Consumption Responses to Pay Frequency: Evidence From “Extra” Paychecks

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To budget, households must manage cash inflows and outflows. This paper studies how households manage their cash flow when the timing of their income and the timing of their expenditures is misaligned. I show that spending responds to income variation arising from such misalignment in ways consistent with mental accounting.

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Paper #1: Does Access to FICO Scores Influence Financial Behavior? Evidence from a Field Experiment with Student Loan Borrowers

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Paper #2: Consumption Responses to Pay Frequency: Evidence from “Extra” Paychecks

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Paper #3: Can Food Stamps Reduce Food Consumption? The Unintended Consequences of Restricted-Use Funds on Budgeting Decisions

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Paper #4: Shopping Behavior of Food Stamps Users: The Role of Decision Conflict

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SESSION OVERVIEW

In recent years, there has been a growing appreciation—in academia, government, and industry—for behavioral research on consumer’s financial decisions. Although any consumption decision can be said to be “financial” (insofar as it involves money), the stream of consumer financial decision making is specifically concerned with decisions that “have dramatic effects on a consumer’s overall financial picture due to the size of a single expenditure […] or to the accumulated effects of repeating the same pattern […]” (Lynch 2011). As such, it includes research not only on core decisions regarding financial resources (saving, borrowing, and repaying) but also extends to consumers’ budgeting process (when, how and on what should those resources be used or invested). Because of their importance and/or of their frequency, these decisions play a critical role in consumers’ welfare, and policymakers are growing increasingly concerned with understanding those decisions, and governments have created “behavioral units” aimed at researching and developing tools to improve consumers’ financial behavior.

The four papers presented in the session further our understanding of such consumer financial decisions, and illustrate their importance in areas with strong policy implications. Homonoff, O’Brien, and Sussman present the results of a large-scale field experiment in which consumers are provided with information about credit (FICO) scores, and show that giving consumers access to that information has important positive consequences. Zhang investigates the consequences of misaligned cash flows (e.g. consumers paid on a bi-weekly basis receiving a “third” paycheck in a given month) and shows that they trigger a significant increase in expenditures. André, Reinholdt, and Lynch study the consequences of endowing consumers with a resource that can only be spent on a limited range of products and show that a resource akin to food stamps can paradoxically decrease people’s food consumption. Finally, Gauri, Ma, and Thomas document how different financial resources (food stamps vs. money vs. credit card) lead to different food choices, with significant implications for consumers’ health.

This research offers a broad view of the current issues in consumer financial decision-making research, and have strong connections to policy. First, they are tackling issues on which public institutions have a lever for action, and as such have the potential to inform policy decisions: Should consumers be given more transparent access to their FICO scores? Should bi-weekly payments be discouraged, in favor of weekly or monthly payments? Should the poor be given money, rather than food stamps? Second, they rely on methods high in external validity: the simulations, field experiments, retailer data, and natural experiments used in the projects ensure that the effects documented are ecologically valid, and representative of problems encountered by consumers in their daily lives. Finally, they are authored not only by prominent consumer behavior scholars but also by members of public policy institutes and of the Consumer Financial Protection Bureau (a leading institution in policy-relevant research). For all those reasons, we think that the four papers form a cohesive and important session, which has the potential to appeal to a large audience.

EXTENDED ABSTRACT

Consumers struggle when making financial decisions. Research consistently documents the costly mistakes individuals make across all domains of household finance, from investment and retirement savings decisions (e.g., Benartzi and Thaler, 2001; Choi, Laibson, and Madrian, 2009, 2011) to mortgage choice (e.g., Huang, Amromin and Sialm, 2007) to debt management (e.g., Gross & Souleles, 2002; Hershfield et al., 2016; Sussman & O’Brien, 2016; Sussman & Shafir, 2011). FICO’s recent move to provide people with direct access to their FICO score was intended to empower consumers with the information they need to improve their financial lives. However, the effect of this information on financial behavior remains unknown.

In this research, we examine whether and how access to credit score information influences financial decisions among a population of student loan borrowers.

