The Effect of Supplemental Nutrition Assistance Program on Food and Nonfood Spending Among Low-Income Households

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Abstract

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The main goal of this was to examine the impact of the SNAP program on the allocation of food and nonfood spending expenditures across six subgroups: food, utilities, apparel, transportation, medical care, and other nonfood spending. The empirical analysis is conducted using a consumer demand approach instead of the traditional Engel curve approach used to evaluate the effect of SNAP participation on household spending. Endogeneity and measurement error of the SNAP participation variable and endogeneity of total expenditures are accounted for with the use of specialized econometric procedures.

Keywords: Measurement error, binary variable, Generalized Method of Moments, bounds.

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Introduction

The Supplemental Nutrition Assistance Program (SNAP), previously called the Food Stamp Program, is designed to help improve the nutrition status of low income households in the United States. The SNAP program expanded dramatically during the last years: SNAP program budget went from $37.6 billion in 2008, to $79.86 billion in 2013; and the number of the program participants increased from 28.2 to 47.64 million (USDA, 2014). These figures demonstrate average annual increases of 11% in the number of participants and 17% in the program budget during the period, well above the corresponding average annual rates of increase of 6% and 10% for the previous six year period (2002-2008).

The effectiveness of the SNAP program at increasing recipients' food expenditures is an issue of considerable policy interest and has received substantial attention in the economics literature. However, beyond food expenditures, there is little research studying the effects of SNAP participation on nonfood spending. The emphasis on estimation of the effect of SNAP participation on food expenditures only has been justified by SNAP's intent of improving households' nutritional needs; however, the program may also affect expenditures on nonfood goods through the reallocation of funds. Estimates of SNAP benefits effects on non-food spending (e.g., marginal propensity to consume) are important in the evaluation of the economy-wide impacts of cuts or increases in the program (see e.g., Kuhn et al., 1996). Hence, this study examines the impact of the SNAP program on the allocation of food and nonfood spending expenditures across six subgroups: food, utilities, apparel, transportation, medical care, and other nonfood spending. Specific objectives of the study are: 1) to evaluate the effect of SNAP on households' expenditures on food and nonfood, and 2) to analyze the influence of location, economic conditions, and demographic characteristics effects on households' allocation of expenditures on food and nonfood.

Literature Review

The effect of SNAP on food expenditures

Most of the studies evaluating the effectiveness of SNAP on food expenditures have been conducted using an Engel curve approach where food expenditures are estimated as a function of income and socio-demographic characteristics of the individuals (e.g., Senauer and Young, 1986; Chavas and Yeung, 1982; Wilde, Troy and Rogers, 2009; Hoynes and Schanzenbach, 2009). The parameter corresponding to a SNAP variable is usually used to estimate the marginal propensity to consume (MPC) food out of SNAP benefits as a measure of the program impact.[1] The majority of studies have found that the MPC food out of SNAP benefits is higher than the MPC out of cash.

Broadly speaking, there are two types of studies within the Engle curve literature evaluating the effectiveness of SNAP: 1) studies using data from cash out experiments (or quasi-experiments), and 2 observational studies. Data for the studies using the experimental approach comes from two main sources: experiments conducted in the early 1990s in California and Alabama where random subsets of recipients were paid out cash instead of the food stamp coupons, and the actual conversion from stamps to cash in Puerto Rico in 1982 (Fraker, Martini and Ohls, 1995; Moffit, 1989). In the case of the San Diego experiment, results indicated that the cash out reduced total household food expenditures. On the contrary, in the Alabama experiment the cash out did not result in lower total expenditures for food (Fraker et al., 1992; Ohls et al., 1992).

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[1] Previous literature on the subject calls these estimate MPC out of food stamps. In this study, we refer to them as MPC out of SNAP benefits to be consistent with the new name of the program.

