Moral Incentives: Experimental Evidence from Repayments of an Islamic Credit Card*

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Abstract

We study the role of morality in the decision to repay debts. Using a field experiment with a large Islamic bank in Indonesia, we find that moral appeals strongly increase credit card repayments. In our setting, all of the bank's late-paying credit card customers receive a basic reminder to repay their debt one day after they miss the payment due date. In addition, two days before the end of a ten-day grace period, clients in a treatment group also receive a text message that quotes an Islamic religious text stating that *"non-repayment of debts by someone who is able to repay is an injustice."* This message increases the share of customers meeting their minimum payment by about 15%. By contrast, sending either a simple reminder or an Islamic quote that is unrelated to debt repayment has no effect on the share of customers making the minimum payment. Clients respond more strongly to this moral appeal than to substantial financial incentives: receiving the religious message increases repayments by more than offering a cash rebate equivalent to 50% of the customer's minimum payment. We also find that removing religious aspects from the quote does not change its effectiveness, suggesting that the moral appeal of the message does not necessarily rely on its religious connotation. Finally, we find that resending the moral message to credit card customers who have received it previously is again effective, suggesting that repayment is not driven by the novelty of the message or the provision of new information.

Keywords: Credit Cards, Household Finance, Religion, Moral Suasion

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1 Introduction

The ability to collect debts is one of the main pillars of any financial system. While economists have extensively examined the importance of screening, monitoring, and reputational considerations, little attention has been paid to the role of morality in establishing a norm of debt repayment. Still, from ancient philosophy to contemporary news media, there are countless references to the moral aspects of repaying one's debts. In Plato's *Republic*, Socrates defines justice as "telling the truth and paying one's debts."[1] More recently, the burst of the real estate bubble left many observers puzzled by the fact that surprisingly few homeowners defaulted on mortgages whose value exceeded that of the property, while others suggested that moral considerations may have played an important role in these decisions.[2] Similarly, a vocal debate over the morality of failing to repay one's student loans has been featured prominently in major newspapers.[3] Issues of morality have also played an important role in the context of sovereign debt – for example, in the heated discussions on public debt and defaults in Argentina or Greece.[4]

In this paper, we study the moral aspects of debt repayment decisions. We use a field experiment with the universe of late-paying customers of the most popular Islamic credit card in Indonesia, the world's largest Muslim country. Islamic banking is a large and rapidly growing industry in Indonesia and around the world, with more than 300 banks in over 75 countries and approximately US$ 1.5 trillion in assets (World Bank, 2014). Islamic banks offer a range of financial products that comply with the principles of Islamic law and typically emphasize the ethical dimension of their business model. Their popularity suggests that, even in a comparatively secular country such as Indonesia, consumers care about ethical and religious issues when making financial decisions.[5]

The credit card in our experiment is issued by one of Indonesia's leading Islamic banks, which is part of a large, non-religious conglomerate and targets a relatively secular customer segment.[6] Prior

[1] There are also numerous references to the morality of debt in religious texts. An example from the Bible is *Romans 13:7-8*: "Give to everyone what you owe them [...] and let no debt remain outstanding." An example from Islam is *Shahih al-Bukhari 3:575*: "[...] The best among you are those who repay their debts handsomely." Many languages, including German and Hebrew, share the same word for "debt" and "guilt." Nietzsche offers a detailed account of this association and its influence on the development of social norms in *The Genealogy of Morals* (1887).

[2] See Wilkinson-Ryan (2011) and Guiso et al. (2013) for more on attitudes towards strategic default on mortgages.

[3] See, for example, Lee Siegel "Why I Defaulted on My Student Loans", *New York Times*, June 6, 2015. "Times Op-Ed Goes All In On Student Debt Silliness", *Forbes*, June 8, 2015.

[4] The prevalence of usury laws throughout history illustrates that moral issues regarding debt are not specific to the debtor's side. In the context of public debt, philosophers have questioned not only the morality of default but also the morality of debt itself. The French philosopher Montesquieu, for example, argued that public debt is fundamentally immoral because it "takes the true revenue of the state from those who have activity [...], to convey it to the indolent." Moral arguments have also played a prominent role in debates on debt forgiveness for highly indebted poor countries. See, for example, William Easterly "Debt Relief". *Foreign Policy*, December 2001.

[5] References to moral values are also used in other areas of finance. Many investment management firms offer socially responsible investment (SRI) products that do not invest in "sin stocks," including purveyors of alcohol, tobacco, and gambling, or firms linked to unethical practices. Examples include the *HSBC Ethical Global Equity Fund* or the *iShares Human Rights Fund*. SRIs account for approximately US$ 5 trillion in assets worldwide.

[6] Not all clients of Islamic banks are driven by religious motivations. Approximately 10 percent of credit card clients at our partner bank are not even Muslim. This is roughly the same as the share of non-Muslims in the Indonesian

to our study, the bank had independently introduced a text messaging system that automatically sends reminders to customers who have not made the required minimum payment one day after the due date. Between February 2015 and April 2016, we worked with the bank to develop a second set of messages that included basic reminders as well as moral appeals. These messages were randomly assigned at the individual customer level and sent to late-paying customers sixty hours before the end of a ten-day grace period.[7] A control group received only the first reminder, right after the due date, but did not receive any of the additional messages.

Our main treatment involves a moral appeal that refers to the Islamic religious doctrine on non-repayment of debts. The text uses a quote from the *Shahih al-Bukhari*, one of the main religous texts in Sunni Islam, which is widely used as a source of Islamic law and well known among Indonesian Muslims:

> *The Prophet (Peace and blessings be upon Him) says: "non-repayment of debts by someone who is able to repay is an injustice." (Imam al-Bukhari) Please repay your credit card balance at your earliest convenience. Call [customer service number].*

The design of our experiment has three important features that help us identify the effect of moral appeals on repayment decisions. First, debt repayment is a common financial decision with high stakes. Second, the experiment is implemented using text messages, sent privately through the bank's automated system. This allows us to address the moral appeal to delinquent customers directly. Third, the bank routinely uses text messages to communicate with its customers. Reminders with religious or moral content, such as those in our experiment, are common in these messages. In fact, the bank had previously used the religious quote employed in our experiment in phone calls with delinquent customers. Hence, the channel of communication used in our experiment is both natural and credible in this setting.

We document a strong effect of moral appeals on repayment. In our preferred specification, receiving the moral message raised the share of customers meeting their minimum payment by 15% above the 34% of customers making the minimum payment by the deadline in the control group.

In order to assess the economic magnitude of our main result, we benchmark the impact of the moral message against the effect of direct financial and reputational incentives. Our first benchmark is a financial incentive treatment, in which late-paying customers were sent a message offering a cash rebate equal to 50% of the outstanding minimum payment – or 5% of the customer's current debt – for making a payment before the deadline.[8] The cash rebate treatment increased

population. Many non-Muslim customers seem to be attracted by the zero overdraft fees the bank charges. While the card has no explicit interest rates, it charges fees proportional to the balance so that the pricing is similar to credit cards outside Islamic finance. We discuss the institutional details of our setting in Section 2.

[7] A customer is considered delinquent if the minimum repayment is not made by the end of the grace period. We discuss the consequences of becoming delinquent in Section 2.

[8] We offered a cash rebate rather than a discount on current payments to avoid liquidity constraint effects, so that the treatment focuses on customers' willingness rather than ability to repay.

repayment by 7% relative to the control group, which is less than half of the effect of receiving the moral message. Since a text message had to be sent in both cases but the rebate had additional costs, the moral appeal was significantly more cost-effective than direct financial incentives in encouraging repayment. Our second benchmark examines the effect of informing customers about the reputational consequences of non-repayment. To do so, a group of customers received text messages that informed them about the existence of the Indonesian credit registry and the adverse consequences of being reported for late repayment on future access to credit.[9] The reputational incentive treatment raised the probability of meeting the minimum repayment by nearly 30%. These results suggest that ethical and reputational considerations strongly affect repayment behavior in our setting.[10]

To better understand how the moral message affects repayment decisions, we conduct a series of additional interventions that allow us to test and rule out a number of alternative mechanisms. First, is the impact of the moral message simply due to a reminder effect? To address this possibility, a group of customers were sent a simple reminder message that did not contain a moral appeal. This message had no significant effect on repayment, ruling out this channel.

Second, does the moral message work because it primes customers on religion, or evokes a religious frame of mind?[11] To answer this question, a group of customers were sent a religious placebo message, which included a quote from the Prophet that was taken from the same religious text as the moral message, but made no reference to debt repayment. This message also had no effect on repayment. Moreover, the simple reminder and the religious placebo message were both newly designed text messages that had never before been received by any of the bank's customers. The fact that none of these messages has an effect on repayment also rules out that the effect of the moral appeal is due to the surprise of receiving a novel or attention-grabbing message.

Third, does the moral appeal only work in a religious context or when using language that has a religious connotation? To answer this question, the bank sent two additional variations of the moral message. While the original moral incentive message explicitly quoted the Prophet Muhammad, cited the religious text from which the quote was taken, and employed a word of Arabic origin for "injustice" that is typically used in religious contexts, these two additional variations of the moral message omitted the religious elements of the moral appeal. The first message omitted the reference to the Prophet and the religious text. The second message also replaced the Arabic-origin word for "injustice" used in the moral message with the standard Indonesian word, which has no religious connotation. The first message allows us to test whether adding a credible source increases the effectiveness of the religious message and sheds light on the mechanism through which references to

[9] As we discuss in more detail below, most customers of the bank did not know about the credit registry.

[10] Our result that customers care and respond to reputational incentives is consistent with recent findings from the literature (see, for example, Liberman, 2015). In Section 4.3, we provide evidence suggesting that intensive margin effects (i.e. amount repaid) are stronger in the moral incentive group than in the reputational incentive group.

[11] As we discuss in more detail below, numerous studies in economics and psychology have shown that priming subjects on religion or religious identity affects behavior in various experimental settings.

a moral norm affect behavior. The second message tests whether a moral appeal without explicit religious content is sufficient to affect behavior.

We find that all variations of the moral appeal have the same effect. That is, a non-religious moral statement is just as powerful as the same moral statement identified as a quote from the Prophet and attributed to a well-known religious text. This finding may be because the main aspect of the treatment is its moral appeal, not its religious connotation. Alternatively, it may be because customers associate the bank with religion and, therefore, interpret a purely moral message as related to religion. To disentangle these two explanations, we conducted an end-line survey in which a bank employee read the non-religious version of the moral message to customers in the control group and asked if they associated the message with religion. The vast majority of respondents reported not to be aware of the religious origin of the quote. This finding, coupled with the fact that our experiment is set in a relatively secular environment, suggests that our results are driven primarily by the moral appeal, rather than the religious nature of the message.[12]

Fourth, does the moral appeal work because receiving a strongly worded message signals that the bank is committed to enforcing debt collection? To test this possibility, we surveyed customers who had received either no message, the basic reminder, or one of the versions of the moral message one day after the payment deadline. Customers were asked "How committed do you think [bank name] is to collect debt from delinquent customers on a scale from 1 to 5 (where 1 is not committed and 5 is very committed)?" There is no statistically significant difference in the response to this question between customers assigned to the different treatments.[13]

Finally, does the moral message work only once, say because it is novel or because it conveys new information, or would it work if it were sent repeatedly? To explore this question, the bank sent the moral message to consumers who reappeared on the late payers list and had already received a moral message once. We find that moral messages are effective even when they are sent repeatedly after as little as two months to recipients who had already received a moral incentive message previously.[14] In fact, controlling for a number of observables to address the differential selection of repeated late-paying customers, we find that the effect of receiving the moral message again is nearly identical to the effect of receiving the moral message for the first time. This suggests that the effect of the moral message cannot be explained by the novelty of the message.

Our findings also rule out an explanation for the effectiveness of the moral message based on learning new information. As mentioned before, the repayment rate does not change when the

[12] If we restrict the analysis to customers located in greater Jakarta, a more secular and urban area, the effects of the moral incentive are similar to the rest of the sample. The finding that most clients did not know the Islamic doctrine on debt non-repayment corroborates the view that the customers in our sample are relatively secular.

[13] The share of customers choosing 4 or 5 was in fact slightly *lower* among those who had received the moral message.

[14] The sample consists of customers that had previously received any version of the moral message, and customers received the same version that they had received before. We analyzed customers that received the moral message for a second time, either with a delay of two months or about one year. The results are very similar for the two cases.

information content of the message is reduced either by excluding religious language or by excluding the reference to a well-known religious text. Moreover, the effect of receiving the same message for the second time is nearly identical to the effect of receiving it for the first time, ruling out an explanation based on learning new information.

