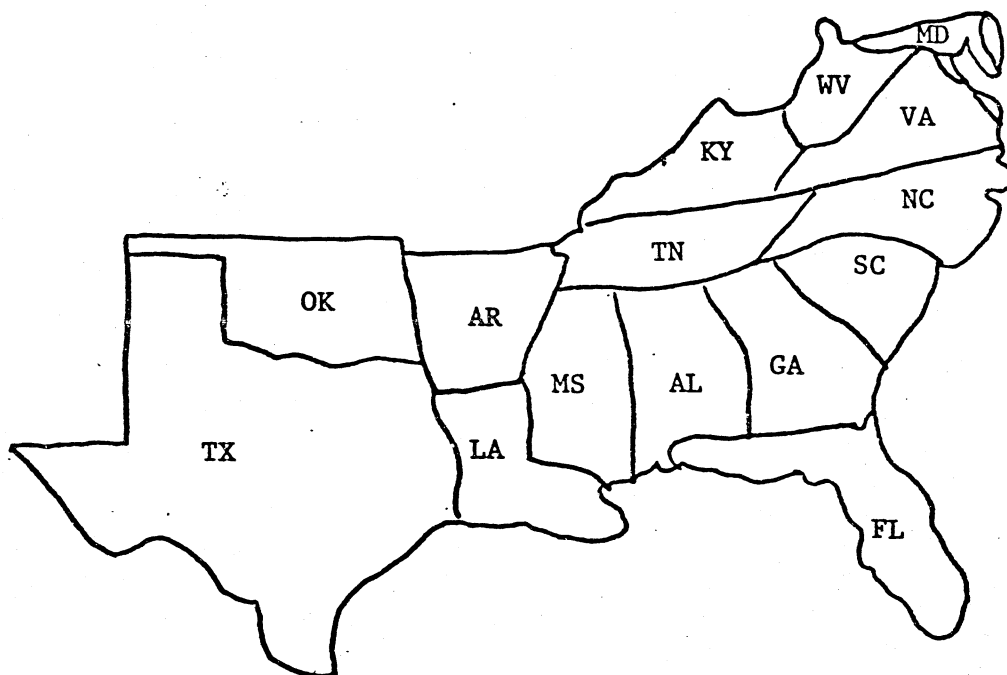
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Figure 1 States in the Southern Census Region of the United States

Table 1 Mean Monthly Gross Income Available to Families That
Participate in the Food Stamp Program Arrayed By Number
of Members In The Family

Number of Family Members	Mean Monthly Income	Standard Deviation	Value of Two Standard Deviations[a]	Maximum Income Allowed[b]
		———————— N = 216 ————————		
1	105.63	59.21	225	210
2	199.96	128.44	456	290
3	302.45	247.86	796	420
4	333.56	293.51	919	540
5	360.22	227.30	814	630
6	352.89	210.99	772	720
7[c]	407.06	271.64	949	810

[a]The calculated value of two standard deviations above the
mean monthly income.

[b]The maximum net monthly income allowed the family in order to
be eligible for food stamps in 1974.

[c]Seven or more members of the family.

chosen to represent low income families with a high probability of being eligible for the food stamp program but not participating in the program. No family was chosen that had an income above $12,000. It was felt that the selected income criterion allowed for the selection of an "eligible" nonparticipant sample population. The 1,144 families that met the low income criterion and did not accept the food stamps were treated as a control group for the purposes of this analysis. It is not known for certain why these families did not participate in the food stamp program. The explanation offered by Richard Coe, that the families do not participate because of non-economic factors such as information and administrative practices of the government is assumed to offer the best explanation for nonparticipation by the families. (Coe P. 8-2) There are 1,360 low income families considered in this analysis. Of this number, 216 accepted the food stamps and 1,144 did not participate in the F.S.P.

