

Improving Mortgage Default Collection Efforts by Employing the Decoy Effect

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Improving Mortgage Default Collection Efforts by Employing the Decoy Effect

Abstract

We test the ability of the Decoy Effect to enhance debt collection efforts and find that by disclosing the Annual Percentage Rate (APR) in settlement offers, participants are less influenced by the decoy and more apt to select the repayment option that is in their best interest. At the same time, by reporting the APR, borrowers are more willing to make repayments on the modified loan, resulting in a net gain to debt collection efforts. Because disclosing the APR is Consumer Financial Protection Bureau (CFPB) compliant, this simple disclosure has the ability to increase debt collection returns while helping borrowers make better decisions when selecting debt modification repayment plans. Our results suggest an applicability to all types of defaulted debt including mortgages, sub-prime auto loans, credit cards, student loans, and payday loans.

Keywords: Decoy Effect, Mortgage Default, Asymmetric Dominance, Heuristics, Debt Collection, CFPB.

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1. Introduction

Imagine you go to the concession stand at a movie theater and see a small popcorn offered at a price of \$3.00 and a large offered at \$7.00. You are torn between the two options resulting in a 50/50 preference for selecting either size. Now suppose there is a third option: a medium sized popcorn offered at \$6.75. If you now prefer to buy the large popcorn because for just \$0.25 (\$7.00 - \$6.75) more you can get a lot more popcorn, then you are susceptible to the decoy effect. The decoy effect capitalizes on the idea that the brain makes pairwise comparisons instead of rank-ordering alternatives independently. The medium sized popcorn is termed the “decoy” because while it is inferior to the large popcorn, it still influenced your preference to shift from a 50/50 indifference between the small and large popcorn to a strong preference for the large popcorn.

Previous studies have documented that the decoy effect can be used to influence decision-making in many areas, ranging from the selection of consumer goods such as microwaves, running shoes, TVs, and canned food, to financial investments and even social partners (Ariely & Wallsten 1995; Doyle *et al.* 1999; Sedikides *et al.* 1999; Schwarzkopf 2003). Seiler (2018) was the first to apply this theory to real estate by examining the ability of the decoy effect to enhance defaulted mortgage debt collection efforts. The study demonstrated that the concept could be used to nudge borrowers to self-select into a higher (implied) APR repayment schedule. While these findings represented a major step forward in applying behavioral tools and constructs to economic problems in real estate markets, the practical application of the analysis was potentially limited by a number of experimental conventions. For example, the study did not report the APR to borrowers begging

the question of how effective the theory would be if borrowers received full disclosure, a requirement in some, but not all loan restructuring. Similarly, while the experiment asked participants to ignore any income constraints, it is entirely possible some borrowers sought the lowest monthly repayment stream instead of the lowest (implied) APR. Additionally, the paper employed re-payment APRs inconsistent with the market's appetite for re-sale. Once defaulted loans have re-performed for 6-12 months, they are sold to investors who prefer specific APRs. Since these do not match the returns employed in Seiler (2018), it remains an empirical question as to whether or not the decoy effect would still work in a more realistic market setting. Finally, the investigation did not examine the ability of various repayment options to impact participation rates. Fundamentally, there are two primary ways to bolster returns for debt collectors: (a) increase the Annual Percentage Rate (APR) on the repayment stream when restructuring debt that is to be repaid, and/or (b) increase the repayment rate within the pool of defaulting borrowers.

Using a large participant sample motivated by financial rewards to accurately complete our experiment, we test the effectiveness of three variants of the decoy effect on the participant's ability to select the best loan modification. The variants include: (1) providing vs. suppressing the APR, (2) having the optimal repayment amount be the most affordable (i.e., lowest) monthly payment, and (3) altering the lowest available APR. In each treatment, we also examine the willingness of borrowers to repay the loan as this is a huge component of debt collection returns.

Previewing our primary results, we find that by disclosing the APR during mortgage default settlement offers (which is required in some, but not all modifications), participants are less likely to be fooled by the decoy and more likely to select the repayment option that is most advantageous to them. At the same time, when participants are provided with the APRs associated with each mortgage default settlement option, they are more willing make repayments on the debt. Taken

together, these results suggest that disclosing the APR when presenting borrowers with repayment options may be beneficial for both the consumer and investors in resolving toxic debt.

Furthermore, our experiment is intentionally designed so that the results should be generalizable to alternative debt collection efforts, such as those pertaining to the burgeoning sub-prime auto loan market, credit cards, student loans, payday loans, and so forth. Moreover, the examined technique is entirely compliant with Consumer Financial Protection Bureau (CFPB) regulations. In fact, it may well offer a prime example of how the debt collection industry can implement a kinder, gentler approach that would substantially improve its image (which has been heavily scrutinized in the past), while simultaneously enhancing its profitability.

The remainder of this paper is organized as follows. Section 2 explores the theoretical foundations and conceptual underpinnings of the decoy effect, while Section 3 outlines our experimental design and highlights its applicability to mortgage default settlement negotiations. Our experimental data collection techniques and sample attributes are noted in Section 4, while our primary results are presented and explained in Section 5. Finally, Section 6 summarizes our results, explores their policy implications, and concludes.

