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What's Advertising Content Worth? Evidence from a Consumer Credit Marketing Field Experiment

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What's Advertising Content Worth?
Evidence from a Consumer Credit Marketing Field Experiment*

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ABSTRACT

Firms spend billions of dollars each year advertising consumer products in order to influence demand. Much of these outlays are on the creative design of advertising content. Creative content often uses nuances of presentation and framing that have large effects on consumer decision making in laboratory studies. But there is little field evidence on the effect of advertising content as it compares in magnitude to the effect of price. We analyze a direct mail field experiment in South Africa implemented by a consumer lender that randomized creative content and loan price simultaneously. We find that content has significant effects on demand. There is also some evidence that the magnitude of content sensitivity is large relative to price sensitivity. However, it was difficult to predict which particular types of content would significantly impact demand. This fits with a central premise of psychology— context matters— and highlights the importance of testing the robustness of laboratory findings in the field.

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I. Introduction

Firms spend billions of dollars each year advertising consumer products in order to influence demand. Economic theories of advertising often emphasize the role of informational content. Stigler (1987, p. 243), for example, writes that "advertising may be defined as the provision of information about the availability and quality of a commodity." But advertisers spend resources on other components of content which do not appear to be informative in the Stiglerian sense.[1]

While laboratory studies in marketing have shown that non-informative, persuasive content may affect demand, there is little systematic evidence on the magnitude of these effects in the field. Instead existing field research has focused on advertising exposure and intensity, rather than on content: only 5 of the 232 empirical papers cited in Bagwell's (2007) extensive review of the economics of advertising address advertising content effects. Bagwell's review covers both laboratory and field studies and cites only one randomized field experiment.[2] Chandy et al (2001) review evidence of advertisement effects on consumer behavior, and find "research to date can be broadly classified into two streams: laboratory studies of the effects of ad cues on cognition, affect or intentions and econometric observational field studies of the effects of advertising intensity on purchase behavior… each has focused on different variables and operated largely in isolation of the other" (p. 399).[3] Hence, while sophisticated firms use randomized experiments to optimize their advertising content strategy (Stone and Jacobs 2001; Day 2003; Agarwal and Ambrose 2007), academic researchers have rarely used field experiments to study content effects. This dearth of field evidence on advertising content effects is striking given that the psychology and behavioral economics literature is full of lab and field evidence suggesting that frames and cues can affect consumer decisions.[4]

A particularly important gap is the lack of evidence on the magnitude of content effects relative to price. This comparison can be accomplished by simultaneously varying content *and* price in the same setting. A large marketing literature using conjoint analysis does this comparison, but is focused on controlled laboratory settings. Likewise, the existing field evidence on the effects of framing and cues does not simultaneously vary price.

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[1] E.g., see Mullainathan, Schwartzstein and Shleifer (forthcoming) for evidence on the prevalence of persuasive content in mutual fund advertisements.

[2] Krishnamurthi and Raj (1985) estimate how the intensity of advertising exposure affects the price sensitivity of self-reported demand of an unnamed consumer product, using a split-cable TV experiment.

[3] Simester (2004) laments the "striking absence" of randomized field experimentation in the marketing literature. Several other articles in the marketing literature call for greater reliance on field studies more generally: Stewart (1992), Wells (1993), Cook and Kover (1997), and Winer (1999). Similarly, in economics Levitt and List (2007) discuss the importance of validating lab findings in the field.

[4] See DellaVigna (2007) for a review of the field evidence and particularly influential laboratory studies. He does not cite any studies on advertising other than an earlier version of our paper.

Our study fills these gaps by analyzing a field experiment in South Africa. A subprime consumer lender randomized both the advertising content and interest rate in actual direct mail offers to 53,000 former clients (Figures 1-5 show example mailers).[5] This design enables us to estimate demand sensitivity to advertising content and compare it directly to price sensitivity. The variation in advertising content comes from eight randomized creative "features" that varied the presentation of the loan offer. We worked together with the Lender to design the features with reference to the extensive literature (primarily from laboratory experiments in psychology and decision sciences) on how "frames" and "cues" may affect choices. Mailers randomly varied in whether they included: a photograph on the letter, reference to the interest rate as special or low, suggestions for how to use the loan proceeds, a large or small table of example loans, inclusion of the interest rate as well as the monthly payments, a comparison to a competitors' interest rate, mention of speaking the local African language, and mention of a promotional raffle prize for a cell phone.

Joint F-tests across all eight content randomizations identify *whether* advertising content affects demand. We find significant effects on loan take-up (the extensive margin) but not on loan amount (the intensive margin). We do not find any evidence that the extensive margin demand increase is driven by reductions in the likelihood of borrowing from other lenders. Nor do we find evidence of adverse selection on the demand response to advertising content: repayment default is not significantly correlated with advertising content.

The experimental design also allows us to estimate *how much* marketing content influences behavior *relative* to the magnitude of the price effect. As one would expect, demand is significantly decreasing in price; e.g., each 100 basis point (13%) reduction in the interest rate increased loan take-up by 0.3 percentage points (4%). A few of the marketing content effects are large relative to this price effect. For example, showing a single example loan (instead of four example loans) had the same estimated effect as a 200 basis point reduction in the interest rate. We also use F-tests to bound the magnitude of the joint effect of the eight content treatments on loan takeup. We do this by identifying the smallest and largest absolute values that cannot be rejected under a null hypothesis. This exercise produces a wide range of content effect sizes that range from very small to very large relative to the price effect.

Overall then we find some evidence that advertising content affects consumer demand, and some evidence that these effects can be large relative to price effects.

We suggest that advertising content effects in our context operate through persuasion rather than information. Information-based explanations of our findings are challenged by two factors:

[5] Customer and employee contact names are suppressed in these examples to preserve confidentiality.

(i) the sample population consists of customers with substantial prior and recent experience with the Lender, and (ii) the results suggest that some particularly effective content treatments provide *less* information (by displaying fewer example loan calculations or suggested loan uses).

Our estimated magnitudes are particularly interesting in light of the interpretation that advertising content can be persuasive. These magnitudes suggest that traditional demand estimation which focuses on price (without observing the persuasive content) may produce unstable estimates of demand. A related sobering finding is that we generally failed to predict (based on the prior laboratory evidence) which *particular* types of advertising content would significantly impact demand. One interpretation of this failure is that we lacked the statistical power to identify anything other than economically large effects of any single content treatment. Another interpretation fits with a central premise of psychology— context matters— and highlights the importance of testing the robustness of laboratory findings in the field.

The paper proceeds as follows: Section II describes the market and our cooperating Lender. Section III details the experimental and empirical strategy. Section IV provides a conceptual framework for interpreting the results. Section V presents the empirical results. Section VI concludes.

II. The Market Setting

A. Overview

Our cooperating consumer Lender operated for over 20 years as one of the largest, most profitable lenders in South Africa.[6] The Lender competed in a "cash loan" market segment that offers small, high-interest, short-term, uncollateralized credit with fixed monthly repayment schedules to the working poor population. Aggregate outstanding loans in the cash loan market segment equal about 38 percent of non-mortgage consumer debt.[7] Estimates of the proportion of the South African working-age population currently borrowing in the cash loan market range from below 5 percent to around 10 percent.[8]

[6] The Lender was merged into a bank holding company in 2005 and no longer exists as a distinct entity.

[7] Cash loan disbursements totaled approximately 2.6% of all household consumption and 4% of all household debt outstanding in 2005. (Sources: reports by the Department of Trade and Industry, Micro Finance Regulatory Council, and South African Reserve Bank).

[8] Sources: reports by Finscope South Africa, and the Micro Finance Regulatory Council. We were unable to find data on the income or consumption of a representative sample of cash loan borrowers in the population. We do observe income in our sample of cash loan borrowers; if our borrowers are representative then cash loan borrowers account for about 11% of aggregate annual income in South Africa.