MODEL

The regression model used to isolate the impacts of the F.S.P. on the food expenditures of participant families can be specified as follows:

$$Y_i^* = \alpha^* + \beta_1 I^* + \beta_2 S^* + \beta_3 P + \beta_4 U + \beta_5 R + \beta_6 E_1 + \beta_7 E_2 + \beta_8 E_3 +$$

$$\beta_9 E_4 + \beta_{10} L_1 + \beta_{11} L_2 + \beta_{12} L_4 + \beta_{13} L_5 + \beta_{14} L_6 + \beta_{15} L_7$$

where:

Y_i^* = log of the expenditure for food group i

(i = 1 = cereal and bakery products,

i = 2 = beef and veal, i = 3 = pork, i = 4 poultry,

i = 5 = fish and shellfish, i = 6 = dairy products,

i = 7 = fruits, i = 8 = vegetable, i = 9 = sugars and

sweets, i = 10 = fats and oils, i = 11 = non-alcoholic

beverages)

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$* = $ Log intercept

$I* = $ Log of income

$S* = $ Log of family size

$P = $ a dummy variable that represents participation of the family in the food stamp program

$U = $ degree of urbanization (The zero-one analysis of covariance technique was used. $U = 1$ if urban and $0 = $ non urban.)

$R = $ race of the household members.

(R = 1 if black and = 0 if non black)

E1 - E4 = education of the homemaker. Education classes were coded using the zero-one format as follows:

E1 = 1 if homemaker had complete some high school, 0 otherwise

E2 = 1 if homemaker had complete high school, 0 otherwise

E3 = 1 if homemaker had complete some college, 0 otherwise

E4 = 1 if homemaker had graduated from college, 0 otherwise

A zero value to all variables E1 through E4 was assigned to a homemaker with less than a high school education.

L1 - L7 = stage of the household in the family life cycle. The seven discrete family cycle stages were represented using the zero-one dummy variable format as follows:[2]

L1 = 1 if no children were present and the housewife was 40 years of age or less (Stage 1) and = 0 otherwise:

L2 = 1 if the housewife was present and the average age of the children ranged from six to less than 12 years (Stage 3) and = 0 otherwise:

L3 = 1 if the housewife was present and the average age of the children ranged from 12 to 17 years (Stage 4) and = 0 otherwise;

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L5 = 1 if the housewife was present and the average age of

the children was over 17 years (Stage 5) and

= 0 otherwise;

L6 = 1 if no children were present and the housewife was

over 40 years of age (Stage 6) and = 0 otherwise;

L7 = 1 if the housewife was absent (Stage 7) and = 0

otherwise;

The classification (Stage 3) was omitted to avoid singularity.

RESULTS

Results of econometric analyses are shown in Table 2. Overall, the results indicate that food stamp participants have greater expenditures on cereal and bakery products, dairy products, fruits and non-alcoholic beverages than families with similar socio-economic characteristics that do not participate in the food stamp program. One unexpected result is the fact that food stamp participants fail to increase total expenditures on beef and veal, pork and poultry above that of nonparticipant low income families. No category showed a smaller expenditure by the food stamp participants.

The income variable is only significant for the cereal and bakery products category and the sugars and sweets category. In this sample the family income is generally low and therefore may not affect the expenditures of the more stable foods such as beef and veal, pork and poultry. Higher levels of income significantly increased the expenditures for cereal and bakery products and significantly decreased the expenditures on sugars and sweets.