Instead, our findings suggest that the moral message affects behavior by drawing attention to the moral implications of non-repayment, an attribute of the repayment decision that was not previously on the customer's "top of mind." Soon enough the attribute is no longer on customers' top of mind, so the same message works again when sent a second time.[15] Our results show that reminders that render different attributes of a decision salient can have important effects on consumers' decisions, in line with the framework in Bordalo et al. (2015), which introduces a role of reminders in salience theory. In our experiment, reminders that make moral considerations salient increase repayment, while simply reminding customers to repay does not. Using the framework of Bordalo et al. (2015) to interpret our findings, these results indicate that, when deciding whether to repay, customers in our sample focus on immediate financial penalties, while a potential moral penalty does not come to mind. Reminding customers to repay does not affect their decision much, because they are already aware that they are late. However, reminding customers that *"non-repayment of debts* [...] *is an injustice"* has two consequences. First, it brings morality, which was previously a "shrouded" attribute, to mind. Second, it establishes that there is a high moral cost of not repaying one's debts. These two elements combined make moral considerations salient and increase the repayment rate.[16]

This paper contributes to several strands of the literature. First, our work relates to a large literature on non-monetary incentives (Frey, 1997; Akerlof and Kranton, 2000; Gneezy, 2005; Bénabou and Tirole, 2003, 2006). In particular, we shed light on how moral appeals affect meaningful economic decisions. Moral appeals, directed to the audience's sense of what is right and proper, are among the most common persuasion strategies. Many companies, such as Starbucks or Whole Foods, advertise their support for fair trade and environmentally clean practices. Others publicize their support for charitable causes to affect consumer choices.[17] Although moral appeals are widely used in practice, there is very little evidence about how and why they work. An exception is the work of Dal Bó and Dal Bó (2014), who use lab experiments to study how moral messages affect contributions in a public goods game. They find that subjects who are sent messages highlighting a "moral norm" are more likely to contribute.[18] Using field experiments, Fellner et al. (2013) find

[15]Consistent with this interpretation, we also show that the effect of the moral message is not persistent, i.e., does not affect repayments in subsequent months.

[16]More broadly, our findings relate to a recent line of research that models what individuals pay attention to, and how this influences their decisions (Bordalo et al., 2012, 2013, 2015; Kőszegi and Szeidl, 2013; Gabaix, 2014).

[17]For example, Warby Parker and Toms Shoes are known for donating, for each pair of glasses and shoes sold in the United States, another one to people in developing countries. In another famous example, Google, which adopted "don't be evil" as their official slogan, matches their employee's contributions to non-profit organizations.

[18]Shu et al. (2012) find that making people sign at the beginning rather than at the end of a self-report task makes

no impact of moral messages beyond reminder effects among evaders of television license fees, and Ito et al. (2015) find that reminders for voluntary energy conservation during peak hours generate reductions in energy consumption. We add to this line of research by showing that even in a setting where other elements, such as altruism, social signaling and peer pressure are relatively weak, strictly moral appeals can strongly affect important economic decisions. Moreover, these appeals can be effective even when used repeatedly. We show that moral appeals work even if they are sent by a financially interested party and that they can be more powerful than considerable direct financial incentives.

Beyond helping understand the impact of moral suasion, our work also relates to a literature on religion and economic behavior (see Barro and McCleary, 2006).[19] Identifying the effect of moral appeals linked to religion is difficult because religious activities often combine moral, instrumental, and social motivations. For example, people may go to church because they believe it is the "right thing to do," but they may also do so for indirect material or social benefits, such as socializing with others, or signaling one's beliefs or shared values. In fact, many laboratory experiments have established that religious primes increase prosocial behavior.[20] Our paper adds to this literature by providing experimental evidence that moral motivations associated with religion can drastically affect real behavior in a setting where the social interactions associated with religion are absent.

Finally, our work also contributes to a literature on household finance and consumer financial protection that studies non-traditional regulation and incentives intended to help consumers make better financial decisions (Madrian and Shea, 2001; Benartzi and Thaler, 2004; Agarwal et al., 2009; Campbell et al., 2011; Agarwal et al., 2014; Karlan et al., 2014, 2015). We contribute to this line of research by investigating which messages get individuals to repay their credit card debt.

The remainder of the paper proceeds as follows. Section 2 describes our setting and experimental design. Section 3 presents the main results. Section 4 discusses the interpretation of our findings, and Section 5 concludes.

2 Experimental Design

2.1 The Credit Card

We design a natural field experiment with the universe of late-paying borrowers of Indonesia's most popular Islamic credit card. The credit card is issued by one of the country's leading Islamic banks,

ethics salient, thereby reducing dishonesty.

[19] See also Iannaccone (1998); Clingingsmith et al. (2009); Becker and Woessmann (2009); Cantoni (2015); Bénabou et al. (2015); Campante and Yanagizawa-Drott (2015).

[20] Studies from the psychology literature have found that priming subjects on religion increases the amount shared in dictator games (Shariff and Norenzayan, 2007), reduces cheating (Randolph-Seng and Nielsen, 2007; Mazar et al., 2008), and increases charitable donations (Pichon et al., 2007). It also increases costly punishment of unfair behavior, but only among religiously committed subjects (McKay et al., 2011; Laurin et al., 2012). There is also evidence that different religious groups respond differently to religious primes (Benjamin et al., 2015).

which offers credit cards as part of its portfolio of Islamic consumer finance products. Originally introduced in 2009, the card has approximately 200,000 customers.

The credit card features are designed to comply with the principles of Islamic *Shari'a* law which, among other prescriptions, prohibits charging interest and investing in commercial activities that are considered contrary to the principles of Islam. In order to be consistent with Islamic law, the features of the card are based on a *fatwa* issued in 2006 by the National *Shari'a* Board of the *Indonesian Council of Islamic Scholars* that lays out the guidelines under which Islamic banks can offer *Shari'a* compliant credit cards. Following these guidelines, the credit card is structured as a *Ijara* fee structure contract, which means that customers pay a fee for the transaction services provided by the card instead of a variable interest rate. Customers are charged fixed annual fees of Rp 120,000 (US$ 10) for a basic card, Rp 240,000 (US$ 20) for a gold card, and Rp 600,000 (US$ 45) for a platinum card, plus a monthly membership fee of 2.75% of the customer's credit limit. This monthly fee can be partially or fully waived through a "cash rebate," which is proportional to the customer's available credit and can range from zero to the total amount of the monthly fee.[21] The monthly fee is waived if there is no outstanding debt.

There is a monthly billing cycle, with a billing date on the eighteenth day of each month. The minimum monthly payment, equal to either 10% of the customer's total outstanding balance or Rp 50,000 (whichever amount is higher) plus eventual arrears and overdrafts, is due on the eighth day of the following month. Customers who do not meet the minimum payment by the due date receive a text message from the bank on the following day. The bank grants late-paying customers a grace period of ten days, which ends on the eighteenth of each month (we refer to this date as the "deadline for repayment"). Customers who do not meet the minimum payment by this date are considered "delinquent" and are reported to the Indonesian credit registry, the *Sistem Informasi Debitur*, which all banks in Indonesia consult before issuing credit. On the same day, they receive a phone call from the bank. They are charged a nominal late payment fee (*Ta'widh*) ranging from Rp 15,000 to Rp 35,000 and the card is automatically blocked.[22] Once the customer makes the minimum payment, the card is immediately unblocked. If a customer's minimum payment remains outstanding for more than 90 days after the due date, the card is permanently blocked and the account is closed. Accounts that remain more than 120 days overdue are sent to the bank's collections department and, eventually, an outside collections agency. Figure 1 summarizes the credit card billing cycle and the timeline of our intervention.

[21] The cash rebate is calculated as follows: *cash rebate = 2.75% × (credit limit - amount outstanding)*. The net monthly fee is the monthly membership fee minus the cash rebate, that is, 2.75% × *amount outstanding*.

[22] Late payment fees increase in size over time. For example, customers who are more than 30 days late are charged additional fees ranging from Rp 20,000 to Rp 50,000.

2.2 Sample Population and Random Assignment

The population for our experiment comprises the 14,429 credit card customers who were more than one week late on their minimum payment at least once between February 2015 and April 2016 during one of the six months in which the experiment was carried out.[23] Some customers were late more than once during the sample period, so that our sample frame is an unbalanced panel with 23,520 observations.[24]

The experiment was conducted in six waves, coinciding with the monthly credit card repayment cycle.[25] Each month, the bank shared with us the list of customers that were more than one week late on their minimum required payment. From this list, we excluded customers who had previously received a text message treatment, except for a subsample used in a separate follow-up arm described below. Customers assigned to the control group in a previous month remained in the sample and could either be assigned to a treatment or form part of the control group again. For example, in March 2015, 4,803 customers were more than a week late. Out of these, 1,018 had previously received a treatment message and were thus excluded from the sample; the remaining 3,785 customers were randomly assigned to one of the treatment conditions or the control group.[26] Following this process, we obtain a panel of 13,428 observations, representing 12,104 unique subjects, which we use for our analysis.[27]

Eligible customers were then randomly assigned to one of several treatment conditions or to a control group. As part of the bank's standard communications policy, all customers received a simple text message reminder one day after the due date. The 4,120 customers assigned to the control group received no other text from the bank, while the 9,308 customers assigned to one of the

[23]The experimental months are February, March, May, and June 2015, and February and April 2016. We also ran a small pilot with 250 customers in January 2015 that had results similar to those in our main intervention.

[24]In the universe of 14,429 customers, 8,691 were late only once, while the remainder appeared in our sample more than once: 3,052 customers were late twice, 1,414 were late three times, 579 four times, 191 five times, and 52 were late in all six months.

[25]The first two waves of the experiment were conducted in February and March 2015. We originally planned to have a treatment group receiving restructuring offers in April 2015, but the partner bank was not able to operationalize this. Upon agreement with the bank, we then decided to pause our main intervention in April 2015 and to resume it in May 2015. The last three waves were conducted in June 2015, and February and April 2016. As part of another project, we had two other treatments groups with customers receiving multiple text messages on the same day. We excluded those 2,200 observations from our analysis. Results are unaffected when these observations are included and are available upon request.

[26]Additional details are available in Appendix Table A.1.

[27]Out of these 13,428 observations, 10,903 customers appear once, 1,088 appear twice (the first time in the control group), 104 appear three times (the first two in the control group), 6 appear four times (the first three in the control group), and 1 customer appears 5 times (the first four times in the control group). Although this approach does not affect the internal validity of our analysis, it could potentially reduce the representativeness of our sample, since, in a given month, customers who received a previous treatment message could have been part of the list of late payers if they had been assigned to the control group instead. However, because the effect of our treatments are very similar for subjects appearing for the first time in our sample and for those who were previously assigned to the control group, re-weighting the sample to correct for the probability of being excluded does not affect our results. These additional results are available on request.

treatment conditions received additional information through a text message sent two days before the payment deadline. All treatments were randomly assigned at the individual customer level and delivered through text messages, using the bank's existing customer notification system.[28] Figure 2 summarizes the experimental design.

In February and April 2016, we also conducted a separate follow-up experiment with the 898 customers who reappeared in the late-payer list and had previously received the moral message as part of the main experiment. The follow-up experiment was designed to test if the moral message only works the first time it is sent, for example because it is novel or conveys new information, or if sending the message repeatedly can still affect repayment. Following the same procedure and timing as above, recurrent late payers were randomly assigned either to a control group or to a repeated message treatment group.[29] The 450 customers assigned to the control group received no other text from the bank apart from the reminder one day after the due date. The 448 customers assigned to the treatment group, received a moral message identical to the one they had previously received two days before the payment deadline.[30] The results of this follow-up experiment are analyzed separately in subsection 4.1.2, but are excluded from all other regressions.

2.3 Experimental Treatments

The first four waves of our experiment were conducted in the first semester of 2015. In early 2016, two other waves were conducted, with the main goal of analyzing whether a moral message would work again if sent to a customer who had previously received it. In our main analysis of the effect of moral messages, we use of all the sample available for the treatment groups, therefore pooling observations from both years of intervention (since the last two waves also included a control group and a moral incentives group). Results are similar if we restrict ourselves to observations from 2015 only.

2.3.1 Control Group

A total of 4,120 customers were assigned to the control group, which forms the basis of comparison throughout the experiment. Customers in this group received a single reminder on the day after the due date:

> *Your [name of the card] has reached the due date. For your convenience, please make a payment at your earliest convenience. If you have already paid, ignore this text. Call*

[28] All messages were in Bahasa Indonesia, the official language of Indonesia, which is also the standard language used by the bank in all of its communication with customers.

[29] We stratified on how recently the customer had received the first moral message: 364 customers were treated two months before reappearing in the late-payer list, while the other 534 customers were treated for the fist time between eight and fourteen months earlier.

[30] There are three slightly different versions of the moral message, described in subsection 2.3.2. Customers in the treatment group received the same version of the moral message that they had received before.

[customer service number].