2. Theoretical Background

The Independence of Irrelevant Alternatives Axiom (Arrow 1951) states that if a person prefers one object to another, this preference will not change if a third, lesser appealing object is offered. In other words, a person's decision between two choices should not be influenced by adding an inferior selection to the set of choices. However, Huber *et al.* (1982) discovered a violation of Arrow's axiom. They find that if an inferior, but similar choice is introduced, choices can be influenced due to the simplifying heuristics the human brain employs. This violation of the

Independence of Irrelevant Alternatives Axiom is called the decoy effect. Huber *et al.* (1982) argue that the human brain tends to make decisions by comparing one choice to another. If a clearly inferior, but similar option is introduced, the brain tends to evaluate the original object more favorably because the original object is now better than the newly introduced, lesser object.

Due to its clear applications in consumer purchasing behavior, the decoy effect has been extensively researched in marketing and psychology studies. For example, using a sample of psychology students, Ariely and Wallsten (1995) find evidence of the decoy effect in the decision to select microwaves, TVs and running shoes. Similarly, Doyle *et al.* (1999) test the robustness of the decoy effect and find that it continues to hold even when the inferior good that is introduced is not actually available to consumers. Performing an experiment with in-store purchases, they also find that the effect can be generalized from experiments with students' proposed purchases to actual purchases in "brick and mortar" stores.

Outside of the marketing literature, in what may be the most unusual and innovative application of the decoy effect to date, Sedikides *et al.* (1999) test the decoy effect's ability to influence the selection of a social partner, when very little concrete information is known. With a fictitious sample of potential dating partners who were rated based on physical, cognitive, and personality attributes, the authors find that by introducing a less desirable, but similar dating prospect, a participant could be influenced to choose a different dating partner once the decoy choice was introduced. The decoy effect has also been studied in finance, although far less frequently than in marketing or psychology. Of note, Schwarzkopf (2003) finds evidence of the decoy effect at work when examining portfolio allocations among three stocks based on the quality of earnings versus earnings estimates, source reliability versus earnings estimates, and source reliability

versus performance measures.¹ Taken together, the above studies provide strong and broad-based evidence consistent with the decoy effect materially influencing decision-making across a variety of economic settings.

Seiler (2018) was the first to apply the decoy effect to a real estate setting, and while this study provided the foundation for its application to the mortgage market, before debt collection firms and governments consider implementing this idea in the marketplace several additional questions must be answered. Specifically, (1) does disclosing the APR materially impact the effectiveness of the decoy effect? (2) do borrowers focus more on selecting the lowest APR or on the lowest monthly repayment being offered? (3) will the decoy effect still work if more realistic market resale APRs are used? and (4) does disclosing the APR impact borrower repayment rates? The current investigation answers all these questions allowing firms and the government to adopt this simple to implement, CFPB compliant technique.

3. Experimental Design

The goal of this study is to examine whether, and to what extent, the decoy effect can be employed to improve outcomes of the mortgage default settlement process for distressed debt investors and borrowers. Ideally, a field study would be used to test the hypotheses put forth in this paper. However, the regulatory environment created by the Dodd-Frank Wall Street Reform and Consumer Protection Act² has significantly reinforced financial firms' longstanding

¹ Additional studies examining the decoy effect include, but are not limited to, Ratneshwar *et al.* (1987); Simonson (1989); Wedell (1991); Mishra *et al.* (1993); Redelmeier and Shafir (1995); Highhouse (1996); Herne (1997); Herne (1998); Schwartz and Chapman (1999); Slaughter *et al.* (1999); Slaughter (2007); Lombardi (2009); Clippel and Eliaz (2012); Gerasimou (2013); and Ok *et al.* (2014).

² [Pub.L. 111-203](#); 124 [Stat. 1376](#)-2223.

tendencies to be very conservative in letting anyone other than employees have access to their proprietary data and borrowers. Secondary data, such as loan servicing records are of little to no use, as they do not reflect the theories and testable hypotheses put forward by the current investigation. When field studies are not feasible, the literature often uses experiments to address important research questions. Sefton and Yavas (1995) and Yavas, Miceli, and Sirmans (2001) were among the first papers to employ an experimental design in a residential real estate brokerage setting. More recently, Ikromov and Yavas (2012a,b), Seiler et al. (2012), Sahin, Sirmans, and Yavas (2013), Seiler (2014; 2015a,b; 2016; 2017, 2018), and Cypher et al. (2018) have popularized the use of experiments in answering real estate-related research questions that do not lend themselves to existing secondary datasets. Accordingly, we proceed with an experimental design.

In operationalizing this experiment, 1,775 participants were presented with instructions to imagine they had fallen behind on their mortgage payments and are being presented with three options to resolve the remaining deficiency amount. To remove the budget constraint, participants are also informed they have sufficient funds to afford any of the options put forward to them. Participants are then presented eight alternative scenarios, one at a time, in random order to avoid presentation order effects. Before moving to the next scenario, participants are asked to rate their willingness to make payments on the selected payment plan on a scale from 1 (least willing) to 5 (most willing).

Insert Table 1

Table 1 outlines the eight scenarios presented to each of the participants. As just noted, each scenario provides three mortgage default settlement options. The options differ in number of

total payments, payment amount, and APR. For ease of presentation within this paper, the options are reported so that Option 1 is the best choice for the borrower, Option 2 is the second-best choice, while Option 3 is the decoy, or least desirable choice. The decoy is designed to resemble Option 2 in terms of the monthly payment amount, but because of its greater number of total payments, it is strictly inferior. Once again, to be clear, the purpose of the decoy is not to be selected by the borrower, but instead to move the borrower away from selecting Option 1 in favor of selecting Option 2.

