Is there an Nth of the Month Effect?
The Timing of SNAP Issuance, Food Expenditures, and Grocery Prices

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A. Summary

Previous research on the Supplemental Nutrition Assistance Program (SNAP) finds that participating households reduce their consumption of food throughout the benefit month, facing increased risk of nutritional insecurity in the week before benefits are re-issued. Additional work suggests that retailers respond by raising food prices at the start of the month, when SNAP demand is highest, in order to capture a portion of the transfer. Partly in response to such findings, the United States Department of Agriculture (USDA) recently recommended that states stagger SNAP benefit issuance over multiple days of the month.

Our paper is the first to use the variation in the timing of SNAP benefit issuance within and across states to study the effects of SNAP on participant and retailer behavior. We link this policy variation to food acquisition data as well as retail grocery price data from the National Household Food Acquisition and Purchase Survey (FoodAPS) and Kilts-Nielsen Data. By utilizing this variation, we are able to carefully separate the effects of SNAP on retailer and participant behavior from confounding factors that occur at the beginning of the month.

Preliminary results reveal large intra-month cycles in food expenditures among SNAP-eligible households that closely track state issuance policies. However, we find only very small effects on food prices. Using detailed information available from the FoodAPS Dataset, we intend to study the mechanisms behind our results: for example, how shopping behavior and local food environments affect consumer and retailer response.

B. Project Description

The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamps Program, is the largest nutrition assistance program in the United States, providing benefits to over 46 million households (around 1 in 8) at an annual cost of almost $75 billion. Once per month, each SNAP household is issued a lump sum benefit that can be redeemed for food at grocery stores or other retailers. Standard economic theory predicts that SNAP participants, who must be low income in order to qualify for the program, would ration their benefits throughout the month in order to smooth consumption and avoid having to skip a meal. However, if participants are present-biased they may consume too much at the beginning of the benefits cycle, leaving themselves unable to afford enough food at the month's end (DellaVigna, 2009). Recognizing this tendency, retailers may strategically raise food prices

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in low-income neighborhoods in the days following SNAP issuance to take advantage of SNAP-induced cycles of demand.

Prior research has documented evidence consistent with both of these phenomena. A number of studies have found that households participating in SNAP tend to reduce both food expenditures and caloric consumption over the course of the month.[2] In addition, Hastings and Washington (2010) report evidence that retailers raise prices in the days following the issuance of SNAP benefits, thereby shifting a portion of the program's incidence away from its intended beneficiaries. Partly on the basis of such findings, some policymakers and academics have called for states to revamp their SNAP programs so that participants receive their benefits on different days from one another. And, in recent years, a number of states have adopted policies consistent with this advice by expanding the number of days on which benefits are issued.

However, the prior research supporting such reforms has important data limitations. For example, Hastings and Washington (2010) rely on data from only three stores, all drawn from a single state and a single chain. Because all SNAP participants in that state receive their benefits on the first of the month, the authors cannot investigate whether the demand and price cycles they observe stem from the timing of SNAP issuance or from other monthly patterns such as employee pay schedules, other benefit programs, or due dates for rent or utility bills.[3] Earlier studies that rely on consumption surveys, such as Wilde and Ranney (2000) and Shapiro (2005), though nationally representative, lack retailer pricing data and, therefore, cannot rule out the possibility that the observed demand cyclicality stems from unrelated cyclicality in retailer pricing, as opposed to the timing of SNAP issuance.

In this paper, we study whether the timing of SNAP issuance affects demand for food among SNAP households and, in turn, the pricing decisions of retailers. We contribute to the existing literature in three major ways. First, our analysis utilizes two new data sets which contain nationwide household-level purchase data and retailer-level price data: the National Household Food Acquisition and Purchase Survey (FoodAPS) and the Kilts-Nielsen Consumer Panel and Retail Scanner Data. These multi-state datasets allow us to compare consumption and pricing patterns across states with different SNAP issuance policies. The representativeness of the sample is of particular concern, as pricing strategy is likely to vary among retailers.