While all other customers also received another message from the bank sixty hours before the repayment deadline, customers in the control group only received this initial reminder.

2.3.2 Moral Incentives

To test the impact of moral appeals, we assigned 2,244 participants to the *moral incentives* condition. In addition to the basic reminder, these customers received a message drawing attention to the religious implications of not repaying their debts. The message quotes from the *Shahih al-Bukhari*, one of the main religious texts of Sunni Islam, which reports of the teachings, deeds, and sayings of the Prophet Muhammad and serves as one of the main sources for the interpretation of Islamic law. The text message draws from the religious doctrine on repayment of debts and asks the customer to repay her outstanding balance:

> *The Prophet (Peace and blessings be upon Him) says: "non-repayment of debts by someone who is able to repay is an injustice" (Imam al-Bukhari). Please repay your credit card balance at your earliest convenience. Call [customer service number].*[31]

To better understand the mechanisms underlying the impact of moral appeals, the bank also implemented two variations of this treatment, which varied the degree of its religious content. The first variation (*non-religious moral incentives* condition) made no reference to the Prophet or the source of the quote and used the standard Indonesian word for "injustice" (*ketidakadilan*) instead of the original term *kezaliman*, which is of Arabic origin and is typically used in religious contexts. This message, assigned to 1,186 customers during the last three waves of the intervention, reads:

> *Non-repayment of debts by someone who is able to repay is an injustice. Please repay your credit card balance at your earliest convenience. Call [customer service number].*

The second variation also made no reference to the Prophet and the religious text from which the quote was taken, but used the Arabic term for "injustice." This *implicit moral incentives* condition was also assigned to 1,180 customers in the last three waves of the intervention.

The first of these additional messages allows us to test whether simply receiving a moral statement without religious connotation affects repayment decisions. The second message tests to what extent a credible religious source increases the effect of a moral appeal.

[31] See Appendix Figure A.1 for a screenshot of the actual text message.

2.3.3 Direct Financial Incentives: Cash Rebate

To benchmark the effect of moral appeals against explicit financial incentives, we implemented two treatments. The first one consisted of a direct financial benefit in the form of a cash rebate. In this *cash rebate incentive* condition, the bank sent the standard reminder on the due date and then notified customers about the possibility to obtain a substantial cash rebate. To qualify for this rebate, equal to 50% of their minimum payment or 5% of their total outstanding balance, customers had to make the minimum payment by the deadline. The rebate would then be credited to their account in the next billing cycle.[32] This message, assigned to 336 participants in June 2015, reads as follows:

> *This month, make your credit card payment to get a cash rebate equal to 50% of your minimum payment on your next statement. Please repay your card balance at your earliest convenience. Call [customer service number].*

2.3.4 Indirect Financial Incentives: Credit Reputation

The second benchmark consisted of indirect financial benefits through the ability to obtain credit in the future. In this *credit reputation incentives* condition, customers received the standard reminder on the due date and an additional message two days before the repayment deadline. This message states that non-repayment will result in the customer being reported to the Indonesian credit registry, the *Sistem Informasi Debitur*, which all banks check before issuing credit and highlights that this will diminish the customer's access to credit in the future. More specifically, the message, assigned to 2,000 customers, reads as follows:[33]

> *Late payments are reported monthly to Bank Indonesia Sistem Informasi Debitur (SID), which all banks consult. This will diminish your ability to get credit in the future. Please repay your card balance at your earliest convenience. Call [customer service number].*

2.3.5 Placebo: Simple Reminder

We assigned 1,362 customers to the *simple reminder* treatment. Customers in this group received the standard message on the due date and another message two days before the deadline for

[32] We worked with the bank to design a rebate that consumers would understand based on their previous experience. In general, clients in our sample are familiar with the concept and of cash rebates and have been offered similar rebates before.

[33] We designed two variations of this text message and randomly assigned 1,000 customers to each of two subgroups. The first subgroup received the message in the main text. The second group received a text that says "*Late payments are reported monthly to Bank Indonesia Sistem Informasi Debitur (SID), which all banks can consult. Please repay your card balance at your earliest convenience. Call [customer service number].*" We pool these two treatments in our analysis since their effect on repayment is not statistically different.

repayment.[34] This second reminder is similar to the first message sent to all customers on the due date and makes no reference to the moral or financial implications of non-repayment:

> *The due date of your [name of the card] bill was on [due date] and your payment has not been received yet. Please repay your credit card balance at your earliest convenience. Call [customer service number].*

This treatment tests how receiving a second reminder affects repayment through channels such as limited attention and memory. Comparing its effect to that of moral incentives allows us to distinguish the impact of moral appeals from the effect of receiving additional reminders.

2.3.6 Placebo: Religious Message

Finally, we assigned 1,000 customers to a *religious placebo* treatment. Customers in this group received the standard message on the due date and a message two days before the repayment deadline, which contained a religious quote from the Prophet Muhammad taken from the *Shahih al-Bukhari*. However, in contrast to the moral incentives treatment, this quote was entirely unrelated to financial matters or debt repayment:

> *The Prophet (Peace and blessings be upon Him) says: "When Allah wishes good for someone, He bestows upon him the understanding of the Book" (Imam al-Bukhari). Please repay your credit card balance at your earliest convenience. Call [customer service number].*

This treatment condition allows us to test whether moral appeals work because they highlight the moral implications of a specific action (non-repayment of debts), or simply because they evoke a religious frame of mind, or remind them of the religious nature of their contract and bank.

2.4 Data and Summary Statistics

The data set combines information on the repayment decisions of individuals participating in the experiment with administrative data on their accounts at the bank, as well as data from phone surveys administered to credit card customers of the bank.

2.4.1 Administrative Data

We first obtained bank data on customer characteristics (age, gender, religion, province of residence, and monthly income) for the universe of late-paying customers participating in the experiment.

[34] A number of customers were included in this treatment on the last wave of the experiment (wave 6), to compare the effect of the moral incentive with that of a simple reminder on outcomes measured on the phone survey (whether customers would like to receive the dame text message again and how committed they thought the bank is at collecting debt).

Table 1 reports summary statistics and presents a test of random assignment.[35] The median credit card customer in our sample is male, 42 years old, and has a monthly income of Rp 5,000,000 (US$ 375).[36] As expected, given random assignment, the sample is well balanced across all baseline variables.[37]

In a second step, the bank shared data on credit card repayment for customers in our sample after each wave of the experiment as well as historical repayment data covering the 12 months before our intervention. In the monthly repayment data, we observe whether the customer made the required minimum monthly payment by the deadline, which is the main outcome of interest for our analysis. The bank also provided further financial data for the customers in our sample. In particular, we collected data on savings account balance for all customers in the 2015 sample who also have an account with our partner bank. [38]

2.4.2 Survey Data

We combine data from the experiment with information from phone surveys administered to the population of credit card customers (see the Supplemental Appendix for survey instruments).

The main survey, administered in June and July 2015 to participants of the experiment, asked respondents about their level of religiosity and their familiarity with the quote contained in the *moral incentive* text message. The same survey was also administered to a randomly drawn sample of the bank's credit card customers all over Indonesia who were not late in their payments during the study period. We use the results from this survey to construct a measure of local religiosity for the regions in which participants of the experiment reside. The bank also shared with us the results of an earlier survey, conducted in December 2014 with a smaller population of credit card customers not included in our sample. This survey contains broader questions about religious and non-religious implications of credit usage and repayment. We use this survey to measure general awareness about the existence of the credit reporting system.

An additional survey was administered one day after the repayment deadline in April 2016 to a random sample of participants of the experiment in that month. These customers had received either no message, the basic reminder, or one of the versions of the moral message. First, the survey asked them how committed they thought the bank was to collect debt from delinquent customers. Second, it asked them about their wish to receive from the bank text messages like the one received

[35] See Appendix Table A.2 for summary statistics and a test of random assignment for the follow-up experiment.

[36] For comparison, Indonesian per capita income was US$3,491 (approximately US$ 291 per month) at the time of the experiment (World Bank, 2014).

[37] Our sample is also very similar along most observable dimensions to the universe of credit card customers of the bank. Late payers are only marginally more likely to be female (40% against 37%), and on average have lower credit limit (13.5 million Rp against 14.7 million Rp).

[38] Customers are not required to have a checking or savings account at the bank to open a credit card. The most common deposit account within the bank is a liquid savings (*tabungan*) account. In our sample, 30 customers have a checking account and 1,088 customers have a savings account at the bank during the study period.

a few days earlier. Third, customers were randomized in two groups: those in a treatment group were read the content of the reputational incentive message, while those in a control group were not given any information. All customers were then asked questions about the Indonesian credit registry. We use this survey to test whether the strong wording of the moral appeal signals that the bank is committed to enforcing debt collection, whether receiving it causes any disutility to customers, and to measure whether the reputational SMS increases knowledge about the credit reporting system.[39]

2.4.3 Main Outcome Variable

Our main outcome of interest is a dummy variable indicating whether a customer has made the minimum repayment by the eighteenth of the month (the deadline for repayment). The intervention was designed in collaboration with the partner bank with the intent to improve repayment rates, so that repayment by the deadline is the natural outcome to examine. Moreover, we are limited in our ability to evaluate outcomes measured after this deadline. Text messages were always sent on the sixteenth day of the month. However, after the eighteenth day of the month, delinquent customers are reported to the credit registry and may receive phone calls from the bank, so that we no longer have full experimental control over the sample. In particular, the bank's actions after the deadline might interact with a customer's treatment status, so that the impact of our intervention on outcomes other than repayment is not causal and must be interpreted with caution.[40]

2.5 Estimation

Since treatment status was randomly assigned, our identification strategy is straightforward. We identify experimental treatment effects using regression models of the form:

$$Y_i = \alpha + \sum_c \beta_c I_{c,i} + \gamma' \mathbf{X}_i + \epsilon_i, \tag{1}$$

where Y_i is an indicator for customer i repaying an amount equal to or greater than the required minimum payment within the deadline. The variables $I_{c,i}$ are indicators for customer i being in category c, where c indicates the experimental treatment condition to which i was assigned. In all of regressions, the omitted category is the control group that received only a basic reminder but no second text message two days prior to the deadline. Finally, in some specifications we include

[39] The survey conducted in June and July 2015 was administered to 2,273 participants of our experiment and to other 567 randomly selected customers. The survey conducted in December 2014 was administered to 223 randomly selected customers. The survey conducted in April 2016 was administered to 95 randomly selected participants of the experiment that month, stratified by treatment group.

[40] For example, the bank's collection department might expend greater effort on calling customers from a group that had a lower average repayment rate as a result of the intervention.

control variables: $\mathbf{X}_i$ is a vector of controls that includes either month fixed effects only, or month fixed effects as well as a set of customer and account characteristics.

3 Results

3.1 Main Result: Moral Incentives

We begin by comparing raw minimum repayment rates, shown in Figure 3. Since the moral incentive group was oversampled relative to the control in the last three waves of the experiment and no religious placebo messages were sent during those months, we exclude these observations from the figure to keep all treatments arms comparable. Compared to the control group, the share of customers making at least the minimum payment increased by 18% (from 34% to 41%) under the moral incentive treatment condition. The difference in repayment rates is significant at the 1 percent level (p-value=0.001). Table 2 displays the results in regression format. In column (1), we report the effect of the moral incentive treatment compared only to the control group across all waves and without additional controls. In column (2), we present the results without controls excluding the last wave, replicating the results from Figure 3. In column (3), we add month fixed effects, and in column (4) we add customer-level covariates. The results remain very similar across all specifications, indicating that the randomization was successful.

3.2 Benchmarking the Moral Incentive Effect

3.2.1 Moral versus Financial Incentives

To assess the economic significance of the moral incentive effects, we use two benchmarking treatments. In the first benchmarking treatment, the bank sent text messages to a random subset of customers offering them a substantial cash rebate in the next billing cycle if they made the required minimum payment in the current month by the deadline. This cash rebate amounted to 50% of the minimum payment to be made, which is equivalent to a 5% reduction of the customer's total outstanding credit card debt. The median rebate offered was Rp 380,000 (US$28), which amounts to 8% of the median monthly earnings for customers in our sample.

The results are reported in Table 3. Column (1) presents raw repayment rates, restricting our sample to the fourth wave of the intervention to keep the time period constant across treatments. In column (3), we add month fixed effects and include observations from all months of the intervention. In column (4), we also include individual controls. Across all specifications, we find that providing financial incentives increases repayment rates. Although the magnitude of the effect of financial incentives is lower than the one from sending a moral text message, we cannot rule out that they are the same under conventional significance levels due to the small sample size in this analysis (the p-value of the one-sided test that the financial incentives treatment has a higher coefficient

than the moral incentives treatment is 0.104 in the specification with fixed effects, and 0.055 in the specification that also includes controls).