Even though experimental studies overcome the endogeneity problem of the SNAP variable present in observational studies, they are not without shortcomings. First, these studies are limited in geographic scope. Second, the estimated SNAP impact measure (i.e., the cash-out effect) represents only a lower bound of the total impact of SNAP on food expenditures. The cash out impact measure only accounts for the effect of not providing the benefits in coupon form but excludes the effect on food expenditures of giving households more money. Finally, all the SNAP experimental studies were carried out almost 20 years ago. Since then the program has experienced numerous modifications.

Observational studies using the Engel approach to evaluate the effect of SNAP on food expenditures have traditionally been conducted using surveys that are national in scope; and therefore, their results are more generalizable than experimental studies; however, they also have limitations. The first limitation has to do with the implicit assumption of the majority of these studies that prices are constant. Polinsky (1977) has pointed out that failure to specify cross-sectional price effects adequately could result in biased and misleading marginal effects of the variables included in Engel models.

The second limitation of observational studies using the Engel approach is related to the potential endogeneity of the SNAP variable. From the best of our knowledge, only the study by Hoynes and Schanzenbach (2009) has considered this issue in the context of food expenditures.[2] To account for the potential endogeneity of the SNAP benefits variable, these authors use variation in the timing of food stamp introduction across areas in the U.S. A drawback of this study is the fact that the dataset used for their analyses covers the period between 1968 and 1978.

[2] Wilde, Troy and Rogers (2009) also discuss this issue but they do not provide an estimate of the MPC. To deal with the potential endogeneity issue they estimate separate nonparametric Engel functions for participants and nonparticipants but use total income including cash income plus SNAP benefits as explanatory variables in their food expenditures mode.

Hence, their estimates need to be updated as economic conditions have changed dramatically over the past 40 years. The final limitation of observational studies using the Engel approach to analyze the effect of SNAP on food expenditures, and which has not been addressed in previous studies, is the problem of extensive underreporting of participation status in the SNAP program (Gundersen et al., 2012).

The effect of SNAP on nonfood spending

The literature on nonfood spending and SNAP participation is very limited. Fracker et al. (1992) and Ohls et al. (1992) used data from the Alabama and California cash out experiments to assess whether the cash out caused any shifts in the allocation of total expenditures away from food to other nine categories of nonfood goods and services: housing, utilities, health, transportation, clothing, education, dependent care, recreation, and personal items. In the Alabama experiment, only in the utilities category the mean expenditure share of the cash households was statistically higher than the mean share of the coupon households. In the California experiment, the mean expenditure of cash households was higher than the mean expenditure of coupon households in three categories: health, housing, and education. Finally, Meyerhoefer and Pylypchuk (2008) use the 2000-2003 Medical Expenditure Panel Survey to evaluate the effect of program participation on medical spending. To identify the SNAP treatment effect these authors also use an instrumental variable approach. The instruments used to help identify the effect of SNAP participation on medical spending were state level variables of outreach program expenditures and recertification requirements. Overall, the effects of SNAP participation on out of packet expenditures are found to be positive but not significant for both males and females.

Given the limitations mentioned previously, this study proposes to analyze the effect of SNAP on consumer expenditures using a demand analysis approach that includes prices as explanatory variables in the demand models and and econometric approach that accounts for the endogenity and measurement error problems of the SNAP participation variable. The results of this study contribute to the literature providing new estimates of the impact of SNAP participation on households' expenditures.

Data

Data for this project was obtained from the Bureau of Labor and Statistics (BLS)'s Quarterly Interview component of the Consumer Expenditure Survey (CEX) and Detailed Monthly Consumer Price Index (CPI) from years 1998 to 2010. The CEX Interview Survey is a rotating panel of about 7,000 households per calendar quarter. Households are in the panel for five consecutive quarters, and each exiting family is replaced.

The CEX Interview Survey is designed to capture expenditures of purchased items that are easy to recall at quarterly intervals, including the groups of goods and services subject of this study: food, utilities, apparel, transportation, medical care, and other nonfood spending. Durables and housing are not considered. Even though it is possible to use the "stock" of each of them as dependent variables in the demand equations, these stocks are not well measured in consumer expenditures surveys (Browning and Meghir, 1991).