B. Additional Details on Market Participants, Products, and Regulation

Cash loan borrowers generally lack the credit history and/or collateralizable wealth needed to borrow from traditional institutional sources such as commercial banks. Data on how borrowers use the loans is scarce, since lenders usually follow the "no questions asked" policy common to consumption loan markets. The available data suggest a range of consumption smoothing and investment uses, including food, clothing, transportation, education, housing, and paying off other debt.[9]

Cash loan sizes tend to be small relative to the fixed costs of underwriting and monitoring them, but substantial relative to a typical borrower's income. For example, the Lender's median loan size of 1000 Rand ($150) was 32 percent of its median borrower's gross monthly income (US$1 ~=7 Rand during our experiment). Cash lenders focusing on the highest-risk market segment typically make one-month maturity loans at 30 percent interest *per month*. Informal sector moneylenders charge 30-100 percent per month. Lenders targeting lower risk segments charge as little as 3 percent per month, and offer longer maturities (12+ months).[10]

Our cooperating Lender's product offerings were somewhat differentiated from competitors. It had a "medium-maturity" product niche, with a 90 percent concentration of 4-month loans (Table 1), and longer loan terms of 6, 12 and 18 months available to long-term clients with good repayment records.[11] Most other cash lenders focus on 1-month or 12+-month loans. The Lender's standard 4-month rates, absent this experiment, ranged from 7.75 percent to 11.75 percent per *month* depending on assessed credit risk, with 75 percent of clients in the high risk (11.75 percent) category. These are "add-on" rates, where interest is charged upfront over the original principal balance, rather than over the declining balance. The implied annual percentage rate (APR) of the modal loan is about 200 percent. The Lender did not pursue collection or collateralization strategies such as direct debit from paychecks, or physically keeping bank books

[9] Sources: data of questionable quality from this experiment (from a survey administered to a sample of borrowers following finalization of the loan contract); household survey data from other studies on different samples of cash loan market borrowers (FinScope 2004; Karlan and Zinman 2008).

[10] There is essentially no difference between these nominal rates and corresponding real rates. For instance, South African inflation was 10.2% *per year* from March 2002-2003, and 0.4% per year from March 2003-March 2004.

[11] Market research conducted by the Lender, where employees or contractors posing as prospective applicants collected information from potential competitors on the range of loan terms offered, confirmed this niche. These exercises turned up only one other firm offering a "medium-maturity" at a comparable price (3-month at 10.19%), and this firm (unlike our Lender) required documentation of a bank account. ECI Africa and IRIS (2005) finds a lack of competition in the cash loan market. We have some credit bureau data on individual borrowing from other formal sector lenders (to go along with our administrative data on borrowing from the Lender) that we consider below.

and ATM cards of clients, as is the policy of some other lenders in this market. The Lender's pricing was transparent, with no surcharges, application fees, or insurance premiums.

Per standard practice in the cash loan market, the Lender's underwriting and transactions were almost always conducted in person, in one of over 100 branches. Its risk assessment technology combined centralized credit scoring with decentralized loan officer discretion. Rejection was common for new applicants (50 percent) but less so for clients who had repaid successfully in the past (14 percent). Reasons for rejection include inability to document steady wage employment, suspicion of fraud, credit rating, and excessive debt burden.

Borrowers had several incentives to repay despite facing high interest rates. Carrots included decreasing prices and increasing future loan sizes following good repayment behavior. Sticks included reporting to credit bureaus, frequent phone calls from collection agents, court summons, and wage garnishments. Repeat borrowers had default rates of about 15 percent, and first-time borrowers defaulted twice as often.

Policymakers and regulators encouraged the development of the cash loan market as a less expensive substitute for traditional "informal sector" moneylenders. Since deregulation of the usury ceiling in 1992 cash lenders have been regulated by the Micro Finance Regulatory Council (MFRC).[12] Regulation required that monthly repayment could not exceed a certain proportion of monthly income, but no interest rate ceilings existed at the time of this experiment.

III. Experimental Design, Implementation, and Empirical Strategy

A. Overview

We identify and price the effects of advertising content using randomly and independently assigned variation in the description and price of loan offers presented in direct mailers.[13]

The Lender sent direct mail solicitations to 53,194 former clients offering each a new loan at a randomly assigned interest rate. The offers were presented with variations on eight randomly assigned advertising content "creative features" detailed below and summarized in Table 2. These features varied only the presentation of the offer, not its economic content (i.e., not the cost, amount or maturity of available credit).

[12] The "traditional" microfinance approach of delivering credit to targeted groups, often using group liability and not-for-profit mechanisms, is not prevalent in South Africa (Porteous 2003). But the industrial organization of microcredit is trending steadily in the direction of the for-profit, more competitive delivery of individual credit that characterizes the cash loan market (Robinson 2001). This push is happening both from the bottom-up (non-profits converting to for-profits) as well as from the top-down (for-profits expanding into traditional microcredit segments).

[13] Mail delivery is generally reliable and quick in South Africa. Two percent of the mailers in our sample frame were returned as undeliverable.

B. Identification and Power

We estimate the impact of creative features on client choice using empirical tests of the following form:

(1) $Y_i = f(r_i, c_i^1, c_i^2, \ldots c_i^{13}, d_i, X_i)$

where Y is a measure of client i's loan demand or repayment behavior, r is the client's randomly assigned interest rate, and $c^1 \ldots c^{13}$ are categorical variables in the vector C_i of randomly assigned variations on the eight different creative features displayed (or not) on the client's mailer (we need 13 categorical variables to capture the eight features because several of the features were categorical, not binary). Most interest rate offers were discounted relative to standard rates, and hence clients were given a randomly assigned deadline d_i for taking up the offer. All randomizations were assigned independently, and hence are orthogonal to each other by construction, after controlling for the vector of randomization conditions X_i.

We ignore interaction terms given that we did not have any strong priors on the existence or magnitude of interaction effects across treatments. In the sub-sections E-G below we motivate and detail our treatment design and priors on the main effects.

Our inference is based on several different statistics obtained from estimating equation (1). Let β^r be the probit marginal effect or OLS coefficient for r, and $\beta^1 \ldots \beta^{13}$ be the marginal effects or OLS coefficients on the creative variables from the same specification. We estimate *whether* creative affects demand by testing whether the β^n's are jointly different from zero. We estimate the *magnitude* of creative content effects in two ways. First we scale each β^n by the price effect β^r. One can also scale the overall content vector effect, β^C, by the price effect after calculating the lower and upper bounds of the range of absolute values for which the joint F-test fails to reject with a p-value of 0.10.

Our sample of 53,194 offers was constrained by the size of the Lender's pool of former clients and is sufficient to identify only economically large effects of individual pieces of creative content on demand. To see this, note that each 100 basis point reduction in r (which represents a 13% reduction relative to the sample mean interest rate of 793 basis points) increased the client's application likelihood by 3/10 of a percentage point. The Lender's standard take-up rate following mailers to inactive former clients was 0.07. Standard power calculations show that identifying a content feature effect that was equivalent to the effect of a 100 basis point price reduction (i.e., that increased take-up from 0.07 to 0.073) would require over 300,000 observations. So in fact we can only distinguish individual content effects from zero if they are

equivalent to a price reduction of 200 to 300 basis points (i.e., to a price reduction of 25% to 38%).

C. Sample Frame Characteristics

The sample frame consisted entirely of experienced clients. Each of the 53,194 solicited clients had borrowed from the Lender within 24 months of the mailing date, but not within the previous 6 months.[14] The mean (median) number of prior loans from the Lender was 4 (3). The mean and median time elapsed since the most recent loan from the Lender was 10 months. Table 1 presents additional descriptive statistics on the sample frame.

These clients had received mail and advertising solicitations from the Lender in the past. The Lender sent monthly statements to clients and periodic reminder letters to former clients who had not borrowed recently. But prior to our experiment none of the solicitations had varied interest rates or systematically varied creative content.

D. Measuring Demand and Other Outcomes

Clients revealed their demand with their *take-up* decision; i.e., by whether they applied before their deadline at their local branch. Loan applications were assessed and processed using the Lender's normal procedures. Clients were not required to bring the mailer with them when applying, and branch personnel were trained and monitored to ignore the mailers. To facilitate this, each client's randomly assigned interest rate was hard-coded *ex-ante* into the computer system the Lender used to process applications.