Continuing, we conduct our analysis in two stages. First, we employ a between-subjects design, which means we only examine the results from the first scenario seen by each participant. This experimental design is often preferred because participants remain unaware that other scenarios even exist. As such, this design offers the cleanest test of our hypotheses. As a robustness check, we also report results using a within-subjects design, which involves utilizing data from all eight scenarios for each participant. We consider this a mere robustness check because it is possible participants will learn the purpose of our study as they go through each scenario.

To evaluate the ability to impact the decoy effect, we utilize three treatments: APR disclosure, payment affordability, and lowest available APR. Mortgage modifications that go through a formal government program, such as the Home Affordable Modification Program (HAMP)³, must report the APR associated with their modification offerings. However, this is not the case for many debt collectors who seek to modify loans outside the confines of an official program. As such, it is worthwhile to investigate the impact of requiring the reporting of APR on a loan modification versus allowing the APR to be suppressed.

³ <https://www.hmpadmin.com/portal/programs/hamp.jsp>. Accessed on March 27, 2018.

For the APR disclosure treatment, Scenarios 2, 4, 6, and 8 provide the APR, the number of total payments, and the monthly payment amount for each option. We expect that requiring APR disclosure will significantly mitigate the decoy effect, as borrowers will be less likely to be fooled by the decoy. Alternatively stated, reporting the APR will reduce the error rate of the borrower, thus resulting in a lower rate of return for the debt collector.

In the payment affordability treatment, evident in Scenarios 5, 6, 7, and 8, the most advantageous option for the borrower is also the lowest, most affordable monthly payment. We expect that, even though participants are counseled that they have adequate funds to cover any of the payment streams, borrowers may well still prefer lower monthly payments. This preference should lead to reduced (increased) error rates when the lowest payment is also the optimal (sub-optimal) payment.

When debt collectors get defaulted loans to cure and remain current for 6 to 12 months, they have the ability to resell these notes to marketplace participants willing to pay a greater amount for this now less risky stream of cash flows. Pricing these renewed assets is a function not only of their newly lower (perceived) risk level, but is also based on the emerging APR associated with the modified annuity stream. Because different market participants prefer different emerging APRs associated with these modified loans, we next seek to test whether our results are sensitive to different APR ranges. For the lowest available APR treatment, in Scenarios 1, 2, 5, and 6, the best option is a 0% APR, while Scenarios 3, 4, 7, and 8 have the lowest APR of 6%. APRs between paired scenarios are equally spaced by exactly 9%⁴. We do not expect this shift in

⁴ Spacing the APRs associated with the three options by a lesser (greater) percentage will reasonably be expected to allow the decoy effect to be more (less) effective. We selected this amount because a 9% increase in yield is certainly enough of a boost in debt collector returns to warrant serious policy adoption consideration.

the APR scale to have any impact on the effectiveness of the decoy effect, but instead use this as a robustness test speaking to the effectiveness of the theory.

4. Data

To identify subjects for our study, we use MTurk, an online clearinghouse with access to people across the country who stand ready to partake in exchange for a participation fee of \$1.07.⁵ We then financially incentivize participants to fully engage by providing a bonus equal to the initial fee if they perform in the top third of the sample – defined as answering all eight scenarios correctly.⁶

MTurk is effectively an exchange clearinghouse. They host our experiment on their website and manage the accounting aspect of accepting our one-time payment that needs to be individually distributed to thousands of participants. MTurk further provides anonymity for participants and offers researchers tools to screen for high-quality contributors, in exchange for a 10% clearinghouse fee. Accordingly, we use several screening tools to ensure the validity of our sample.

The first method for ensuring the validity of the sample is to require that only potential participants with a lifetime approval rating of at least 95% receive an invitation to join the study. After each study, researchers report to MTurk whether or not the participant should be paid for completing the task. Refusing to compensate a participant not only prevents them from getting

⁵ Anyone can join MTurk by going to their website and registering as a “worker.” While MTurk does not publish the profile of their workers, it is reasonable to assume they cover a broad spectrum of society. Any adult with a computer and access to the Internet is eligible to join. www.mturk.com. Accessed on March 27, 2018.

⁶ Funding for this experiment comes from the personal research budget of one of the authors.

paid, but also substantially hurts them from being able to participate in future experiments. As such, subjects are incentivized to fully engage.

If we allow participants who rush through the experiment to receive the participation fee without making a good-faith effort to complete our experiment successfully, we introduce noise.

Therefore, in addition to restricting the participants invited to the experiment, we also build several validity checks into the experiment itself. The second validity test is that we require a minimum of five seconds to read the opening instructions⁷. The timer placed on each screen is hidden to the participant, so there is no way they even know we are measuring such behavior.

During the experiment, we further include two different questions that instruct the participant to select a specific number, say “4,” to ensure they are at least reading each question. Finally, we compare the zip code collected on one screen to a dropdown menu of city and state in another screen. Comparing the two offers the opportunity to cross-reference for random entries. Starting from a beginning sample of 1,922 participants, after applying the screens, we have a final sample of 1,775 between-subject observations resulting in a total sample of 14,200 (1,775 x 8) within-subject observations.

5. Results

Main results for the three treatments

Insert Table 2

We next turn to the main results of our investigation into ways to dampen the decoy effect. Table 2 reports tests comparing the error rates for scenarios that are identical except that in Scenarios 2,

⁷ Employing a more selective 10 second screen yields qualitatively identical results.