Second, detailed data available from FoodAPS on household purchases, nutritional outcomes, and food security, as well as the local retail environment afford us the unique opportunity to study the mechanisms behind consumer and retailer responses to SNAP. By observing a SNAP household's retail environment, for example, we can study whether intra-month expenditure cycling is related to the local availability of fresh grocers. By observing food away from home, we can study how other food expenditures substitute for or complement SNAP expenditures.

Our third contribution is methodological: we are the first to take advantage of the substantial variation in the timing of SNAP issuance within and across states. For example, in Nevada all SNAP participants receive their

[2] See Wilde and Ranney (2000), Shapiro (2005), and Hastings and Washington (2010).

[3] Previous research finds evidence that expenditures are highest shortly after receiving a paycheck (Stephens Jr., 2006), pension benefits (Stephens Jr. and Unayama, 2011), and Social Security benefits (Stephens Jr., 2003; Mastrobuoni and Weinberg, 2009, 2010). A related area of research finds an increase in drug abuse (Dobkin and Puller, 2007) and mortality (Evans and Moore, 2011, 2012) at the beginning of the calendar month among recipients of government transfer programs that are issued on the first of the month.

benefits on the first of the month, whereas in Missouri the day on which SNAP participants receive their benefits varies by person – a Missourian's issuance day may fall anywhere between the first and the 22nd of the month. We exploit this variation in issuance policy to identify whether cyclicality in consumption and pricing are due to the timing of SNAP issuance or to other monthly patterns. Understanding the source of cyclicality in these variables is crucial for evaluating the desirability of staggering the timing of SNAP issuance.

C. SNAP Benefit Timing and Consumer Expenditures

To begin, we use the FoodAPS data to investigate cyclicality in food expenditures and consumption among SNAP-eligible households. Several variables in FoodAPS make it an ideal data source to address our research questions. The data contain detailed information on daily household food purchases and consumption and, most importantly, information on the exact date of the household's last SNAP benefit receipt. Assuming that the household's interview date is random, we can use time since SNAP receipt to determine if households consume less food at the end of their benefit month. Additionally, since individuals in certain states receive their benefits on different days of the month (depending on the benefit issuance policy), we can determine if the intra-monthly cyclicality measured in previous research is driven by SNAP issuance or other events that take place at the beginning of the month. Our main analysis will use the following econometric model:

$$y_{iswt} = \beta_0 + \beta_1 DaysSinceSNAP_{it} + \eta_w + \theta_i + \gamma_s + \epsilon$$

where y_{ist} is a measure of food expenditure for household i in state s on day t, $DaysSinceSNAP_{it}$ is a measure of time since the household received their SNAP benefits, η_w is a set of calendar week fixed effects, θ_i are household demographic controls, and γ_s are state fixed effects. Unlike other data sources, FoodAPS allows us to compare SNAP households to eligible but non-participating households so that we can tease out whether any observed cyclicality is due to the timing of SNAP benefits rather than other factors affecting all low-income households. Lastly, we can use data on method of payment to determine how households use SNAP benefit dollars compared to out-of-pocket expenditures.

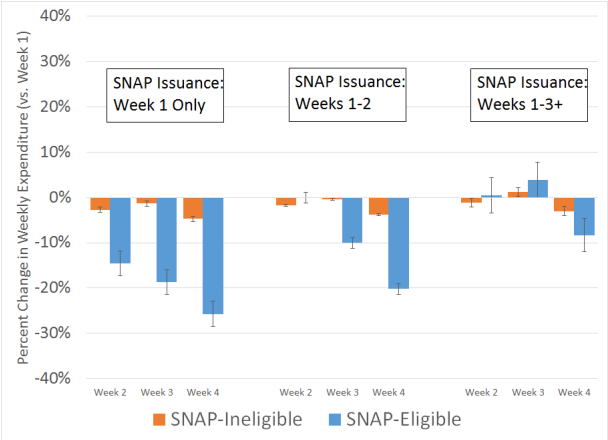
In addition to the FoodAPS data set, we use the Kilts-Nielsen Consumer Panel, a nationally representative panel of over 125,000 households of daily expenditure data on food and non-food purchases. This data set provides important complementarities to the FoodAPS data set. The most important benefit of the Nielsen data is that it provides a very large sample of households and follows each household for an average of four years rather than only seven days, allowing us to control for household fixed effects. However, the FoodAPS data set provides several key benefits that are absent in the Nielsen data. For example, the FoodAPS data indicates household SNAP receipt as well as date of issuance from both survey response and administrative records; in contrast, the Nielsen data only contain household income data, which allows for measures of SNAP eligibility, but not SNAP participation. Therefore, while

we cannot compare individual households with different issuance dates, nor can we compare SNAP households to other low-income households using the Nielsen data, we can compare consumption patterns of low-income households across states with different benefit issuance policies.