Alternative measures of demand include obtaining a loan and the amount borrowed. The solicitations were "pre-approved" based on the client's prior record with the Lender, and hence 87% of applications resulted in a loan.[15] Rejections were due to changes in work status, ease of contact, or other indebtedness. The client also chose a loan amount and maturity (4, 6, or 12 months) subject to the maximums offered by the branch manager. The maximums were orthogonal to the interest rate and content randomizations by construction, as branch personnel were instructed to ignore the mailer and underwrite maximum allowable debt service with respect to the standard interest rate schedule for a client's risk category.

[14] This sample is slightly smaller than the samples analyzed in two companion papers because a subset of mailers did not include the advertising content treatments. See Appendix 1 of Karlan and Zinman (forthcoming) for details.

[15] All approved clients actually took a loan; this is not surprising given the short application process (45 minutes or less), the favorable interest rates offered in the experiment (see III-E for details), and the clients' prior experience and hence familiarity with the Lender.

We consider two other outcomes. We measure outside borrowing, using credit bureau data. We also examine loan repayment behavior by setting Y = 1 if the account was in *default* (i.e., in collection or had been charged off as of the latest date for which had repayment data), and = 0 otherwise. The motivating question is whether any demand response to creative content produces adverse selection by attracting clients who are induced to take a loan they cannot afford. Note that we have less power for this than for our demand estimations, since we only observe repayment behavior for the 4,000 or so individuals that obtained a loan.

E. Interest Rate Variation

The interest rate randomization was stratified by the client's pre-approved risk category because risk determined the loan price under standard operations. The standard schedule for four-month loans was: low-risk = 7.75 percent per *month*; medium-risk = 9.75 percent; high-risk = 11.75 percent. The randomization program established a target distribution of interest rates for 4-month loans in each risk category and then randomly assigned each individual to a rate based on the target distribution for her category.[16,17] Rates varied from 3.25 percent per month to 11.75 percent per month, and the target distribution varied slightly across two "waves" (bunched for operational reasons) mailed September 29-30 and October 29-31, 2003. At the Lender's request, 97 percent of the offers were at lower-than-standard rates, with an average discount of 3.1 percentage points on the monthly rate (the average rate on prior loans was 11.0 percent). The remaining offers in this sample were at the standard rates.

F. Mailer Design

Figures 1-5 show example mailers. The Lender designed the mailers in consultation with both its marketing consulting firm and us. As noted above the Lender had mailed solicitations to former

[16] Rates on other maturities in these data were set with a fixed spread from the offer rate conditional on risk, so we focus exclusively on the 4-month rate.

[17] Actually *three* rates were assigned to each client, an "offer rate" (r) included in the direct mail solicitation and noted above, a "contract rate" (r^c) that was weakly less than the offer rate and revealed only after the borrower had accepted the solicitation and applied for a loan, and a dynamic repayment incentive (D) that extended preferential contract rates for up to one year, conditional on good repayment performance, and was revealed only after all other loan terms had been finalized. This multi-tiered interest rate randomization was designed to identify specific information asymmetries (Karlan and Zinman 2007). 40% of clients received $r^c < r$, and 47% obtained D=1. Since D and the contract rate were surprises to the client, and hence did not affect the decision to borrow, we exclude them from most analysis in this paper and restrict the loan size sample frame to the 31,231 clients who were assigned $r = r^c$ for expositional clarity. In principle r^c and D might affect the intensive margin of borrowing, but in practice adding these interest rates to our loan size demand specifications does not change the results. Mechanically what happened was that very few clients changed their loan amounts after learning that $r^c < r$.

clients in the past but had never offered discounted interest rates or systematically experimented with creative content.

i. Basic Content

Each mailer contained some boilerplate content; e.g., the Lender's logo, its slogan "the trusted way to borrow cash", instructions for how to apply, and branch hours. Other pieces of boilerplate content are closely related to specific creative treatments and described below.

ii. Creative Treatments: Content, Motivation, and Priors

Each mailer also contained mail merge fields that were populated (or could be left blank in some cases) with randomized variations on eight different creative features. Some randomizations were conditional on pre-approved characteristics and each of these conditions is included in the empirical models we estimate.

The content and variations for each of the creative features are summarized in Table 2. We detail the features below along with the prior work and hypotheses underlying these treatments. Our motivation stems primarily from the psychology literature related to persuasive communication. We discuss alternative interpretations of creative content effects in Section IV.

Feature 1: Photo. As the example mailers show, 80% of the mailers featured a photo of a smiling person in the bottom right-hand corner. There was one photo subject for each combination of gender and race represented in our sample (for a total of 8 different photos in all).[18] All subjects were deemed attractive and professional-looking by the marketing firm. The overall target frequency for each photo was determined by the racial and gender composition of the sample and the objective of obtaining: a 2-to-1 ratio of photo race that matched the client's race, a 1-1 ratio of photo gender that matches the client's gender.[19]

The motivation for experimenting with photos starts with casual empiricism noting the prevalence of attractive females in ads. A large psychology literature on affective (as opposed to deliberative) decision making provides an indirect explanation for this stylized fact. Affective and

[18] For mailers with a photo, the employee named at the bottom of the mailer was that of an actual employee of the same race and gender featured in the photo. In cases where no employee in the client's branch had the matched race and gender, an employee from the regional office was listed instead.

[19] If the client was assigned randomly to "match," then the race of the client matched that of the model on the photograph. For those assigned to mismatch, we randomly selected one of the other races. In order to determine a client's race, we used the race most commonly associated with his/her last name (as determined by employees of the Lender). The gender of the photo was then randomized unconditionally at the individual level.

often sub-conscious responses to stimuli drive decisions in many contexts; see, e.g., Slovic et al (2002) for a review. The most closely related study shows that randomly manipulated background images affect hypothetical student choices in a simulated Internet shopping environment (Mandel and Johnson 2002).

Consequently our priors were: showing a photo of an attractive person would (weakly) increase take-up vs. no photo, and showing a female photo would (weakly) increase take-up vs. a male photo (Landry, Lange, List, Price and Rupp 2006).

The motivation for experimenting with matched and mismatched photos comes from the psychology literature on communication and persuasion. Several studies suggest that demographic similarity between client and salesperson can drive choice (Evans 1963), and that similarity can outweigh expertise or credibility (Lord 1997; Cialdini 2001; Mobius and Rosenblat 2006).

Consequently we predicted that photos matched on race or gender would have (weakly) more positive effects on takeup than photos that were mismatched.

Feature 2: Language Affinity

For another "similarity" treatment, we inserted a blurb "We speak (client's language)" for a random subset of the clients who were not primarily English speakers (44% of the sample). When present, the matched language blurb was directly under the "business hours" box in the upper right of the mailer. The rest of the mailer was always in English.

As with the matched photos we predicted that mentioning this type of similarity would (weakly) increase take-up. The Lender was particularly confident that this treatment would increase take-up and insisted that most eligible clients get it, hence the 63-37 split noted in Table 2.

Feature 3: "Special" rate vs. "Low" rate vs. no blurb

As discussed above, nearly all of the interest rate offers were at discounted rates, and the Lender had never offered anything other than its standard rates prior to the experiment. So the Lender decided to highlight the unusual nature of the promotion for a random subset of the clients: 50% of clients received the blurb: "A special rate for you", and 25% of clients received "A low rate for you". The mail merge field was left blank for the remaining clients. When present the blurb was inserted just below the field for the language match.

Our prior was that this treatment would not influence take-up, although there may be models with very boundedly rational consumers and credible signaling by firms where showing one of these blurbs would (weakly) increase take-up.

Feature 4: Suggested Uses

After the salutation and deadline, the mailer said something about how the client could use the loan. This "suggested use" appeared in boldface type and took one of five variations on: "You can use this loan to X, or for anything else you want". X was one of four common uses for cash loans indicated by market research and detailed in Table 2. The most general phrase simply stated: "You can use this cash for anything you want." Each of the five variations was randomly assigned with equal probabilities.

A priori we thought the impact of this treatment was ambiguous. On one hand, suggesting particular uses might make consumption salient and serve as a cue to take-up the loan. On the other hand suggesting a particular use might create dissonance with the Lender's "no questions asked" policy regarding loan uses, a policy designed to counteract stigma associated with high-interest borrowing. Note that it is unlikely that suggesting a particular use provided *information* by (incorrectly) signaling a policy change regarding loan uses, since each variation ended with: "or for anything else you want."