These results suggest that providing moral incentives can be more powerful than providing strong financial incentives, especially in terms of its cost-effectiveness: the average rebate offered to clients who responded to the message by making a payment was Rp 580,000 (US$43), in addition to the negligible cost of sending the text message. By contrast, sending text messages with a moral appeal comes at practically no cost to the bank.[41]

3.2.2 Moral versus Reputational Incentives

In addition to the direct financial consequences of non-repayment, customers might also care about material incentives with a longer time-horizon, such as their reputation in the credit market. To evaluate the hypothesis that customers care about long-term reputational incentives, one group of customers received a text message informing them about the Indonesian credit registry, the *Sistem Informasi Debitur*, and the consequences of being reported for non-repayment instead of the moral message. Specifically, the credit reputation message informed customers that all banks consult the credit registry before issuing credit, so that non-repayment of credit card debt has adverse consequences on future access to credit.

Evidence from a survey with 223 clients drawn from the universe of bank customers suggests that overall knowledge about the Indonesian credit registry is limited. About 75% of respondents report that they do not know about the credit registry, and most clients demonstrate to have substantial misconceptions about the consequences of a bad credit record. For example, 34% of respondents think it will make them unable to open a deposit account, 48% think they will have to appear in front of a judge (neither of which are true), and 22% of respondents think it will have no consequences on their ability to obtain credit in the future (which is also false, since all banks in Indonesia use the registry to screen customers).[42]

Results from the credit reputation treatment are also reported in Table 3. When looking at raw repayment rates in column (2), informing customers about the credit registry raises the probability of meeting the minimum repayment by the deadline by 29% (as opposed to 18% for moral incentive messages sent during the same months). To gain a better understanding of how the reputational incentives affect customers' decisions, a small survey was conducted in April 2016. Customers

[41] We also test whether sending a moral appeal could negatively affect the bank by reducing card usage or transaction volumes. We find that this is not the case. In the 30 day window after the intervention, the average amount spent is Rs 1,217,169 for customers that received the moral message, and 1,260,626 for customers in the control group (p-value 0.6992). The probability of card usage during this time period is .448 and .441 respectively (p-value 0.6911).

[42] The survey referred to the *Sistem Informasi Debitur* and not to the credit registry in general, so that some clients might be aware about the existence of a credit registry, but not its actual name. Despite this potential caveat, the survey indicates that the text message might not only draw customers' attention to the registry, but also provide information about the functioning of the registry. Finally, the effect of the credit registry treatment might in part be due to the message signaling to customers that the bank is serious about reporting them to the registry.

were randomized in two groups: customers in a treatment group were read the content of the reputational incentive message, and customers in a control group were not given any information. All participants were then asked some questions about the Indonesian credit registry. The results from the survey suggest that late paying customers are also poorly informed about the functioning of the credit registry and that the reputational incentive message does not increase their knowledge of how the registry functions (indeed, the treatment was not designed to increase such knowledge). Instead, the message seems to simply make customers think that the consequences of being reported to the credit registry are more severe.[43]

Taken together, the benchmarking results indicate that both moral and reputational incentives affect repayment decisions in our setting. While the effect of the moral message is larger than that of a one-time direct financial incentive, the effect size is close to that of the credit reputation message and suggests that the response to a moral appeal is more similar to the effect of reputational incentives with a longer time horizon.

3.3 Ruling out Other Channels

The results so far document that the moral message leads to a substantial increase in repayment rates. However, there are several mechanisms unrelated to moral suasion that could explain this effect. In this section, we present a number of tests to evaluate these potential channels and show which of these can be ruled out.

3.3.1 Reminding Customers

First, receiving a text message might increase repayment rates simply because it acts as a reminder, irrespective of whether the message contains a moral appeal or not (see, for example, Karlan et al., 2014, 2015). To address this possibility, we compare repayment in the moral incentive treatment group to repayment among customers assigned to the simple reminder placebo treatment, which consisted of a basic non-religious reminder that made no reference to morality or religion and was sent at the same time as the moral message. The results, reported in Table 2, columns (2) to (4), and displayed in Figure 3, show that receiving the simple reminder has no effect on the repayment rate. The raw repayment rate is 35% in the group receiving the basic reminder, compared to 34% in the control group. The p-value of the difference between the simple reminder and the control is 0.714, and the p-value of the difference between the simple reminder and the moral message is

[43] Compared to the control group in the survey, the share of customers correctly saying that being reported will have consequences for their ability to get credit from other banks increases from 38% to 49% (p-value=0.18). However, exposure to the text from the reputational treatment also increases the share *incorrectly* reporting that: (i) they will have problems with opening a deposit account (from 27% to 49%, p-value=0.007); (ii) they will have problems getting credit from the same bank (from 38% to 50%, p-value=0.18); (iii) they will have to appear in front of a judge (from 19% to 25%, p-value=0.421).

0.013. We can therefore rule out that the impact of the moral message is explained by a simple reminder effect.

3.3.2 Priming Religion

Second, receiving a text message with religious content could affect repayment through priming effects, which are also unrelated to moral suasion. The moral message might, for example, remind recipients of the religious connotation of the credit contract or evoke a religious frame of mind more generally. To rule out these possibilities, we compare repayment in the moral incentive treatment group to repayment among customers who received the religious placebo message. The religious placebo message contains a quote from the Prophet that is taken from the same religious text as the quote used in the moral message but makes no reference to debt repaument. The results, reported in Table 2, columns (2) to (4), and displayed in Figure 3, show that the religious placebo message also has no effect on the repayment rate. The raw repayment rate is 35% in the group receiving the religious reminder and nearly identical to the repayment rate in the control group. The p-value of the difference between the religious placebo and the control is 0.889, the p-value of the difference between the religious placebo and the moral message is 0.007. These results indicate that the effect of the moral message is also not driven by priming on religion.

3.3.3 Signaling the Bank's Commitment to Collect Debt

Third, since customers had previously received a text message at the time of the due date, receiving a second message could also be perceived as a signal that the bank is committed to debt collection and affect repayment rates by priming recipients on debt enforcement. To address this possible channel, we conduct the following test. In April 2016, the bank sent placebo messages and the three variations of the moral message discussed above to customers never treated before. Another group of customers was randomly assigned to a control group and received no message. We conducted a phone survey with customers in both groups the day after the payment deadline and asked *"How committed do you think [bank name] is to collect debt from delinquent customers on a scale from 1 to 5 (where 1 is not very committed, and 5 is very committed)?"* The percentage of respondents that answered 4 or 5 is 76% in the control group, compared to only 59% among customers that received one of the moral messages (the p-value for the test of equality of these coefficients is 0.284). Hence, there is no evidence to suggest that receiving the moral message primes customers on debt enforcement or is perceived as a signal that the bank is now more committed to enforce debts.

3.3.4 Novelty of the Message

Finally, customers might respond to the message not because of its moral content, but because the message is novel or attention-grabbing. To test for this possibility, we consider repayment rates

under different text message treatments that use novel content. Note that most of the messages that were sent to credit card customers as part of our study –including the simple reminder, religious placebo, and financial reminder messages– were specifically designed for the experiment and new in the sense that they had never been received by any of the bank's customers before. The fact that none of these messages had a statistically significant effect on repayment allows us to rule out that the effect of the moral message is explained by the novelty of the message. We can also rule out the possibility that the effect of the moral message is explained by the fact that receiving a message with a quote from the Prophet is particularly attention-grabbing. The religious placebo message uses a quote from the Prophet that is very similar to the quote contained in the moral message and is taken from the same religious text but, as we show above, has no effect on repayment.

4 Interpreting the Results

4.1 What Drives the Moral Appeal?

The evidence in the previous section rules out several mechanisms that are unrelated to moral suasion, but could generate higher repayment rates in response to the moral message. We next explore competing explanations for the effectiveness of the moral appeal itself, and present tests that allow us to distinguish between these alternative explanations.

4.1.1 Religious Connotation of the Message

The first possibility is that individuals indeed respond to the moral content of the message, but that this effect arises only because the moral appeal is delivered in a religious context. This seems plausible, given that the original moral incentive message explicitly quoted the Prophet and cited the religious text from which the quote was taken. Moreover, the original moral incentive message used a word for "injustice" that is of Arabic origin, and is often used in a religious context.

In order to distinguish the religious context of the moral message from the effect of the moral appeal, the bank sent two additional variations of the moral message to a randomly chosen subset of credit card customers. The first message was identical to the main treatment, but omitted the name of the Prophet and the source of the quote. The second variation of the moral message omitted the name of the Prophet as well as the source of the quote and additionally replace the Arabic-origin word for "injustice" with the standard Indonesian word, which has no religious connotation. Hence, the first message tests, whether adding a credible religious source adds power to the impact of a moral appeal. The second message tests if simply receiving a simple moral appeal without any religious connotation affects repayment decisions.

The results are reported in Table 4. In the months in which the three variations of the moral message were sent (Table 4, column (1)), the effect sizes are similar for all three variations of the

moral incentive condition. This could indicate that either customers already associated the moral appeal contained in the message with religion (and potentially with the Prophet), or that the pure moral statement was indeed sufficient to trigger repayment. To disentangle these competing hypotheses, we conducted a follow-up phone survey with a random sample of credit card customers. In this phone survey, the message with the standard Indonesian word for "injustice" and without reference to the Prophet was read to customers, who were then asked to indicate its source.[44] The vast majority of clients were not immediately aware of the religious origin of the message. When asked "Who do you think might have said this phrase?", out of 5 given options, 77% chose "I don't know", whereas only 19% associated the phrase with religious figures or institutions (including the bank itself). These findings suggest that the higher repayment rate was not due to an implicit religious association with the message. These results also corroborate the view that our sample is relatively secular; most clients did not immediately recognize the Islamic doctrine on non-repayment of debts.

The follow-up survey also helps us further clarify the role of religiosity in explaining the effects. In the survey, respondents were asked about the importance of religion and the rules of Islamic law in their life, using a 1-5 Likert scale. The survey also asked customers to rank the relative importance of family, work, friends and religion. Because of the small sample size of the survey, we cannot directly use this measure to assess the individual-level heterogeneity of treatment effects.[45] Instead, we use it to construct province-level indicators of religiosity. To do so, we split the sample according to the share of respondents who identified as very religious in each province and compare treatment effects for customers in locations classified as more or less religious according to this measure.[46] In the more religious half of provinces, the main (religious) moral message increased repayment rates by 21%. In the less religious half of provinces, there was still a large and significant 11% increase (with a p-value of 0.016). In contrast, the effects of the non-religious moral message were similar in provinces with higher and lower shares of religious respondents.

4.1.2 Salience versus Information: Repeated Messages

We now explore whether the moral message works only when it is sent for the first time, for example because it conveys new information, or if it works if it is sent repeatedly. To address this question, we conducted a follow-up experiment with a sample of customers who had already received the moral message once and reappeared on the list of late payers. In February and April 2016, customers in this group were sent the same version of the moral message that they had

[44] None of the customers in this sample had previously received any of the moral incentive text messages.

[45] This survey was administered in total to 2,840 customers. Among them 2,273 are participants of our experiment and 567 randomly selected customers of the bank that did not participate in the experiment.

[46] Customers are identified as very religious if they answered "Extremely Important" to both the question about religion and the question about the rules of *Shari'a* law, and if they ranked religion as the most important thing in their life among all the choices given.

previously received for a second time, with a delay of either two months or approximately one year.

Table 5 reports the results. We find that repeated moral messages still affect repayment, and that the size of this effect does not decline when the moral message is sent repeatedly. In the specification without individual covariates and month fixed effects, reported in Table 5, column (1), the effect of the repeated moral message is 0.041 (p-value 0.175).[47]

We next compare the effects of the first and the second moral messages. Since customers who show up on the list of late payers for a second time are likely to be different from those who appear on the list for the first time, we including individual covariates to address this potential selection problem. To gain improve statistical power, we additionally pool the sample from the repeated message experiment with the data from the main experiment. The results are reported in Table 5, column (4). The point estimate of receiving the moral message for the first time is 0.045. With a point estimate of 0.043, the effect of receiving the moral message for a second time is nearly identical, and both effects are statistically significant. The p-value of a test of equality of the two effects is 0.955.

The results of the repeated moral message experiment allow us to distinguish between an information and a salience interpretation of our findings. The result that the moral message affects repayment even when it is sent repeatedly rules out the possibility that the message affects repayment by conveying new information. Given that the moral message affects repayment behavior even when it does not contain any references to religion, as shown above, already indicates that the effect of the moral message is not driven by the recipient learning about a religious teaching that they were not previously aware of. Similarly, the effect cannot be explained by the customer learning that non-repayment of debts can be considered immoral. In both cases, the message would affect repayment only when this information is conveyed to a delinquent customer for the first time.