Table 2   Engel Curve of the Expenditure for Selected Food Categories

Independent Variables	Log of Total Expenditure for Food Category										
	Cereal and Bakery Products (N=1265)	Beef and Veal (N=774)	Pork (N=764)	Poultry (N=667)	Fish and Shellfish (N=486)	Dairy Products (N=1194)	Fruits (N=886)	Vegetables (N=1020)	Sugars and Sweets (N=626)	Fats and Oils (N=668)	Non-Alcoholic Beverages (N=948)
Intercept	4.2196[e]	5.366[e]	5.3665[e]	4.7453[e]	4.4011[e]	4.8367[e]	4.1659[e]	4.5475[e]	4.8116[e]	4.442[e]	4.7207[e]
	(.2154)	(.2891)	(.2815)	(.3116)	(.4303)	(.2088)	(.2707)	(.2670)	(.2923)	(.2856)	(.2393)
Log of Income	.0663[c]	.0396	-.0100	-.0230	-.0741	.0033	-.0026	-.0289	-.0717[b]	-.0515	.0389
	(.0354)	(.0471)	(.0459)	(.0518)	(.0676)	(.0345)	(.0429)	(.0441)	(.0484)	(.0476)	(.0387)
Log of Family Size	.7750[e]	.5287[e]	.3876[e]	.4977	.6228[e]	.6764[e]	.5247[e]	.6174[e]	.3736[e]	.5667[e]	.3820[e]
	(.0705)	(.0917)	(.0927)	(.0957)	(.1428)	(.0675)	(.0907)	(.0838)	(.1024)	(.0934)	(.0793)
Food Stamp Participation	.1519[e]	.0814	.0673	.0755	-.0282	.0720[b]	.1124[b]	.0318	-.0001	.0767	.1372[d]
	(.0643)	(.0866)	(.0847)	(.0855)	(.1249)	(.0530)	(.0850)	(.0774)	(.0910)	(.0866)	(.0747)
Urbanization											
Urban	-.0466	.1267[d]	-.0291	-.0225	-.0399	.0450	.1140[c]	.0346	-.1935[e]	-.0651	-.0760[b]
	(.0510)	(.0667)	(.0665)	(.0706)	(.1045)	(.0483)	(.0652)	(.0608)	(.0698)	(.0630)	(.0577)
Rural[a]											
Race											
Black	-.1104[d]	-.0362	.1937[e]	.2681	-.3341[e]	-.2560[e]	.0165	.0384	-.0201	-.0886[b]	-.2520[e]
	(.0508)	(.0659)	(.0647)	(.0655)	(.0968)	(.0495)	(.0653)	(.0599)	(.0740)	(.0677)	(.0573)
Non-Black[a]											
Education											
Some Grade School[a]											
Some High School	.0282	.1034	-.0809	.0937	-.0689	.0851[b]	.0008	-.0089	.1017	.0453	.0630
	(.0698)	(.0872)	(.0924)	(.0945)	(.1350)	(.0668)	(.0888)	(.0824)	(.0952)	(.0881)	(.0764)
High School Graduate	.0156	.0754[d]	-.0348	.0384	.1182	.1378[d]	.0194	.0417	-.0364	-.2094[e]	.0183
	(.0708)	(.0891)	(.0915)	(.0950)	(1.309)	(.0661)	(.0867)	(.0820)	(.0954)	(.0897)	(.0793)
Some College	.0470	.3032	.1866	.0905	.1233	.2388[d]	.2756[d]	.1928[b]	.1692	.0852	.1274
	(.1157)	(.1423)	(.1533)	(.1431)	(.2037)	(.1052)	(.1397)	(.1361)	(.1680)	(.1521)	(.1260)
College Graduate	.1551	.1393[e]	.0477	.5703	.7734[e]	.3665[d]	.2348	.3443[c]	.3351[b]	.1227	.4884[e]
	(.1731)	(.2199)	(.2352)	(.2284)	(.3126)	(.1605)	(.2144)	(.1944)	(.2208)	(.2076)	(.2067)
Life Cycle											
Stage 1	.3338[e]	.4610[e]	.1925	.2140	.5455[d]	.0228	.2819[b]	.3020[d]	-.1351	.1547	.1005
	(.1283)	(.1752)	(.1759)	(.1948)	(.2623)	(.1251)	(.1794)	(.1551)	(.1854)	(.1776)	(.1419)
Stage 2	.2722[e]	-.2472	-.1655[b]	.0849	.1612	-.1031[b]	.0552	-.2481[e]	-.2540[e]	-.0678	-.3185[e]
	(.0821)	(.1056)	(.1106)	(.1098)	(.1639)	(.0776)	(.1094)	(.0966)	(.1079)	(.1078)	(.0875)
Stage 3[a]											
Stage 4	.1051[b]	.1106[e]	.0791	.0749	.1081	.0352	.0005	.0595	-.1975[c]	.0559	-.0173
	(.0813)	(.1005)	(.1042)	(.1053)	(.1461)	(.0781)	(.1019)	(.0941)	(.1073)	(.0988)	(.0893)
Stage 5	-.0046	.0144	-.0798	.1276	.1696	.1573[c]	.0764	-.0086	-.0172	.1148	-1535[b]
	(.0969)	(.1200)	(.1192)	(.1237)	(.1785)	(.0920)	(.1217)	(.1126)	(.1354)	(.1212)	(.1067)
Stage 6	.5835[e]	.4763[e]	.2182[c]	.3916	.2110	.2281[e]	.3585[e]	.5008	.3335[e]	.3891[e]	.2778[e]
	(.0917)	(.1207)	(.1226)	(.1259)	(.1961)	(.0866)	(.2216)	(.5096)	(.1265)	(.1241)	(.1009)
Stage 7	-.1001	-.3152[b]	.1251	-.5443	.7237[e]	.0521	.0769	-.1306	.1967	.2600	-.2239[b]
	(.1492)	(.1998)	(.2006)	(.2188)	(.3047)	(.1466)	(.2077)	(.1794)	(.2354)	(.2138)	(.1647)
R^2	.2463	.1226	.0866	.1802	.1573	.2532	.0855	.1265	.0813	.1104	.1411