Feature 5: Number of Example Loans

The middle of a mailer prominently featured a table that was randomly assigned to display one or four example loans. Each example showed a loan amount and maturity based on the client's most recent loan, and a monthly payment based on the randomly assigned interest rate.[20] The rate itself was also displayed in randomly chosen mailers (see Feature 6). Every mailer stated "Loans available in other amounts…." directly below the example(s) table.

Our motivation for experimenting with a small vs. large table of loans comes from psychology and marketing papers on "choice overload." In strict neoclassical models demand is (weakly) *increasing* in the number of choices. In contrast the choice overload literature has found that demand can *decrease* with menu size. Large menus can "demotivate" choice by creating feelings of conflict and indecision that lead to procrastination or total inaction (Shafir, Simonson and Tversky 1993). Overload effects have been found in field settings including physician

[20] High risk clients were not eligible for 6- or 12-month loans and hence their 4-example table featured 4 loan amounts based on small increments above the client's last loan amount. When the client was eligible for longer maturities we randomly assigned whether the 4-example table featured different maturities. See Table 2 and Karlan and Zinman (forthcoming) for additional details.

prescriptions (Redelmeier and Shafir 1995) and 401k plans (Iyengar, Huberman and Jiang 2004). An influential field experiment shows that grocery store shoppers who stopped to taste jam were much more likely to purchase if there were 6 choices rather than 24 (Iyengar and Lepper 2000).

We sought to test for choice overload in our setting by ensuring that each table contained an example loan based on the randomly assigned interest rate and the client's most recent maturity and loan amount obtained from the Lender; i.e., the example loan presented in our small-table condition was nested in the larger-table condition. So under most models of consumer choice the small table provides less information than the larger table, and finding that mailers with a small table have higher take-up rates is evidence of a choice overload effect. We discuss an alternative interpretation based on signaling in Section IV.

Feature 6: Interest Rate Shown in Example(s)?

Tables also randomly varied whether the interest rate was shown.[21] In cases where the interest rate was suppressed the information presented in the table (loan amount, maturity, and monthly payment) was sufficient for the client to impute the rate. This point was emphasized with the statement below the table that: "There are no hidden costs. What you see is what you pay."

Displaying the interest rate has ambiguous effects on demand in rich models of consumer choice. Displaying the rate may depress demand by overloading bounded rational consumers (see Feature 5), or by de-biasing consumers who tend to underestimate rates when inferring them from other loan terms (Stango and Zinman 2007). Displaying the rate may have no effect if consumers do not understand interest rates and use decision rules based on other loan terms (this was the Lender's prior). Finally, displaying the rate may induce demand by signaling that the Lender indeed has "no hidden costs", and/or by reducing computational burden.

Given the Lender's prior that interest rate disclosure would not affect demand, and its branding strategy as a "trusted" source for cash, it decided to err on the side of full disclosure and the mailers displayed the interest rate with 80% probability. Given the Lender's prior and the potential for offsetting effects, our prior was that disclosure would have no effect on consumer choice in this setting.

Feature 7: Comparison to Outside Rate

Randomly chosen mailers included a comparison of the offered interest rate to a higher outside market rate. When included the comparison appeared in boldface in the field below "Loans available in other amounts…." Half of the comparisons used a "gain frame"; e.g., "If you borrow

[21] South African law did not require interest rate disclosure, in contrast to the U.S. Truth-in-Lending Act.

from us, you will pay R100 Rand less each month on a four month loan." Half of the comparisons used a “loss frame”; e.g., "If you borrow elsewhere, you will pay R100 Rand more each month on a four month loan."[22]

Several papers have found that such frames can influence choice by manipulating “reference points” that enter decision rules or preferences. There is some evidence that the presence of a dominated alternative can induce choice of the dominating option (Huber, Payne and Puto 1982; Doyle, O'Connor, Reynolds and Bottomley 1999). This suggests that mailers with our dominated comparison rate should produce (weakly) higher take-up rates than mailers without mention of a competitor’s rate. Invoking potential losses may be a particularly powerful stimulus for demand if it triggers loss aversion (Kahneman and Tversky 1979; Tversky and Kahneman 1991), and indeed Ganzach and Karsahi (1995) find that a loss-framed message induced significantly higher credit card usage than a gain-framed message in an direct marketing field experiment in Israel. This suggests the loss-framed comparison should produce (weakly) higher take-up rates than either the gain-frame or the no comparison conditions.

Feature 8: Cell Phone Raffle

Many firms, including the Lender and many of its competitors, use promotional giveaways as part of their marketing. Our experiment randomized whether a cell phone raffle was prominently featured in the bottom right margin of the mailer: "WIN 10 CELLPHONES UP FOR GRABS EACH MONTH!" Per common practice in the cash loan market, the mailers did not detail the odds of winning or the value of the prizes.

In fact the expected value of the raffle for any individual client was vanishingly small.[23] Given that the cash loan market was imperfectly competitive (see Section II, and the modest response to price reductions in Section V-A) this implies that the raffle should not change the take-up decision based on strictly economic factors.[24]

[22] The mailers also randomized the unit of comparison (Rand per month, Rand per loan, percentage point differential per month, percentage point differential per loan), but the resulting cell sizes are too small to statistically distinguish any differential effects of units on demand.

[23] The 10 cell phones were each purchased for R300 and randomly assigned within the pool of approximately 10,000 individuals who applied at the Lender’s branches during the 3 months spanned by the experiment. The pool was much larger than the number of applicants who received a mailer featuring the raffle, since by law all applicants (including first-time applicants, and former clients excluded from our sample frame) were eligible for the raffle.

[24] Omitting the raffle variable from our tests of the joint effect of the creative content variables has negligible impacts on the F-statistics reported in Tables 3 and 4.

Yet marketing practice suggests that promotional raffles may increase demand despite not providing any material increase in the expected value of taking up the offer. A possible channel is a tendency for individuals to over-estimate the frequency of small probability events,

In contrast several other papers have reached the surprising conclusion that promotional giveaways can backfire and reduce demand. The channel seems to be that many consumers feel the need to justify their choices and find it more difficult to do so when the core product comes with an added option they do not value. This holds even when subjects understand that the added option comes at no extra pecuniary or time cost (Simonson, Carmon and O'Curry 1994). And there is no evidence that giveaways lead to inferences about the quality of the core product (Shafir, Simonson and Tversky 1993).

Given the conflicting prior evidence we had no strong prior on whether and how promoting the cell phone raffle would affect demand.

G. Deadlines

As noted above each mailer also contained a randomly assigned deadline by which the client had to respond in order to obtain the offered interest rate. Deadlines ranged from "short" (approximately 2 weeks) to "long" (approximately 6 weeks). Short deadlines were assigned only among clients who lived in urban areas with a non-PO Box mailing address and hence were likely to receive their mail quickly (see Table 2 for details). Some clients eligible for the short deadline were randomly assigned a blurb showing a phone number to call for an extension (to the medium deadline).

The deadline was randomized in order to create a somewhat low-powered test of procrastination (or time management problems more generally). As discussed above regarding choice overload, consumers may postpone difficult decisions or tasks. Indeed introspection and the findings in Ariely and Wertenbroch (2002) suggest that individuals often choose to impose shorter deadlines on themselves even when longer ones are in the choice set. In contrast standard models predict that consumers will always (weakly) prefer the longest available deadline, due to the option value of waiting.

Thus *a priori* the impact of shorter deadlines on takeup seemed ambiguous.

IV. Conceptual Framework: Interpreting the Effects of Advertising Content

As discussed above the creative content treatments in our experiment were motivated primarily by findings from psychology and marketing that are most closely related to *persuasive* theories of advertising. Here we formalize definitions of persuasion and other mechanisms through which

advertising content might affect consumer choice. We also speculate on the likely relevance of these different mechanisms in our research context.

As a starting point consider a simple decision rule where consumers purchase a product if and only if the marginal cost of the product is less than the expected marginal return (in utility terms) of consuming the product. A very simple way to formalize this is to note that the consumer purchases (loan) product (or consumption bundle) l iff:

(2) $u_i(l) - p_i > 0$

Where u_i is the consumer's (discounted) utility gain from purchasing l and p is the price.[25] Advertising has no effect on either u or p and the model predicts that we will not reject the hypothesis of null effects of creative content on demand when estimating equation (1).