Instead, our results appear to be consistent with a salience or "top-of-mind" interpretation. In particular, using the framework in Bordalo et al. (2015) to interpret our findings would suggest that, from the view point of the customer, the repayment decision has different dimensions, only some of which are salient at the time the payment is due. When deciding whether to repay, customers in our experiment seem to focus on immediate financial penalties, while the moral implications of non-repayment do not come to mind. The moral incentive message affects repayment because it makes the moral cost of non-repayment salient. This effect is, however temporary, so that receiving the message for a second time again affects repayment. Hence, in our setting, reminding customers that *"non-repayment of debts* [...] *is an injustice"* has two main consequences. First, it brings morality, which was previously a "shrouded" attribute, to mind. Second, it establishes that there is

[47]There is suggestive evidence that the effects do not vary depending on the time lag between the first and the repeated message. Sending the moral message to customers who already received the same moral message one year before increases repayment by 0.040 compared to not sending any message (p-value 0.323). Sending a moral message to customers who already received the same moral message two months before increase repayment by 0.044 compared to not sending any message (p-value 0.346). However, the sample sizes are too small to estimate effects separately by time lag since the first message.

a moral cost of not repaying one's debts. These two elements combined make moral considerations salient and increase the repayment rate.

4.2 Disutility from Receiving the Message

Our results indicate that moral incentives are effective at getting customers to repay their credit card debt. However, so far, it is unclear if this comes at a utility cost to the customers. To answer this question, in April 2016, as part of of a follow-up survey the day after the payment deadline, the bank called back customers who had just received either a simple/placebo reminder or one of the versions of the moral incentive message. In addition to the other questions previously discussed, these customers were asked: "[Bank name] is sending reminder messages to its customers to help them make their payment on time. You received one of this messages last week. Would you like to receive the same message again in the future? Yes/No." The percentage of customers who reported to want to receive the message again was 80% among those who had just received a placebo reminder, and also 80% among those receiving a moral incentive message. The fact that most customers would prefer to receive the messages again suggests that these messages do not create disutility to the receivers. In particular, the moral messages do not seem to create differential disutility when contrasted to the simple reminder.

4.3 Additional Results and Extensions

4.3.1 Impact in Later Months

If, as we believe, the effects are explained by a salience interpretation –with moral considerations being temporarily brought to the top of mind by the moral message– one would expect the effects of the moral message to be short-lived. We test this hypothesis by examining the persistence of the moral message effect in the sample of customers that received the moral message only once.

It is first worth noting that a sizable share of customers who are late in making repayments in a given month during our sample period appear again in the list of late-paying clients a month later.[48] Among clients in the control group, the average probability of showing up in the list the following month is 0.31. There is also some evidence of income effects: individuals in the control group who make a payment are 7 percentage points more likely to appear again on the list of delinquent customers, than individuals who do not make a payment. Leaving aside selection issues, this finding is intuitive: if one makes a payment in a given month, one is likely to have less money left to make more payments the following month.

One obstacle we face when trying to examine the persistence of the moral incentive effects is the

[48] However, as highlighted above, no client received treatment text messages in more than one month. The only exception are customers part of the follow-up experiment sample, who receive up to two moral messages and are analyzed separately.

lack of experimental control after the deadline for minimum repayments set by the bank. Through our experiment, we experimentally vary the information on people's minds at the point when they make the debt repayment decision (between the 16th and the 18th of each month). Once this deadline has passed, the bank reports customers that have not made a payment to the credit registry and the bank's collection team attempts to call delinquent clients. It is possible that customers react differently to a given phone call if they have previously received a treatment. Moreover, the bank itself can exert differential effort in calling different clients from different treatment arms. For instance, the bank might be more likely to call clients in the control group, especially because they did not get an extra previous incentive to make the repayment. Since we have no information on follow-up calls and effort by the bank after our measured outcome, we cannot assess their importance and how they interact with the different treatments. Hence, effects observed after the repayment deadline may not be causal and should therefore be interpreted with caution.

Nevertheless, with this caveat in mind, we can still attempt to assess whether the moral incentives were likely to have a persistent effect. It is important to note that by raising the repayment rate at a given point in time, the moral incentive message may generate counteracting effects on repayment in later months. This could be due to two channels. First, it might be that the moral message also generates greater incentives to repay the following month. That is, the moral incentives themselves might be persistent. Second, an extra incentive to repay right away also lead to an income effect when compared to the control: more clients in the moral message group will repay, so that some of them would be less able to repay one month later. The impact of the treatment we observe in later months is the combination of these two effects. When these two potential effects are combined, we observe that the likelihood of appearing again in the late paying list one month later is 1 percentage point higher for clients who received the moral incentive message the previous month (the difference is not statistically significant). Although we cannot isolate persistent effects of the moral message from income effects, we can still try to infer the size of these effects and assess the likelihood of finding persistent effects of the moral message in the absence of income effects.

To approximate the size of income effects, we multiply the increase in the probability of repayment due to the moral incentive by the increase in the probability of being late the next month after repaying in the control group. With the caveat that this approach abstracts from selection issues, we find extra income effects in the order of a 0.4 percentage point increase in the probability of a late-paying client the next month in the moral incentive treatment, when compared to the control group. Subtracting this number from the higher likelihood of showing up a month later in the list of late-payers in the moral incentive group yields a persistent effect that is close to zero. Although we cannot make sharp predictions, the evidence suggests that the moral incentive effects did not last until the following month. As mentioned before, this is consistent with an interpretation that these incentives work by bringing moral considerations to clients' "top of mind" when they make repayment decisions.

4.3.2 Impact on Savings Account Balances

To better understand how customers make payments in response to moral incentives, we next examine the effect of repayment on savings account balances. We have access to customers' balance on their *tabungan* (Indonesian for "savings") accounts. These are the most common type of deposit account among clients of our partner bank, and have all characteristics of a standard liquid savings account. Contrasting customers' balance on the sixteenth day of the month (the day when messages were sent) and the eighteenth (the deadline for repayments) of each month provides suggestive evidence about the source of the funds used to repay credit card debt, with the caveat that only 13% of clients in our sample have a savings account, which generates a small and selected sample.

We find that meeting the minimum payment increases the likelihood of diminishing the balance in the saving account, suggesting that some customers may be using their savings to repay their credit card debt. More specifically, among those who met their minimum repayments, 22% reduced their savings balance between the sixteenth and the eighteenth. Among those who did not repay, only 8% had a reduction in savings in that period. The difference is significant at the 1 percent level (p-value=0.000). Unfortunately, we do not have sufficient statistical power to detect differences in savings balance across treatment arms, so we consider this evidence as merely suggestive.

4.3.3 Impact on the Intensive Margin of Repayment

We can further unpack the impact of moral incentives by examining the intensive margin of repayment, that is, the amount repaid conditional on meeting the minimum payment. Since each treatment may induce different customers to repay, it is important to note that this is a selected sample. In fact, because the customers who would repay if they were included in a treatment group but who would not repay if they were included in the control group have a lower willingness to repay, a comparison between treatment and control groups most likely understate the intensive margin effect. We find that the average amount repaid by customers in the reputational incentive treatment is significantly *lower* than the amount repaid among customers in the control group (Rp 1,851,118 for the control group and Rp 1,610,468 for the reputation treatment; the p-value of the test of equality is 0.065). This result suggests that the reputational treatment convinces people to make the minimum payment by highlighting the negative consequences of not meeting it. However, customers responding to the reputational incentive generally do not repay more than the required amount. A different picture emerges in the moral incentive treatment, where the average amount repaid is higher than in the reputational incentive group, and statistically identical to the control (Rp 1,840,376, p-value 0.949). This finding suggests that by mentioning the "injustice" of not honoring one's debts in general terms (rather than only in reference to the minium payment), the moral incentive induces customers to repay *more* than the minimum required amount.

Therefore, while both reputational and moral incentives increase repayment on the *extensive*

margin, they have different effects on the *intensive margin*. Customers in the moral incentive group repay, on average, the same as those in the control group, while those in the reputational group repay less. Since meeting the minimum payment is voluntary, there are two possible channels at play: *moral hazard* and *adverse selection*. With moral hazard, ex-ante identical individuals will respond differently to each message. For example, after receiving a message stating that the bank reports all customers who fail to meet the minimum payment to the credit registry, an individual may exert effort to meet the minimum payment (but will not make a payment exceeding this amount). On the other hand, that same individual may decide to repay even more than the required minimum amount after being reminded of the injustice of failing to repay her debt. In the presence of adverse selection, individuals who respond to each message are different ex-ante. For example, customers who respond to the threat of being reported to a credit registry may be more "strategic" than those who respond to a moral appeal, and therefore more likely to make the minimum payment only.[49]

Since meeting the minimum repayment is voluntary, we cannot disentangle moral hazard from adverse selection. While moral hazard and adverse selection have different welfare implications, they have the same implication for the effectiveness of moral and material (reputational) incentives. Namely, while material incentives are effective in inducing people to meet the minimum payment, few people pay more than the minimum. In contrast, moral incentives induce slightly fewer people to meet the minimum repayment. However, among those who repay, more of them exceed the minimum amount. In fact, combining intensive and extensive margin effects, we find that the expected repayment in the moral incentive treatment group was slightly higher than in the reputational incentive group (Rp 745,352 versus Rp 713,437, with a p-value of 0.185). It is important to note that these are unconditional means, and therefore *not* subject to selection issues.

5 Conclusion

While moral considerations may influence many important economic decisions, economists typically focus on material incentives as the main determinant of behavior. In this paper, we provide novel evidence that moral incentives can strongly affect a financially important and recurrent economic choice: the decision to repay one's debts. Our results suggest that moral appeals can be effective even if they come from a financially interested party and therefore can be used as a strategy of persuasion. In our setting, we show that moral appeals are substantially more cost-effective than direct financial incentives. Our series of interventions also help us rule out confounding stories, and lead us to interpret our findings as being driven by a salience mechanism: the moral messages are equally effective when received a second time by customers.

Although our study uses the setting of an Islamic bank, it is worth noting that this bank is located in a relatively secular country and targets a secular customer segment. Moreover, a moral

[49] See, for example, Einav et al. (2013) for evidence of such "selection on moral hazard" in health insurance.

appeal with no religious association also induced considerably higher repayment rates, while a religious placebo message with no reference to debt repayment did not. This suggests that our results are indeed driven by the moral content of the message, rather than its religious connotation. Studying how moral incentives operate in other settings remains a useful avenue for future research.

References

Agarwal, Sumit, Paige Martha Skiba, and Jeremy Tobacman, "Payday Loans and Credit Cards: New Liquidity and Credit Scoring Puzzles," *American Economic Review*, 2009, *99* (2), 412–417.

_ , Souphala Chomsisengphet, Neale Mahoney, and Johannes Stroebel, "Regulating Consumer Financial Products: Evidence from Credit Cards," *Quarterly Journal of Economics*, 2014, *130* (1), 111–164.

Akerlof, George A. and Rachel E. Kranton, "Economics and Identity," *Quarterly Journal of Economics*, 2000, *115*, 715–753.

Barro, Robert J. and Rachel M. McCleary, "Religion and Economy," *Journal of Economic Perspectives*, 2006, *20* (1), 49–72.

Becker, Sascha O. and Ludger Woessmann, "Was Weber Wrong? A Human Capital Theory of Protestant Economic History," *Quarterly Journal of Economics*, 2009, *124* (2), 531–596.

Bénabou, Roland and Jean Tirole, "Intrinsic and Extrinsic Motivation," *Review of Economic Studies*, 2003, *70* (3), 489–520.

_ and _ , "Incentives and Prosocial Behavior," *American Economic Review*, 2006, *96* (5), 1652–1678.

_ , Davide Ticchi, and Andrea Vindigni, "Forbidden Fruits: The Political Economy of Science, Religion, and Growth," *Working Paper*, 2015.

Benartzi, Shlomo and Richard H. Thaler, "Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving," *Journal of Political Economy*, 2004, *112* (1), 1–187.

Benjamin, Daniel J., James J. Choi, and Geoffrey W. Fisher, "Religious Identity and Economic Behavior," *Forthcoming, Review of Economic and Statistics*, 2015.

Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer, "Salience Theory of Choice under Risk," *Quarterly Journal of Economics*, 2012, *127* (3), 1243–1285.

_ , _ , and _ , "Salience and Consumer Choice," *Journal of Political Economy*, 2013, *121* (5), 803–843.

_ , _ , and _ , "Memory, Attention and Choice," *Working Paper*, 2015.

Campante, Filipe and David Yanagizawa-Drott, "Does Religion Affect Economic Growth and Happiness? Evidence from Ramadan," *Quarterly Journal of Economics*, 2015, *130* (2), 615–658.

Campbell, John Y., Howell E. Jackson, Brigitte C. Madiran, and Peter Tufano, "Consumer Financial Protection," *Journal of Economic Perspectives*, 2011, *25* (1), 91–114.