Note: Standard errors of the estimate coefficient are in parentheses.

[a]Omitted to avoid singularity.

[b]Significant at .20 level.

[c]Significant at .10 level.

[d]Significant at .05 level.

[e]Significant ac .01 level.

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The family size variable is highly significant and positive in all of the equations. Thus, larger families tend to spend more on all categories than smaller families.

The results also indicate that families in urban enviroments significantly increase their expenditure on beef and veal, and fruits. Families in urban areas also tend to purchase less sugar and sweets and non-alcoholic beverages than the omitted group. Black families have significantly less expenditures on cereal and bakery products, fish and shellfish, dairy products, fats and oils and non-alcoholic beverages. However the model indicates that black families have significantly larger expenditures for pork and poultry products than non-black families.

Education of the homemaker also affects the expenditure for foods in certain food groups. In general, results indicate that homemakers with more years of formal education have higher expenditures on all food categories except fats and oils than the families in the omitted category.

CONCLUSION AND IMPLICATIONS

The results of this analysis, although not conclusive, are suggestive. The often reported fact that food stamp families purchase greater amounts of steak and other luxury food items than other low income families is not supported by the analysis. The results indicate that food stamp participants purchase more cereal and bakery products, dairy products, fruits, and non-alcoholic beverages. The increased amounts of cereal and bakery products and non-alcoholic beverages were both highly significant. Implication of the increased purchases of cereal and non-alcoholic beverages suggest that there

is a possbile need for educational programs which would better inform food stamp participants of the nutritional value of foods in the other food groups.

The results of this analysis, cast a suspicious light on the conventional wisdom which states that food stamp families purchase much more expensive cuts of meats and other luxury foods than other low income families. The analysis indicates just the opposite. Empirical evidence indicates that more cereal and bakery products are purchased by the food stamp recipients compared to other low income families. More research effort should be devoted to the identification of the changes that occurred in the 1977 Food and Agriculture Act.

FOOTNOTES

[1]The bonus value received by participant families is defined as the face value of the stamp minus the value paid for the stamp. The purchase requirement was eliminated by a very recent food stamp admendment.

[2]The development of the family unit variable follows that of Adrian.

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