Besides household expenditures, the CEX Interview Survey collects information on all the demographics and family characteristics, and income. Income sources in the previous 12 months, including SNAP benefits, are also recorded. Household characteristics variables from the CEX Interview Survey used in this paper are age of household, household size, education of the household head, race of the household, region of residence, season, presence of children, SNAP participation and income (Table 2). These variables were selected based on the results of previous studies and the objectives of this paper (Raper et al., 2002; Jensen and Yen, 1996; Stewart and Yen, 2004).

Another variable considered in the study are the general economic condition of the country. Two significant economy recession events are considered over the period of study. The first event occurs between year 2000 and 2001 and the second event happens from December 2007 to January 2010 (Kumcu and Kaufman, 2011). Therefore, the dummy variable for the period of 2000-2001 and 2008-2009 are used to capture the economy recession.

We restricted our sample to subsample of the data with a higher probability of being eligible for participation in the SNAP program. Only households with gross income below 130% of the poverty line were considered for the analyses (Meyerhoefer and Pylypchuk, 2008). The calculation of the poverty line was conducted using the 1998-2009 poverty guidelines issued by the U.S. Department of Health & Human Services (HHS). The final sample had 60,817 observations.

Empirical Approach

The main demand specification considered in this study relates the budgetary shares of the commodity aggregates to prices, total expenditures, and economic and demographic characteristics:

(1) $$w_n = \alpha_{0n} + \sum_{k=1}^{N} A_{kn} lnp_k + \sum_{r=1}^{2} b_{rn} (lnx)^r + \sum_{m=1}^{M} (C_{mn} z_m) + \delta_n \text{dSNAP} + \varepsilon_n,$$

where *ln* before a variables refers to its natural log, lnx is real total expenditure in the N goods considered, w_n is the budgetary share allocated to the nth commodity, p_k is the real price of commodity k. The regressors in this model include *N* prices, *M* different economic and demographic characteristics z_m (see Table 2), and a dummy variable (dSNAP) denoting household participation in the SNAP program.

Commodity Prices

The main drawback of using the CEX data is the lack of price or quantity information at the household level. To overcome this limitation, we construct household specific SL from detailed monthly CPI using a procedure suggested by Hoderlein and Mihaleva (2008). If the between-group utility function is weakly separable and the within group sub-utility functions are Cobb Douglas, then it can be shown that the SL price (v_{li}) index corresponding to the group i and household l is:

(2) $$v_{li}(p_{li}, z_l) = \frac{1}{k_i}\prod_{j=1}^{n_i}\left(\frac{p_{ij}}{w_{lij}}\right)^{w_{lij}}$$

with a scaling factor k_i given by $k_i = \prod_{j=1}^{n_i}\bar{w}_{ij}{}^{-\bar{w}_{ij}}$, where n_i is the number of goods in group i, p_{ij} is the (regional) monthly price[3] of the jth good in group i, $w_{lij} = p_{lij}q_{lij}/y_{li}$ is household l within group budget share of the jth good in group i, $\bar{w}_{ij}$ is the budget share of good j in group i of the reference household[4] and z_l is a vector of observable demographic characteristics of household l. SL prices can then be used in place of original price data to estimate the between-group budget share. Notice that the construction of SL prices requires information on subgroups budget shares (Table 1).

Measurement Error and Endogeneity Issues

As discussed in the introduction, there is strong evidence that SNAP participants are self-selected into SNAP (e.g., Gundersen and Oliveira 2001; Hoynes and Schanzenbach, 2009) thus

[3] To produce consistent detailed monthly CPI series over time, we use 1998-2009 as the base period (i.e., average CPI values 1998-2009=100). Each CPI is deflated by using regional CPI for all items to construct regional monthly price. The monthly CPI series used in this project are not seasonally adjusted.
[4] The reference household is the household with average budget shares.

not controlling for self-selection will create the endogeneity issue, where the coefficient on SNAP is not causal. In the proposed study, we use several state level SNAP rules as instrumental variables for causal inference (see Table 3). In addition to the potential endogeneity of SNAP participation, we also consider the potential endogeneity of group expenditures. Instruments used to control for endogeneity of expenditures are income and income squared (see e.g., Blundell and Robin, 2000). Previous studies have also found that the CEX survey underreports SNAP receipt which has the potential to bias the results; hence, it is important to account for this problem in the estimation procedures.