Despite this increased focus and the significant resources invested by policymakers, firms, and charitable foundations, there is little evidence that financial education interventions are effective in improving financial behaviors and financial outcomes. Although consumer financial literacy is positively associated with a range of financial behaviors and financial outcomes (Ameriks et al. 2003; Lusardi & Mitchell 2006, 2007; Stango & Zinman 2009; van Rooij et al. 2012), quasi-experimental studies and randomized controlled trials of financial education interventions typically find no lasting measurable effects (for a meta-analysis see Fernandez, Lynch, Netemeyer 2014; for a review see Hastings et al. 2015).

Alongside efforts to improve financial literacy and financial decision-making, there has been a major push by policymakers, regulators, and firms in recent years to increase consumer access to their credit report information. In this paper, we isolate the effect of viewing the FICO score on consumer financial outcomes drawing on evidence from a field experiment. This intervention differs from more traditional efforts to improve financial literacy in several important ways. First, FICO scores are personalized and are based...
on the actual credit behaviors of the individual. Second, FICO scores are concrete and exist on a continuous scale (0-850tk) that makes it possible for consumers to compare their score with others and track their progress over time. Third, participants view at least two “reason codes” alongside their score. These codes are generated by FICO and provide the consumer with personalized information about why their score is what it is and, in so doing, provides specific action steps the individual can take to improve their score.

We implemented a randomized experiment using email correspondence between a large student loan lender and their clients. Our analytic sample is comprised of more than 450,000 student loan borrowers. The experimental design randomly assigned borrowers to either a control (no email) group or one of three treatment groups. Those randomly assigned to a treatment group received emails from the lender informing them that their FICO score was online and encouraging them to view their scores. The treatment groups varied in the message that accompanied the login information, with messages that provided (i) no additional information (ii) information about peers successfully managing their finances or (iii) specific steps for successful money management. Emails were sent quarterly starting in June 2015 and continuing through December 2016. To test the impact of viewing scores on financial behavior, we compared within-subject changes across conditions before and after the intervention using administrative data on a range of financial metrics pulled directly from the borrower’s credit report.

Our findings suggest that borrowers in all three treatment groups were significantly more likely to view their FICO scores than borrowers in the control group and that these effects did not differ significantly by message type. Additionally, we observe that viewing FICO score information induced borrowers to take actions associated with improved credit scores. For example, treatment group borrowers were less likely to have past due payments or delinquent accounts on their credit reports relative to those in the control group. At the same time, individuals in the treatment groups were more likely to increase the number of open revolving credit accounts during this period. These actions resulted in a statistically significant increase in FICO scores. Future analyses will examine the effects of the intervention by various subgroups including age, education, and initial FICO score.

Viewing their FICO score appears to induce individuals to take steps to improve their creditworthiness including reconciling delinquent accounts and increasing on-time payments as well as increasing the number of open credit accounts. This is, to our knowledge, the first research project that uses a randomized experimental design to directly examine the impact of providing FICO scores on financial behavior and outcomes. Taken together, our findings coupled with the analytic sample of student loan borrowers who are relatively new to borrowing have important implications for both theory and practice. From a theoretical perspective, the current research adds to our understanding of how we react to new information; from a practical perspective, this research suggests an effective approach for motivating people to make better financial decisions.

Consumption Responses to Pay Frequency: Evidence from “Extra” Paychecks

EXTENDED ABSTRACT

Households who engage in budgeting must manage both their inflow of income and their outflow of expenditures. For many households, however, these two cash flow streams are misaligned—the frequency at which they make their consumption decisions often differs from the frequency at which they receive their pay. This misalignment can result in predictable variation in the amount of income a household receives per “consumption decision period.” Standard economic theory predicts that such variation should not matter—consumption should not respond to anticipated changes in income (Friedman 1957; Modigliani 1988). Whether this implication of the theory holds true has generated significant debate and has given rise to an extensive empirical literature testing for excess sensitivity to anticipated income changes. Results from these empirical studies vary substantially, however, and at present, no consensus exists in the literature on the extent to which households may respond to anticipated income changes or on the mechanisms underlying observed responses.

