Social Collateral*

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Abstract

This paper studies the role of social stigma in debt repayment decisions, using a randomized field experiment with the borrowers of a retail bank. In our experiment, borrowers are randomly chosen to have their repayment status shared with an observer who is also randomly selected from a pre-existing list of the borrower's social connections. First, we find receiving the social disclosure treatment significantly reduces delinquency, by 19% of the base rate. Second, estimates from the benchmarking treatments indicate that borrowers are willing to pay 9% of their monthly income to preserve their social image, not significantly less than the formal mechanism of credit reporting. Third, we combine the random variation in the assigned social contexts with heterogeneity in subject characteristics to examine the different reasons *why* borrowers respond to reputational incentives. We find borrowers are concerned that revelation of delinquency can make them a less attractive match in social interactions such as in the labor market or the marriage market, à la the instrumental role of reputation in Bénabou & Tirole (2006). The findings highlight the role of social image as an alternative contract enforcement mechanism in the trade-off between personal privacy and access to (financial) services.

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1 Introduction

A fundamental question in finance is to understand borrower's repayment behavior. In other words, how are debt repayments enforced, or what are the costs of default? In studying this question, most existing work emphasizes credit market mechanisms such as collateral, monitoring or credit reporting. We take a different approach in this paper, focusing on the importance of social stigma instead. Given that credit information is inherently observable in many social contexts,[1] default may carry a significant reputational costs reflecting the judgments and reactions of others in the borrower's social networks. By analyzing the social costs of default, the paper sheds new light on the repayment decision where the traditional view of credit market consequences fails to explain.[2] More broadly speaking, the paper also identifies an alternative mechanism to enforce lending contracts, especially in markets where formal institutions are relatively weak for traditional methods of enforcement such as credit bureaus or bankruptcy courts to function properly.[3]

Although the literature has long recognized social stigma as a potentially important determinant of default (Fay, Hurst & White, 2002; Guiso, Sapienza & Zingales, 2013), it is generally difficult to isolate the effects of reputation concerns from confounding channels associated with using observational data such as unobserved correlated shocks, social learning, or reference-dependent preferences. In this paper, we conduct a randomized field experiment with credit card borrowers of a large retail bank in Vietnam to *directly* (i) estimate the treatment effects of reputational incentives, (ii) benchmark the effectiveness of social pressure against formal credit reporting, and (iii) explore the underlying reasons why individuals care about social image.

Our experiment takes advantage of an institutional feature in Vietnamese banking industry: banks request contact information of borrowers' social acquaintances who then serve as references in their applications for credit. In this setting, the identification of borrowers' social connections had existed prior to our intervention and, more crucially, borrowers had not anticipated the experiment when providing their references. At the same time, there is no mechanism for observation of repayment behavior by a third-party such as bankruptcy records or credit checks in Vietnam. As such, the

[1] Foreclosure is highly visible socially, bankruptcies are public records, and credit checks by non-financial entities such as employers (both current and prospective) or landlords have become ubiquitous.

[2] Most macroeconomic models require substantial default costs, beyond pecuniary components, to rationalize the low rate of strategic default observed empirically (Chatterjee, Corbae, Nakajima & Ríos-Rull, 2007). At the micro level, Bhutta, Dokko & Shan (2017) estimate that the median mortgage borrower does not exercise the default option until the mortgage is 74% underwater compared to the 20% threshold predicted by a neoclassical model. Similarly, Indarte (2020) estimates that bankruptcy filings are five times more responsive to cash-on-hand than relief financial generosity, suggesting a large non-monetary cost of filings.

[3] Anecdotally, lenders in various countries use threats of disclosing non-payment to borrowers' social connections as a method to enforce repayment. For instance, The Washington Post on May 7, 2019, discusses how debt collectors in the US contact people in borrower's networks that they find through social media. In China, fin-tech lenders usually require access to borrowers' phonebook before granting credit and call people in the phonebook if the borrowers do not repay on time.

setting allows us to construct a controlled environment in which we can create exogenous variation in the observability of repayment status and isolate the effect of social reputation concerns. Moreover, social relationships in our sample are all verified and well diverse.[4] This key attribute enables us to examine *why* borrowers respond to reputational incentives through a combination of heterogeneity in subject characteristics and variation in the assigned social contexts.