Estimation Procedures

Estimation procedures of the demand models need to consider the measurement error and endogeneity problems of the SNAP participation binary variable, as well as the endogeneity of total expenditures. In order to account for these problems, we adapt the approach suggested by Frazis and Lowenstein (2003) which allows the estimation of bounds on the effect of an endogenous and mismeasured binary variable. The procedure involves three major steps: 1) estimation of bounds of the measurement error process, 2) the use of a Generalized Method of Moments (GMM) estimator, and 3) estimation of the bounds on the effect of the mismeasured and endogenous binary explanatory variable.

Estimation of the Bounds of the Measurement Error Process

Denote the measurement error probabilities $\alpha_0 \equiv \Pr(\text{dSNAP} = 1|\text{dSNAP}^* = 0)$ and $\alpha_1 \equiv \Pr(\text{dSNAP} = 0|\text{dSNAP}^* = 1)$ The binary dSNAP* participation variable is measured with error. Instead of dSNAP* we observe dSNAP. Therefore, the parameters α_0 and α_1 denote the fraction of false positives and false negative classifications of SNAP benefits recipients, respectively. The first step of the Frazis and Lowenstein (2003) provides estimates of upper bounds of α_0^{max} and α_1^{max}on the measurement error parameters α_0 and α_1. Estimation of these upper bounds requires the estimation of a model for the probability of reported participation as a function of a vector of explanatory variables: $\Pr(\text{dSNAP} = 1|X)$. Since $\alpha_0 \leq \Pr(\text{dSNAP} = 1|X) \leq 1 - \alpha_1$, an estimate of $\Pr(\text{dSNAP} = 1|X)$ can be used to bound α_0 and α_1. The bounds are obtained by estimating the distribution of predicted participation $\text{d}\widehat{\text{SNAP}}$ and calculating total SNAP participation below the sample q- quantile and above the 1-q quantile. The upper bound estimate of α_0^{max} ($\widehat{\alpha_0^{max}}$) is the ratio of total participation below the sample q quantile to the total number of sample observations below that sample quantile. The upper bound estimate of α_1^{max} ($\widehat{\alpha_1^{max}}$) is the ratio of total participation above the sample 1-q quantile to the total number of sample observations above that sample quantile.

In this study, we estimated a probit model of SNAP program participation on all exogenous variables used in the demand models (1) and instruments. As shown in Frazis and Lowenstein (2003), an incorrect functional form for $\Pr(\text{dSNAP} = 1|X)$ only affects the tightness of the bound but not their validity. Regarding the choice of the quantile q, its choice involves a tradeoff between the value of the tightness of the bounds and their variance: the tightness of the bounds is an increasing of function of q, and their variances are decreasing functions of it. Since, there is not a specific criteria for the optimal choice of q, we follow Frazis and Lowenstein (2003) and use the 5th and 95th percentiles in our empirical analysis and evaluate the sensitivity of the results to the choice of q.

Generalized Method of Moments

The second step of the process involves the application of standard linear GMM methods which allow us to simultaneously consider the endogeneity of the SNAP participation variable and total expenditures. Moreover, to account for heteroskedastic errors we used the optimal GMM estimator (se e.g., Cameron and Trivedi, 2005; p. 187).

