Limited and Varying Consumer Attention: Evidence from Shocks to the Salience of Penalty Fees[*]

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ABSTRACT

Limited attention has potentially broad implications for intertemporal choice and household finance, yet there is little empirical evidence on its economic importance or applications. We study the impact of varying attention on the payment of bank account and credit card penalty fees. These fees are important profit centers for firms, are often shrouded from consumers at account opening, and are largely avoidable by consumers with small changes in behavior (meaning that inattention might plausibly explain why some people pay fees). We measure fee payment using unusually rich, transaction-level, administrative data that spans multiple accounts, across multiple providers and months, for each consumer. Our variation in attention comes from periodic surveys. Some surveys ask questions related to penalty fees, others do not. The questions do not provide information, and survey topics are not preannounced when the consumer chooses to take the survey. Conditional on selection into surveys, we find that penalty fee payment drops sharply immediately following a survey, but only if the survey contains a question on penalty fees. The reduction is short-lived when panelists who taken few relevant surveys, but long-lived when panelists have taken many relevant surveys. The results suggest that consumers have a stock of attention that periodic shocks can help to build or maintain; in contrast, one-shot upfront shocks such as disclosures at account opening may be ineffective or depreciate quickly.

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I. Introduction

Theories of limited attention posit that consumers have "bandwidth constraints": they only imperfectly integrate information into their decision making. These theories show that limited attention important impacts on intertemporal choice and household finance, including macroeconomic [Mankiw and Reis 2002; Sims 2003], optimal tax policy [Chetty et al forthcoming], and savings rates [Karlan, McConnell, Mullainathan, and Zinman]. Yet there is relatively little empirical evidence on limited attention [see DellaVigna 2009 for a review].

We develop empirical evidence on the importance, nature, and dynamics of limited attention to bank and credit card penalty fees. Penalty fees are important revenue sources for both depository institutions and credit card issuers. The main penalty fee incurred by bank account holders is for "overdrafting": initiating a transaction that bring the holder's checking account balances below zero. Fees typically range from $20-$35 per transaction, and we estimate that about 6% of account holders incur a fee in any given month. All told, overdraft fees account for an estimated 74% of service charge revenue on deposit accounts, and 6% of *total* net operating revenues earned by banks. Similarly, over-limit and late fees are large revenue sources for credit card companies, and about [13]% of card holders incur a penalty fee in a given month. Both banks and credit card companies have been criticized for inadequate disclosures (a bank regulator recently reported that most overdraft fees are levied by banks that do not disclose fees either at account opening or in real-time),[1] and recent policy and regulatory actions seek to improve upfront disclosure of penalty fees. This debate often takes as given that disclosure is most impactful up front – presumably because it allows consumers to make better ex ante account choices.

Our prior work suggests that most penalty fees are "avoidable": many consumers could save hundreds of dollars per year with seemingly small changes in behavior, like using a credit card with available credit instead of overdrafting with a debit card [Stango and Zinman 2009]. There are two broad types of explanations or theories of such behavior. The standard economic explanation is that fee payments are optimal responses to liquidity or time constraints. Another explanation is that fee payments may be mistakes. In particular, consumers might mistakenly incur penalty fees if they have limited attention.

We test for limited attention using shocks to the "salience" of fees. The shocks come from quarterly surveys, administered routinely as part of a market research firm's consumer panel. Some of the surveys plausibly draw consumers' attention to penalty fees by asking questions about overdraft terms, or about (dis)satisfaction with fees. Other surveys do not ask about penalty fees. Survey topics are not preannounced when the consumer chooses to take the survey. The nature of the salience "treatment" is subtle: the questions do not provide any direct information on product features or prices, respondents are not asked to forecast their penalty fee payments, and questions on penalty fees never represent more than 5% of survey content. We measure how fee payments respond following surveys using unusually rich, transaction-level, administrative data that spans multiple accounts, across multiple providers and months, for each of 22,429

[1] [Fdic report. See Gabaix and Laibson [2006] for a theory of equilibrium non-disclosure of state-contingent fees.]

consumers. The data span 36 months (2006-2008), and we have an average of 15 months of data for each panelist.

Conditional on selection into surveys,[2] we find that penalty fee payment drops sharply (by 2.2 percentage points, or 21% percent) immediately following a survey, but only if the survey contains a "relevant" question on penalty fees. The reduction is short-lived (about a month) when panelists have taken few relevant surveys, but long-lived (at least several months) when panelists have taken many relevant surveys. E.g., someone who has taken three surveys with a question on overdraft fees has an estimated 5.1 percentage point lower probability of overdrafting than when they had taken zero overdraft surveys. This suggests that repeated shocks to attention change behavior even when they are *non-specific*; i.e., even if they do not provide information on a specific product's features or pricing. The findings also suggest that the effects of limited attention on behavior can be large economically. For example, they suggest that repeated exposures to attention shocks— in a newly regulated equilibrium, these shocks might be mandated reminders or real-time disclosures— could reduce overdrafting by a half. That would be a substantial revenue shock to a banking industry that has small margins.

Our work is most closely related to two recent papers on limited attention in household finance.[3] Karlan, McConnell, Mullainathan, and Zinman [2009] develops a theory of limited attention to future needs, and test it by randomly reminding some account holders to make savings deposits. Getting reminders increases savings balances in the account of the reminding bank by about 6%. Zwane et al [2009] shows that randomly getting a baseline survey on health and insurance status, and health risks, increases subsequent takeup of two different health insurance products. Credit use does not change following a randomly assigned baseline survey.[4] The common thread across the findings in all three papers may be that decisions regarding future payoffs (state-contingent penalty fees, savings, insurance) have relatively low claims on attention and hence respond to shocks to salience, whereas a decision that has more immediate payoffs (borrowing to finance current consumption or investment) has a relatively greater claim on attention and hence does not respond to a shock to salience (indeed, the survey is presumably not even a shock).

Relative to these other two papers, our paper provides unusually rich evidence on the dynamics and intensity of shocks to limited attention. We find that the temporary effects are short-lived on average (about a month), but that repeated shocks change behavior permanently (or at least over the several months that we observe).

This evidence is suggestive but has important limitations. Our identification comes from people who participate in consumer panels and take surveys; the external validity to other populations is unknown. Our ability to infer anything about the magnitude of limited attention effects on behavior is limited to what we observe from a subtle and unusual "treatment": survey-taking.

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[2] We also find evidence that selection into surveys is strong. In the cross-section, those who take surveys are [] relative to those who do not. It also appears that those who take more surveys are those whose financial condition is deteriorating (an unsurprising finding given that surveys yield a chance of compensation, and that people in financial difficulty may be more attuned to their finances generally).

[3] [psych lit? marketing lit on repeated exposures?].

[4] As in the current paper, the product offers in Zwane et al were not linked to the surveying firm. See Zwane et al for a review of the literatures on interview effects and Hawthorne effects.

The paper proceeds as follows. Section II provides some institutional background on penalty fees and related disclosures. Section III describes our data. Section IV details our empirical strategy and results. Section V concludes.