4, 6, and 8, the APR is explicitly stated, while in Scenarios 1, 3, 5, and 7, the borrowers are not provided the APR. Panel A describes results for a between-subjects design, using an Independent-Samples T-Test and including only the observations from the first scenario encountered by each participant. Panel B reports a within-subjects design, pooling results from all participants across all scenarios. Panel C provides results for combinations of similar scenarios. All three panels convey compelling evidence that disclosing the APR significantly reduces the error rate. Comparing Scenarios 1 and 2 in Panel A, divulging the APR reduces the percentage of participants who failed to select the most favorable mortgage payment option from 39.6% to 11.0%, a difference significant at the 1% level. Similar results are observed in the remaining between-subject design results in Panels A and C, as well as in the within-subject design in Panel B.

Insert Table 3

Having found support for our hypothesis that providing the APR of each option to the borrower will dampen the decoy effect and influence the borrower to select a more optimal mortgage payment, we proceed to examine the results for the next treatment: affordability of payments. We predict that the decoy effect will be diminished in scenarios where the lowest payment is also the most optimal for the borrower. Although participants are given instructions that all payments are within their budgets, we expect that concern for day-to-day expenses will lead some participants to select the lowest payment offered. Therefore, we compare participant error rates between scenarios which are similar, except that Scenarios 5, 6, 7, and 8 have the optimal payment as the lowest mortgage payment offered, whereas in Scenarios 1, 2, 3, and 4, the optimal payment is not the lowest offered. As in the previous table, Panel A displays results of Independent-Samples T-Tests for a between-subjects design, Panel B reports a within-subjects design, and Panel C

presents relevant combinations of scenarios. As in Table 2, we find strong support for our hypothesis that the decoy effect can be reduced by structuring mortgage repayment options so that the preferred option is also the option that has the lowest monthly payment. In scenarios where the lowest payment is also the optimal payment, participants are significantly less likely to be influenced by the decoy to make an incorrect choice. In fact, in Panels A, B, and C, the error rates for the lowest-payment-best scenarios are all lower than the scenarios where the lowest payment is not optimal, and further, these differences are statistically significant at the 1% level.

Insert Table 4

The final treatment we explore is the lowest available APR. Once again, we compare scenarios which are similar except that in Scenarios 1, 2, 5, and 6, the optimal payment has an APR of 0%, while in Scenarios 3, 4, 7, and 8, the optimal payment has an APR of 6%. The APRs in all scenarios are evenly spaced at either 0%-9%-18% or 6%-15%-24%. Recall that this treatment is a robustness check - we do not expect it to reduce the decoy effect. In Table 4, Panels A and C report the results of Independent-Samples T-Tests for only the first scenario seen by a respondent (a between-subjects design). Panel B reports Paired-Samples T-Tests for all responses to each scenario (a within-subjects design). Consistent with expectations, we find little evidence that the treatment dampens the decoy effect. In Panels A and B, we find weak evidence that participants are more likely to select the incorrect payment option when the lowest APR is 0% in three cases. However, the majority of the T-Tests, including all of Panel C, show no significant differences between scenarios with and without the treatment.

Insert Table 5

Before progressing to our multivariate results, in Table 5 we examine the behavioral and demographic characteristics of the experimental respondents. The behavioral characteristics collected include measures of each participant's financial literacy (*FinancialLiteracy*), previous default experience (*PrevDefaultD*), and personal demeanor (*AgreeableAvg*). Since we are interested in each borrower's ability to accurately determine the most advantageous mortgage payment, an understanding of their level of financial literacy is important. Following Zahirovic-Herbert *et al.* (2016), we measure the respondent's understanding of financial concepts by asking five questions that have been used in prior research to assess the financial acumen of borrowers. These questions are originally from the FINRA Investor Education Foundation, and are the industry standard for measuring financial knowledge.⁸ To capture *FinancialLiteracy*, we use the number of correct responses by each participant to five of these financial literacy questions, divided by five to arrive at a percentage score. Higher values thus indicate increased financial literacy. As with financial literacy, a respondent's mortgage default history may inform his or her decisions about which payment option to select, as well as their willingness to make payments on the selected option. Our *PrevDefaultD* indicator variable attempts to control for this possibility. This variable assumes the value of one if the respondent has previously defaulted on a mortgage, and zero otherwise. Our final behavioral characteristic relates to each respondent's general personality traits and disposition. More specifically, *AgreeableAvg* is the participant's average score across four questions rating their general level of agreeableness on a scale of 1 (least agreeable) to 5 (most agreeable). Following Goldberg *et al.* (2006) these questions are derived from the International Personality Item Pool, and are rescaled for consistent analysis. In general,

⁸ For further information on these metrics, see <http://www.usfinancialcapability.org/quiz.php>. Accessed on March 27, 2018.

more agreeable participants may well exhibit increased propensities to report that they make mortgage repayments as negotiated and agreed upon.

Turning to the financial and economic characteristics of our participants, we capture income and wealth dynamics using ranges. Income groupings include seven distinct classifications. The first six groupings represent sequentially increasing \$20,000 wage ranges, while the final category includes all observations with incomes greater than \$120,000 per year. Similarly, we include nine wealth ranges of approximately \$200,000 each. More specifically, category one includes all borrowers with a self-reported net worth of less than negative \$400,000, categories two through eight sequentially capture respondents with a net worth in monotonically increasing \$200,000 steps, while our final wealth bucket includes all respondents with a net worth in excess of \$1 million.