Bounds on the effect of the mismeasured and endogenous binary explanatory variable

As shown in Frazis and Lowenstein (2003) the GMM estimator yields consistent estimates of all the parameters in the demand model (1), except for the SNAP variable parameter δ_n which is inconsistent. However, the estimated parameter using $\hat{\delta}_{nGMM}$ GMM provides an upper bound to the true parameter value δ_n since

$$p\lim \hat{\delta}_{nGMM}(1-\alpha_0^{max}-\alpha_1^{max}) \leq \delta_n \leq p\lim \hat{\delta}_{nGMM}.$$

Results and Discussion

Descriptive statistics

Descriptive statistics of aggregate goods budget shares and household characteristics are presented in Tables 4 and 5 respectively. Food expenditures accounts for the largest share of households' total expenditures at 42% for SNAP participants and 36% for eligible nonparticipants, followed by utilities (22% for SNAP participants and 19% for nonparticipants). Medical care is the good category with the largest difference in expenditure shares between SNAP participants (5%) and nonparticipants (12%).

The summary statistics in Table 5 show some notable differences in the characteristics of households that participate in SNAP relative nonparticipants. Compared to the average nonparticipant household, the average household participating in the SNAP program has more family members and a younger but less educated household head. The group of SNAP participants has also a higher proportion of Black and Hispanic households' heads than the group of eligible nonparticipating households. Finally, SNAP participants are less likely to own a house but on average have higher incomes than nonparticipants.

Regression Results

We present the results of several specifications starting with a budget share specification estimated using ordinary least squares (OLS) and different groups of control variables. We first present a model including only the SNAP program participation variable (model 1), followed by a model with the SNAP dummy, prices and total expenditures (model 2), and the traditional Engel curve specification which includes all the socio-demographic characteristics shown in Table 3 (except annual income) and total expenditures (model 3). The final model estimated using OLS corresponds to a specification including the SNAP participation dummy the full demand model specification described in equation (1) which includes prices, socio demographic characteristics and total expenditures (model 4).

The qualitative effect of SNAP participation in most cases remains unchanged when additional sets of controls are added; however, the magnitude of the effect changes. The magnitude of the change in the marginal SNAP effect is indicative of the relative importance of the control variables explaining the raw difference in budget shares (Altonji et al., 2005). Overall, control variables seem to be more important explaining the SNAP participation effect on the expenditure shares on food, medical care and the other nonfood group than on the expenditure shares for the other four good groups. In addition, the effect of socio demographic characteristics appears to be more important than the effect of prices explaining the differences in raw expenditures.

The next specification shown in Table 5 (model 5) correspond to a model including the same set of explanatory variables as model 4, but estimated using GMM procedures to control for endogeneity of total expenditures and the SNAP participation variable. Relative to model 4, most of the effects estimated using GMM are higher in absolute value; however, since the SNAP variable is endogenous and measured with error, these estimates only provide an upper bound of the SNAP participation effect (lower bound in the case of negative effects).

Models 6, 7 and 8 provide estimates of the bounds of the effect of SNAP participation on expenditure shares. As mentioned before, the three models share the same the upper bounds. However, the lower bounds for the marginal effects of SNAP participation (or upper bounds for negative marginal effects) change depending on the estimated bounds for α_0 and α_1 (i.e., parameters α_0^{max} and α_1^{max}).

For model 6, the bound for α_0 (probability of a false positive) is tight at 1%. The bound for α_1 (probability of a false negative), 43%, is much higher indicating the potential for a great deal of measurement error. The relative magnitudes of these bounds are intuitively plausible, as it seems more likely that households would fail to report participation in the SNAP program than to report participation that did not occur. The use of the instruments as explanatory variables in model 7 helps to tighten the bounds, which provides some evidence about the validity of the instruments used. Moreover, the use of a lower quintile in model 7 (5^{th} percentile) relative to model 8 (20^{th} percentile) also tightness the measurement error bounds estimates. However, the bounds for the SNAP participation marginal effects are relatively robust to both the specification used and the quintile used.