Section II. Bank Overdraft and Credit Card Late Fees: Pricing and Regulation

A. Bank Overdrafts

Bank overdraft fees are charged for nonsufficient fund transactions (NSFs); i.e., transactions that (would) bring a checking account holder's balance below zero. Some fees are charged for the extension of credit (i.e., the bank settles the transaction and allows the account balance to go negative); other fees are charged for "returning" the transaction (i.e., the transaction is not settled, and credit is not extended). Consumers can incur overdrafts on any type of transaction that produces an accounting debit to the account, including ATM withdrawals, check presentments, automated clearinghouse (ACH) payments (a.k.a. "auto-debit", or "automatic deduction"), and point-of-sale (POS) debit card purchases. The Federal Deposit Insurance Corporation's November 2008 report [cite tag] provides extensive description of bank overdraft pricing and policies, and we draw heavily on that report here.

The most common overdraft pricing for is a per-NSF transaction fee, ranging from $10 to $38. The FDIC reports that the median fee across banks is $27; the median fee across panelists in our sample is $34. Many banks (and most large banks) batch-process overdraft transactions by size, from largest to smallest, which can increase the number of NSF transactions. One-quarter of banks charge additional flat fees or finance charges for accounts that remain in the red beyond a set period of time.

Overdraft fees have become common in recent years; e.g., 11% of our panelists incur an overdraft fee in any given month (conditional on having an active checking account in the data, for that month, see Table 1). The likelihood of paying a fee is serially correlated +0.47 month-to-month, within panelist. Overdraft fees are also important profit centers for banks: they account for an estimated 74% of service charge revenue on deposit accounts, and 6% of *total* net operating revenues earned by banks.

Most checking account holders are "defaulted in" to a contract with a per-NSF transaction fee at account enrollment at account opening, often without any disclosure. A customer has to affirmatively "opt out" to avoid having overdrafts settled by the bank for a fee. In contrast, linked-account overdraft programs (where overdrafts are paid out of a savings account or credit card, often at a much lower cost) are almost always "opt-in", and subject to underwriting. Although a few banks warn consumers that they are about to overdraft and incur a fee if the relevant transaction is at an ATM or the point-of-sale, most banks report the occurrence of NSF transactions and related fees to their customers only after the fact.

The Federal Reserve Board issued new regulations in January 2009 that will require banks to more prominently disclosure of overdraft fees that a customer has paid in any periodic statements issued to that customer.[5] But the regulations do not require banks to actually issue periodic statements to customers, nor do they require banks to issue periodic disclosures on overdraft pricing. Regulators are also considering changes to the default for enrollment in overdraft programs. A recently proposed rule would "limit the ability of a financial institution to assess an overdraft fee for paying ATM withdrawals

[5] 12 CFR Part 230 [Regulation DD; Docket no. R-1315], effective January 1, 2010.

and one-time debit card transactions… unless the consumer affirmatively consents, or opts in, to the institution's payment of overdrafts for these transactions."[6]

Our prior work [cite tag] suggests that consumers could avoid many overdraft fees by tapping readily available sources of liquidity. One conservative measure classifies a fee as avoidable if the overdraft amount is exceeded by the *minimum* available liquidity in another bank account or credit card during the month of that overdraft. Under this measure 30% of overdraft fees in our sample are avoidable. To be clear, this measure does not rule out time constraints or some general form of decision costs (bounded rationality) as a driver of fee payment. Rather, it highlights that liquidity constraints may not drive most overdrafts, and provides indirect motivation for the possibility that limited attention plays a role.

B. Credit Card Late Fees

Since we focus more on bank overdrafts we will provide only very brief background on credit card late fees, drawing heavily on Furletti [cite].

As with bank overdraft fees, credit card penalty fees have become increasingly important revenue sources for financial institutions over time. A "late fee" is levied when a customer does not submit her minimum monthly payment by the due date. Late fees are the most common and important source of fee revenue for nearly all credit card issuers, surpassing annual, over-limit, and other fees. The median late fee in our sample is $39, and 10% of our panelists pay a late fee in any given month. 49% of our sample paid at least one late fee during our sample period. Our prior work suggests that credit card users pay late fees even when they have sufficient liquidity in the checking accounts to avoid them [cite]. A conservative estimate for the sample in this paper is that 18% of late fees are avoidable.[7]

Late fee incidence trends up over time in our data (Table 2). Credit card reform advocates attribute this to the rise of issuer "tricks" such as mailing statements only shortly before the due date, changing the within-month timing of due dates from month-to-month, and changing payment addresses. Recent regulations and proposed legislation address late fees in various ways.[8]

Section III. Data

A. Overview of Data and Sample Architecture

Our data come from Lightspeed Research (formerly Forrester Research) as part of its comprehensive consumer panel. Panelists enter the "Ultimate" sample by providing Lightspeed with access to at least two online bank (checking, savings or time deposit) and credit card accounts held by their household. Panelists have typically participated in other Lightspeed surveys, and receive $20 on average for enrolling in the Ultimate panel.

The primary pieces of the "administrative" dataset are monthly statement data downloaded from each account, daily transaction information scraped from each

[6] 12 CFR Part 205 [Regulation E; Docket no. R-1343].

[7] [We classify a late fee as avoidable if the credit card's minimum payment due that month was exceeded by the *lowest* balance attained by the panelist's checking account(s) for that month.]

[8] See, e.g., Federal Reserve System 12 CFR Part 227 [Regulation AA; Docket No. R-1314], and http://www.creditcardreform.org/learn.html .

account's transaction listing page, and account information scraped periodically from other account pages (such as the one listing terms). Lightspeed also surveys its panelists at the time of enrollment (on demographics and financial attitudes), and then gives panelists the opportunity to complete additional surveys (on financial product features and usage) at roughly quarterly frequencies after that.

An observation in the raw administrative data is a panelist-transaction, but for this paper we aggregate to the panelist-month. We do this because we wish to test whether contingent fee payment change after taking a survey on a related topic, but we do not observe the precise day of survey completion (only the month).

Our data cover all 36 months of 2006-2008, and we have 22,429 panelists who appear in the administrative data at some point (Table 2). Panelists appear for 15 months on average (with a standard deviation of 10 months). All told we have 326,573 panelist-month observations, 147,966 of which contain active checking accounts. Nearly all contain active credit card accounts. The median panelist registers [] checking accounts and [] credit card accounts, and there is substantial heterogeneity (Table 1).

B. Descriptive Statistics on Panelists and Comparison to Other Data Sources

The Lightspeed data is unique (to our knowledge) in two important respects. First, its account and transaction information span multiple providers. Administrative data from single financial institution typically lacks that breadth. Household surveys sometimes offer breadth, but typically lack transaction-level detail. Second, Lightspeed also surveys its panelists. This provides supplemental demographic information that we use in other papers (e.g., to measure homeownership status in Skinner, Stango and Zinman []). And here survey completion itself provides a source of potential variation in attention to penalty fees.

The main disadvantage of the Lightspeed data is that it is not nationally representative (Table 1). The requirement that panelists register accounts online selects younger and relatively educated people, who therefore have high income conditional on age. Panelists are necessarily those who are willing to share sensitive financial information (in exchange for the compensation they get for participating), although household surveys on consumer finances face this selection issue as well. Most of our panelists manage their finances online. Average creditworthiness is comparable to the national average but above average conditional on age.

Our panelists transact intensively but generally have substantial available liquidity. Panelists average one "spending" transaction (an accounting debit) per day, although many make more than that. Debit and credit card transactions are the most common type. These and other "electronic" transactions (including discretionary and automatic payments) are relatively common compared to the population and large, and conversely our subsample uses ATMs (cash) less intensively than the national average. By most measures, our panelists have access to substantial liquidity, either in the form of checking balances or available credit. The median (90^{th} percentile) of daily available checking balance is [$] ([$]), and the median (90^{th} percentile) of daily available credit on all registered cards is [$] ([$]).