One might wonder whether a very slightly enriched model would predict that consumers who are just indifferent about borrowing (from the Lender) might be influenced by advertising content (say by changing the decision rule from randomizing, to "go with the choice that has the attractive mailer".) This would be a more plausible interpretation in our setting if the experiment's pricing were more uniform and standard, given that everyone in the sample had borrowed recently at the Lender's standard rates. But experimental prices ranged widely, with a density almost entirely below the standard rates. Thus if consumers were indifferent on average in our sample then price reductions should have huge positive effects on take-up on average. This is not the case; Section V-A shows that take-up elasticities for the price reductions are substantially below one in absolute value.

Models in the "behavioral" decision making and economics of advertising literatures enrich the simple decision rule in equation (2) and allow for the possibility that advertising affects consumer behavior; i.e., for the possibility that average effect on the creative content variables in equation (1) is different from 0. Following Bagwell's (2007) taxonomy, we explore three distinct mechanisms.

One possible mechanism is *informative* advertising content. Here the consumer has some uncertainty about the utility gain and/or price (that could be resolved by a consumer at a search and/or computational cost), and advertising operates on *expectations* about utility and price. Now the consumer buys the product if:

(3) $E^u_t(C_{it})[u_i(l)] - E^p(C_{it})_t[p_i] > 0$

[25] In our context p is a summary statistic capturing the cost of borrowing. Without liquidity constraints the discounted sum of any fees + the periodic interest rate captures this cost. Under liquidity constraints loan maturity affects the effective price as well (Karlan and Zinman forthcoming).

Where expectations E at time t are influenced by the vector of advertising content *C* that consumer i receives.

In our setting, for example, announcing that the firm speaks Zulu might provide information. The content treatments might also affect expected utility through credible signaling. Seeing a photo on the mailer might increase the client's expectation of an enjoyable encounter with an attractive loan officer at the Lender's branch.

Our experimental *design* does not formally rule out these sorts of informative effects, but we do not find them especially plausible in this particular implementation. Recall that the mailers were sent exclusively to clients who successfully repaid prior loans from the Lender. Most had been to a branch within the past year and hence were familiar with the loan product, the transaction process, the branch's staff and general environment, and the fact that loan uses are unrestricted.

A second possibility is that advertising is *complementary* to consumption: consumers have fixed preferences, and advertising makes the consumer "believe—correctly or incorrectly—that it [sic] gets a greater output of the commodity from a given input of the advertised product" (Stigler and Becker 1977). In reduced form, this means that advertising affects net utility by interacting with enjoyment of the product. So the consumer purchases if:

(4) $u_i(l, l^*C_i) - p_i > 0$

Our design does not formally rule out complementary mechanisms, but their relevance might be limited in our particular implementation. Complementary models tend to be motivated by luxury or prestige goods (e.g., cool advertising content makes me enjoy wearing a Rolex more, all else equal), and the product here is an intermediate good that is used most commonly to pay for necessities. Moreover, the first-hand prior experience our sample frame had with consumer borrowing makes it unlikely that marketing content would change perceptions of the loan product in a complementary way.

Finally, a third mechanism is *persuasive* advertising content. A simple model of persuasion would be that the true utility of purchase is given by: $u_i(l) - p_i$. But individuals decide to purchase or not based on:

(5) $D_i(u_i(l), C_i) - p_i > 0$

where $D_i(u_i(l), C_i)$ is the effective decision, rather than hedonic, utility. Persuasion can operate directly on preferences by manipulating reference points, providing cues that increase the marginal utility of consumption, providing motivation to make (rather than procrastinate) choices, or simplifying the complexity of decision making. Other channels for persuasion arise if perceptions of key decision parameters are *biased* and can be manipulated by advertising content.

To clarify the distinction from the informative view, note that allowing for biased expectations or biased perceptions of choice parameters is equivalent to allowing for a distinction between *hedonic utility* (i.e., true, experienced utility) and *choice utility* (perceived/expected utility at the time of the decision). Under a persuasive view of advertising, consumers decide based on choice utility.

Notice that as in the traditional model, price will continue to affect overall demand. In this sense, there may appear to be a stable demand curve. But the demand curve may shift as content C_i varies. Thus demand estimation that ignores persuasive content may produce a misleading view of underlying utility.

V. Results

This section presents results from estimating the equation (1) detailed in Section III-B.

A. Interest Rates

Recall that consumer sensitivity to the price of the loan offer will provide a useful way to scale the magnitude of any advertising content effects. Table 3 shows the estimated magnitude of loan demand price sensitivities in our sample.

Our main result on price is that the probability of applying rose 3/10 of a percentage point for every 100 basis point reduction in the monthly interest rate (Column 1). This implies a 4% increase in take-up for every 13% decrease in the interest rate, and a take-up price elasticity of -0.28.[26] Column 2 shows a nearly identical result when the outcome is obtaining a loan instead of applying for a loan. Column 3 shows that the total loan amount borrowed (unconditional on borrowing) also responded negatively to price. The implied elasticity here is -0.34.[27] Column 4 shows that default rose relatively strongly with price; this result indicates adverse selection and/or moral hazard with respect to interest rates.[28] Column 5 shows that more expensive offers did not induce significantly more substitution to other formal sector lenders (as measured from credit bureau data). This result is a precisely estimated zero relative to a sample mean outside borrowing proportion of 0.22. The lack of substitution is consistent with the descriptive evidence discussed in Section II on the dearth of close substitutes for the Lender.

[26] Clients were far more elastic with respect to offers at rates greater than the Lender's standard ones (Karlan and Zinman forthcoming). This small sub-sample (632 offers) is excluded here because it was part of a pilot wave of mailers that did not include the content randomizations.
[27] See Karlan and Zinman (forthcoming) for additional results on price sensitivity on the intensive margin.
[28] The finding here is reduced-form evidence of information asymmetries; see Karlan and Zinman (2007) for additional results that separately identify adverse selection and moral hazard effects.

B. Advertising Content Treatments

Table 3 also presents the results on creative content variations for the full sample.

The F-tests reported near the bottom of the table indicate *whether* the content features had an effect on demand that was jointly significantly different from zero.[29] The applied (or "take-up") model has a p-value of 0.07, and the "obtained a loan" model has a p-value of 0.04, implying that advertising content did influence the extensive margin of loan demand with at least 90% confidence. Column 3 shows that the joint effect of content on loan amount is insignificant (p-value = 0.25). Column 4 shows an insignificant effect on default; i.e., we do not find evidence of adverse selection on response to content. Column 5 shows an insignificant effect on outside borrowing; i.e., the positive effect on demand for credit from the Lender in Columns 1 and 2 does not appear to be driven by balance-shifting from other lenders.

Results on the individual content feature variable conditions provide some insight into *how much* creative affects demand. For our preferred outcome (applied), the female photo, 1 example table, and "no specific loan use mentioned" conditions have statistically significant effects. In each case the implied magnitudes are large; each condition increases demand by at least as much as a 200 basis point (25%) reduction in the interest rate. Note that some caution regarding statistical inference is warranted here, since with 13 content variables we would expect one to be significant purely by chance. The other notable finding here is the disjoint between our priors and actual findings. Several treatments that we thought might have significant effects did not (cell raffle, comparisons, client's language, and no photo), and one condition we did not have strong priors about (no suggested use) turned out to have a strong positive effect.

Another approach to estimating the magnitude of the advertising content effects is to identify the lower and upper bounds for the range of values for which the F-test does not fail for all creative content. The lower bound tells us the lowest absolute value for all creative coefficients for which the F-test rejects the null hypothesis. For applied as an outcome, this is 0.0010, and for take-up as an outcome, this is 0.0026. As with the point estimates on individual content variables, these bounds can be scaled by the price coefficient to obtain estimates of the relative magnitude of advertising content on loan demand. Thus, the lower bound "aggregate" content effect is one third of the effect generated by a one percentage point change in the monthly interest rate. The upper bounds, on the other hand, are very large, at 0.0448 and 0.0498, respectively. We only calculate upper and lower bounds when the primary null hypothesis of no effect is rejected (and hence we do *not* calculate bounds for content effects on loan size, outside borrowing, or default).