In this paper, I empirically test this prediction by exploiting variation in monthly income arising from the timing of bi-weekly pay schedules. Bi-weekly workers are paid on a regular two-week schedule and receive 26 paychecks over the course of the year. Because these 26 paychecks must be disbursed over 12 months, bi-weekly workers typically receive two paychecks per month with the exception of two months out of the year, during which they receive three. As a result, the level of wage and salary income that a household receives during these atypical months with three paychecks is higher than during typical months with only two. The timing of bi-weekly pay schedules thus provides predictable variation in monthly income while holding constant both total lifetime income and the environment in which that income is received. This is in contrast to semi-monthly or monthly pay schedules through which workers receive the same income each month.

My focus on the variation generated by bi-weekly pay schedules is motivated by two main considerations. First, this variation in income (and the extent to which there is an “extra” third paycheck) is simply an artifact of evaluating or accounting for income on a monthly basis. For a bi-weekly worker there is predictable variation in monthly income but not in twice-weekly income. While it is not difficult to imagine bi-weekly households thinking or budgeting on a monthly basis, the fact that whether or not a particular paycheck can be considered “extra” is not a priori assumed makes the evidence I provide in this paper even more compelling. Second, in contrast to much of the existing literature, the third paychecks are not referred to as a bonus, special payment, or in any other manner which might induce bi-weekly workers to differentially respond following their receipt. The concern with such special designations is that they may naturally lead households to categorize or evaluate the payments separately from other income. In my setting, the only way in which these third paychecks are “special” is if people choose to evaluate their income at a monthly frequency.

I test for excess sensitivity in months following three paycheck months using panel data from the Consumer Expenditure Survey (CEX). I first identify households whose heads are paid at a bi-weekly frequency and then determine the months during which they receive three paychecks. The empirical strategy takes advantage of the fact that the months during which bi-weekly workers receive three paychecks differ from year to year. For example, a biweekly worker paid in the first week of January in 2008 would have received three paychecks in February and August of that year. In 2009, that same worker would have received three paychecks in January and July. The causal effect of these third paychecks is identified using a difference-in-differences strategy that compares spending responses following a given calendar month in years during which there are three paychecks distributed during that month to responses in years during which there are only two paychecks during that month.

Using this identification strategy, I establish two main empirical results. First, I find that total household spending increases by rough-
ly 31 percent on average in the month following a three-paycheck month and that this effect on spending does not persist in subsequent months. Second, I find that this spending increase is due entirely to changes in durable spending, and specifically new vehicle purchases, with no corresponding response in non-durables. These results are consistent with several other papers in the literature on responses to anticipated income receipt which also find large responses in durable spending (Parker 1999; Souleles 1999; Adams et al. 2009; Parker et al. 2011; Aaronson et al. 2012). These findings suggest that, contrary to the predictions of standard economic theory, households do in fact respond to the variation induced by misalignment between the timing of consumption and the timing of income. I explore several explanations for why I find evidence of excess sensitivity and show that the empirical findings cannot be explained by the presence of liquidity constraints and are instead consistent with households engaging in mental accounting. I finally discuss several policy implications of those findings, such as recommendations for the design of employment contracts, the timing at which welfare benefits should be distributed to recipients, or unintended consequences of tax return policies in the United States.

Can Food Stamps Reduce Food Consumption? The Unintended Consequences of Restricted-Use Funds on Budgeting Decisions

EXtENDED ABSTRACT

A consumer’s budget is typically viewed as a single fungible resource (money) from which the consumer allocates money to purchase goods and services. However, less fungible resources—such as gift cards, loyalty points, and coupons—should also be viewed as part of a consumer’s budget. This is particularly true in the United States, where close to 15% of the population receives SNAP benefits (food stamps), a resource that can only be spent on non-prepared food products. However, little work has examined how fungibility restrictions impact consumer budgeting decisions. In the present research, we propose a theory of such “restricted-use funds,” and evaluate their impact on consumers’ budgeting decisions.