Focusing on the preferred model 8, the estimated bounds for the marginal effects of SNAP participation indicate that participation in the program increases expenditure shares on food and utilities, and decreases expenditure shares in transportation and medical care. In the case of food and utilities expenditure shares, the effect of participation in the program is estimated to increase these shares between 10.6% to 16.2% and 3.7% to 5.7%, respectively. On the other hand, participation in the program is estimated to decrease transportation and medical care shares between 5.9% to 9% and 7.9 to 12%, respectively. The effects of SNAP participation on the expenditure shares for apparel and other nonfood spending were very small and not statistically significant.

Summary and Conclusions

The main goal of this was to examine the impact of the SNAP program on the allocation of food and nonfood spending expenditures across six subgroups: food, utilities, apparel, transportation, medical care, and other nonfood spending. The empirical analysis is conducted using a consumer demand approach instead of the traditional Engel curve approach used to evaluate the effect of SNAP participation on household spending. Data for the study was obtained from the BLS's CEX survey and monthly CPIs from years 1998 to 2010. Endogeneity and measurement error of the SNAP participation variable and endogeneity of total expenditures are accounted for with the use of specialized econometric procedures. Several state level SNAP rules are used as instrumental variables for causal inference of SNAP participation.

The effect of participation in the SNAP program is estimated to increase the food budget share by 10.6% to 16.2%, and to increase the utilities budget share by 3.7% to 5.7%. On the other hand, participation in the program is estimated to decrease transportation and medical care shares between 5.9% to 9% and 7.9 to 12%, respectively. The effects of SNAP participation on the expenditure shares for apparel and other nonfood spending were very small and not statistically significant.

Estimates of SNAP benefits effects on non-food spending (e.g., marginal propensity to consume) are important in the evaluation of the economy-wide impacts of cuts or increases in the program (see e.g., Kuhn et al., 1996). The results of this study contribute to the literature providing new estimates of the impact of SNAP.

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Table 1: Aggregate Commodity Groups and Sub-Groups

Groups	Sub-groups
Food	1) Food at home 2) Food away from home 3) Alcoholic beverages
Utilities	1) Natural gas 2) Electricity 3) Telephone services 4) Water and other public service 5) Fuel oil and other fuels
Apparel	1) Clothing for men and boys 2) Clothing for women and girls 3) Footwear 4) Clothing for children under 2
Transportation	1) Motor vehicle maintenance and repair 2) Motor vehicle insurance 3) Motor vehicle fees 4) Public transportation 5) Motor fuel
Medical care	1) Medical care commodities 2) Medical service 3) Health insurance
Other nonfood spending	1) Recreation 2) Other goods and services

Table 2: Instrumental Variables to Control for Endogeneity of SNAP Participation

Policy variable	Description	Expected effect on participation	Previous literature	Source
Immigration eligibility	Whether noncitizen immigrants are eligible for SNAP benefits	+	Kaushal (2007)	ERS SNAP rules database
Short recertification period for elderly SNAP units	Proportion of elderly SNAP units that have to be recertified at high frequencies (e.g. 1-3 months)	–	Meyerhoefer and Pylypchuk (2008)	Same as above
Categorical eligibility	Whether the state removed the asset test	+		Same as above
Simplified reporting	Whether the state simplifies reporting of changes in earnings by SNAP units	+		Same as above

[a] Meyerhoefer and Pylypchuk (2008) use the total proportion of SNAP units that have to be recertified at high frequencies. In this study we considered different recertification variables realted to diffebt ctaegories : SNAP units with earnings; nonearning, nonelderly SNAP units; and, elderly SNAP units.