Working closely with our partner bank, we designed and implemented a program that could generate random assignment of the two features above: (1) delinquency observability and (2) the social contexts in which the observation of delinquency takes place. Specifically, the program first randomly assigned each borrower one reference among their pool of references, and then asked for the borrower's agreement to have the designated reference notified of their payment status if they become delinquent, in exchange for a lottery ticket to win different prizes. Among those who agreed, we implemented a random draw to determine whether their delinquency would actually be disclosed (the treated group) or not (the control group), with borrowers being notified of the result immediately. Since borrowers in the treated and control groups all agree to the disclosure of their payment status but have *randomly determined difference* in actually having the disclosure, comparing their repayment behaviors can control for the selection effects and provides an estimate of the treatment effects.

We organize our analysis into three parts. In the first part of the paper, we find a positive effects of social image incentives on repayment. Receiving the social reporting treatment reduces delinquency by 2.2 percentage points, equivalent to a 20% drop from the control group. Analysis of credit take-ups reveals that there exist both ex-ante and ex-post treatment effects. Ex-ante, borrowers take preemptive actions to reduce their risk exposure by consuming less credit. The preemption minimizes the likelihood that cash-flow constraints become binding or makes marginal utility of cash-on-hand less responsive to income shocks. Ex-post, concerns about social images either incentivize treated borrowers to exert more efforts to repay or decrease the net benefits of strategic default. Further investigation indicates that ex-ante reductions in credit take-up does not fully explain the decrease in the delinquency rate and that the higher repayment rate is significantly driven by ex-post incentives to avoid reputational damage caused by delinquency disclosure. Finally, we do not find evidence that the funding for repayment comes from increases in income or lender substitution. This suggests borrowers either spend off their savings or borrow elsewhere to repay. We, however, do not have sufficient evidence to give a definitive answer to this question.

Secondly, following Bursztyn, Fiorin, Gottlieb & Kanz (2019), we implemented two additional treatments to benchmark the economic magnitude of the social treatment. The first one is an outright financial incentive to estimate borrower's willingness-to-pay for an intact social image. The

[4]Commonly used proxies for social connections include geographical proximity such as neighborhood indicators or group memberships such as workplaces and schools. However, these proxies do not always reflect actual social interactions and even if they do, they only allow for comparisons within one specific type of relationship.

second benchmarking treatment involves credit reporting mechanism. In this treatment, borrowers are reminded that delinquency will be reported to the credit registry and that will diminish their chance to borrow in the future. As information sharing is a common feature in many credit systems and credit reputation has been extensively studied (Liberman, 2016; Liao, Martin, Wang, Wang & Yang, 2019), the second benchmarking exercise serves to provide a broader cross-sample comparison.

With results from these benchmarking treatments, we (conservatively) estimate that borrowers are willing to pay 9% and 11% of their monthly income to preserve a "clean" social image and a clean credit record, respectively. These numbers indicate that social reporting appears to be not significantly less effective than credit reporting, at least in our setting. We then compare the effects of credit reporting in our sample to what has been documented in other markets such as Liberman (2016) or Bursztyn et al. (2019) and find comparable estimates. Overall, the exercise shows an economically significant and meaningful effect of social reporting on enforcing repayment.

In the third part of the paper, we use a series of tests to investigate the different reasons *why* borrowers respond to social image concerns. Adapting Bénabou & Tirole (2006), we form our empirical analyses in this section based on the assumption that the value of reputation can be instrumental (meaning it makes the borrower a more attractive match in social interactions such as in friendship, marriage or workplace), or purely hedonic (that is social esteem or shame as a hedonic goods). One implication of this assumption is that while hedonic motives are fixed preferences, the instrumental roles will depend on the informational and economic content of the specific social context. Embedding this theoretical framework into our experimental design, we construct three categories for social relationships: relatives, friends and co-workers and test whether the treatment effects vary with respect to the different (randomly chosen) social contexts.

We find that the treatment effect is highly significant when the reference is a friend or a co-worker but becomes insignificant when the reference is a relative. First, the random assignment of reference in our experimental design mitigates the concern that borrowers may be of systematically different types with different hedonic preferences for reputation. Likewise, evidence from our follow-up survey indicates that a borrower's relative is not more likely to know of the borrower's repayment status than a friend or a co-worker. As such, it is most likely the differences in how borrowers care about their images that are driving their heterogeneous responses across social contexts. In other words, the finding is consistent with the existence of the instrumental roles of social reputation. Furthermore, the null result in the relative sub-sample suggests that hedonic motivations (if any) are not strong enough to significantly influence borrower's default decisions.