Research on mental accounting has shown that when consumers consider a purchase opportunity of a focal item, they do not compare it to all possible alternatives, but only to a subset of options (Thaler, 1985). Importantly, the greater the categorical similarity between the focal item and the alternative item, the more likely it is to be considered in this subset. For instance, spending $15 on drinks with friends will likely be contrasted with spending the same amount on a movie ticket, but not with saving the money for a washing machine. This congruency principle applies to income as well, and consumers seek coherence between its sources and destinations. For instance, Reinholdt and colleagues (2015) have shown that store-specific gift cards are spent on items that are prototypical of the store (e.g. Levi’s gift cards used on jeans rather than t-shirts).

When a restricted-use fund is tied to a product category (as SNAP benefits are to food), we propose that prototypical category members (specific food items) will be intrinsically linked to the fund (SNAP budget). Further, because categories can compete against each other (Chen et al. 2014), we propose that the link between other resources (such as money) and the prototypical members of the target product category will become weaker. We thus predict that consumers will be averse to spending general funds on items which can alternatively be purchased with restricted-use funds. In the context of SNAP, consumers endowed with SNAP benefits should be averse to spending their (non-SNAP) money on food; and since this endowment rarely cover their food needs, they will consume less food than a similar consumer endowed with unrestricted money.

To test this hypothesis, we programmed a simulation to give participants the full experience of a budgeting task with multiple resources. The simulation was divided into four rounds (“weeks”), and each round was further decomposed in three phases: “Recurring,” “Groceries,” and “Misc.” In the “Recurring” phase, participants received their weekly salary, whatever money they had left from the previous period, and paid rent and utilities. No decision is made during this phase. In the “Groceries” phase, participants were asked to pick 14 menus for the week out of three types: “Thrifty,” “Regular,” or “Indulgent.” The total price of the menu choices was displayed to the participants and constitutes our dependent variable. In the “Misc.” phase, participants were given binary choices on non-food spending opportunities (e.g. movie tickets, birthday gift for a friend). A post-simulation survey administered to the participants revealed interesting differences. First, participants in the experimental condition spent significantly less money on food each week than participants in the “Control” condition (M = $71.05 vs. M = $82.01, p < .001). A week-by-week breakdown of food expenditure revealed a pattern consistent with our theoretical account. In the first week, participants in the experimental condition spent their food-specific fund to buy food, and spent as much as participants in the control condition (M = $79.54 vs. M = $84.33, p = .136). However, starting in week 2 (when those participants had to start using their general money), this difference became larger and significant (M = $68.22 vs. M = $81.24, p < .001). Since all participants had a similar amount of money that could be spent on food, this difference suggests an aversion to spending unrestricted money on a category that was already covered by a restricted-use fund.

A post-simulation survey administered to the participants revealed interesting differences. First, participants in the experimental condition expressed less discomfort at spending their “Card” on food, but more discomfort at spending their (unrestricted) salary on food, which is consistent with our hypothesized process. Second, consumers had a flawed intuition regarding the influence of the restricted-use fund: Participants in the experimental condition believed that they would have spent less food if they had received unrestricted money in place of their “Card,” but a comparison with the control condition suggests that they would, in fact, have spent more.

Our findings have important implications for the design and public acceptance of food stamps, or other policies aimed at shifting consumption through restricted-use funds (e.g. school supplies or medical allowance). A follow-up study of 200 participants revealed similar results when the cheapest meal options were described as
“unhealthy” rather than “thrifty,” further suggesting adverse effects of restricted-use fund allocations.

**Shopping Behavior of Food Stamps Users: The Role of Decision Conflict**

**EXTENDED ABSTRACT**

The food stamps program or Supplemental Nutrition Assistance Program (SNAP) provides economic assistance for low-income individuals to purchase food at grocery stores. In 2014 almost one in every seven – approximately 46 million – people in the U.S. received “food stamps” or supplemental nutrition assistance. In that year almost $70 billion was spent on food stamps subsidies. The monetary benefit is provided through electronic benefit transfer card (or EBT card), which is an electronic system that allows state welfare departments to issue benefits via a magnetically encoded payment card, which looks and works like a debit or a charge card.