With respect to the demographic composition of our experimental respondents, we construct and include an array of binary/dummy control variables identifying whether each respondent is male (MaleD=1 if yes, 0 otherwise), Caucasian (CaucasianD=1 if yes, 0 otherwise), married (MarriedD=1 if yes, 0 otherwise), and/or has at least one dependent child living at home (ChildD=1 if yes, 0 otherwise). We also capture the chronological age of each participant (measured in years), as well as their self-reported ethnicity.

Finally, with respect to geographic representation we examine two alternative metrics. First, we construct a problem state binary/dummy control variable (*ProblemStateD*) that is set equal to one if the respondent resides in a state whose real estate prices were severely adversely affected by the financial crisis, and zero otherwise. These states include California, Florida, Nevada, Arizona, and Michigan. Second, we identify which of four geographic regions of the country the

respondent is domiciled within to evaluate the possibility of spatial clustering in survey responses and/or attributes across our experimental scenarios.

Examining the data in Table 5 reveals the sample of 1,775 borrowers is reasonably aware of financial concepts based on a mean financial literacy score of 0.712, a number consistent with the 69.4% found in Zahirovic-Herbert *et al.* (2016). Only 8% of respondents have previously defaulted on a mortgage, while the respondents are also generally amenable with an average agreeable score of nearly 4.0 on a 5-point scale. Respondents are also similar to the national distribution of homeowners, except our sample is younger than the typical homeowner.

According to the 2013 American Housing Survey, 86.0% of owner-occupied units have Caucasian homeowners compared to 86.2% in our study; 59.3% of homeowners are married versus 67.5% in our study; and the median homeowner's age is 55 versus 36 in our sample⁹.

Respondents are also well-distributed throughout the country, among age groups, ethnicities, and gender, adding further assurance as to the representative nature of our sample and potential generalizability of our findings.

Multivariate results for main treatments

Insert Table 6

In most research with psychological theories, only univariate analyses are performed. However, in keeping with the norms of publishing in the financial/economics literature, we present the results of logistic regressions in Table 6 estimated exclusively using a between-subjects design considering only the first scenario encountered by each of the 1,775 participants. This design

⁹ 2013 American Housing Survey, <http://www.census.gov/programs-surveys/ahs/data/2013/ahs-2013-summary-tables/national-summary-report-and-tables---ahs-2013.html>

ensures that the respondents are not influenced by other scenarios later in the experiment, and may thus be viewed as a conservative estimation approach. The dependent variable is set equal to one if the participant answered the first question *wrong* (i.e., they selected a payment plan that did not minimize their expected repayment costs), and zero otherwise. In Model 1 of Table 6, dummy variables for each treatment category are included as independent variables. As each scenario may have more than one type of treatment, there are no concerns about multicollinearity, and all three dummy variables may be simultaneously included. Model 2 adds behavioral characteristics, while Model 3 adds our socio-economic and demographic attributes. The results strongly support our hypotheses. Both the *APR Disclosed* and *Lowest Payment Best* indicator variables are (significantly) negatively associated with respondent errors in choosing the optimal repayment option. Consistent with both ex-ante expectations and our univariate results, we do not find support for the third treatment alternative, as there is no significant difference when the lowest offered APR is 0% versus 6%.

While not the primary focus of this investigation, results surrounding the behavioral, socio-economic, and demographic attributes also provide a number of interesting insights. Notably, borrowers with a higher financial literacy score and higher income level are less likely to self-select the sub-optimal payment. Caucasian respondents also are less likely to commit an error when selecting the optimal repayment option. On the other hand, men and respondents from a (problem) state where housing prices experienced a significant downturn are marginally more likely to choose a sub-optimal mortgage repayment option. Taken together, the multivariate

results strongly support the univariate results and suggest disclosing the APR and/or having the lowest payment as the best option offered both significantly reduce the decoy effect.¹⁰¹¹

Treatment impact on willingness to make payments

Insert Table 7

Recall that there are two ways in which a debt collector can increase the return on collectible debt. The first is to agree to a payment stream associated with a greater APR. The second is to experience a higher collection rate. To this end, our final set of analyses investigate whether the treatments that dampen the decoy effect have any impact on the borrowers' willingness to make repayments. After each scenario, respondents are asked how likely they are to make payments on the selected mortgage repayment option, on a scale from 1 (least willing) to 5 (most willing).

Table 7 reports the results from Independent-Samples T-Tests in Panels A, C, and E, and Paired-Samples T-Tests for Panels B and D. Panels A through D test for significant differences between individual scenarios, while Panel E reports combinations of scenarios by treatment category.

Taken together, while significance levels vary across individual comparisons, these results generally support the contention that borrowers are more willing to make payments on their mortgage after a default if either: 1) the APR is disclosed to them, or 2) a 0% APR is available.

¹⁰ Although our instructions indicate that the respondents should not be concerned about the size of the payment, some respondents may include their actual income constraints in their payment decision. As a robustness check, when restricted to higher income respondents (incomes over \$60,000), our results remain unchanged (available upon request).

¹¹ We also investigated whether the results are sensitive to participant and state-specific attributes. Individual characteristics tested include the level of financial literacy, previous default, and net worth. State-specific attributes investigated center around foreclosure rules including whether the states require judicial foreclosure, is a recourse state, whether the state allows statutory redemption, and average foreclosure time. Our results are robust to all these additional checks.

Since repayment of the agreed upon loan is required for successful debt collection efforts, this is an important finding.