Cantoni, Davide, "The Economic Effects of the Protestant Reformation: Testing The Weber Hypothesis in The German Lands," *Journal of the European Economic Association*, 2015, *13* (4), 561–736.

Clingingsmith, David, Asim Ijaz Khwaja, and Michael Kremer, "Estimating the Impact of The Hajj: Religion and Tolerance in Islam's Global Gathering," *Quarterly Journal of Economics*, 2009, *124* (3), 1133–1170.

Dal Bó, Ernesto and Pedro Dal Bó, ""Do the Right Thing:" The Effects of Moral Suasion on Cooperation," *Journal of Public Economics*, 2014, *117*, 28–38.

Einav, Liran, Amy Finkelstein, Stephen P. Ryan, Paul Schrimpf, and Mark R. Cullen, "Selection on Moral Hazard in Health Insurance," *American Economic Review*, 2013, *103* (1), 178–219.

Fellner, Gerlinde, Rupert Sausgruber, and Christian Traxler, "Testing Enforcement Strategies in the Field: Threat, Moral Appeal and Social Information," *Journal of the European Economic Association*, 2013, *11* (3), 634–660.

Frey, Bruno, *Not Just for the Money: An Economic Theory of Personal Motivation*, Cheltenham, UK: Edward Elgar, 1997.

Gabaix, Xavier, "A Sparsity-Based Model of Bounded Rationality," *Quarterly Journal of Economics*, 2014, *129* (4), 1661–1710.

Gneezy, Uri, "Deception: The Role of Consequences," *American Economic Review*, 2005, *95* (1), 384–394.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, "The Determinants of Attitudes towards Strategic Default on Mortgages," *Journal of Finance*, 2013, *68* (4), 1473–1515.

Iannaccone, Laurence R, "Introduction to the Economics of Religion," *Journal of Economic Literature*, 1998, *36* (3), 1465–1495.

Ito, Koichiro, Takanori Ida, and Makoto Tanaka, "The Persistence of Moral Suasion and Economic Incentives: Field Experimental Evidence from Energy Demand," *Working Paper*, 2015.

Karlan, Dean, Margaret McConnel, and Jonathan Zinman, "Getting to the Top of Mind: How Reminders Increase Savings," *Forthcoming, Management Science*, 2014.

_ , Melanie Morton, and Jonathan Zinman, "A Personal Touch: Text Messaging for Loan Repayment," *Working Paper*, 2015.

Kőszegi, Botond and Adam Szeidl, "A Model of Focusing in Economic Choice," *Quarterly Journal of Economics*, 2013, *128* (1).

Laurin, Kristin, Azim F. Shariff, Joseph Henrich, and Aaron C. Kay, "Outsourcing punishment to God: beliefs in divine control reduce earthly punishment," *Proceedings of the Royal Society of London B: Biological Sciences*, 2012, *279* (1741), 3272–3281.

Liberman, Andres, "The Value of a Good Credit Reputation: Evidence from Credit Card Renegotiations," *Working Paper*, 2015.

Madrian, Brigitte C. and Dennis F. Shea, "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior," *Quarterly Journal of Economics*, 2001, *116* (4), 1149–1187.

Mazar, Nina, On Amir, and Dan Ariely, "The Dishonesty of Honest People: A Theory of Self-Concept Maintenance," *Journal of Marketing Research*, 2008, *45* (6), 633–644.

McKay, Ryan, Charles Efferson, Harvey Whitehouse, and Ernst Fehr, "Wrath of God: Religious primes and punishment," *Proceedings of the Royal Society B: Biological sciences*, 2011, *278* (1713), 1858–1863.

Pichon, Isabelle, Giulio Boccato, and Vassilis Saroglou, "Nonconscious influences of religion on prosociality: a priming study," *European Journal of Social Psychology*, 2007, *37* (5), 1032–1045.

Randolph-Seng, Brandon and Michael E. Nielsen, "Honesty: One Effect of Primed Religious Representations," *The International Journal for the Psychology of Religion*, 2007, *17* (4), 303–315.

Shariff, Azim F. and Ara Norenzayan, "God Is Watching You: Priming God Concepts Increases Prosocial Behavior in an Anonymous Economic Game," *Psychological Science*, 2007, *18* (9), 803–809.

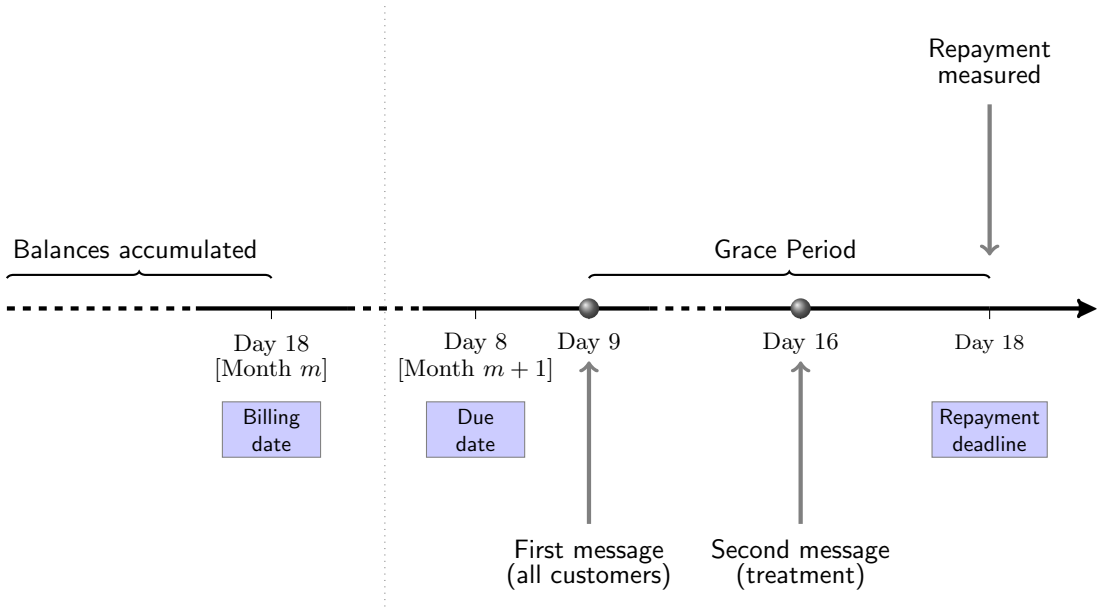
Shu, Lisa L, Nina Mazar, Francesca Gino, Dan Ariely, and Max H Bazerman, "Signing at the Beginning Makes Ethics Salient and Decreases Dishonest Self-Reports in Comparison to Signing at the End," *Proceedings of the National Academy of Sciences*, 2012, *109* (38), 15197–15200.

Wilkinson-Ryan, Tess, "Breaching the Mortgage Contract," *Vanderbilt Law Review*, 2011, *64* (5).

World Bank, "Global Financial Development Report: Financial Inclusion," 2014.

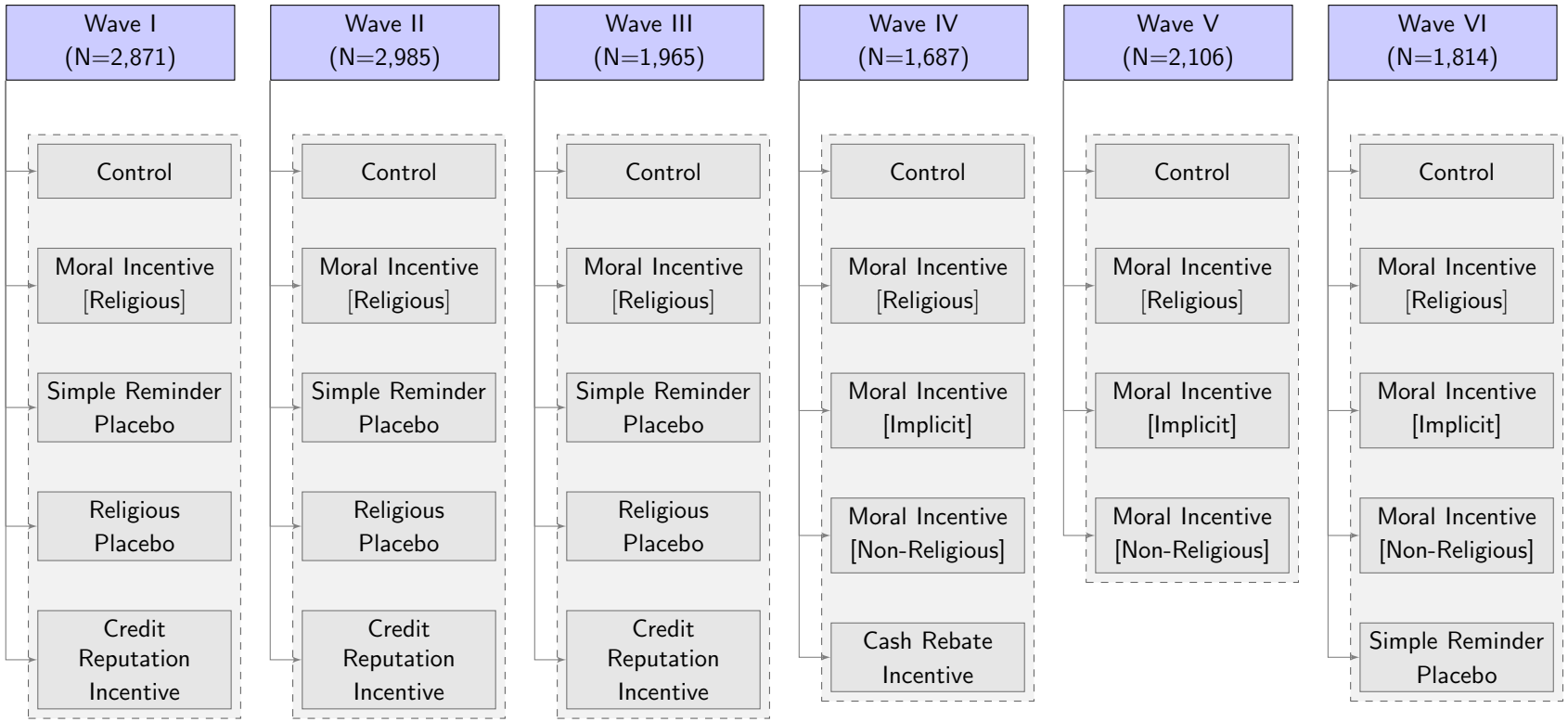
Figures and Tables

Figure 1: **Timeline of Events**



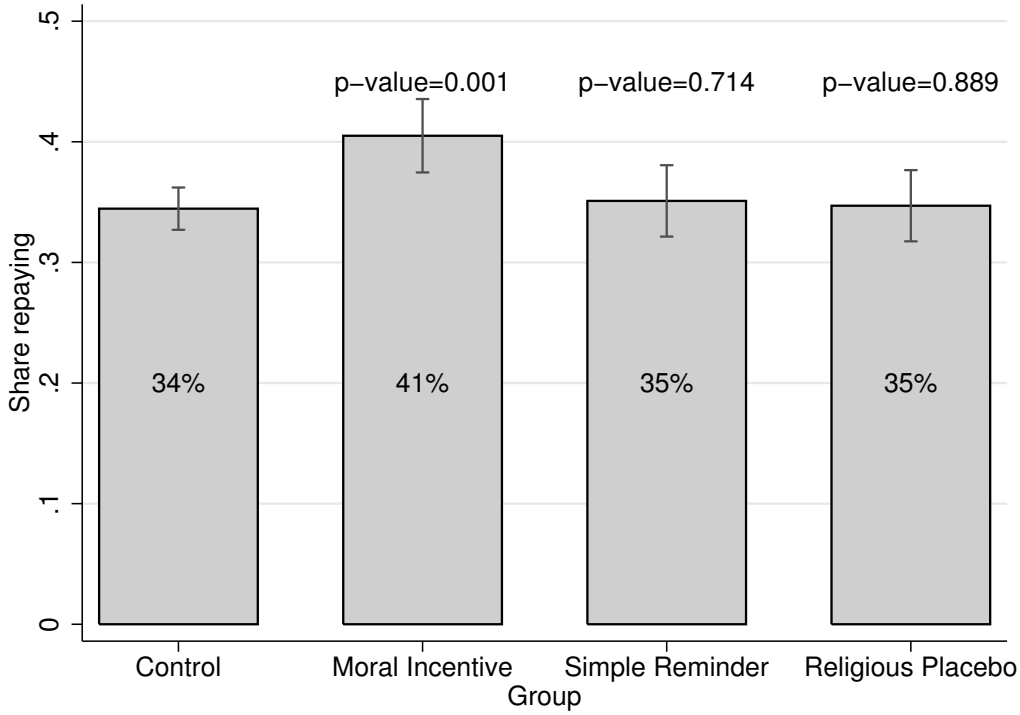
Notes: The figure shows the credit card billing cycle and timing of the intervention. Customers receive their monthly statement on the *eigthteenth* day of each month. The due date is on the *eight* day of the following month. One day later, the bank sends a simple reminder message to *all* late-paying customers. The repayment deadline is on the *eighteenth* day of the month, at the end of a 10-day grace period. In the morning of the *sixteenth* day of the month (sixty hours before the repayment deadline), randomly assigned reminder messages are sent to customers assigned to one of the treatment groups. Repayment is observed at the time of the final deadline, which is midnight of the *eighteenth* day of the month.