[29] Results are nearly identical if we omit the raffle from the joint test of content effects on the grounds that the raffle has some expected pecuniary value.

C. Heterogeneity

Given our lack of strong priors on how any advertising content effects might vary with consumer characteristics, and statistical power issues, we will not devote much space to discussing heterogeneity in responses to advertising content.

For the interested reader, Table 4 presents results for sub-samples split by gender, education (as predicted from occupation), number of prior loans with the Lender, and number of months since prior loan with the Lender. There is some evidence that males respond more to creative content (Columns 1 and 2). But we view these results as merely suggestive.

D. Deadlines

Recall that the mailers also included randomly assigned deadlines designed to test the relative importance of option value (longer deadlines make the offer more valuable and induce take-up) versus time management problems (longer deadlines induce procrastination and perhaps forgetting, and depress takeup). Table 5 presents results from estimating our usual specification with the deadline variables included.[30]

The results in Table 5 Panel A suggest that option value dominates any time management problem in our context: take-up increased dramatically with deadline length. Lengthening the deadline by approximately two weeks (i.e., moving from the omitted short deadline to the extension option or medium deadline, or from medium to long) increases take-up by about three percentage points. This is a large effect relative to the mean take-up rate of 0.085, and enormous relative to the price effect. Shifting the deadline by two weeks had about the same effect as a 1,000 basis point reduction in the interest rate. This large effect could be due to time-varying costs of getting to the branch (e.g., transportation cost, opportunity cost of missing work), and/or to borrowing opportunities or needs that vary stochastically (e.g., bad shocks).

Some caveats are in order however. First, the strength of the longer-deadline effect may be due in part to the nature of direct mail. We took precautions to ensure that the mailers *arrived* well before the assigned deadline, but it may be the case that clients did not *open* the mailer until after the deadline expired. E.g., if clients only opened their mail every two weeks, then the short deadline would mechanically produce a very low takeup rate (in fact the mean rate for those offered the short deadline was 0.057, vs. 0.085 for the full sample). Second, our deadline

[30] We omit the creative content variables from the specification for expositional clarify in the table, but recall that all randomizations were done independently. So including the full set of treatments does not change the results.

variation may miss important nonlinearities over longer horizons. Note however that longer deadlines were arguably empirically irrelevant in our context, as the Lender deemed deadlines beyond six weeks operationally impractical.

Panel B explores whether Panel A misses a smaller, offsetting procrastination effect. We do this by testing whether shorter deadlines increase the likelihood of take-up *after* deadlines pass. There is no support for this hypothesis.

In all the results suggest that deadlines may be very important determinants of consumer choice and merit continued study.

VI. Conclusion

Theories of advertising, and laboratory studies on framing, cues, and product presentation, suggest that advertising content can have important effect on consumer choice. Yet there is remarkably little field evidence on how much, and what types, of advertising "creative" content affect demand. We analyze a direct mail field experiment that simultaneously and independently randomized the price and creative content of actual loan offers made to former clients of a subprime consumer lender in South Africa. We find that advertising content had statistically significant effects on take-up. There is some evidence that these content effects were economically large relative to price effects. Consumer response to advertising content does not seem to have been driven by substitution across lenders, and there is no evidence that it produced adverse selection. Deadline length trumped both creative content and price in economic importance. In all, the results suggest that advertising content and deadlines are important drivers of consumer choice. Our design and results also leave many questions unanswered and suggest directions for future research.

First, we found it difficult to predict *ex-ante* which types and variations of creative content would affect demand. This fits with a central premise of psychology—context matters— and suggests that pinning down the types and magnitude of content effects will require systematic field experimentation on a broad scale. Also, studying the dynamics of consumer responses will be particularly important given the opportunities for learning from repeated exposures to advertising.

Another unresolved question is *why* creative content matters. In the taxonomy of the economics of advertising literature, the question is whether content is informative, complementary to preferences, and/or persuasive. We find the persuasive mechanism most compelling in our context, given the nature of the product (an intermediate good) and the

experience level of consumers in the sample. But this interpretation is speculative, since our design is not sufficiently rich to identify mechanisms underlying the content effects.

Lastly, it will be fruitful to study consumer choice in conjunction with the strategies of firms that provide and frame choice sets. A literature on industrial organization with "behavioral" or "boundedly rational" consumers is just beginning to (re-)emerge (Ellison 2006; Gabaix and Laibson 2006), and there should be gains from trade between this literature and related ones on the economics of advertising and the psychology of consumer choice.

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the trusted way to borrow cash

30 October 2003

Shop 11 Checkers Centre
Corner of Waterkan & Lady Grey Street
Paarl 7646
Tel: 021 872 5224

BUSINESS HOURS
MON - FRI 08:30 - 16:30
SAT 08:00 - 12:00

Ons praat **Afrikaans**

A special rate for you.

Congratulations! As a valued client, you are now eligible for a special interest rate on your next cash loan from This is a limited time offer, so please come in by 30 November 2003 to take advantage of this offer.

You can use this cash to buy an appliance, or for anything else you want.

Enjoy low monthly repayments with this offer! Here is one example of a loan you can get under this offer:

Loan Amount	Loan Term	Monthly Repayment
R1000.00	4 Months	R290.00

LOAN AVAILABILITY SUBJECT TO TERMS & CONDITIONS

Loans available in other amounts. There are no hidden costs. What you see is what you pay.

How to apply:

Bring your ID book and latest payslip to your usual branch, by **30 November 2003** and ask for

Customer Consultant

P.S. Unfortunately, if you have already taken a loan since the date this letter was issued, you do not qualify for this offer.

the trusted way to borrow cash

Figure 2. Example Letter 2

25 September 2003

Shop 9B, Pinetown Arcade
Hill Street
Pinetown 3600
Tel: 031 717 8950

BUSINESS HOURS	
MON - FRI	08:30 - 16:30
SAT	08:00 - 12:00

A special rate for you.

Congratulations! As a valued client, you are now eligible for a special interest rate on your next cash loan from This is a limited time offer, so please come in by 31 October 2003

You can use this cash to buy an appliance, or for anything else you want.

Enjoy low monthly repayments with this offer! For example:

	4 Months	6 Months	12 Months
R500	R149.95	R108.28	R66.62
R1000	R299.90	R216.57	R133.23
R2000	R599.80	R433.13	R266.47
R4000	R1199.60	R866.27	R532.93

LOAN AVAILABILITY SUBJECT TO TERMS & CONDITIONS

Loans available in other amounts. There are no hidden costs. What you see is what you pay.

If you borrow elsewhere you will pay R280.14 more in total on a R350.00, 4 month loan.

How to apply:

Bring your ID book and latest payslip to your usual branch, by **31 October 2003** and ask for

Customer Consultant

P.S. Unfortunately, if you have already taken a loan since the date this letter was issued, you do not qualify for this offer. Comparison based on a competitor's interest rate of 25%.

the trusted way to borrow cash

Figure 3. Example Letter 3

25 September 2003

Ground Floor
52 Field Street
Durban 4001
Tel: 031 305 4209

BUSINESS HOURS	
MON - FRI	08:30 - 16:30
SAT	08:00 - 12:00

A low rate for you.

Congratulations! You are now eligible for a special interest rate on a cash loan from . This is a limited time offer, so please come in by 31 October 2003

You can use this cash to pay off a more expensive debt, or for anything else you want.

Enjoy low monthly repayments with this offer! For example:

Interest Rate	Loan Amount	Loan Term	Monthly Repayment
3.99%	R500	4 Months	R144.95
3.99%	R1000	4 Months	R289.90
3.99%	R2000	4 Months	R579.80
3.99%	R4000	4 Months	R1159.60

LOAN AVAILABILITY SUBJECT TO TERMS & CONDITIONS

Loans available in other amounts. There are no hidden costs. What you see is what you pay.

If you borrow from us you will pay R840.40 less in total on a R1000.00, 4 month loan.

How to apply:

Bring your ID book and latest payslip to your usual branch, by **31 October 2003** and ask for

Customer Consultant

P.S. Unfortunately, if you have already taken a loan since the date this letter was issued, you do not qualify for this offer. Comparison based on a competitor's interest rate of 25%.

the trusted way to borrow cash

Figure 4. Example Letter 4

25 September 2003

67 Albert Street
Durban 4001
Tel: 031 327 1400

BUSINESS HOURS
MON - FRI 08:30 - 16:30
SAT 08:00 - 12:00

A low rate for you.

