Food Policy xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

Changes in Supplemental Nutrition Assistance Program real benefits and daily caloric intake among adults☆

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ARTICLE INFO

Keywords:
SNAP cycle
Food intake
NHANES
Benefit amounts
ARRA
Food assistance programs

ABSTRACT

The Supplemental Nutrition Assistance Program (SNAP) is the largest food-assistance program in the United States, providing support for low-income families to purchase food from stores. Previous research has found that adult participants experience a decline in caloric intake at the end of their benefit month. Using use data from the National Health and Nutrition Examination Survey, we exploit the variation in real SNAP benefits between 2007 and 2014 arising from policy changes and inflation over the period to study how real benefits affect the cycle of food intake over the benefit month among working-age adults in SNAP households. We find that greater real benefit levels reduce the SNAP cycle in daily dietary intake, but that larger changes in benefit amounts would be required to eliminate cyclic intake.

1. Introduction

The Supplemental Nutrition Assistance Program (SNAP) is the largest food-assistance program in the United States, providing assistance to low-income families to purchase food. SNAP is an entitlement program so that every family that is eligible per the criteria set by law can receive benefits. Each family's benefit is delivered on a fixed date each month to an Electronic Benefit Transfer (EBT) card, which is similar to a debit card, and can be redeemed for eligible items at authorized food retailers. Previous research has documented that SNAP recipients spend a disproportionate share of their benefit just after receipt (Hastings and Washington, 2010), and that most of this spending is concentrated at larger retail food stores, such as grocery stores, supercenters, and club stores (Damon et al., 2013). Researchers examining dietary intake data find that food intake falls off at the end of the benefit month (Wilde and Ranney, 2000; Shapiro, 2005; Todd, 2015). Other research has found that cyclic spending also occurs following receipt of other income, and may have impacts on health and mortality (Stephens, 2003; Andersson et al., 2015; Evans and Moore, 2012; Dobkin and Puller, 2007). Indeed, cyclic food consumption patterns are increasingly linked to chronic illness (Laraia, 2013) and higher medical expenditure. For example, Seligman et al. (2014) and Basu et al. (2017) show that, for low income households, cyclic consumption behavior is linked to increased hospital visits for hypoglycemia. The latter estimate that emergency department and inpatient visits attributable to the monthly cycle in hypoglycemia cost $54.1 million per year.

Evidence of cyclic consumption behavior is important for several reasons. Cyclic food consumption – meaning, dietary intake but not shopping – offers evidence against the life-cycle-permanent income hypothesis, which was until recently the go-to explanation of expenditure (and saving) in economics (Stephens, 2006). However, evidence against this explanation – and for cyclic consumption — leaves room for other explanations of imperfect smoothing. Among the most prominent is that introduced by Shapiro (2005): differences in time preference. SNAP households, Shapiro argues, don't discount utility exponentially (patiently), as the theory suggests might be optimal; rather, they are quasi-hyperbolic (impatient) discounters, which is evidenced by the cyclic behavior with respect to food consumption.

In this paper we extend previous research and look at a different alternative hypothesis: namely, that the behavior observed by SNAP households is due to liquidity constraints. To do this, we explore whether the SNAP cycle is affected by benefit levels, taking advantage of two sharp changes in benefit amounts and the general attrition in real benefit value due to inflation between 2007 and 2014. Per U.S. law, SNAP benefits are adjusted at the start of each fiscal year in October based on the estimated cost of the U.S. Thrifty Food Plan, a food basket that quantifies the foods an individual should consume to meet U.S. dietary recommendations at the lowest cost (Carlson et al., 2007) in June. Real values then decline slowly over the year as prices increase. In April 2009, the SNAP benefit was increased by roughly 14 percent

☆ The findings and conclusions in this paper are those of the authors and do not necessarily represent the views of the Economic Research Service, the U.S. Department of Agriculture, the Research Data Center, the National Center for Health Statistics, or the Centers for Disease Control and Prevention.

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https://doi.org/10.1016/j.foodpol.2018.06.004
Received 6 November 2017; Received in revised form 18 June 2018; Accepted 19 June 2018
0306-9192/ Published by Elsevier Ltd.

through the American Recovery and Reinvestment Act (ARRA) as U.S. lawmakers sought not only to reduce the impact of the Great Recession on low-income households, but also to stimulate the broader economy (Hanson, 2010). The real value of the ARRA-induced benefit increase declined over time but was not eliminated due to inflation as the U.S. Congress had expected; in October 2013, they completely eliminated it. We study how the real SNAP benefit affects the monthly cycle of food intake among working-age adult participants using these changes in real benefit levels.

Our results confirm that SNAP households exhibit imperfect consumption smoothing over the SNAP month. However we show that the size of the real SNAP benefit affects this behavior; when the ARRA benefit increase is still in effect, we show that it reduces, but does not eliminate, cyclic food consumption among adults in SNAP. Along with previous research that looked at the effect of ARRA when real benefits were more valuable (Todd, 2015), this result suggests that the real value of SNAP benefits is likely a factor in the cyclic behavior. This result has direct meaning for policy about SNAP: benefit increases could help reduce or eliminate this cycling behavior and the attendant direct and indirect health costs.

