

Anticipation and Consumption

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Abstract

This paper introduces a model of how the timing of information affects consumption decisions and tests its predictions in both developed and developing contexts. In our model, consumers form intertemporal plans and experience utility from anticipating future consumption. The model predicts excess sensitivity of spending to receiving a windfall, with smaller spending responses when there is more time to anticipate receiving the payment. The prediction that waiting leads to more patient decisions does not depend on whether consumers are liquidity constrained. Using Nielsen Consumer Panel data, we find higher marginal propensities to spend for households scheduled to receive the 2008 Economic Stimulus Payments sooner. Using data from randomized experiments in Kenya and Malawi, we find higher savings and assets among households scheduled to wait longer before receiving lump-sum unconditional cash transfers. Finally, we discuss existing evidence on how consumption responds to gains, losses, and news in light of our model.

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1 Introduction

Households with higher propensities to plan have higher savings (Lusardi, 1999, 2001; Ameriks *et al.*, 2003). Despite the importance of financial planning and the pervasiveness of thinking about money, economic models offer little guidance as to how time spent anticipating future consumption affects decision making.

Models of intertemporal choice typically assume, as Berns, Laibson and Loewenstein (2007) note in their neuroeconomics survey article, “that choices have no utility consequences other than the consumption events that result from those choices [...]. In practice, however, when a plan is made in advance [...] there is a waiting period during which the future outcome is anticipated.”¹ As a particular example, they report that anticipatory activity in neural systems “has been associated with the prospect of receiving a financial windfall.”

In this paper, we present a model in which consumers experience utility from anticipation. Section 2 derives implications for how the timing of information affects intertemporal consumption decisions. Specifically, the model makes predictions about how consumers react to consumption opportunities depending on how much they can anticipate those opportunities. Our main result shows that more time to anticipate leads decision makers to put more weight on future consumption, thereby making more patient choices. The model captures the intuition that decision makers overreact to surprises, as they overconsume in response to windfalls (Stone, 2005; Kőszegi and Rabin, 2009), but surprises wear out over time (Thakral and Tő, forthcoming), so that waiting longer before receiving a windfall induces consumers to save more. Our model predicts similar patterns for liquidity-constrained and unconstrained consumers as well as higher marginal propensities to consume out of smaller windfalls.

The prediction that receiving information earlier orients consumers toward the future is in stark contrast with discounted-utility models of intertemporal choice (Samuelson, 1937; Ainslie, 1975; Mazur, 1984; Loewenstein and Prelec, 1992; Harvey, 1994; Laibson, 1997). Under such models, the timing of news does not affect choices because decision makers who receive information at different times face identical intertemporal tradeoffs once the consumption opportunity arises. Anticipatory utility,

¹They also point out that while “this period of anticipation might have its own affective consequences [...] [t]he period between decision and outcome has received relatively little consideration from economic researchers because economic models typically do not treat purely mental events as intrinsic sources of utility.”

by contrast, predicts a complementarity between waiting times and saving. Longer waiting times enable consumers to experience more anticipatory utility, and a greater stock of anticipatory utility increases the marginal utility of saving.

Testing the model’s predictions requires exogenous variation in when households learn about a windfall payment relative to when they receive it. We examine two distinct domains that have this feature. The first consists of a natural experiment provided by the randomized disbursement dates of a U.S. fiscal stimulus payment (Parker *et al.*, 2013). The second involves variation induced by randomized controlled trials (RCTs) on unconditional cash transfers in Kenya (Haushofer and Shapiro, 2016) and Malawi (Brune *et al.*, 2017). Although these settings have been explored in previous work, our empirical findings in each case—greater consumption responses among households that receive payments sooner after announcement—are new.

In Section 3, we use Nielsen Consumer Panel data to study consumption expenditure responses to the tax rebates sent to low- and middle-income American households as part of the Economic Stimulus Act of 2008 (Broda and Parker, 2014; Parker, 2017). Our identification strategy, as in prior research, relies on the fact that the last two digits of the recipient’s Social Security number (SSN) determined the timing of payment over a three-month period. While previous papers estimate an impulse response function of consumption to the receipt of payment by comparing households a given number of weeks since receiving a stimulus payment with households that will receive payments later, our work additionally exploits variation in waiting times across households as motivated by our model of anticipatory utility. We find that faster disbursement of stimulus payments leads to a substantial change in spending behavior, with households receiving payments at the earliest date spending twice as much as the average household.