Overall, our panelists are younger, higher-income, more educated, and more likely to use electronic payments and manage finances online. In short, they are probably more financially sophisticated in many respects than the national average.

C. Survey Sampling and Completion

The market research firm that administers the panel conducts surveys on financial product use and satisfaction roughly every quarter. Invitations are sent by email to all panelists and do not announce the survey topics (Figure 1 shows the boilerplate invitation). Survey respondents are compensated by being entered into a prize lottery.

We have survey data on our panelists going back to August 2004, even though we only have account/transaction data from January 2006 forward. Table 3 summarizes the timing, content, and number of respondents for each quarterly survey from August 2004-December 2008.[9] It shows that 5 of the 20 surveys asked questions related to bank overdrafts, and that an additional (i.e.,. distinct set of) 3 surveys asked questions on credit card late fees. These 8 penalty fee surveys occurred at irregular intervals (e.g., none after November 2006). We focus below on overdraft surveys because there are more of them (5 vs. 3), and more of them within our account/transaction data (2 vs. 1). But we will present some results using late fee surveys as well.

The second-to-last-row of Table 3 shows that the relevant questions occupy a small fraction of total questions on the survey: never more than 5%, and typically closer to 1% (thus calling a survey with relevant questions an "overdraft survey" or "late fee survey" is something of a misnomer; nevertheless we use these labels for convenience). Combined with the nature of the questions (listed in Table 4)-- which ask about valuations of or satisfaction with product features (like overdraft protection) and related pricing, rather than forecasted use or fee payments-- this suggests that the relevant surveys provide a somewhat subtle "shock" to the panelist's attention to penalty fees. The nature of the shock is thus similar to many of the experiments studied in Zwane et al, where subjects took an extensive household survey with a few relevant questions, and then were offered a related product several weeks later.

Table 5 shows a cross-tab of total surveys and overdraft surveys, for the sample we use for analyzing the response of overdraft fee payment to taking a relevant survey. The table shows counts of panelist-month observations. Here we report panelist-level counts. 2,062 of 10,603 panelists with an active checking account take a least one overdraft survey, with 45% taking only one. 82 take all five overdraft surveys. 3,582 panelists take a least one survey of any type, with 87% taking five surveys or fewer.

We discuss selection into surveys in the next two sections.

Section IV. Empirical Strategy and Results

A. Model and Identification

We estimate the immediate response of penalty fee likelihood to being surveyed using OLS models of the form:

[9] [Why does N vary across quarters? 1. panel size varies over time; 2. some surveys left "open" online longer than others; 3 ?have the invites to take a quarterly survey always gone out by email, or were there ever phone or snail mail invites instead of, or in addition to, the email invites? ?4. prizes/compensation for participation change from survey to survey?]

(1) $AnyFee_{it} = a + b took\_OD\_survey_{it} + c took\_any\_survey_{it} + MOYR_t + Panelist_i + e_{it}$

Here *AnyFee* = 1 if the panelist i incurred an overdraft fee in month t. We focus on bank overdraft fees because we have more relevant survey variation, but the model takes roughly the same form for credit card late fees, as detailed below.

took_OD = 1 if the panelist took a relevant survey in month t (here, a survey with a question related to bank overdrafts), and zero in all other months. *took_any* = 1 if the panelist took any survey in t, and zero in all other months. The *MOYR* variables are dummies for each month-year (e.g., January 2006 gets its own dummy, as does March 2007, etc.). The *Panelist* variables are panelist-level fixed effects. We adjust standard errors for clustering at the panelist level.

We also estimate models that allow for permanent shifts in penalty fee likelihood as the panelist takes more surveys:

(2) $AnyFee_{it} = a + \beta took\_OD\_survey_{it} + B OD\_surveys\_taken_{it} + \delta took\_any\_survey_{it} + \Delta Any\ surveys\_taken_{it} + MOYR_t + Panelist_i + e_{it}$

OD_surveys_taken and *Any surveys_taken* are vectors of categorical variables measuring the number of overdraft-relevant and any surveys that panelist had taken before t (these variables then increase by one the month after a survey is taken). Zero is the omitted category for both vectors.

Note that the **any_survey** variables are inclusive: they take on a value of one at time t (and then increment by one for *any_surveys_taken*, in t+1) when the panelist takes either a non-overdraft survey or an overdraft survey. The coefficients on the **any_survey** variables will therefore measure content-independent correlations between behavior and taking surveys.

Below we refer to the **any_survey** variables as controlling for "selection effects": i.e., the **any_survey** capture panelist-specific secular trends (or more broadly, dynamics) in the dependent variable that are associated with a survey, or multiple surveys.[10] The month-year variables control flexibly for aggregate dynamics in the dependent variable. The panelist fixed effects control for each panelist's average fee payment likelihood, and thus we estimate the response of penalty fee payment to taking surveys using *within*-panelist variation in the timing and stock of surveys.

Our identifying assumption is that, conditional on our right-hand-side variables, there are no differential unobserved secular dynamics in the dependent variable, at high-frequencies, across those who take relevant surveys and any other survey. Under that assumption we can calculate the immediate effect of taking a relevant survey from the *took_OD_survey* coefficient.[11] And we can calculate the longer-run effect of taking multiple relevant surveys from the appropriate variable in the *OD_surveys_taken* vector. E.g., the categorical variable for having taken four overdraft surveys captures the effect of those surveys on overdraft likelihood, relative to months in which the panelists had not yet taken any overdraft surveys.

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[10] The **any_survey** variables may also capture causal effects on behavior from taking "generic" surveys that are not directly related to penalty fees.

[11] Mechanically, the immediate effect is the sum of the coefficients on the two immediate variables (*took_OD_survey* and *took_any_survey*), subtracting off any bias from selection into surveys (which is captured by the *took_any_survey* variable), so the net effect is: $\beta + \delta - \delta = \beta$.

The identifying assumption seems reasonable in light of the fact that survey topics are not preannounced, and occur at unpredictable intervals, as detailed in Section III-D. [We also provide some related circumstantial evidence in Table 6. There we show that several conditions that are likely stricter than our identifying assumption hold. Panel A's cross-tab of the proportions of overdraft and any surveys taken suggests that few people take a disproportionate number of overdraft surveys. Panel B Column 1, at the panelist level, shows that the number of overdraft surveys taken is unrelated to demographics and average financial condition, conditional on the total number of surveys taken. Panel B Column 2 limits the sample to panelist-months where a survey was offered, and finds that, conditional on the number of surveys taken, there is no evidence that survey completion is related to the interaction between there being overdraft questions on that survey and lagged financial condition.]

B. Main Results

Table 7 presents results using a more flexible parameterization of the timing of survey effects than our preferred specification. We replace the "took a (relevant) survey that month" variables in equation (2) above with categorical variables for months elapsed since one's most recent (relevant) survey (Appendix Table 1 shows the prevalence of different amounts of time elapsed since taking an overdraft survey, for each month in our administrative data). There is a separate category capturing whether the panelist has not taken any (relevant) survey as of time t. Results for the month-year dummies and panelist fixed effects are not shown in the table to save space.