2. Background and previous literature

2.1. Cyclic purchase behavior: theoretical concerns

Shapiro (2005) was among the first to empirically identify consumption behavior that followed the cycle of SNAP benefit disbursement. This behavior, especially with respect to perishable items like food, violates the life-cycle permanent income hypothesis (LCPIH), which stipulates that known changes in income should have no effect on consumption (Hall, 1978). Shapiro showed that SNAP participants' caloric consumption declined 10–15 percent over the SNAP month and attributed this decline to time preferences consistent with quasi-hyperbolic discounting; that is, SNAP participants have a strong preference for current over future consumption, leading to present-bias in their consumption decisions. These results corroborated the work of Stephens (2003) who found a similar cyclical pattern in food at home and away from home among recipients of Social Security, a program that provides monthly income payments to the retired and work-disabled in the U.S.

The empirical literature that examines the LCPIH also identifies other regularities at odds with the theory (Hall, 1978). Among the most important for our purposes is that, if households cannot borrow when income decreases, increases in consumption will be correlated with known increases in income (DeJuan et al., 2006; Flavin, 1985; Zeldes, 1989; Gomes and Paz, 2010). This situation might arise if credit markets are imperfect and households are liquidity constrained. Evidence suggests that some non-optimal consumption smoothing is likely due to such constraints (Zeldes, 1989; Gomes and Paz, 2010; Flavin, 1985).

A formal test of the liquidity constraints hypothesis would examine the difference (in percentage terms) of the consumption response to increases and decreases in income. Because the real value of SNAP benefits decreases monthly, there are only two months of data with discrete changes in benefit amounts that would afford us this test: the implementation of ARRA (April 2010) and its end (October 2013). The sample sizes for these months make this test infeasible. However, our data do allow us to look at changes in consumption due to the real increase in SNAP benefits subsequent to the American Recovery and Reinvestment Act (ARRA) of 2009. With these data, we are able to examine the degree to which the cyclic deficits in consumption are ameliorated by higher benefit amounts; while these data aren't suitable for a formal test that would distinguish between hyperbolic discounting and liquidity constraints as causal mechanisms of consumption patterns, our results are consistent with the hypothesis that liquidity constraints play a role in cyclic consumption behavior.

2.2. SNAP benefit levels

SNAP provides a monthly benefit which households can use to purchase food from authorized food retailers. Benefit amounts are determined by a standard formula which considers a household's size and income after allowable deductions (net income) as well as the maximum benefit amounts, which are set annually in October based on the cost of the U.S. Thrifty Food Plan (Carlson et al., 2007) in June of the same calendar year (FNS, 2017a). The Thrifty Food Plan outlines the types and amounts of foods by age and gender individuals can consume to meet U.S. dietary recommendations at the lowest cost. The SNAP benefits are delivered electronically on an EBT card, which functions much like a debit card when making purchases. Each household's benefit is delivered in full on a single day each month. Some states set a single day each month—for example, the first—for all SNAP households to receive their benefits, but most states stagger the distribution to the full caseload over the course of a week or more during each month (FNS, 2017b). The way in which the states divide their caseload for staggered distribution varies, but generally utilizes the last number of the household's case number or the first letter of the last name. Each group is then given their SNAP benefits on the same calendar day each month so that they receive benefits every 30 to 31 days, depending on the month.

SNAP is an entitlement program, in that all households that meet the eligibility requirements are entitled to receive benefits. As such, the program serves as a safety net for individual families. Between 2007 and 2013, SNAP participation nearly doubled, increasing from 26.3 to 47.6 million people (FNS, 2017c), mainly due to increased unemployment following the 2007–09 recession (Ganong and Liebman, 2013). As part of the American Recovery and Reinvestment Act (ARRA), the U.S. Congress increased household SNAP benefits by an amount equal to 13.6 percent of the maximum benefit for a household of a given size. For example, for single person households, the maximum monthly benefit before ARRA was $176; the ARRA boost increased that benefit by $24 to $200 (13.6 percent). Other single-person households saw their benefits increase by $24, so that households with smaller benefits before ARRA saw a larger percentage increase (see Nord and Prell, 2011, Table 1).

The U.S. Congress expected the one-time increase in benefits to lose value through inflation by 2014. As Table 1 demonstrates, while the nominal value held steady between April 1, 2009 and September 30, 2013, the real value was declining slowly each year, but had only declined 8 percent between April 2009 and the end of the 2013 fiscal year.

Table 1
Nominal and Real Maximum Monthly SNAP benefit for a family of four.

Fiscal year	Nominal $	% change in nominal benefit	Real $ (base 2006$)	% change in real benefit from previous year
2006	506		506	
2007	518	2.4	518	2.4
2008	542	4.6	522	0.8
2009	588	8.5	568	8.8
2009*	668	13.6	646	13.6
2010	668	0.0	635	−1.6
2011	668	0.0	616	−3.0
2012	668	0.0	603	−2.0
2013	668	0.0	595	−1.4
October 2013	668	0.0	585	−1.6
2014**	632	−5.4	554	−5.4
2015	649	2.7	568	2.6

Notes: Compilation of data on SNAP benefits from FNS (2017a). Real values calculated using annual all-items CPI, all city data, (calendar year CPI applied to fiscal year) from the U.S. BLS (2017).

* Starting April 1, 2009.

** Starting November 1, 2013