The Impact of In-kind Food Benefit Increase on Consumption

Yiting Lan, Ohio State University[1]
Andrew Hanks, Ohio State University[2]

The Supplemental Nutrition Assistance Program (SNAP), which was known as the Food Stamp Program before, is the largest program in the U.S. that provides nutrition assistance to low-income and no-income families. A large literature has shown the effectiveness of SNAP benefits on improving the food security of low-income households. Hyones and Schazenbach (2009) show that the introduction of food stamps reduces out-of-pocket food expenditure and increase overall food consumption. Some researchers find the increase in SNAP benefits cause inframarginal households (households who spend more on food than the benefits they receive) to increase their total food consumption share, using the Consumer Expenditure Survey (Interview) data during 2009 ARRA benefit increase (Beatty and Tuttle, 2014). However, how the consumers reallocate their food expenditure when the SNAP benefits increase is not sure.

In this study, firstly, I try to test whether low-income inframarginal households increase their food expenditure after SNAP benefits increase by using Consumer Expenditure Survey (Diary) data. Secondly, I investigate whether those low-income inframarginal households increased certain food categories expenditure (fruits, vegetables, beverage, meats and so on) when their SNAP benefits increase. The results of my study show the increase in benefits cause households to increase their food consumption and non-alcohol beverages consumption, but does not cause household to increase consumption for other healthy food categories, such as fruits, vegetables, meats and so on.

In order to investigate the question, Consumer Expenditure Survey data (Diary) of 2007 through 2011 when SNAP benefits experienced several large discrete increases is used. To separate the effects of benefits increases and other economic condition, a difference-in-difference design is used. And, Coarsened Exact Matching [CEM] (Iacus, King, and Porro 2011) is used to create a quasi-control group for DID analysis.

The dependent variables include food at home consumption, vegetables, fruits, non-alcohol beverage, dairy, meats and eggs. Two dummy variables indicating whether the survey participants received SNAP benefits in the past 12 month and last month, combining with a variable that measuring the SNAP benefits received last month are used to measure if the households are SNAP participants. Demographic variables, including gender, age, race, family size, etc. are used as fixed effects. A dummy variable *after* is created to measure whether the consumption happened before or after the SNAP benefits increase.

The expenditure for food at home and several food categories is as below:

[1] Yiting Lan, (lan.106@osu.edu), Graduate student, Consumer Sciences
[2] Andrew Hanks, (hanks.46@osu.edu), Assistant Professor, Consumer Sciences

$$y_{ij} = \beta_{0j} + \beta_{1j} SNAP_i + \beta_{2j} After + \beta_{3j} (SNAP_i * After) + \beta_4 \ln(TotalExp_i) + X_i \Gamma_j + \gamma_j + \varepsilon_{ij}$$

The *i* is for individual, the *j* is for the outcome variable of consumption for food at home, vegetables, fruits and other food categories. The *After* is a dummy variable for data period, the *SNAP* is a dummy variable indicating whether the households are SNAP participants. The variable *After*SNAP* is the interaction term to test whether the increase of benefits has an impact on the amount of food purchased. X_i include matrix of the household fixed effect, γ_j is the interview term fixed effects and ε_{ij} is the error.

Table1 presents the main results of Difference-in-Difference analysis, the regression coefficients and their standard error. Column 1 contains results for food at home consumption, column 2 to 7 include fruits, vegetables, non-alcohol beverage, dairy, meat and eggs consumption. There is evidence showing that SNAP participants increase their total food at home consumption, and non-alcohol beverage consumption in response to increases in SNAP benefits. There is no evidence that consumption for other food categories are affected.

My data shows evidence that the increase of SNAP benefits increases SNAP participants' food consumption of food at home and non-alcohol beverage. There are several points to identify. firstly, food expenditure from the CEX diary data is calculated by adding up all food items that recorded by participants, which is more detailed than CEX interview data but still with measurement error (Brzozowski et al., 2017). Secondly, the CEX interview data is panel data, so only households that were participants in the program before and after the policy changes, and households that were never participants in the program are included in the sample. However, for CEX dairy data, a similar sample selection cannot be achieved.

Table1. Main Results: 2007-2011

Variables	Food at home	Fruit	Vegetables	Non-alcohol beverage	Dairy	Meat&eggs
SNAP	68.381***	3.952***	5.292***	6.470***	6.235***	19.769***
	(5.165)	(.691)	(.634)	(.732)	(.663)	(1.732)
After	-8.311**	-1.301**	.114	-1.224**	-1.953**	-2.935**
	(3.889)	(.521)	(.478)	(.551)	(.499)	(1.304)
After*SNAP	18.530***	1.395*	1.258	2.230**	1.386	4.130*
	(6.566)	(0.855)	(.806)	(.931)	(.843)	(2.202)
Total expenditure	.024***	.002***	.002***	.002***	.002***	.006***
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Observations	26353	26353	26353	26353	26353	26353
R-squared	0.272	0.152	0.160	0.130	0.213	0.186

Notes: Regression include household, year and quarter fixed effects. *, **, *** represent10%, 5%, and 1% significance respectively

References

Beatty, T. K., & Tuttle, C. J. (2014). Expenditure response to increases in in-kind transfers: Evidence from the Supplemental Nutrition Assistance Program. American Journal of Agricultural Economics, 97(2), 390-404.

Brzozowski, M., Crossley, T. F., & Winter, J. K. (2017). A comparison of recall and diary food expenditure data. Food Policy, 72, 53-61.

Hoynes, H. W., & Schanzenbach, D. W. (2009). Consumption responses to in-kind transfers: Evidence from the introduction of the food stamp program. American Economic Journal: Applied Economics, 1(4), 109-39.

Iacus, S. M., King, G., & Porro, G. (2012). Causal inference without balance checking: Coarsened exact matching. Political analysis, 20(1), 1-24.