Table 7 shows two key results. The first motivates our preferred specification for the immediate effect of taking a survey with an overdraft question: the coefficients on the time-elapsed variables have similar (and statistically indistinguishable) magnitudes. I.e., the results in Columns 1 and 2 suggest that overdraft likelihood falls sharply in the month of a relevant survey, and that this decrease decays immediately and completely. The second key result is on the timing of the response to taking a survey with a question on credit card late fees. In principle any "immediate" such effect on late fee payment should occur with a bit of lag, since the next credit card payment may not be due until the month *after* taking the survey. Columns (3) and (4) suggest that this is indeed the case: there is a sharp drop in late fee payment in the month *after* the survey (as opposed to the month *of* the survey for overdrafts). We do not find evidence that the stock of late fees surveys taken affects late fee payment, but this may be due to the relatively small number (3) and age of the late fee surveys (the first two were in January and September 2005).

Table 8 presents our key results. As detailed in Section III-D, we focus largely on bank overdrafts because there are more related surveys. Each column presents a slightly different specification or sub-sample for estimating the relationship between overdraft likelihood and taking surveys, with each row presenting results on a different right-hand-side (RHS) variable. We show results for all RHS variables except for the month-year effects (Table 2 shows our LHS variables month-by-month) and panelist fixed effects. The variables of interest are $took\_OD\_survey_{it}$ (labeled "took an overdraft survey this month" in the table) and the vector $OD\_surveys\_taken_{it}$ (each categorical variable is labeled "taken [n] overdraft surveys prior to this month" in the table). The variables for taking *any* survey, and for the number of any (relevant or generic) surveys taken prior to

this month, control for selection into (multiple) surveys. The omitted category for all of the survey variables is not taking any survey.

The first thing to note, reading across columns (1)-(8), is that the effects of taking an overdraft survey, and selection into surveys, work in opposite directions. The immediate effect of taking an overdraft survey is strongly negative: a panelist's likelihood of incurring any overdraft fee is, e.g., 2.22 percentage points lower in the month she takes an overdraft survey, relative to all other months (Column 2, our preferred specification). This is a 21% reduction relative to the sample mean probability of 0.106 for overdrafting in a given month. Conversely, the immediate correlation between taking any survey and overdraft likelihood is significantly positive (and about 30% of the size of the overdraft survey effect). Roughly the same pattern holds on the number-of-surveys-taken variables: panelists overdraft less (more) as their stock of overdraft (any) surveys increase. These patterns bode well for our identifying assumption because they imply that any effect of selecting into overdraft-specific surveys would have to work in the opposite direction of the general selection effect. That is, it would have to somehow be the case that people end up taking overdraft surveys as their financial condition or attention is waxing, but take other surveys when their financial condition or attention is waning. That seems unlikely, given that survey topics are not preannounced, and that the timing of overdraft surveys is unpredictable (Section III-D).

Columns (1)-(8) show that the immediate reduction in fee likelihood from taking an overdraft survey is robust to different specifications. Column 1 includes only the immediate effect variables for overdraft and any survey, along with the month-year and panelist fixed effects. Column 2 adds variables for the stock of overdraft and any surveys. Column 3 limits the sample to panelist-months where the minimum checking account balance falls below $500, and hence remove observations with negligible risk of incurring overdraft fees. Column 4 add dummy variables (not shown) for the running total of months that the panelist has appeared in the administrative data. Column 5 adds a dummy for whether the panelist overdrafted last month as a control variable. Column 6 adds one lead of the survey-taking variables. Column 7 adds three leads. In each of these first 7 specifications the immediate reduction from taking an overdraft survey is estimated at roughly 2 percentage points. Column 8 explores whether the interpretation of this immediate effect as arising from a shock to attention rather than information is apt, by limiting the sample to those who had overdrafted prior to the overdraft survey dates (i.e., to a sample that in principle already knows they pay a fee for overdrafting). The sample is small (21,567 month-year observations), and hence the point estimates are noisy, but magnitude of the point estimate on the immediate effect actually increases, to -0.04 (with a p-value of 0.26).

The results also suggest that stock of overdraft surveys matters: taking multiple overdraft surveys produces a permanent (or, more precisely "longer-lived") reduction in overdraft likelihood. The coefficients suggest that fee payment decreases monotonically in the number of overdraft surveys taken through survey four, with a flattening at survey five. But wide confidence intervals make these results merely suggestive. Nevertheless, in most specifications the effects are large and significant beginning with the third overdraft survey. For example, in our preferred specification a panelist who has taken three overdraft surveys overdrafts an estimated 5.1 percentage points less (or about half as much) than we she had not taken any overdraft surveys.

Figure 2 summarizes both the immediate and permanent effects, and thereby the overall dynamics, of shocks to salience (i.e., of taking one or more overdraft surveys). We do this by assuming that someone takes a survey every six months (survey months are the sawtooth points, starting in month 3). In the month of the survey the overdraft likelihood drops by the immediate effect in Column 2 (0.022). Then overdraft likelihood returns to the "permanent" level implied by the stock of overdraft surveys (for now, we take all point estimates on the stock variables literally, even though the first two are not statistically distinguishable from zero). So, after taking the first survey overdraft likelihood is 0.013 lower (the coefficient on "has taken 1 overdraft survey") than at "baseline" (i.e., when the panelist had not taken any overdraft survey). If the panelist takes another survey, overdrafting again falls by 0.022 (so the second sawtooth is at -.013-0.022= 0.035), and then rises to the permanent level implied by the coefficient on "has taken 2 overdraft surveys": -0.026 relative to baseline. And so on.

The figure highlights two interesting possibilities in the dynamics of attention. First, the extent to which the immediate effect of an attention shock persists may depend on the stock of shocks (and hence of attention). Second, this persistence may vary nonlinearly with the stock of shocks. We would get U-shaped persistence if we assumed that the effects of the first two stock variables are zero; i.e., we would find no persistence of the first, second, or fifth shocks, and substantial persistence of the third and fourth shocks.

V. Conclusion

[We do, we find]

We can only speculate on the implications for disclosure, but one interpretation of the results is that upfront disclosures may not be necessary or sufficient to facilitate informed consumer decision making in steady-state. More precisely, our results suggest that one-time disclosures will only inform/change consumer decisions in the short-run; such disclosures would increase the stock of attention for a few weeks, but depreciate quickly and completely. Real-time disclosure (e.g.: "if you complete this transaction you will incur a fee of $xx)", or some other form of repeated information or prods (e.g., reminders), may be more likely to affect consumer decisions. Another possibility for reducing late fees would be defaulting customers into automatic deduction of the minimum monthly payment from their checking account. Our data suggests that this would lead to a reduction in penalty fee payments (net of any additional overdraft fees) of about 18%.

One way to move from speculation to prescription is to do further research that experiments directly with disclosures and reminders of varying time and intensity. This would develop further evidence on the nature, magnitude, and dynamics of limited attention, and on related welfare implications.

Figure 1

$panelPersonal.getFirstName(),

You are invited to participate in a new ConsumerSay survey!!

Name: Consumer Opinion Survey #13
Time: 10 minutes
Reward: An entry in a drawing to win one of twenty $25 Amazon© Gift Codes

Just sign in to your Members Page and access the link to the survey.