To further understand the instrumental role of reputation, we then examine the effects of disclosure threat on delinquency in three environments: informal credit market, labor market, and marriage market. We find that social reputation treatment becomes less effective when borrowers would more

likely borrow from the reference, suggesting that the treatment effects are not driven by concerns about credit information in the informal credit market. In contrast, we document a significantly higher increase in repayment rate when borrowers treated with co-worker reference have lower job security which is consistent with the concern that negative credit information may impact borrower's employment outcomes.[5] There are also strong and significant differential treatment effects between single and married males when the reference is a friend compared to when the reference is a relative. Notably, we find no such differential effects with respect to single and married female borrowers. Provided that women care a great deal about the socio-economic conditions of partner (Fisman, Iyengar, Kamenica & Simonson, 2006), we interpret this result as evidence of single male borrowers responding to marriage market incentives. Taken together, the evidence suggests that reputation associated with credit information can play an instrumental role in social signalling for both pecuniary reasons like career concerns and non-pecuniary motives such as dating matches.

Overall, our findings show that social reputation incentives have a significant impact on debt repayment decisions. Borrower's responses are mostly driven by concerns that the revelation of non-payment sends a negative signal to their social network and makes them a less attractive match in these social interactions. As such, social disclosure is particularly effective at deterring non-payment by individuals who are likely to be strategic.

Related Literature. Our paper relates to two main strands of literature. First, the paper advances our understanding of household debt decisions, particularly with regard to the effects of social factors. Early studies in the literature documented a default pattern that appear consistent with social stigma explanation. For example, Fay et al. (2002) and Gross & Souleles (2002) find a significant connection between the likelihood a household defaults and the aggregate bankruptcy filing rates in their neighborhood. Both empirical results can be attributed to declining social stigma felt by defaulters, but they can also be driven by unobserved common shocks to the local economic conditions or unobserved common characteristics shared by borrowers within the same neighborhood. Later work was able to overcome the issues with unobservables and establish peer effects or spillover in default behaviors such as in mortgage foreclosure (Gupta, 2019), bankruptcy filing (Kleiner, Stoffman & Yonker, 2019), or micro-credit repayment (Karlan, 2007; Breza, 2012). These results are again consistent with social stigma in default, but also with alternative mechanisms such as supply-driven pricing, social learning or reference-dependent preferences.

In this space, to the best of our knowledge, we are the first to provide *direct* evidence on the importance of reputational incentives in default decisions. On one hand, our setting effectively shuts down borrower's observation of peer's repayment behaviors - the channel that underlies these alter-

[5] Bos, Breza & Liberman (2018) find in the context of Sweden, employment outcomes significantly improve following removal of negative credit information.

native explanations. On the other hand, in our experiment, borrower's responses are driven solely by random variation in the observability of their behaviors by peers. The setup, thus, can cleanly separate the effects of reputation concerns from other factors driving social interactions. Moreover, our contributions go beyond identifying the treatment effects and provide an estimate of how effective these reputational incentives are relative to outright financial incentives and other material incentives, i.e., credit reputation.

Second, our work connects to the study of social image and its impacts on economic behaviors (Bursztyn & Jensen, 2017). In the field, social image pressure has been found to influence various economic behaviors including saving (Breza & Chandrasekhar, 2019), consumption (Bursztyn, Ferman, Fiorin, Kanz & Rao, 2018), effort in the workplace (Mas & Moretti, 2009), education (Bursztyn & Jensen, 2015), charitable giving (DellaVigna, List & Malmendier, 2012) and voting (Dellavigna, List, Malmendier & Rao, 2017). Our study first confirms that social reputation can be a powerful incentive even in case of outright, high financial stake.[6] More importantly, while the literature has focused on cleanly identifying the effects of social image concerns, little is known about the underlying reasons *why* individuals respond to these concerns. By analyzing treatment effects within randomly assigned social contexts, we can disentangle the instrumental roles from the hedonic motivations and show specifically the social contexts in which reputation matters.