Table 3: Descriptive Statistics of Household Characteristics

	SNAP Participants n=13,289		SNAP Nonparticipants n=47,528	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Continuous Variables				
Age of household	43.94	16.45	51.49	21.33
Family Size	3.10	1.94	2.31	1.65
Time trend	7.41	3.73	6.37	3.58
Dummy variable (Yes=1, No=0)				
Education of the household head				
College-educated	0.04	0.2	0.13	0.33
Race of the household head				
White	0.61	0.49	0.76	0.42
Black	0.32	0.47	0.17	0.38
Other race	0.07	0.25	0.06	0.24
Region of residence				
Northeast	0.21	0.41	0.19	0.4
Midwest	0.20	0.40	0.20	0.4
South	0.37	0.48	0.35	0.48
West	0.22	0.41	0.26	0.44
Hispanic	0.23	0.42	0.17	0.38
Owns house with mortgage	0.09	0.28	0.18	0.39
Annual Income	11,998.17	8,343.54	10,142.67	7,651.48

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Table 4: Descriptive Statistics of Households Expenditures and Budget Shares

	SNAP Participants n=13,289		SNAP Nonparticipants n=47,528	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Expenditures				
Food	1,011.93	703.37	1,055.22	838.33
Utilities	519.73	412.46	552.15	434.48
Apparel	147.84	255.05	153.40	303.48
Transportation	354.47	465.61	530.47	678.06
Medical care	120.10	335.89	400.04	743.55
Other nonfood spending	413.88	854.44	543.05	1,719.12
Total expenditures non-durables	2,567.96	1,757.09	3,234.33	2,910.09
Expenditure Shares				
Food	0.42	0.19	0.36	0.17
Utilities	0.22	0.14	0.19	0.13
Apparel	0.05	0.07	0.04	0.07
Transportation	0.12	0.12	0.15	0.13
Medical care	0.05	0.1	0.12	0.15
Other nonfood spending	0.14	0.13	0.14	0.13

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Table 5: Marginal Effect of SNAP Participation on Expenditure Shares

Specification		Good Category: Food	Utilities	Apparel	Transportation	Medical care	Other nonfood spending
OLS, SNAP dummy variable only		0.058**	0.030**	0.006**	-0.029**	-0.067**	0.002**
		(0.002)	(0.001)	0.001	(0.001)	(0.001)	(0.001)
OLS, SNAP dummy, socio-demographic characteristics and total expenditures.		0.010**	0.025**	-0.001	-0.024**	-0.029**	0.019**
		(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
OLS, SNAP dummy, prices and total expenditures.		0.032**	0.020**	0.004**	-0.026**	-0.049**	0.020**
		(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
OLS, SNAP dummy, socio-demographic characteristics, prices and total expenditures.		0.010**	0.023**	-0.002	-0.023**	-0.028**	0.020**
		(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GMM accounting for endogeneity of SNAP participation and total expenditures		0.162**	0.057**	0.004	-0.090**	-0.120**	-0.003
		(0.015)	(0.010)	(0.006)	(0.013)	(0.013)	(0.012)
(6) Bounds accounting for endogeneity and measurement error of SNAP participation variable and estimated using prices and demographic variables: $\hat{\alpha}_0^{max} = 0.009;\ \hat{\alpha}_1^{max} = 0.43; q = 0.05.$	LB[a]	0.091	0.032	0.002	-0.090	-0.120	-0.003
	UB	0.162	0.057	0.004	-0.051	-0.068	-0.002
(7) Bounds accounting for endogeneity and measurement error of SNAP participation variable and estimated using prices, demographic variables and instruments: $\hat{\alpha}_0^{max} = 0.014;\ \hat{\alpha}_1^{max} = 0.332; q = 0.05.$	LB	0.106	0.037	0.003	-0.090	-0.120	-0.003
	UB	0.162	0.057	0.004	-0.059	-0.079	-0.002
(8) Bounds accounting for endogeneity and measurement error of SNAP participation variable and estimated using prices and demographic variables and instruments: $\hat{\alpha}_0^{max} = 0.021;\ \hat{\alpha}_1^{max} = 0.414; q = 0.20.$	LB	0.092	0.032	0.002	-0.090	-0.120	-0.003
	UB	0.162	0.057	0.004	-0.051	-0.068	-0.002

** Statistically significant at the 0.05 level.

[a]LB stands for lower bound and UB stands for upper bound