Insert Table 8

The regression results in Table 8 further confirm the univariate results from Table 7.

Specifically, we regress the borrower's willingness to repay against the treatment category dummy variables, behavioral characteristics, and socio-economic and demographic attributes.

We find that respondents who are either provided the APR, or are given the choice of a 0% APR, are more willing to make payments on the mortgage. Of note, we also find that borrowers who have previously defaulted on a mortgage are less willing to make payments on the loan than those who have not. Additionally, as hypothesized, the agreeable score is positively related to delinquent borrower willingness to make repayments. That is, respondents who rated themselves as agreeable are more apt to be willing make repayments on the debt. Finally, a cursory review of the socio-economic and demographic control variables reveals wealthier borrowers and younger borrowers appear more willing to repay their renegotiated debts, while borrowers living in the Southeastern region of the United States appear less likely.¹²

6. Policy Implications and Conclusions

The effects of the global financial crisis are still being felt in the financial markets. One particularly important consequence of the crisis is the current high rate of default on mortgage debt. The goal of the present study is to investigate whether or not the decoy effect may be useful

¹² While beyond the scope of the current investigation, these latter results with respect to our control variables may well be due, at least in part, to issues of perceived affordability of the mortgage repayment options. While all experimental respondents were told to assume they could afford all proffered alternatives, the effective cost or implied magnitude of the designated terms may well be perceived differently across wealth, age, and/or geographic groupings.

in enhancing mortgage (and other toxic) debt collection efforts. Our central finding is that when the APR is disclosed in mortgage default offers, borrowers are less likely to be duped by the decoy, and more likely to select the repayment option that is most advantageous to them. At the same time, our results also demonstrate borrowers exhibit a greater willingness to make repayments on the debt when the APR is disclosed. The net effect is estimated to yield a positive marginal return for the debt collector. Moreover, disclosing the APR is unmistakably Consumer Financial Protection Bureau (CFPB) compliant.

Although our study is centered around mortgage default negotiations, the experimental design is structured so that the results might be generalizable and applied to other types of defaulted debt, including sub-prime auto loans, credit cards, student loans, and payday loans. As such, the results of this study make a compelling case for disclosing the APR in default offers, even if such disclosure is not required. The goodwill and trust that is garnered as a result of being forthright with the borrower may well lead the borrower to act in kind by making payments on the newly renegotiated debt. Since disclosing the APR makes it easier for borrowers to make sound, informed decisions *and* increases the returns to distressed debt investors by increasing the repayment rate, debt collection entities should consider this new strategy to enhance debt collection efforts.

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Table 1. Scenarios to Test for the Decoy Effect

This table reports the 8 scenarios shown to each participant. Although we randomized the order during the experiment to avoid presentation order effects, the options are presented in this table from most attractive to the borrower (Option 1 = 0% or 6% APR) to least attractive (Option 3 = 18% or 24% APR). Option 2 is exactly in the middle (9% or 15% APR). Option 3, the decoy, is meant to induce movement from Option 1 to Option 2, a less desirable choice for the borrower. The scenarios also differ in that for Scenarios 1, 3, 5, and 7, the APR is not explicitly stated, while for Scenarios 2, 4, 6, and 8 the APR is provided. For Scenarios 1-4, the optimal choice has the highest payment amount, while the optimal choice is the lowest payment amount for Scenarios 5-8.

Scenario 1 (w/o APR)			
Scenario 2 (w/APR)			
Option	N	PMT	APR
1	36	\$2,777.78	0%
2	48	\$2,488.50	9%
3	62	\$2,488.75	18%

Scenario 3 (w/o APR)			
Scenario 4 (w/APR)			
Option	N	PMT	APR
1	40	\$2,764.55	6%
2	57	\$2,463.48	15%
3	84	\$2,467.58	24%

Scenario 5 (w/o APR)			
Scenario 6 (w/APR)			
Option	N	PMT	APR
1	46	\$2,173.91	0%
2	49	\$2,446.29	9%
3	64	\$2,441.53	18%

Scenario 7 (w/o APR)			
Scenario 8 (w/APR)			
Option	N	PMT	APR
1	52	\$2,188.67	6%
2	58	\$2,434.30	15%
3	87	\$2,434.75	24%

Table 2. T-Tests for the Decoy Effect: Provision of APR

This table presents the results from T-Tests for 1,775 participants across eight scenarios. Scenario comparisons differ by whether the APR is provided to the participant or not, as indicated. Significance levels: *** = 1%; ** = 5%; * = 10%.

	APR Provided	N	% Wrong	p-value
Panel A: First Scenario Seen, APR Provision Differs				
Scenario 1	No	207	39.6%	0.000***
Scenario 2	Yes	237	11.0%	
Scenario 3	No	231	32.0%	0.000***
Scenario 4	Yes	187	10.2%	
Scenario 5	No	240	8.3%	0.009***
Scenario 6	Yes	221	2.7%	
Scenario 7	No	242	7.0%	0.045**
Scenario 8	Yes	210	2.9%	
Panel B: Total Sample, APR Provision Differs				
Scenario 1	No	1,775	41.0%	0.000***
Scenario 2	Yes	1,775	12.1%	
Scenario 3	No	1,775	34.5%	0.000***
Scenario 4	Yes	1,775	12.7%	
Scenario 5	No	1,775	7.8%	0.000***
Scenario 6	Yes	1,775	2.4%	
Scenario 7	No	1,775	6.3%	0.000***
Scenario 8	Yes	1,775	2.9%	
Panel C: First Scenario Seen, Scenario Combinations				
1&5	No	447	22.8%	0.000***
2&6	Yes	458	7.0%	
3&7	No	473	19.2%	0.000***
4&8	Yes	397	6.3%	

Table 3. T-Tests for the Decoy Effect: Affordability of Payments

This table presents the results from the Affordability T-Tests for the full sample of 1,775 participants across eight scenarios. Scenario comparisons differ by whether the best option presented to the user is also the option with the lowest monthly payment. Significance levels: *** = 1%; ** = 5%; * = 10%.