SIGN IN

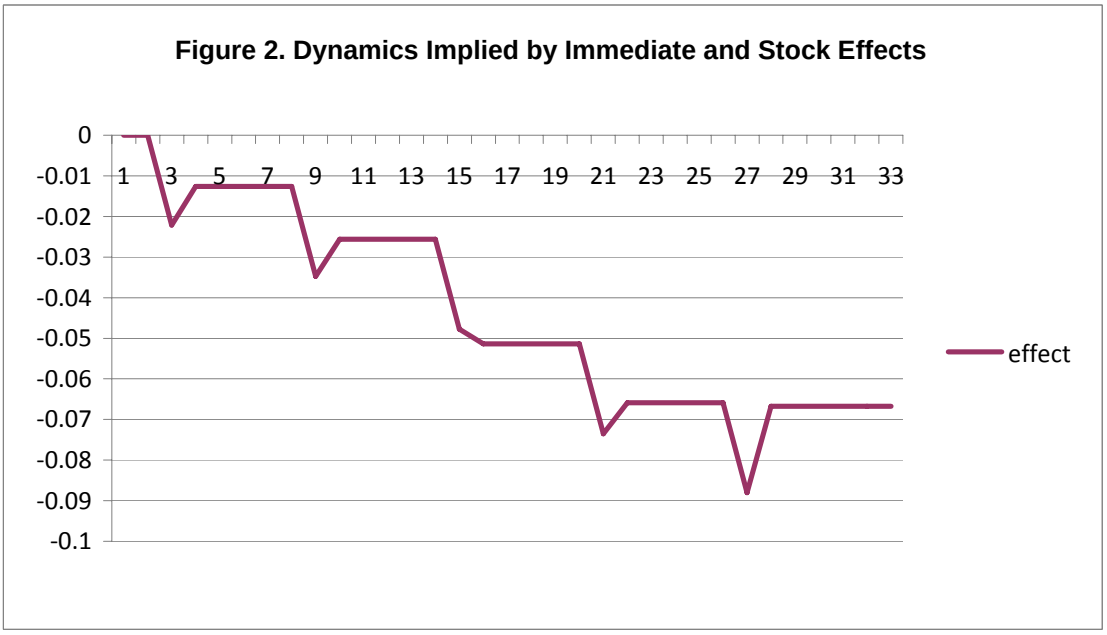
Your Username: $panel.emailAddress
Your ConsumerSay.com Password: $panel.password

If you cannot view the button above, please copy the link below and paste it in your browser:
http://www.consumersay.com

If you have any problems or questions, please respond to this email. Enter the name of the survey in the subject line.

We look forward to your participation!

ConsumerSay



Y-axis is months, X-axis is net survey effect(s) for a panelist who takes an overdraft survey every six months. In month of survey, overdraft likelihood drops per the immediate effect. Then overdraft likelihood returns to the "permanent" level implied by point estimate for the current stock of overdraft surveys taken.

Table 1. Panelists: Descriptive Statistics

		Lightspeed	U.S.	U.S. source
total panelists		22,429		
months of transaction data (200601:200812)		36		
mean panelist-months of transaction data		15		
panelist-month observations		326,573		
panelist-month observations with > 0 active checking accounts		147,966		
panelists with > 0 active checking accounts		10,603		
female proportion of Lightspeed panelists, SCF respondents		0.69		SCF
age categories: proportions of panelists, SCF respondents				SCF
	19-25	0.15		
	25-29	0.12		
	30-39	0.27		
	40-49	0.21		
	50-59	0.16		
	60-79	0.08		
educational attainment: proportions panelists, SCF respondents				SCF
	some high school or less	0.01		
	high school graduate	0.12		
	vocational/technical school, some college, 2-year degree	0.44		
	4-year degree	0.30		
	graduate degree	0.13		
income category: proportion of panelists, SCF respondents				SCF
	under $30,000	0.19		
	$30,000 to $39,999	0.14		
	$40,000 to $54,999	0.13		
	$55,000 to $74,999	0.24		
	$75,000 to $99,999	0.15		
	>= $100,000	0.16		
credit score*		678	677	Experian National Score Index, May 2006
has a mortgage*		0.50	[0.61]	SCF, average of 2004 and 2007
median checking accounts registered in L/speed, reported in SCF (SD)				SCF
median credit card accounts registered in L/speed, reported in SCF (SD)				SCF
proportion households carrying credit card balance, 2007				SCF
mean end-of-month credit card balances				G.19 monthly average 2006-2008
median proportion of credit lines available, 2007 [90th percentile]				SCF
median average daily checking account balance, 2007 [90th percentile]		$387		SCF
proportion panelist-months with an overdraft fee		0.106		
proportion panelist-months with a credit card late fee		0.098		

*FICO score only available for those who entered the panel before [], due to data-sharing restrictions imposed on Lightspeed by the credit bureau. SCF = 2007 Survey of Consumer Finances. Lightspeed variables calculated for months in which SCF was administered (May 2007-Jan 2008).

Table 2. Penalty fees and Available Liquidity, Month-by-Month

	Count, all panelists	Proportion with active checking account	Proportion paying overdraft fee (among those with active account)	Proportion with minimum balance < $500 (among active)	Proportion panelists paying any credit card late fee
200601	7,921	0.508	0.125	0.636	0.086
200602	7,870	0.498	0.112	0.603	0.070
200603	7,717	0.492	0.136	0.614	0.075
200604	7,522	0.471	0.126	0.621	0.094
200605	7,419	0.473	0.140	0.600	0.098
200606	7,309	0.465	0.123	0.608	0.094
200607	7,145	0.455	0.135	0.612	0.097
200608	7,017	0.446	0.147	0.602	0.090
200609	6,891	0.441	0.131	0.597	0.083
200610	6,576	0.429	0.130	0.588	0.077
200611	6,456	0.422	0.132	0.587	0.095
200612	6,794	0.387	0.132	0.582	0.086
200701	8,586	0.335	0.131	0.592	0.086
200702	10,929	0.432	0.087	0.576	0.076
200703	12,923	0.480	0.078	0.634	0.071
200704	14,116	0.535	0.079	0.643	0.084
200705	14,297	0.546	0.086	0.638	0.087
200706	12,142	0.464	0.106	0.653	0.108
200707	12,164	0.471	0.107	0.644	0.112
200708	11,937	0.464	0.108	0.651	0.114
200709	11,010	0.422	0.121	0.610	0.111
200710	9,431	0.360	0.123	0.605	0.105
200711	7,775	0.427	0.111	0.604	0.124
200712	7,649	0.420	0.107	0.600	0.114
200801	7,648	0.427	0.100	0.588	0.111
200802	7,625	0.430	0.099	0.596	0.110
200803	8,324	0.408	0.090	0.565	0.095
200804	9,685	0.475	0.092	0.630	0.093
200805	9,942	0.483	0.091	0.644	0.098
200806	9,438	0.458	0.101	0.631	0.096
200807	9,354	0.454	0.106	0.642	0.105
200808	9,423	0.454	0.094	0.654	0.114
200809	9,366	0.453	0.104	0.649	0.114
200810	8,894	0.434	0.103	0.651	0.116
200811	8,651	0.421	0.098	0.646	0.114
200812	8,627	0.419	0.036	0.649	0.125
sample mean		0.453	0.106	0.622	0.098
total observations meeting condition(s)	326,573	147,966	15,658	92,085	32016.000
month-to-month correlation		0.903	0.466	0.718	0.425

Active checking account === panelist has nonzero average daily balance that month.