Our empirical results in the domain of tax rebates contribute to an extensive literature in household finance, public economics, and macroeconomics on tests of intertemporal consumption models, notably the life-cycle/permanent-income hypothesis (Modigliani and Brumberg, 1954; Friedman, 1957; Hall, 1978). The review article by Jappelli and Pistaferri (2010) emphasizes “two distinct questions” that the literature considers, namely how consumption responds to anticipated income changes and how consumption responds to unexpected shocks. Our work goes beyond this distinction by positing the importance of the duration over which an income shock is anticipated. The most closely related papers in this literature to ours are those that use household-

level data to estimate the consumption impacts of stimulus payments (Johnson *et al.*, 2006; Parker *et al.*, 2013) and examine the role of liquidity constraints. We build on the existing work methodologically by using a two-step estimation approach.² Our findings point toward a novel role for the timing of information in designing effective stabilization policies.

In Sections 4 and 5, we present new analyses of raw data from two published RCTs. The first is an impact evaluation of unconditional cash transfers by a non-governmental organization (GiveDirectly) using a sample of households in Rarieda, Kenya (Haushofer and Shapiro, 2016). The second is a windfall experiment in partnership with a commercial bank (NBS Bank) to understand how households manage cash without formal financial products using a sample of households in villages near Mulanje, Malawi (Brune *et al.*, 2017).

The Kenya study contains a set of treatments to compare lump-sum payments with a series of nine monthly installments. To facilitate that comparison, the lump-sum transfers take place at randomly selected but pre-announced times within nine months of enrollment in the program. This previously unexploited random variation in the timing of lump-sum transfers thus provides an ideal experiment for testing our predictions. Among households that wait longer to receive their transfer payments, we find increases in savings and investments.

The Malawi study contains payment-delay treatments to understand whether time-inconsistent behavior provides scope for financial products such as savings defaults to improve welfare. While the authors find no evidence that delaying payments affects the amount or composition of spending, our analysis of the data focuses on different forms of savings, which overlap to some extent with their expenditure measures, thus leading to new conclusions. In particular, we find significant increases in savings in response to receiving a delayed windfall payment.

Our analyses of these experimental data relate to a large body of work in development economics on cash transfers as a tool for alleviating poverty (Hanlon *et al.*, 2012). In a systematic review of the design of cash transfers, Bastagli *et al.* (2016) note the following core features: complementary interventions, conditionality, duration, frequency, main recipient, predictability and reliability, size, and timing of transfer payments. Our work relates most closely to, but is distinct from, the issues of timing

²See Borusyak and Jaravel (2017) for a discussion of possible biases in previous approaches and a related proposal for improvement.

and predictability. While timing there refers to making funds available to households at specific instances when needs arise, such as the time to pay school fees or to acquire agricultural inputs (Duflo *et al.*, 2011), our results pertain to the timing of payments relative to when households learn about them. Predictability refers to reducing uncertainty associated with failing to deliver expected transfers on time; for instance, Bazzi *et al.* (2015) document reduced consumption expenditures in response to an unanticipated delay in disbursement of an unconditional cash transfer program in Indonesia, consistent with liquidity constraints. Our evidence complements this by focusing on how anticipated delays or waiting periods affect household decision making. Utility from anticipation thus suggests the potential for a new design feature—waiting times—to prompt agents to “slow down and spend more time thinking,” leading to less impulsive behavior (Heller *et al.*, 2017).

Section 6 discusses additional predictions of our model as well as the relationship of the model with existing empirical evidence. Our model provides an explanation for the widely documented phenomena of excess sensitivity and excess smoothness of consumption (Campbell and Deaton, 1989): Households in our model adjust consumption when they receive additional income rather than new information to avoid a loss from deviating from their consumption plan, consistent with ideas of mental accounting from Shefrin and Thaler (1988).³ Our model reconciles seemingly conflicting findings in the literature that consumption responds to anticipated payments in some settings (Kueng, 2018) but not others (Browning and Collado, 2001) by emphasizing the timing of information and the time horizon over which households anticipate changes in income. We also discuss how the model can explain asymmetric patterns of consumption smoothing, i.e., smoothing in response to losses but not gains (Baugh *et al.*, forthcoming), and we show that the model predicts a decreasing relationship between the size of a windfall and the marginal propensity to consume, as recent work by Fagereng *et al.* (forthcoming) documents empirically. Furthermore, we discuss how our model captures the intuition behind a broader range of phenomena related to waiting times and patience beyond spending-saving decisions. Several lab and field experiments document a relationship between waiting time and impatience in decisions about specific consumption goods or effort allocation. The evidence

³This contrasts with the predictions of a dynamic model of expectations-based reference dependence (Kőszegi and Rabin, 2009), which predicts that consumption increases in response to news about future gains.