	Lowest Payment Best	N	% Wrong	p-value
Panel A: First Scenario Seen, Lowest Payment Best Differs				
Scenario 1	No	207	39.6%	0.000***
Scenario 5	Yes	240	8.3%	
Scenario 2	No	237	11.0%	0.001***
Scenario 6	Yes	221	2.7%	
Scenario 3	No	231	32.0%	0.000***
Scenario 7	Yes	242	7.0%	
Scenario 4	No	187	10.2%	0.003***
Scenario 8	Yes	210	2.9%	
Panel B: Total Sample, Lowest Payment Best Differs				
Scenario 1	No	1,775	41.0%	0.000***
Scenario 5	Yes	1,775	7.8%	
Scenario 2	No	1,775	12.1%	0.000***
Scenario 6	Yes	1,775	2.4%	
Scenario 3	No	1,775	34.5%	0.000***
Scenario 7	Yes	1,775	6.3%	
Scenario 4	No	1,775	12.7%	0.004***
Scenario 8	Yes	1,775	2.9%	
Panel C: First Scenario Seen, Scenario Combinations				
1&3	No	438	34.6%	0.000***
5&7	Yes	482	7.7%	
2&4	No	424	10.6%	0.000***
6&8	Yes	431	2.8%	

Table 4. T-Tests for the Decoy Effect: Lowest Available APR

This table presents the results from the Lowest Available APR T-Tests for the full sample of 1,775 participants across eight scenarios. Scenario comparisons differ by whether the lowest APR presented to the participant is 0% or 6%. Significance levels: *** = 1%; ** = 5%; * = 10%.

	Lowest APR 0%	N	% Wrong	p-value
Panel A: First Scenario Seen, APR Provision Differs				
Scenario 3	No	231	32.0%	0.099*
Scenario 1	Yes	207	39.6%	
Scenario 4	No	187	10.2%	0.789
Scenario 2	Yes	237	11.0%	
Scenario 7	No	242	7.0%	0.590
Scenario 5	Yes	240	8.3%	
Scenario 8	No	210	2.9%	0.929
Scenario 6	Yes	221	2.7%	
Panel B: Total Sample, APR Provision Differs				
Scenario 3	No	1,775	34.5%	0.000***
Scenario 1	Yes	1,775	41.0%	
Scenario 4	No	1,775	12.7%	0.426
Scenario 2	Yes	1,775	12.1%	
Scenario 7	No	1,775	6.3%	0.026**
Scenario 5	Yes	1,775	7.8%	
Scenario 8	No	1,775	2.9%	0.257
Scenario 6	Yes	1,775	2.4%	
Panel C: First Scenario Seen, Scenario Combinations				
3&7	No	473	19.2%	0.183
1&5	Yes	447	22.8%	
4&8	No	397	6.3%	0.687
2&6	Yes	458	7.0%	

Table 5. Univariate Summary Statistics

This table reports univariate summary statistics for variables considered in the regression analysis.

Variable	N	Mean	Std. Dev.	Min.	Max.
<i>Behavioral Characteristics</i>					
FinancialLiteracy	1,775	0.712	0.171	0	1
PrevDefaultD	1,775	0.080	0.271	0	1
AgreeableAvg	1,775	3.962	0.819	1	5
<i>Socio-Economic and Demographic Attributes</i>					
Income	1,775	3.633	1.628	1	7
NetWorth	1,775	3.912	1.769	1	9
MaleD	1,775	0.424	0.494	0	1
MarriedD	1,775	0.675	0.468	0	1
CaucasianD	1,775	0.862	0.345	0	1
ChildD	1,775	0.574	0.495	0	1
Age	1,775	38.088	10.519	19	76
ProblemStated	1,775	0.217	0.412	0	1
Ethnicity					
Caucasian	1,530	86.2%			
African American	88	5.0%			
Hispanic	61	3.4%			
Asian	69	3.9%			
Other	27	1.5%			
Region					
Midwest	437	24.6%			
Northeast	353	19.9%			
Southeast	674	38.0%			
West	311	17.5%			

Table 6. Logistic Regression Results: Treatment by Category

This table reports the results from three logistic regressions where the dependent variable is 1 if the participant answered the first question wrong, and 0 otherwise. Robust standard errors are reported inside the parentheses. Significance levels: *** = 1%; ** = 5%; * = 10%.