Figure 2: **Experimental Design**



Notes: The figure summarizes the experimental design. The main experiment was conducted in four waves, coinciding with the monthly credit card repayment cycle, between February 2015 and April 2016. Waves I and II were conducted February and March 2015. Waves III and IV were conducted in May and June 2015. A follow-up experiment, consisting of waves V and VI, was conducted in February and April 2016. Within each wave of the experiment, credit card customers that had not made their minimum required payment by the due date were randomly and individually assigned to the treatment conditions shown in the figure.

Figure 3: **Treatment Effects**



Notes: This figure presents the means and 95 percent confidence intervals of the raw repayment rates for the sample of customers assigned to one of the four following groups: control, moral incentives, simple reminder, and religious placebo (these two treatments have not been run simulateously in Waves IV, V and VI, so customers late in June 2015, and February and April 2016 are excluded from the sample analyzed in this figure). There are 1000 observations in each of the treatment groups and 2821 customers in the control group. For each treatment we report the p-value of a test of equality of the means in the treatment and in the control.

Table 1: **Balance of Covariates and Treatment Cell Size**

	Full Sample	Moral Incentive	Simple Reminder	Religious Placebo	Credit Reputation	Control Group	p-value
Panel A1: Waves I, II, and III Balance of Covariates							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	42.03	42.36	42.10	41.73	41.99	42.03	0.631
	[9.071]	[9.317]	[8.776]	[8.717]	[9.092]	[9.195]	
Female	0.40	0.40	0.41	0.41	0.39	0.40	0.914
	[0.489]	[0.490]	[0.491]	[0.491]	[0.488]	[0.489]	
Muslim	0.92	0.92	0.91	0.91	0.92	0.92	0.427
	[0.273]	[0.271]	[0.286]	[0.289]	[0.271]	[0.264]	
Income	151.67	135.51	185.73	134.86	177.65	132.85	0.418
(Rp, million)	[836.968]	[175.295]	[1242.218]	[187.644]	[1369.992]	[201.640]	
Credit Limit	13.55	13.93	13.28	13.77	13.38	13.55	0.438
(Rp, million)	[9.338]	[9.708]	[8.652]	[9.444]	[9.272]	[9.448]	
Panel A2: Waves I, II, and III Treatment Cell Size							
Wave I	2871	400	400	400	800	871	
Wave II	2985	400	400	400	800	985	
Wave III	1965	200	200	200	400	965	
Total	7821	1000	1000	1000	2000	2821	
Panel B1: Wave IV Balance of Covariates							
	Full Sample	Moral Incentive [Religious]	Moral Incentive [Implicit]	Moral Incentive [Non-Religious]	Cash Rebate	Control Group	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	42.24	41.82	42.70	41.98	42.31	42.38	0.764
	[9.491]	[9.170]	[9.415]	[9.137]	[9.196]	[10.477]	
Female	0.39	0.42	0.38	0.38	0.37	0.40	0.703
	[0.488]	[0.494]	[0.486]	[0.487]	[0.482]	[0.490]	
Muslim	0.92	0.93	0.91	0.90	0.93	0.92	0.517
	[0.271]	[0.253]	[0.281]	[0.302]	[0.253]	[0.265]	
Income	134.64	121.99	132.46	138.35	152.25	128.27	0.345
(Rp, million)	[189.589]	[192.350]	[154.065]	[187.183]	[233.037]	[172.253]	
Credit Limit	13.56	13.15	13.13	14.20	13.87	13.44	0.569
(Rp, million)	[9.834]	[10.587]	[9.360]	[9.525]	[9.867]	[9.803]	
Panel B2: Wave IV Treatment Cell Size							
Wave IV	1687	336	336	336	336	343	
Total	1687	336	336	336	336	343	
Panel C1: Wave V and VI Balance of Covariates							
	Full Sample	Moral Incentive [Religious]	Moral Incentive [Implicit]	Moral Incentive [Non-Religious]	Simple Reminder	Control Group	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	41.61	41.73	41.80	41.36	40.95	41.79	0.557
	[9.722]	[10.093]	[9.481]	[9.639]	[9.954]	[9.562]	
Female	0.39	0.41	0.37	0.40	0.43	0.36	0.087
	[0.488]	[0.492]	[0.483]	[0.489]	[0.496]	[0.481]	
Muslim	0.90	0.88	0.90	0.92	0.88	0.89	0.087
	[0.306]	[0.326]	[0.295]	[0.279]	[0.321]	[0.314]	
Income	158.51	141.85	205.76	159.15	160.08	131.45	0.379
(Rp, million)	[966.064]	[556.385]	[219.339]	[1942.643]	[609.755]	[184.891]	
Credit Limit	13.87	13.68	14.00	13.73	13.59	14.17	0.786
(Rp, million)	[10.257]	[10.143]	[10.037]	[10.530]	[9.967]	[10.441]	
Panel C2: Wave V and VI Treatment Cell Size							
Wave V	2106	546	482	488	0	590	
Wave VI	1814	362	362	362	362	366	
Total	3920	908	850	844	362	956	

Notes: Panel A1 reports summary statistics for the sample and presents a test of random assignment for waves I, II, and III. Column (1) reports the mean level of each variable, with standard deviations in brackets, for the full sample. Columns (2) to (6) report the mean level of each variable, with standard deviations in brackets, for all the experimental conditions. Column (7) reports the p-value of a test that means are the same in all the experimental conditions. Panel A2 reports treatment cell sizes by month. Panels B1 and B2 replicate this for wave IV. Panels C1 and C2 replicate for waves V and VI.

Table 2: **Moral Incentive Effects and Ruling Out Other Channels**

Dependent variable	Dummy: customer repaid within the deadline			
	(1)	(2)	(3)	(4)
Moral Incentive	0.044***	0.060***	0.052***	0.051***
	[0.013]	[0.018]	[0.013]	[0.013]
Simple Reminder		0.006	0.023	0.022
		[0.018]	[0.015]	[0.015]
Religious Placebo		0.002	0.006	0.010
		[0.018]	[0.017]	[0.017]
Moral Incentive - Simple Reminder		0.054**	0.029*	0.028*
		[0.022]	[0.017]	[0.017]
Moral Incentive - Religious Placebo		0.058***	0.045**	0.041**
		[0.022]	[0.019]	[0.019]
Mean Repayment Control Group	0.34	0.34	0.34	
Month fixed effects	No	No	Yes	Yes
Controls	No	No	No	Yes
Waves	All Waves	Waves I, II, and III	Full Sample	Full Sample
N	6364	5821	13428	13428
R^2	0.002	0.002	0.011	0.057

Notes: Column (1) restricts the sample to customers assigned to the moral incentive treatment or to the control group. Column (2) excludes customers late in June 2015, February 2016 and April 2016, and restricts the sample to customers assigned to one of the four following groups: moral incentives, simple repayment reminder, religious placebo (these two treatments have not been run in Wave IV, V and VI) and control. Column (3) and (4) use the whole sample. Columns (1) and (2) present OLS regression of a dummy variable for whether a customer repaid her credit card debt (made at least the minimum payment) within the deadline on treatment group dummies. The control is the omitted group, for which we report the mean repayment rate. Column (3) replicates and adds month fixed effects. Column (4) replicates and adds individual covariates (age, gender dummy, Muslim dummy, province dummy, income, a dummy for being in the sample in a previous month, and a dummy for having been more than 30 days past due at least once in the previous 12 months). "Moral Incentive - Simple Reminder" gives the difference between the coefficient on "Moral Incentive" and the coefficient on "Simple Reminder." "Moral Incentive - Religious Placebo" gives the difference between the coefficient on "Moral Incentive" and the coefficient on "Religious Placebo." Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: **Benchmarking Moral Incentives: Cash Rebate and Credit Reputation**

Dependent variable	Dummy: customer repaid within the deadline			
	(1)	(2)	(3)	(4)
Moral Incentive	0.054	0.060***	0.052***	0.051***
	[0.036]	[0.018]	[0.013]	[0.013]
Cash Rebate	0.021		0.014	0.003
	[0.035]		[0.030]	[0.029]
Credit Reputation		0.098***	0.102***	0.104***
		[0.014]	[0.014]	[0.013]
Moral Incentive -	0.033		0.038	0.047
Cash Rebate	[0.036]		[0.030]	[0.029]
	(0.185)		(0.104)	(0.055)
Moral Incentive -		-0.038**	-0.051**	-0.053***
Credit Reputation		[0.019]	[0.016]	[0.016]
Mean Repayment Control Group	0.30	0.34	0.34	
Month fixed effects	No	No	Yes	Yes
Controls	No	No	No	Yes
Waves	Only Wave IV	Waves I, II, and III	Full Sample	Full Sample
N	1015	5821	13428	13428
R^2	0.002	0.008	0.011	0.057

Notes: Column (1) restricts the sample to customers late in June 2015 and assigned to one of the three following groups: moral incentives, financial incentives (this treatment has been run only in Wave IV) and control. Column (2) restricts the sample to customers late in February, March or May 2015 and assigned to one of the three following groups: moral incentives, reputational incentives (this treatment has not been run in waves IV, V and VI) and control. Column (3) and (4) use the whole sample. Column (1) and (2) present OLS regression of a dummy variable for whether a customer repaid her credit card debt (made at least the minimum payment) within the deadline on treatment group dummies. The control is the omitted group, for which we report the mean repayment rate. Column (3) replicates and adds month fixed effects. Column (4) replicates and adds individual covariates (age, gender dummy, Muslim dummy, province dummy, income, a dummy for being in the sample in a previous month, and a dummy for having been more than 30 days past due at least once in the previous 12 months). "Moral Incentive - Cash Rebate" gives the difference between the coefficient on "Moral Incentive" and the coefficient on "Cash Rebate." P-value for the test of inequality "Moral Incentive < Cash Rebate" in parenthesis. "Moral Incentive - Credit Reputation" gives the difference between the coefficient on "Moral Incentive" and the coefficient on "Credit Reputation." Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: **What Drives the Moral Appeal? Religious Connotation**

Dependent variable	Dummy: customer repaid within the deadline		
	(1)	(2)	(3)
Moral Incentive	0.041**	0.051***	0.051***
	[0.019]	[0.013]	[0.013]
Implicit Moral Incentive	0.039**	0.041**	0.039**
	[0.019]	[0.018]	[0.018]
Non-Religious Moral Incentive	0.039**	0.040**	0.038**
	[0.019]	[0.018]	[0.017]
Moral Incentives -	0.001	0.011	0.011
Implicit Moral Incentive	[0.019]	[0.018]	[0.018]
Moral Incentives -	0.002	0.011	0.012
Non-Religious Moral Incentive	[0.020]	[0.018]	[0.017]
Mean Repayment Control Group	0.32	0.34	
Month fixed effects	No	Yes	Yes
Controls	No	No	Yes
Waves	Wave IV, V, and VI	Full Sample	Full Sample
N	4909	13428	13428
R^2	0.001	0.011	0.057

Notes: Column (1) restricts the sample to customers late in June 2015, February 2016 or April 2016 and assigned to one of the four following groups: moral incentives, moral incentives without quoting the Prophet, moral incentives without religion connotation (these last two treatments have been run only in Wave IV, V, and VI) and control. Column (2) and (3) use the whole sample. Column (1) presents OLS regression of a dummy variable for whether a customer repaid her credit card debt (made at least the minimum payment) within the deadline on treatment group dummies. The control is the omitted group, for which we report the mean repayment rate. Column (2) replicates and adds month fixed effects. Column (3) replicates and adds individual covariates (age, gender dummy, Muslim dummy, province dummy, income, a dummy for being in the sample in a previous month, and a dummy for having been more than 30 days past due at least once in the previous 12 months). "Moral Incentives - Implicit Moral Incentive" gives the difference between the coefficient on "Moral Incentives" and the coefficient on "Implicit Moral Incentive." "Moral Incentives - Non-Religious Moral Incentive" gives the difference between the coefficient on "Moral Incentives" and the coefficient on "Non-Religious Moral Incentive." Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