Given the magnitude of the financial outlay, and the size and vulnerability of this segment of customers, scholars, and analysts have called for a better understanding of the shopping habits of food stamps users. In this research, we examine whether the food consumption of food stamps users is more or less unhealthy than that of nonusers of food stamps, and how the mode of payment affects the purchase of unhealthy food items by these shoppers. Are food stamps users more or less likely to buy unhealthy food items? Does their propensity to buy unhealthy food change when they pay using their EBT cards, that look and feel like credit cards? Are they less likely to buy unhealthy food items when they pay for those purchases using cash? Can food stamps users be nudged to purchase more healthy food items if the benefits are disbursed in a more tangible form such as coupons instead of a plastic card resembling a credit card?

To answer these questions, the present research brings together two streams of literature – the literature on judgments and decisions of socially and financially underprivileged shoppers (Bernheim, Ray, Yeltekin 2015; Chandon and Wansink 2007; Mani et al. 2013; van Ittersum et al. 2013) and the literature on effects of mode of payment (Chatterjee and Rose 2012; Feinberg 1986; Hirschman 1979; Prelec and Loewenstein 1998; Prelec and Simester 2001; Soman 2001, 2003; Raghurib and Srivastava 2008; Srivastava and Raghurib 2002).

The form of money has changed radically over the past few decades. Today a majority of retail transactions are carried out through card payments. Although sellers and buyers both have welcomed the cashless economic environment, an emerging stream of research has identified an unintended consequence of cashless payments: they reduce the psychological pain of paying. This reduced pain of paying can, in turn, increase spending and weaken impulse control. Cash payments, in contrast, can strengthen impulse control; the pain of paying in cash can reduce impulsive purchases of unhealthy food products (Soman 2003; Thomas, Desai, Seenivasan 2011). We extend this stream of research by examining the effect of mode of payments on a specific segment of American shoppers – socially and financially underprivileged shoppers who use food stamps for their grocery purchases. We examine whether the effects of mode of payment – cash versus card – vary between food stamps users and non-users.

We posit that because food stamps users tend to be less health conscious, they do not experience decision conflict – or they experience much less decision conflict compared to nonusers of food stamps – while purchasing unhealthy food products. Thus, food stamps users are more likely to purchase unhealthy products. Furthermore, we also posit that food stamps users’ purchase decisions are less sensitive to the effects of mode of payment.

We test the predictions by analyzing the actual shopping behaviors of around 500 food stamps users and 500 nonusers of food stamps. Specifically, we analyzed the transaction-level data gathered through retail scanners at the point-of-purchase, which includes information about the the mode of payment (credit card, food stamps, or cash). This allows us to observe how the unhealthiness of the shopping basket changes with different modes of payment, and whether this change is of similar magnitude for users and non-users of food stamps. This rich dataset allows us to overcome the limitations of self-reports or responses to hypothetical shopping situations and enables us to test our hypotheses across a wide range of products – the top 100 food categories. As such, this research follows a rich tradition of researchers using retailer scanner data to test behavioral insights (Briesch et al. 1997; Stiving and Winer 1996; Thomas et al. 2011; Winer 1986).

The results of our empirical analyses support our hypotheses about the role of decision conflict in the purchase decisions of unhealthy food items. Using random effect models to account for individual heterogeneity, we first found that food stamps users’ shopping baskets had a greater caloric density (defined in calories per oz) compared to those of non-users. Furthermore, while non-users of food stamps exhibited a mode-of-payment effect (i.e. were less likely to spend money on high-calorie food items when they paid in cash), this effect was not observed for food stamps users, who purchased as much high-calorie items when they paid in cash as they did when they paid in food stamps. Both the main effect and the interaction were significant at conventional level ($p < .05$). Furthermore, our findings are robust to using the unhealthiness ratings of the food items as an alternative dependent variable.

These results suggest that decision conflict plays an important role in purchase decisions of unhealthy food items and that the experience of decision conflict can be moderated by individual differences (i.e., it is lower for food stamp users) as well as mode of payment (i.e., it is lower when shoppers use plastic modes of payments). We believe that our findings have substantive policy implications (as understanding decision conflict is critical to encouraging better food choices and budgeting decisions as a whole), and promise to offer new insights into the psychology of purchase decisions at the bottom of the pyramid.

**REFERENCES**