Variables	(1)	(2)	(3)
<i>Treatment Category</i>			
APR Disclosed	-1.457*** (0.168)	-1.527*** (0.167)	-1.564*** (0.170)
Lowest Payment Best	-1.787*** (0.173)	-1.851*** (0.176)	-1.875*** (0.179)
Zero Lowest APR	0.222 (0.147)	0.210 (0.149)	0.207 (0.151)
<i>Behavioral Characteristics</i>			
FinancialLiteracy		-1.934*** (0.418)	-1.675*** (0.439)
PrevDefaultD		0.217 (0.267)	0.214 (0.284)
<i>Socio-Economic and Demographic Attributes</i>			
Income			-0.110** (0.053)
NetWorth			-0.082 (0.050)
MaleD			0.271* (0.161)
MarriedD			0.234 (0.194)
CaucasianD			-0.464** (0.217)
ChildD			0.086 (0.186)
Age			-0.013 (0.009)
MidwestD			0.428* (0.250)
NortheastD			0.357 (0.274)
SoutheastD			0.294 (0.237)
ProblemStatedD			0.336* (0.198)
Constant	-0.729*** (0.121)	0.650** (0.315)	1.371*** (0.491)

Observations	1,775	1,775	1,775
McFadden R2	0.150	0.166	0.185
Chi-square test	154.9	178.0	200.5
Log-Likelihood Full Model	-613.6	-601.4	-588.2
Cox-Snell R2	0.115	0.127	0.140
Nagelkerke R2	0.206	0.227	0.251
Area Under ROC Curve	0.766	0.779	0.801

Table 7. T-Tests for the Willingness to Repay Debt

This table presents the results from the participants' willingness to repay the debt, presented in the eight scenarios for the full sample of 1,775 respondents. Significance levels: *** = 1%; ** = 5%; * = 10%.

		N	Willingness	p-value
Panel A: First Scenario Seen, APR Provision Differs				
APR Provided				
Scenario 1	No	207	3.870	0.606
Scenario 2	Yes	237	3.932	
Scenario 3	No	231	3.697	0.529
Scenario 4	Yes	187	3.775	
Scenario 5	No	240	3.796	0.000***
Scenario 6	Yes	221	4.235	
Scenario 7	No	242	3.694	0.295
Scenario 8	Yes	210	3.824	
Panel B: Total Sample, APR Provision Differs				
APR Provided				
Scenario 1	No	1,775	3.878	0.000***
Scenario 2	Yes	1,775	4.063	
Scenario 3	No	1,775	3.731	0.506
Scenario 4	Yes	1,775	3.719	
Scenario 5	No	1,775	4.034	0.000***
Scenario 6	Yes	1,775	4.230	
Scenario 7	No	1,775	3.895	0.695
Scenario 8	Yes	1,775	3.889	
Panel C: First Scenario Seen, Lowest Payment Best Differs				
Lowest Payment Best				
Scenario 1	No	207	3.870	0.543
Scenario 5	Yes	240	3.796	
Scenario 2	No	237	3.932	0.006***
Scenario 6	Yes	221	4.235	
Scenario 3	No	231	3.697	0.982
Scenario 7	Yes	242	3.694	

Scenario 4	No	187	3.775	0.704
Scenario 8	Yes	210	3.824	
Panel D: Total Sample, Lowest Payment Best Differs				
Lowest Payment Best				
Scenario 1	No	1,775	3.878	0.000***
Scenario 5	Yes	1,775	4.034	
Scenario 2	No	1,775	4.063	0.000***
Scenario 6	Yes	1,775	4.230	
Scenario 3	No	1,775	3.731	0.000***
Scenario 7	Yes	1,775	3.895	
Scenario 4	No	1,775	3.719	0.000***
Scenario 8	Yes	1,775	3.889	
Panel E: First Scenario Seen, Scenario Combinations				
2,4,6,8 (APR)		855	3.950	0.002***
1,3,5,7 (no APR)		920	3.761	
5,6,7,8 (Lowest Best)		913	3.882	0.307
1,2,3,4 (Highest Best)		862	3.820	
1,2,5,6 (0% APR)		905	3.956	0.000***
3,4,7,8 (6% APR)		870	3.744	

Table 8. Regression Results for Willingness to Make Payments: Treatment by Category

This table reports the results from three regressions where the dependent variable is the participants' assessment of their willingness to repay the mortgage in the scenario seen on a scale of 1 (least willing) to 5 (most willing). Robust standard errors are reported inside the parentheses. Significance levels: *** = 1%; ** = 5%; * = 10%.

Variables	(1)	(2)	(3)
<i>Treatment Category</i>			
APR Disclosed	0.180*** (0.060)	0.178*** (0.059)	0.185*** (0.059)
Lowest Payment Best	0.067 (0.060)	0.060 (0.059)	0.069 (0.059)
Zero Lowest APR	0.204*** (0.060)	0.186*** (0.059)	0.193*** (0.059)
<i>Behavioral Characteristics</i>			
FinancialLiteracy		0.117 (0.174)	0.143 (0.182)
PrevDefaultD		-0.432*** (0.119)	-0.331*** (0.118)
AgreeableAvg		0.245*** (0.039)	0.261*** (0.040)
<i>Socio-Economic and Demographic Attributes</i>			
Income			-0.012 (0.020)
NetWorth			0.068*** (0.019)
MaleD			-0.031 (0.063)
MarriedD			0.078 (0.069)
CaucasianD			0.012 (0.088)
ChildD			-0.078 (0.065)
Age			-0.011*** (0.003)
Midwest			-0.059 (0.098)
Northeast			-0.020 (0.102)
Southeast			-0.197** (0.090)
ProblemStateD			-0.115 (0.084)
Constant	3.627***	2.621***	2.812***

	(0.060)	(0.212)	(0.252)
Observations	1,775	1,775	1,775
R-squared	0.013	0.047	0.066
Adjusted R-squared	0.011	0.043	0.057
F test	8.010	13.47	6.978
Prob >F	0.000	0.000	0.000