Congratulations! As a valued client, you are now eligible for a special interest rate on your next cash loan from '. This is a limited time offer, so please come in by 31 October 2003

You can use this cash to repair your home, or for anything else you want.

Enjoy low monthly repayments with this offer! For example:

	4 Months	6 Months	12 Months
Interest %	5.55%	5.05%	3.05%
R500	R152.75	R108.58	R56.92
R1000	R305.50	R217.17	R113.83
R2000	R611.00	R434.33	R227.67
R4000	R611.00	R434.33	R227.67

LOAN AVAILABILITY SUBJECT TO TERMS & CONDITIONS

Loans available in other amounts. There are no hidden costs. What you see is what you pay.

If you borrow elsewhere you will pay R3424.20 more in total on a R1300.00, 12 month loan.

How to apply:

Bring your ID book and latest payslip to your usual branch, by **31 October 2003** and ask for

Customer Consultant

P.S. Unfortunately, if you have already taken a loan since the date this letter was issued, you do not qualify for this offer. Comparison based on a competitor's interest rate of 25%.

the trusted way to borrow cash

Figure 5. Example Letter 5

30 October 2003

Shop 8
12 Market Street
Krugersdorp 1739
Tel: 011 660 2944

BUSINESS HOURS
MON - FRI 08:30 - 16:30
SAT 08:00 - 12:00

A low rate for you.

Congratulations! As a valued client, you are now eligible for a low interest rate on your next cash loan from This is a limited time offer, so please come in by 30 November 2003 to take advantage of this offer.

You can use this cash to pay for school, or for anything else you want.

Enjoy low monthly repayments with this offer! Here is one example of a loan you can get under this offer:

Interest Rate	Loan Amount	Loan Term	Monthly Repayment
10.50%	R2000.00	4 Months	R710.00

LOAN AVAILABILITY SUBJECT TO TERMS & CONDITIONS

Loans available in other amounts. There are no hidden costs. What you see is what you pay.

If you borrow elsewhere you will pay R360.00 more in total on a R2000.00, 4 month loan.

How to apply:

Bring your ID book and latest payslip to your usual branch, by **30 November 2003** and ask for

Area Manager

P.S. Unfortunately, if you have already taken a loan since the date this letter was issued, you do not qualify for this offer. Comparison based on a competitor's interest rate of 15% per month.

Table 1. Summary Statistics

	Full sample	Obtained a loan	Did Not Obtain a Loan
Applied before deadline	0.085	1	0.01
Obtained a loan before deadline	0.074	1	0
Loan amount in Rand	110	1489	0
	(536)	(1351)	(0)
Loan in default		0.12	
Got outside loan and did not apply with Lender	0.22	0.00	0.24
Maturity = 4 months		0.81	
Offer rate	7.93	7.23	7.98
Last loan amount in Rand	1118	1158	1115
	(829)	(835)	(828)
Last maturity = 4 months	0.93	0.91	0.93
Low risk	0.14	0.30	0.12
Medium risk	0.10	0.21	0.10
High risk	0.76	0.50	0.78
Female	0.48	0.49	0.48
Predicted education (years)	6.85	7.08	6.83
	(3.25)	(3.30)	(3.25)
Number previous loans with Lender	4.14	4.71	4.10
	(3.77)	(4.09)	(3.74)
Months since most recent loan with Lender	10.4	6.19	10.8
	(6.80)	(5.81)	(6.76)
Race = African	0.85	0.85	0.85
Race = Indian	0.03	0.03	0.03
Race = White	0.08	0.08	0.08
Race = Mixed ("Coloured")	0.03	0.04	0.03
Gross monthly income in Rand	3416	3424	3416
	(19657)	(2134)	(20420)
Number of observations	53194	3944	49250

Means or proportions, with standard deviations in parentheses.

Table 2. Experimental Summary

Creative Content	Treatment Value	Frequency	Sample Frame/Conditions
Feature 1: Photo	No photo	0.20	All
	Black photo	0.48	
	Non-Black photo:		
	Indian	0.13	Assigned conditional on client's race to produce the targeted ratio of client-photo matches.
	White	0.12	
	Coloured	0.07	
	Photo with race matched to client race	0.53	
	Photo with mismatched race	0.27	
	Female photo	0.40	
	Male photo	0.40	
	Photo with gender matched to client gender	0.40	
	Photo with mismatched gender	0.40	
Feature 2: Client's Language	"We speak [client's language]"	0.63	Eligible if non-English primary language (0.44 of full sample)
	No mention of language	0.37	
Feature 3: "A 'special' or 'low' rate for you"	Interest rate is labeled as:		All
	"Special" or "Low"	0.75	
	No mention of "Special" or "Low"	0.25	
Feature 4: Suggested Loan Uses	"You can use this loan for anything you want"	0.20	All
	"You can use this loan to X, or for anything else you want", where X is:		
	Pay off a more expensive debt	0.20	
	Buy an appliance	0.20	
	Pay for school	0.20	
	Repair your home	0.20	
Feature 5: Number of Example Loans	One loan amount shown in example table	0.43	All
	Of low and medium risk clients	0.15	
	Of high risk clients	0.52	
	Four loan amounts shown in example table	0.57	
	Four loan amounts in table, one maturity (high risk clients)	0.48	
	Four loan amounts in table, one maturity (low/med risk clients)	0.75	
	Four loan amounts in table, three maturities (low/med risk clients)	0.10	Only low and medium risk eligible for 4 amount, 3 maturity treatment
Feature 6: Interest Rate Shown in Example(s)?	Interest rate shown (and monthly payments)	0.80	All
	Interest rate not shown (just monthly payments)	0.20	
Feature 7: Comparison to Outside Rate	No comparison to competitor rates	0.20	All
	Gain frame	0.40	
	Loss frame	0.40	
Feature 8: Cell Phone Raffle	Mentioned cell phone raffle	0.25	All
	Not mentioned cell phone raffle	0.75	
Other Treatments			
Interest Rate	High Risk: [3.25, 11.75]		
	Medium Risk: [3.25, 9.75]		Monthly rates randomly assigned from a smooth distribution, conditional on risk
	Low Risk: [3.25, 7.75]		
Deadline	Medium deadline (approx 4 weeks)	0.78	1.0 of sample eligible for medium
	Long deadline (approx 6 weeks)	0.14	0.79 of sample eligible for long (certain branches excluded by Lender)
	Short deadline (approx 2 weeks)	0.03	0.14 of sample eligible for short (certain branches excluded by Lender, and all PO Boxes excluded)
	Short deadline with option to extend 2 weeks by calling in	0.04	

Table 3. Effects of Advertising Content on Borrower Behavior: Full Sample
OLS, Probit