Table 3. Quarterly Surveys, and Summary of Their Content

	Aug04	Oct04	Jan05	Mar05	Jun05	Jun05	Sep05	Dec05	Mar06	Jul06	Aug06	Aug06	Nov06	q12007*	Apr07	Aug07	Feb08	Jul08	Oct08	Dec08
Question(s) on bank overdraft?				yes		yes		yes			yes		yes							
Others questions on banking (but not on overdraft)?		yes	yes		yes		yes		yes				yes	yes	yes	yes	yes	yes	yes	yes
Question(s) on credit card penalty fees?	yes		yes				yes		yes											
Specific mention of late fees?			yes				yes		yes											
Specific mention of overlimit fees?			yes																	
Other questions on credit cards (but not on penalty fees)?		yes			yes			yes		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
proportion of questions related to overdraft or penalty fees	0.01		0.01	0.05		0.03	0.03	0.01			0.01		0.01							
N panelists in administrative data who took survey	1132	1377	1402	991	2005	1966	2298	2135	2611	1384	1560	977	1258	4636	2559	3134	2154	3023	2042	2446

* q12007 was administered on rolling basis, between January and August. We observe the data of survey completion.

Table 4. Penalty fee questions, and selected responses

August 2004 q12: "Which of the following, if any, would make you MORE satisfied with your card? (Select all that apply [from 7 choices])", asked for up to 3 accounts
16% replied "no hidden fees"

January 2005 q12: "Which would make you more satisified [with credit card]? (Select all that apply) [from 8 choices], asked for up to 3 accounts.
32% replied "No fees for late payments or

March 2005, q10: "How important, if at all, are each of the following [8 features] when you are choosing a new bank for your main checking account and other bank services?"
86% replied that "overdraft protection" is "very important" or "somewhat important"

March 2005, q11: "How likely would you be to switch your checking account to a different bank, if it offered you [each of 8 features asked about]:"
18% replied "definitely would switch", 30% replied "probably would switch" if offered overdraft protection

June 2005, q5: "How likely would you be, if at all, to switch your checking account to a different bank, if it offered you [each of 8 features asked about]:"
11% replied "definitely would switch", 24% replied "probably would switch" if offered overdraft protection

June 2005, q7.: "Please tell us how much you agree or disagree with the following [9] statements concerning fees assessed on your primary checking account:"
re: "I have over-draft protection to avoid over-draft fees", 33% replied "don't have/never used"; 30% "totally agree"; 13% "totally disagree"

June 2005, q11.: "… Again, off the top of your head, which of the following [8] fees do you believe were charged to your primary checking account in July 2005?"
35% replied yes to overdraft

June 2005, q12.: "Do you have over-draft protection for your primary checking account?"
49% replied yes

June 2005, q13: "How is your over-draft protection funded?"
[see tab]

September 2005, part 1 q1: "How interested would you be in each of the [7] below credit cards?"
62% replied "very interested" or "somewhat interested" to "A credit card with no late fees when you use your card to make at least 1 purchase/cash advance each billing period. It also includes 0% APR on balance transfers and purchases for the first 12 months, as well as no annual fee."
68% very or somewhat interested to "A 1% flat cash back credit card with no late fees and no balance transfer fees. The cash back is in the form of a $25 gift card automatically mailed to you after every $2500 spent."

December 2005, q11: "How satisfied are you with [the following 6] primary services at your bank?"
85% reply "very satisfied" or "satisified" that "Clear and easy-to-find information about bank fees and charges (ATM fees, overdraft fees, minimum balance charges, etc.)"

Mar 2006, q19: "In the past 6 months, did you [do any of the following 4 things on your credit card]..."
17% said "yes" to "Pay any late fees on your primary credit card"

Aug 2006, q17: "Do you have overdraft protection?"
59% say "yes"

Nov 2006, q20: "What, if anything, frustrates you about your primary bank (Select all that apply)"
19% say "overdraft fees"

Table 5. Panelist-Month Observations for each Combination of Number of Surveys Taken

	overdraft surveys						
total surveys	0	1	2	3	4	5	row total
0	61,252	0	0	0	0	0	61,252
1	21,363	3,237	0	0	0	0	24,600
2	16,465	3,657	561	0	0	0	20,683
3	6,693	4,887	576	11	0	0	12,167
4	2,548	2,728	1,845	127	0	0	7,248
5	1,014	1,302	2,207	528	0	0	5,051
6	271	857	1,560	866	62	0	3,616
7	44	382	1,251	1,233	60	0	2,970
8	30	140	759	1,289	217	18	2,453
9	1	130	521	1,051	460	26	2,189
10	5	71	325	703	422	118	1,644
11	3	21	151	649	289	101	1,214
12	20	8	55	328	398	119	928
13	0	2	14	173	149	182	520
14	0	0	4	101	212	160	477
15	0	0	0	22	230	185	437
16	0	0	0	13	104	131	248
17	0	0	0	14	64	91	169
18	0	0	0	6	17	64	87
19 or 20	0	0	0	3	0	10	13
column total N	109,709	17,422	9,829	7,117	2,684	1,205	147,966

Sample = panelist-months with an active checking account

Table 6. Exploring Validity of the Identifying Assumption: Selection into Surveys