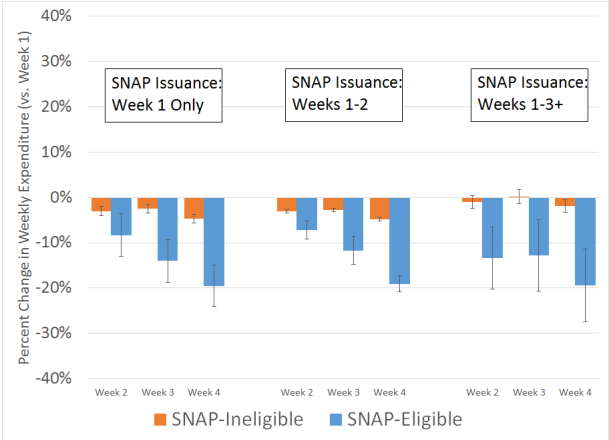
Our preliminary results from the Nielsen data show that food expenditure among SNAP-eligible households is tied closely to the state's SNAP issuance policy: food expenditures among SNAP-eligible participants are 27 percent higher in the first week of the month relative to the fourth week in states that issue all SNAP benefits at the beginning of the month, but relatively constant in states that stagger SNAP issuance over the month. In contrast, we find no such pattern by issuance schedule for non-food expenditures nor for SNAP-ineligible households, suggesting that the cyclicality we do observe in that variable is driven by factors other than SNAP issuance (see figure below).

Figure 1: Weekly Change in Household Expenditure by SNAP Issuance Policy

(a) Food Expenditure



(b) Non-Food Expenditure



Source: Nielsen Consumer Panel.

D. SNAP Benefit Timing and Retailer Pricing

Next, we turn to the effect of SNAP issuance timing on retailer pricing decisions. Previous research suggests that when states issue all SNAP benefits on the first of the month, retailers in low-income neighborhoods raise food prices at the beginning of the month to take advantage of the surge in food demand among SNAP-eligible households. If so, staggering the timing of SNAP issuance across participants could be an effective way to shape the incidence of the benefit – i.e., to ensure that transfers intended for SNAP participants are not captured by retailers.

For this analysis, we utilize data from the Kilts-Nielsen Retail Scanner Data, which contains weekly product-level price and expenditure data for over 11,000 grocery stores, approximately 53 percent of supermarket food purchases in the United States. In contrast to the previous literature, we find that the timing of SNAP issuance has no effect on the cyclicality of food prices. Our null effect is precisely estimated – a 95% confidence interval excludes intra-month price cycles greater than 0.3 percent per week in magnitude, even in high SNAP use neighborhoods. These results have important implications for policy: staggering SNAP issuance over the course of the month is likely to affect the timing of SNAP participants' food purchases but unlikely to substantially affect the food prices they face.

One possible explanation for why retailers do not raise prices in response to SNAP-induced fluctuations in demand is that SNAP participants are price-elastic with respect to any particular retailer. That is, although SNAP participants may be inelastic with respect to the day on which they purchase food, they may be quite flexible as to the particular retailer at which they shop. To investigate this possibility, we turn to back to the FoodAPS data. This dataset has several variables that shed light on the shopping experience of SNAP participants, such as the location of the household's primary grocery store, the number of stores at which the household shops, the number of stores within a certain distance from the participant's home, and whether the household indicates price sensitivity when selecting a store. In addition, the FoodAPS Geographical Component provides food price data for stores located near survey participants. Combining these datasets, we can test whether local competition is responsible for the lack of a price response by retailers, by analyzing whether there is more price cyclicality in areas in which the retailer has fewer low-cost competitors.

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