LHS:	Applied	Obtained Loan	Loan amount	1 = Loan in collection status	Borrowed from other Lender
Specification:	Probit	Probit	OLS	Probit	Probit
	(1)	(2)	(3)	(4)	(5)
Offer interest rate	-0.003***	-0.003***	-4.771***	0.003**	0.001
	(0.001)	(0.000)	(0.824)	(0.001)	(0.001)
1= no photo	0.001	0.003	3.932	0.001	-0.002
	(0.004)	(0.004)	(7.676)	(0.009)	(0.006)
1= female photo	0.006**	0.006**	8.329	-0.011**	-0.005
	(0.003)	(0.002)	(5.090)	(0.006)	(0.004)
1= photo gender matches client's	-0.003	-0.003	-7.177	-0.002	0.004
	(0.003)	(0.002)	(5.085)	(0.006)	(0.004)
1= black photo	0.006	0.003	-3.762	0.013	0.001
	(0.005)	(0.004)	(10.628)	(0.010)	(0.007)
1= photo race matches borrower's	-0.006	-0.003	9.064	-0.008	-0.002
	(0.005)	(0.004)	(10.408)	(0.009)	(0.007)
1 = we speak (your language)	-0.004	-0.004	-11.356*	-0.001	0.013**
	(0.004)	(0.003)	(6.293)	(0.008)	(0.006)
1 = a 'low' or 'special' rate for you	0.000	0.001	3.386	-0.002	-0.000
	(0.003)	(0.003)	(5.921)	(0.007)	(0.005)
1 = no specific loan use mentioned	0.006**	0.004	4.085	0.001	-0.003
	(0.003)	(0.003)	(5.627)	(0.007)	(0.004)
1 = one example loan	0.007**	0.008***	2.439	-0.003	-0.004
	(0.003)	(0.003)	(4.838)	(0.006)	(0.004)
1 = interest rate shown	0.002	0.004	2.888	-0.003	0.001
	(0.003)	(0.003)	(6.723)	(0.007)	(0.005)
1= no comparison to competitor rate	0.003	0.001	-0.490	-0.006	-0.008*
	(0.003)	(0.003)	(6.460)	(0.007)	(0.005)
1= gain frame comparison to competitor rate	0.002	0.002	-3.092	0.010	-0.003
	(0.003)	(0.002)	(5.068)	(0.006)	(0.004)
1 = cell phone raffle mentioned	-0.002	-0.001	-9.438*	0.010	-0.001
	(0.003)	(0.002)	(5.120)	(0.007)	(0.004)
(pseudo-) R-squared	0.0456	0.0534	0.0361	0.0626	0.0048
N	53194	53194	53194	3944	53194
p-value F-test on all advertising content variables	0.0729	0.0431	0.2483	0.2873	0.4866
Absolute value of lower bound of range for which F-test rejects null	0.0010	0.0026			
Absolute value of upper bound of range for which F-test fails to reject null	0.0448	0.0498			

* p<0.10, ** p<0.05, *** p<0.01. Huber-White standard errors. Probit results are marginal effects. All models include controls for randomization conditions: risk, race, gender, language, and mailer wave (September or October).

Table 4. Effects of Advertising Content on Likelihood of Applying: Heterogeneity

Probit

LHS:	Applied	Applied	Applied	Applied	Applied	Applied	Applied	Applied
Sample Frame:	Males	Females	High Predicted Education	Low Predicted Education	Prior Loans >3	Prior Loans <=3	Last Loan >10 Months Prior	Last Loan <=10 Months Prior
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Offer interest rate	-0.002***	-0.003***	-0.004***	-0.002***	-0.003***	-0.003***	-0.004***	-0.002***
	(3.484)	(4.361)	(4.344)	(3.554)	(4.622)	(3.051)	(4.026)	(3.839)
1= no photo	0.003	0.002	-0.006	0.006	0.000	0.003	0.008	-0.005
	(0.590)	(0.388)	(0.912)	(1.208)	(0.037)	(0.454)	(1.189)	(1.254)
1= female photo	0.008**	0.003	0.004	0.007**	0.004	0.007*	0.009**	0.002
	(2.285)	(0.829)	(0.818)	(2.183)	(1.341)	(1.755)	(2.085)	(0.712)
1= photo gender matches client's			-0.003	-0.002	0.000	-0.007	-0.001	-0.004
			(0.671)	(0.562)	(0.107)	(1.633)	(0.343)	(1.373)
1= black photo	-0.000	0.012*	0.006	0.004	0.002	0.014*	0.001	0.009*
	(0.034)	(1.727)	(0.900)	(0.624)	(0.298)	(1.646)	(0.128)	(1.836)
1= photo race matches borrower's	-0.001	-0.010	-0.013*	-0.000	-0.001	-0.014	0.003	-0.013***
	(0.211)	(1.419)	(1.804)	(0.064)	(0.267)	(1.621)	(0.436)	(2.615)
1 = we speak (your language)	-0.002	-0.007	-0.008	-0.002	-0.006	-0.000	-0.004	-0.004
	(0.334)	(1.357)	(1.206)	(0.554)	(1.430)	(0.029)	(0.677)	(0.981)
1 = a 'low' or 'special' rate for you	-0.002	0.003	0.006	-0.004	0.001	-0.003	0.003	-0.003
	(0.530)	(0.598)	(1.214)	(1.093)	(0.391)	(0.472)	(0.524)	(0.924)
1 = no specific loan use mentioned	0.008**	0.003	0.004	0.007*	0.008**	0.003	0.010**	0.003
	(2.146)	(0.724)	(0.931)	(1.831)	(2.151)	(0.647)	(2.059)	(0.866)
1 = one example loan	0.010***	0.003	0.006	0.007**	0.005	0.009*	0.010**	0.004
	(2.662)	(0.776)	(1.245)	(2.162)	(1.629)	(1.879)	(2.176)	(1.313)
1 = interest rate shown	-0.002	0.007	-0.000	0.004	0.001	0.004	0.001	0.004
	(0.404)	(1.604)	(0.074)	(1.064)	(0.291)	(0.889)	(0.164)	(1.203)
1= no comparison to competitor rate	0.003	0.002	0.008	-0.001	0.004	0.001	0.002	0.003
	(0.718)	(0.411)	(1.449)	(0.187)	(0.984)	(0.119)	(0.355)	(0.766)
1= gain frame comparison to competitor rate	0.002	0.003	0.004	0.001	0.003	0.002	0.001	0.004
	(0.525)	(0.764)	(1.026)	(0.377)	(0.916)	(0.404)	(0.307)	(1.273)
1 = cell phone raffle mentioned	-0.000	-0.005	-0.007	0.000	-0.000	-0.005	-0.004	-0.001
	(0.034)	(1.247)	(1.552)	(0.147)	(0.075)	(1.210)	(0.828)	(0.181)
Pseudo R-squared	0.048	0.044	0.050	0.043	0.032	0.056	0.026	0.006
N	27848	25346	20809	32385	30766	22428	28264	24923
p-value F-test on all advertising content variables	0.0623	0.5354	0.3090	0.2002	0.2747	0.4512	0.2716	0.2327
Absolute value of lower bound of range for which F-test rejects null	0.0021							
Absolute value of upper bound of range for which F-test fails to reject null	0.0388							

* p<0.10, ** p<0.05, *** p<0.01. Probit marginal effects with Huber-White standard errors. All models include controls for randomization conditions: risk, race, gender (columns 3-8 only), language and mailer wave (September or October).

Table 5. Effects of Deadline on Borrower Behavior
Probit, OLS

Panel A: Pre-Deadline Demand

LHS:	Applied	Obtained Loan	Loan amount	1 = Loan in collection status	Borrowed from other Lender
	(1)	(2)	(3)	(4)	(5)
Offer interest rate	-0.003***	-0.003***	-4.777***	0.008***	0.001
	(0.001)	(0.000)	(0.824)	(0.002)	(0.001)
Short deadline, extended	0.032***	0.024**	31.132*	0.024	-0.010
	(0.012)	(0.011)	(17.286)	(0.042)	(0.013)
Medium deadline	0.030***	0.027***	38.034***	0.021	-0.007
	(0.007)	(0.006)	(13.823)	(0.030)	(0.012)
Long deadline	0.060***	0.056***	70.112***	0.014	-0.005
	(0.012)	(0.011)	(15.095)	(0.036)	(0.012)
Adjusted r-squared (or pseudo)	0.0461	0.0538	0.0351	0.0597	0.0007
F-test of joint significance of all deadlines	0.0000	0.0000	0.0000	0.8487	0.8813
N	53194	53194	53194	3944	53194

Panel B: Post-Deadline Applications

LHS= Applied	after short deadline	after medium deadline	after long deadline
	(1)	(2)	(3)
Offer interest rate	-0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)
Short deadline, extended	-0.022*	-0.005	-0.003
	(0.012)	(0.011)	(0.010)
Medium deadline	-0.006	-0.004	-0.005
	(0.011)	(0.010)	(0.009)
Long deadline	-0.009	0.002	-0.001
	(0.011)	(0.011)	(0.010)
Pseudo r-squared	0.0560	0.0448	0.0369
F-test of joint significance of all deadlines	0.2518	0.6332	0.8262
N	53194	53194	53194

* p<0.10, ** p<0.05, *** p<0.01. Huber-White standard errors. Probit results are marginal effects. All models include controls for randomization conditions: risk, mailer wave (September or October), and deadline eligibility. Short deadline is the omitted category; "short deadline, extended" gave customers a number to call and get an extension (to the medium deadline).