Table 7. Timing and Decay of Penalty Fee Survey Effects

lhs:	any overdraft fee		any credit card late fee	
sample:	active bank accounts	active bank accounts	all	
	(1)	(2)	(3)	(4)
1 month since relevant survey (overdraft when lhs=overdraft, late fee when lhs= late fee)	0.0224**	0.0371***	-0.0210***	-0.0225**
	(0.0111)	(0.0126)	(0.00806)	(0.0105)
2 months since relevant survey	0.0119	0.0255**	-0.00507	-0.00630
	(0.0114)	(0.0127)	(0.00837)	(0.0104)
3 months since relevant survey	0.0141	0.0263**	-0.000420	-0.00184
	(0.0118)	(0.0126)	(0.00882)	(0.0104)
4 months since relevant survey	0.00644	0.0178	-0.00564	-0.00659
	(0.0123)	(0.0128)	(0.00728)	(0.00797)
5 months since relevant survey	0.00908	0.0197	-0.00596	-0.00616
	(0.0125)	(0.0131)	(0.00717)	(0.00770)
6 months since relevant survey	0.0223*	0.0319**	-0.000806	0.0000916
	(0.0122)	(0.0129)	(0.00826)	(0.00924)
> 6 months since relevant survey	0.0194*	0.0259**	-0.00290	0.000672
	(0.0106)	(0.0112)	(0.00722)	(0.00858)
Never taken relevant survey	0.0167	0.00717	-0.00334	0.00130
	(0.0141)	(0.0210)	(0.0108)	(0.0128)
1 month since any survey	-0.00612	-0.0101**	0.00586**	0.00529*
	(0.00372)	(0.00433)	(0.00255)	(0.00292)
2 months since any survey	-0.00556	-0.00848*	0.00866***	0.00775**
	(0.00399)	(0.00443)	(0.00275)	(0.00303)
3 months since any survey	-0.00153	-0.00365	0.00273	0.00198
	(0.00438)	(0.00470)	(0.00322)	(0.00339)
4 months since any survey	-0.00460	-0.00643	0.00569*	0.00516
	(0.00470)	(0.00492)	(0.00327)	(0.00340)
5 months since any survey	-0.00702	-0.00818	0.00400	0.00336
	(0.00505)	(0.00523)	(0.00356)	(0.00367)
6 months since any survey	-0.000223	-0.00157	0.0104***	0.00940**
	(0.00571)	(0.00585)	(0.00403)	(0.00414)
>6 months since any survey	-0.00646	-0.00576	0.00468	0.00290
	(0.00453)	(0.00474)	(0.00330)	(0.00346)
Never taken any survey	-0.00614	-0.00688	-0.0171***	-0.0143***
	(0.00535)	(0.00600)	(0.00357)	(0.00416)
1 relevant survey taken so far		-0.0305		0.00406
		(0.0215)		(0.0134)
2 relevant surveys taken so far		-0.0451*		0.00462
		(0.0261)		(0.0176)
3 relevant surveys taken so far		-0.0724**		0.0172
		(0.0303)		(0.0233)
4 relevant surveys taken so far		-0.0886**		
		(0.0351)		
5 relevant surveys taken so far		-0.0906**		
		(0.0417)		
1 any survey taken so far		0.00329		0.00207
		(0.00618)		(0.00436)
2 any surveys taken so far		0.00545		0.00576
		(0.00757)		(0.00534)
3 any surveys taken so far		0.00796		0.00552
		(0.00907)		(0.00653)
4 any surveys taken so far		0.0253**		0.00470
		(0.0106)		(0.00774)
5 any surveys taken so far		0.0301**		0.00551
		(0.0126)		(0.00911)
6 any surveys taken so far		0.0443***		0.00220
		(0.0168)		(0.0107)
7 any surveys taken so far		0.0326		-0.0110
		(0.0210)		(0.0125)
8 any surveys taken so far		0.0576**		0.00139
		(0.0237)		(0.0133)
9 any surveys taken so far		0.0697***		-0.0121
		(0.0262)		(0.0144)
10 any surveys taken so far		0.0896***		-0.0189
		(0.0292)		(0.0163)
11 any surveys taken so far		0.0772**		-0.0310*
		(0.0310)		(0.0174)
12 any surveys taken so far		0.0754**		-0.0260
		(0.0332)		(0.0198)
13 any surveys taken so far		0.0935***		-0.0382*
		(0.0361)		(0.0202)
14 any surveys taken so far		0.108***		-0.0320
		(0.0407)		(0.0213)
15 any surveys taken so far		0.116**		-0.0199
		(0.0492)		(0.0246)
16 any surveys taken so far		0.101**		-0.0532**
		(0.0489)		(0.0237)
17 any surveys taken so far		0.109**		-0.0176
		(0.0543)		(0.0300)
18 any surveys taken so far		0.119**		-0.0528
		(0.0477)		(0.0390)
19 or 20 any surveys taken so far		0.136***		-0.0606*
		(0.0487)		(0.0313)
constant	0.0909***	0.101***	0.103***	0.0956***
	(0.0139)	(0.0215)	(0.00974)	(0.0126)
N	147966	147966	326573	326573
R-sq	0.002	0.003	0.002	0.002

="* p<0.10 ** p<0.05 *** p<0.01"

Unit of observation is panelist-month. Full sample includes all months 2006-2008 inclusive.
Omitted category for months-since variables is: "took survey this month".
Omitted category for taken-so-far variables is: "none taken so far".
OLS, with standard errors (clustered on panelist) in parentheses.
All specifications also include panelist fixed effects, and dummies for month-year.
Overdraft/late fee survey variables and "any survey" variables are not mutually exclusive.
"Active bank accounts" sample includes only panelist-months with nonzero average daily balance in a checking account.
We use all panelist-months for the late fee sample because: 1) most panelists register at least one credit card account; 2) the timing of measuring active account for the purposes of late fees is tricky, due to the timing of billing samples. Restricting the sample to panelist-months with nonzero average daily balance in the current month, or in the last month, does not change the results.