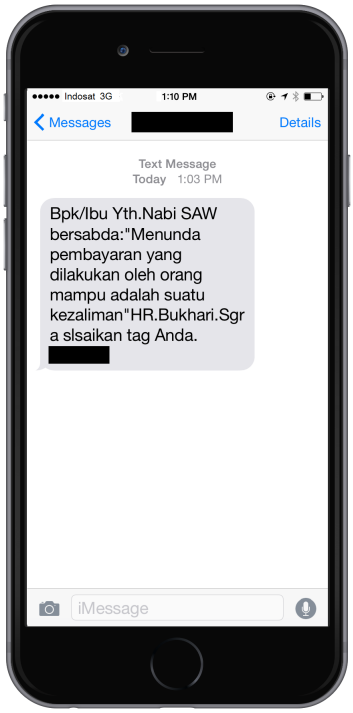
Table 5: **What Drives the Moral Appeal? Salience or Information**

Dependent variable	Dummy: customer repaid within the deadline			
	(1)	(2)	(3)	(4)
Repeated Moral Incentive	0.041	0.041	0.036	0.043*
	[0.030]	[0.030]	[0.031]	[0.025]
First Moral Incentive				0.045***
				[0.011]
Repeated Moral Incentive - First Moral Incentive				-0.001
				[0.025]
Mean Repayment Control Group		0.30		0.33
Month fixed effects	No	Yes	Yes	Yes
Controls	No	No	Yes	Yes
Waves	Waves V and VI	Waves V and VI	Waves V and VI	Full Sample
N	898	898	898	14326
R^2	0.002	0.006	0.071	0.056

Notes: Column (1), (2) and (3) restrict the sample to customers part of the follow-up experiment, that is customers late in February 2016 or April 2016 and treated in a previous wave with a moral message. Column (4) uses the whole sample (both the main experiment sample and the follow-up experiment sample). Column (1) presents OLS regression of a dummy variable for whether a customer repaid her credit card debt (made at least the minimum payment) within the deadline on a dummy for having received one of the three version of the moral message after being treated in a previous wave with the same moral message. The control is the omitted group, for which we report the mean repayment rate. Column (2) replicates and adds month fixed effects. Column (3) replicates and adds individual covariates (age, gender dummy, Muslim dummy, province dummy, income, a dummy for being in the sample in a previous month, and a dummy for having been more than 30 days past due at least once in the previous 12 months). Column (4) replicates, adds a dummy for having received one of the three version of the moral message for the first time, and other treatment group dummies. "Repeated Moral Incentive - First Moral Incentive" gives the difference between the coefficient on "Repeated Moral Incentive" and the coefficient on "First Moral Incentive." P-value for the test of inequality "Moral Incentive < Cash Rebate" in parenthesis. Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix Figures

Figure A.1: **Text Messages**



Notes: The figure shows the text message sent to experimental participants assigned to the "*moral incentive*" treatment condition.

Figure A.2: **Survey June and July 2015**

Assalamu'alaikum Sir/Mam.

Excuse me, may I talk to Mr./Mrs. [Cardholder name]. I am calling from [name of the bank] and I would like to take your time for a moment to ask you a few questions to improve the services we offer you with [name of the card]. This will take less than 5 minutes of your time.

Are you willing to do this?

- Rank the following in terms of importance in your life, where 1 is the most important and 4 is the less important:

Family Work Friends Religion

- How important is religion in your life?

Not important at all | 1 | 2 | 3 | 4 | 5 | Extremely important

- To you personally, how important are the rules of Islam and Syaria law?

Not important at all | 1 | 2 | 3 | 4 | 5 | Extremely important

- Who do you think might have said a phrase like this one? "Non repayment of debt by someone who can afford is an injustice".

1 Islamic Council

2 Prophet Mohammad PBUP

3 Director [name of the bank]

4 Director Bank Indonesia

5 Don't Know

Thanks you so much for your participation to improve our service. Have a nice day and Wassalamualaikum Wr. Wb.

Figure A.3: **Survey December 2014**

Assalamu'alaikum Sir/Mam.

Excuse me, may I talk to Mr./Mrs. [Cardholder name]. I am calling from [name of the bank] and I would like to take your time for a moment to ask you a few questions to improve the services we offer you with [name of the card]. This will take less than 5 minutes of your time.

Are you willing to do this?

- Are you aware of the existence of the "Bank Indonesia Sistem Informasi Debitur?"

- What do you think would be the consequences if you get reported to credit registry for missed payments?

-- Won't be able to open new deposit accounts at [name of the bank] or any other bank:

Yes No

-- Won't be able to get new credit from [name of the bank]:

Yes No

-- Won't be able to get new credit from any other bank:

Yes No

-- Will have to go on a trial (process in front of judge):

Yes No

Thanks you so much for your participation to improve our service. Have a nice day and Wassalamualaikum Wr. Wb.

Figure A.4: **Survey April 2016 Control Group**

Assalamu'alaikum Sir/Mam.

Excuse me, may I talk to Mr./Mrs. [cardholder name]? I'm calling from [name of the bank], and I would like to ask you some quick questions regarding your [name of the card]. Do you have a few minutes to tell me your answer?

- How committed do you think [name of the bank] is to collect debt from delinquent customers on a scale from 1 to 5 (where 1 is not much, and 5 is a lot)?

- [Name of the bank] is sending reminder messages to its customers to help them make their payment on time. You received one of this messages last week. Would you like to receive the same message again in the future?
Yes No

- What do you think would be the consequences if you get reported to the Bank Indonesia Sistem Informasi Debitur credit registry for missed payments?

-- Won't be able to open new deposit accounts at [name of the bank] or any other bank:
Yes No

-- Won't be able to get new credit from [name of the bank]:
Yes No

-- Won't be able to get new credit from any other bank:
Yes No

-- Will have to go on a trial (process in front of judge):
Yes No

Thanks you so much for your participation. Have a nice day and Wassalamualaikum Wr. Wb.

Figure A.5: **Survey April 2016 Treatment Group**

Assalamu'alaikum Sir/Mam.

Excuse me, may I talk to Mr./Mrs. [cardholder name]? I'm calling from [name of the bank], and I would like to ask you some quick questions regarding your [name of the card]. Do you have a few minutes to tell me your answer?

- How committed do you think [name of the bank] is to collect debt from delinquent customers on a scale from 1 to 5 (where 1 is not much, and 5 is a lot)?

- [Name of the bank] is sending reminder messages to its customers to help them make their payment on time. You received one of this messages last week. Would you like to receive the same message again in the future?
Yes No

- We sent this SMS to some of our customers being late on their credit card repayment: "Dear Mr/Mrs. Late payments are reported monthly to Bank Indonesia Sistem Informasi Debitur (SID), which all banks consult. This will diminish your ability to get credit in the future. Please repay your card balance at your earliest convenience. Call [customer service number]."
What do you think would be the consequences if you get reported to the Bank Indonesia Sistem Informasi Debitur credit registry for missed payments?

-- Won't be able to open new deposit accounts at [name of the bank] or any other bank:
Yes No

-- Won't be able to get new credit from [name of the bank]:
Yes No

-- Won't be able to get new credit from any other bank:
Yes No

-- Will have to go on a trial (process in front of judge):
Yes No

Thanks you so much for your participation. Have a nice day and Wassalamualaikum Wr. Wb.

Appendix Tables

Table A.1: **Categorization**

	Treated (1)	Control (2)	Repeated (3)	Excluded (4)	Other Project (5)	Total (6)
Wave I	2000	871	0	83	800	3754
Wave II	2000	985	0	1018	800	4803
Wave III	1000	965	0	1823	600	4388
Wave IV	1344	343	0	1652	0	3339
Wave V	1516	590	306	1075	0	3487
Wave V	1448	366	592	1343	0	3749
Total	9308	4120	898	6994	2200	23520

Notes: Column (1) and (2) gives the number of customers who were randomized into treatment and control for the main experiment. Column (3) fives the number of customers who were randomized into treatment and contron for the follow-up experiment on the effect of repeated messages. Column (4) gives the number of customers excluded because they had previously received a text message treatment. Customers assigned to the control group in a previous month remained in the sample and could either be assigned to a treatment or be again in the control group. Column (5) gives the number of customers randomized into treatment for a different project. Column (6) gives the total number of late customers.

Table A.2: **Follow-Up Experiment Balance Covariates and Treatment Cell Size**

Panel A: Balance of Covariates				
	Full Sample	Repeated Moral Incentive	Control Group	p-value
	(1)	(2)	(3)	(4)
Age	42.29	42.43	42.15	0.653
	[9.375]	[9.375]	[9.384]	
Female	0.41	0.44	0.38	0.080
	[0.492]	[0.497]	[0.486]	
Muslim	0.90	0.91	0.89	0.321
	[0.296]	[0.282]	[0.309]	
Income	126.72	124.07	129.35	0.702
(Millions Rp)	[206.906]	[171.322]	[237.255]	
Credit Limit	13.10	13.38	12.82	0.368
(Millions Rp)	[9.386]	[9.445]	[9.329]	
Panel B: Treatment Cell Size				
Wave V	306	153	153	
Wave VI	592	295	297	
Total	898	448	450	

Notes: Panel A reports summary statistics for the follow-up experiment sample and presents a test of random assignment. Column (1) reports the mean level of each variable, with standard deviations in brackets, for the full sample. Columns (2) and (3) report the mean level of each variable, with standard deviations in brackets, for the two experimental conditions. Column (4) reports the p-value of a test that means are the same in the two experimental conditions. Panel B reports treatment cell sizes by month.

Table A.3: **Text Messages**

	Bahasa Indonesia	**English**
Control: Basic Reminder	Bpk/Ibu Yth. Tag [name of the card] Anda tlh jth tempo. Utk kenyamanan & keleluasaan bertransaksi, segera lakukan pemby. Jk tlh membayar, abaikan SMS ini.[customer service number]	Dear Mr/Mrs. Your [name of the card] has reached the due date. For your convenience, please make a payment at your earliest convenience. If you have already paid, ignore this text. Call [customer service number].
Moral Incentive	Bpk/Ibu Yth.Nabi SAW bersabda:"Menunda pembayaran yang dilakukan oleh orang mampu adalah suatu kezaliman"HR.Bukhari.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. The Prophet (Peace and blessings be upon Him) says: "non-repayment of debts by someone who is able to repay is an injustice" (Imam al-Bukhari). Please repay your credit card balance at your earliest convenience. Call [customer service number].
Non-Religious Moral Incentive	Bpk/Ibu Yth.Menunda pembayaran yang dilakukan oleh orang mampu adalah suatu ketidakadilan.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. Non-repayment of debts by someone who is able to repay is an injustice [non-arabic]. Please repay your credit card balance at your earliest convenience. Call [customer service number].
Implicit Moral Incentive	Bpk/Ibu Yth.Menunda pembayaran yang dilakukan oleh orang mampu adalah suatu kezaliman.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. Non-repayment of debts by someone who is able to repay is an injustice. Please repay your credit card balance at your earliest convenience. Call [customer service number].
Cash Rebate Incentive	Bpk/Ibu Yth.Bulan ini:slsaikan tag Anda utk mendapatkan hadiah uang tunai sebesar 50% dr pembayaran minimum pada tag berikutnya.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. This month, make your credit card payment to get a cash rebate equal to 50of your minimum payment on your next statement. Please repay your card balance at your earliest convenience. Call [customer service number].
Credit Reputation Incentive I	Bpk/Ibu Yth.Ketrlmbtn pembyr dilaporkan k SistemInformasiDebitur BI,yg semua bank berkonsltasi&mengurangi kemampuan mendptkan krdt.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. Late payments are reported monthly to Bank Indonesia Sistem Informasi Debitur (SID), which all banks consult. This will diminish your ability to get credit in the future. Please repay your card balance at your earliest convenience. Call [customer service number].
Credit Reputation Incentive II	Bpk/Ibu Yth.Ketrlmbtn pembyr dilaporkan k SistemInformasiDebitur BI,yg semua bank dapat berkonsultasi.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. Late payments are reported monthly to Bank Indonesia Sistem Informasi Debitur (SID), which all banks can consult. Please repay your card balance at your earliest convenience. Call [customer service number].
Placebo: Simple Reminder	Bpk/Ibu Yth.Tagihan [name of the card] Anda jatuh tempo pada tanggal [due date] dan pmbayarn belum diterima.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. The due date of your [name of the card] bill was on [due date] and your payment has not been received yet. Please repay your credit card balance at your earliest convenience. Call [customer service number].
Placebo: Religious Message	Bpk/Ibu Yth.Nabi SAW bersabda:"Jika Allah menginginkan yg terbaik buat umatnya,IA melimpahkan padanya pengetahuan Kitab"HR.Bukhari.Sgra slsaikan tag Anda.[customer service number]	Dear Mr/Mrs. The Prophet (Peace and blessings be upon Him) says: When Allah wishes good for someone, He bestows upon him the understanding of the Book (Imam al-Bukhari). Please repay your credit card balance at your earliest convenience. Call [customer service number].