Table 8. Immediate and Stock Effects of Taking an Overdraft Survey

lhs:	any overdraft fee							
sample:	active bank accounts	active bank accounts	min. balance < $500	active bank accounts	active bank accounts	active bank accounts	active bank accounts	overdrafted Jan-June 2006
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
took an overdraft survey this month	-0.0167*	-0.0222**	-0.0257	-0.0221**	-0.0221**	-0.0225**	-0.0189*	-0.0397
	(0.00981)	(0.00993)	(0.0160)	(0.00993)	(0.0100)	(0.0103)	(0.0107)	(0.0350)
took any survey this month	0.00513*	0.00663**	0.0111**	0.00690**	0.00617*	0.00766**	0.00806**	0.00878
	(0.00294)	(0.00308)	(0.00491)	(0.00308)	(0.00315)	(0.00344)	(0.00396)	(0.0187)
1 overdraft survey taken so far		-0.0126	-0.0211	-0.0139	-0.0111	-0.0129	-0.0137	-0.0174
		(0.0118)	(0.0188)	(0.0119)	(0.0114)	(0.0120)	(0.0123)	(0.0357)
2 overdraft surveys taken so far		-0.0256	-0.0543**	-0.0268	-0.0247	-0.0229	-0.0223	-0.0271
		(0.0164)	(0.0261)	(0.0165)	(0.0159)	(0.0171)	(0.0184)	(0.0519)
3 overdraft surveys taken so far		-0.0514**	-0.0941***	-0.0515**	-0.0497**	-0.0457**	-0.0446*	-0.0898
		(0.0213)	(0.0352)	(0.0214)	(0.0207)	(0.0224)	(0.0247)	(0.0714)
4 overdraft surveys taken so far		-0.0659**	-0.119***	-0.0643**	-0.0655**	-0.0575**	-0.0600**	-0.111
		(0.0262)	(0.0422)	(0.0263)	(0.0254)	(0.0273)	(0.0301)	(0.0888)
5 overdraft surveys taken so far		-0.0668**	-0.127**	-0.0636*	-0.0643**	-0.0557	-0.0595	-0.115
		(0.0334)	(0.0524)	(0.0336)	(0.0323)	(0.0349)	(0.0384)	(0.124)
1 any survey taken so far		0.00269	0.00349	0.00607	-0.000671	0.00553	0.00522	-0.00523
		(0.00484)	(0.00727)	(0.00508)	(0.00484)	(0.00502)	(0.00524)	(0.0372)
2 any surveys taken so far		0.00473	0.00851	0.00961	0.00213	0.00981	0.00930	-0.0124
		(0.00618)	(0.00970)	(0.00655)	(0.00601)	(0.00660)	(0.00723)	(0.0468)
3 any surveys taken so far		0.00664	0.00566	0.0118	0.00541	0.0104	0.0100	-0.0112
		(0.00777)	(0.0122)	(0.00816)	(0.00745)	(0.00833)	(0.00927)	(0.0558)
4 any surveys taken so far		0.0235**	0.0319**	0.0280***	0.0225**	0.0255**	0.0226**	0.00137
		(0.00931)	(0.0152)	(0.00949)	(0.00887)	(0.0101)	(0.0113)	(0.0620)
5 any surveys taken so far		0.0278**	0.0420**	0.0325***	0.0265**	0.0276**	0.0244	0.0168
		(0.0114)	(0.0183)	(0.0116)	(0.0108)	(0.0127)	(0.0152)	(0.0699)
6 any surveys taken so far		0.0410***	0.0680***	0.0456***	0.0372**	0.0371**	0.0299	0.0534
		(0.0152)	(0.0257)	(0.0154)	(0.0147)	(0.0168)	(0.0194)	(0.0815)
7 any surveys taken so far		0.0286	0.0449	0.0324*	0.0257	0.0243	0.0172	0.00191
		(0.0191)	(0.0327)	(0.0191)	(0.0183)	(0.0204)	(0.0231)	(0.0924)
8 any surveys taken so far		0.0533**	0.0729**	0.0561***	0.0507**	0.0479**	0.0422	0.0606
		(0.0213)	(0.0358)	(0.0212)	(0.0206)	(0.0229)	(0.0262)	(0.101)
9 any surveys taken so far		0.0649***	0.0991**	0.0672***	0.0640***	0.0584**	0.0519*	0.0750
		(0.0238)	(0.0391)	(0.0238)	(0.0233)	(0.0256)	(0.0287)	(0.106)
10 any surveys taken so far		0.0837***	0.138***	0.0853***	0.0795***	0.0752***	0.0704**	0.103
		(0.0261)	(0.0442)	(0.0262)	(0.0254)	(0.0282)	(0.0316)	(0.110)
11 any surveys taken so far		0.0710**	0.118**	0.0707**	0.0677**	0.0605**	0.0569*	0.0995
		(0.0278)	(0.0463)	(0.0280)	(0.0270)	(0.0300)	(0.0335)	(0.119)
12 any surveys taken so far		0.0684**	0.127***	0.0680**	0.0673**	0.0574*	0.0539	0.0695
		(0.0296)	(0.0488)	(0.0299)	(0.0288)	(0.0316)	(0.0354)	(0.131)
13 any surveys taken so far		0.0862***	0.132**	0.0853***	0.0838***	0.0738**	0.0714*	0.0691
		(0.0322)	(0.0532)	(0.0327)	(0.0315)	(0.0347)	(0.0392)	(0.146)
14 any surveys taken so far		0.100***	0.162***	0.0978***	0.0967***	0.0835**	0.0817*	0.116
		(0.0368)	(0.0570)	(0.0373)	(0.0358)	(0.0392)	(0.0440)	(0.160)
15 any surveys taken so far		0.108**	0.194***	0.105**	0.104**	0.0877*	0.0852	-0.00415
		(0.0456)	(0.0606)	(0.0462)	(0.0440)	(0.0470)	(0.0523)	(0.164)
16 any surveys taken so far		0.0912**	0.103	0.0869*	0.0900**	0.0738	0.0740	0.0846
		(0.0442)	(0.0640)	(0.0452)	(0.0430)	(0.0468)	(0.0523)	(0.173)
17 any surveys taken so far		0.100**	0.209**	0.0951*	0.0995**	0.0845	0.0851	-0.000249
		(0.0497)	(0.0945)	(0.0508)	(0.0475)	(0.0527)	(0.0569)	(0.171)
18 any surveys taken so far		0.109***	0.201***	0.103**	0.110***	0.0867*	0.0854*	0.137
		(0.0419)	(0.0621)	(0.0441)	(0.0411)	(0.0446)	(0.0500)	(0.164)
19 or 20 any surveys taken so far		0.125***	0	0.113**	0.124***	0.0947**	0.0930*	0
		(0.0425)	(.)	(0.0454)	(0.0416)	(0.0451)	(0.0511)	(.)
Any overdraft last month					0.0816***			
					(0.00605)			
Will take overdraft survey next month						-0.0116	-0.0123	
						(0.00934)	(0.0100)	
Will take overdraft survey two months from now							0.000610	
							(0.00953)	
Will take overdraft survey three months from now							-0.0138	
							(0.00954)	
Will take any survey next month						0.00525	0.00577	
						(0.00338)	(0.00388)	
Will take any survey two months from now							0.00637*	
							(0.00382)	
Will take any survey three months from now							-0.00467	
							(0.00380)	
constant	0.103***	0.104***	0.158***	0.0858***	0.105***	0.102***	0.100***	0.391***
	(0.00508)	(0.00589)	(0.00895)	(0.0261)	(0.00717)	(0.00598)	(0.00660)	(0.0307)
N	147966	147966	92085	147966	137174	144347	136843	21567
R-sq	0.002	0.003	0.005	0.003	0.010	0.001	0.001	0.015

="* p<0.10 ** p<0.05 *** p<0.01"

Unit of observation is panelist-month. Full sample includes all months 2006-2008 inclusive.

OLS, with standard errors (clustered on panelist) in parentheses.

All specifications also include panelist fixed effects, and dummies for month-year. Column 4 also includes dummies for number of months the panelist had been present in the administrative data as of month-year t.

Overdraft survey variables and "any survey" variables are not mutually exclusive.

"Active bank accounts" sample includes only panelist-months with nonzero average daily balance in a checking account.

Column 8 limits sample to those with active bank account who overdrafted at least once between January-June 2006 inclusive.

Appendix Table 1. Months Elapsed Since Taking an Overdraft Survey

	Time Since Overdraft Survey									
	0 months	1 month	2 months	3 months	4 months	5 months	6 months	>6 months	never	row total
200601	0	1,157	0	0	0	0	0	589	2,275	4,021
200602	0	0	1,139	0	0	0	0	582	2,200	3,921
200603	0	0	0	1,108	0	0	0	566	2,123	3,797
200604	0	0	0	0	1,037	0	0	529	1,974	3,540
200605	0	0	0	0	0	1,031	0	518	1,963	3,512
200606	0	0	0	0	0	0	1,002	506	1,889	3,397
200607	0	0	0	0	0	0	0	1,446	1,805	3,251
200608	646	0	0	0	0	0	0	905	1,578	3,129
200609	0	632	0	0	0	0	0	872	1,532	3,036
200610	0	0	615	0	0	0	0	818	1,387	2,820
200611	464	0	0	269	0	0	0	689	1,300	2,722
200612	0	438	0	0	249	0	0	657	1,288	2,632
200701	0	0	413	0	0	240	0	630	1,594	2,877
200702	0	0	0	399	0	0	226	599	3,501	4,725
200703	0	0	0	0	378	0	0	791	5,038	6,207
200704	0	0	0	0	0	443	0	869	6,246	7,558
200705	0	0	0	0	0	0	449	856	6,496	7,801
200706	0	0	0	0	0	0	0	1,210	4,419	5,629
200707	0	0	0	0	0	0	0	1,269	4,456	5,725
200708	0	0	0	0	0	0	0	1,258	4,280	5,538
200709	0	0	0	0	0	0	0	1,200	3,444	4,644
200710	0	0	0	0	0	0	0	691	2,706	3,397
200711	0	0	0	0	0	0	0	677	2,641	3,318
200712	0	0	0	0	0	0	0	657	2,556	3,213
200801	0	0	0	0	0	0	0	636	2,628	3,264
200802	0	0	0	0	0	0	0	623	2,655	3,278
200803	0	0	0	0	0	0	0	611	2,785	3,396
200804	0	0	0	0	0	0	0	593	4,007	4,600
200805	0	0	0	0	0	0	0	581	4,224	4,805
200806	0	0	0	0	0	0	0	570	3,754	4,324
200807	0	0	0	0	0	0	0	563	3,680	4,243
200808	0	0	0	0	0	0	0	553	3,724	4,277
200809	0	0	0	0	0	0	0	527	3,719	4,246
200810	0	0	0	0	0	0	0	516	3,344	3,860
200811	0	0	0	0	0	0	0	493	3,151	3,644
200812	0	0	0	0	0	0	0	472	3,147	3,619
column total	1,110	2,227	2,167	1,776	1,664	1,714	1,677	26,122	109,509	147,966

Each cell is a count of the number of panelists.
Sample is panelist-months with an active checking account.