Our results on social collateral suggest a novel way to relax the collateral constraint in credit provision. Economists have long argued for the presence of informal institutions such as social norms as a solution to the commitment problem, especially in environments with weak formal foundations (Greif, 1993; Dixit, 2009; Acemoglu & Jackson, 2017; Ali & Bénabou, 2019). The lack of proper formal institutions for contract enforcement has been one of the main obstacles to credit provision, and consequently economic growth, in developing economies (Banerjee & Newman, 1993; Banerjee, Chandrasekhar, Duflo & Jackson, 2013). To the extent that social reputation incentives helps enforce repayment, it can also help expand credit provision to the group of borrowers who fall short of collateral requirements. The current lending landscape of China provides an example to illustrate this point. The majority of individuals and SMEs in China do not have access to credit from traditional financial institutions, mainly due to the lack of qualified collateral and credit histories. By making use of social collateral, among other innovations, fin-tech lenders have stepped in and filled the void for the underserved population.[7]

The example also highlights the trade-off between the value of personal privacy and the price of access to services (i.e. credit in this case) that has become an integral part of many business models nowadays (Ali & Bénabou, 2019). The increasing prevalence of this strategy is in part due to the

[6] Bénabou & Tirole (2006)'s model shows a reversal in an agent's actions with respect to the level of financial stakes involved. They also call for more empirical work on situations in which opportunity costs are nontrivial.

[7] See discussions by Brookings, Knowledge@Wharton or CNBC among others.

rise of social media and advances in technology that have significantly reduced the cost to collect and disseminate information. As a result, there have been substantial policy debate on these issues. By providing an estimate of borrower's willingness-to-pay to protect their social image, our paper helps better understand this privacy-service trade off and directly contributes to the policy discussion on the topic.

More broadly speaking, studying how these reputational costs affect repayment decisions is also crucial for our understanding of household debt decisions and their implications for credit markets as well as macroeconomic activities in the aggregate (Campbell, 2006; Zinman, 2015). Designing a credit system without considering these non-financial components can result in higher than optimal default cost, which limits household ability to insure against income shocks and other unexpected financial risks. Indeed, the class of general equilibrium models with default (Dubey, Geanakoplos & Shubik, 2005; Chatterjee et al., 2007; Livshits, MaCgee & Tertilt, 2007)) when modelling these trade-offs between consumption-smoothing and moral hazard often find the optimal default cost to be intermediate.[8]

The paper proceeds as follows. We first describe the setting and experimental design in Section 2. Section 3 presents results on the effect of social reputation treatment on delinquency rate. Section 4 details how we estimate the value of social image. Section 5 analyzes heterogeneity in treatment effects. Section 6 discuss selection effects and generalizability of the results. Section 7 concludes.

2 The Experiment

2.1 Institutional settings

The bank. We partner with a large retail bank in Vietnam to design a natural field experiment with a random sample of its credit card borrowers. The bank is among the five biggest retail banks in Vietnam, serving approximately four million individual borrowers throughout the country. It offers a multitude of financial products, and its borrower base is representative of the local banked population. There has been an exponential growth in demand for consumer credit in the past five

[8]The passage of Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) in 2005, the biggest overhaul of bankruptcy system in decades, provides a case in point. The early 2000s witnessed an upsurge in personal bankruptcy in the US. A widely accepted explanation of the phenomenon at that time was the decline in default cost, a large part of which involved declining social stigma. Alan Greenspan, the then Chairman of the Federal Reserve in his testimony before Congress in 1999 even claimed that *"personal bankruptcies are soaring because Americans have lost their sense of shame"*. In response, lawmakers passed the BAPCPA to "make bankruptcy more embarrassing and more difficult" as quoted by Senator Charles Grassley (R-Iowa) in "Soaked by Congress", *Time magazine*, May 7, 2000. Proponents of the bill argued that the lower default rate should reduce interest rates and thus make borrowers better off. However, an estimate by Gross, Kluender, Liu, Notowidigdo & Wang (2019) indicates that only a portion of higher debt-recovery rates is passed through into lower borrowing cost.

years in Vietnam. Our partner bank is experimenting with different ways to expand credit provision without substantially increasing its risk exposure.

The credit card. Upon application for credit cards, borrowers provide the bank with information about their characteristics such as age, gender, marital status, education, employment and, most importantly, their financial conditions (e.g., income, outstanding debts, assets).[9] Banks usually only consider applicants that have stable full-time jobs with monthly income above a certain level. To verify the applicant's income, banks ask for proof of employment including employment contract and salary statement.[10] Banks also have access to applicants' credit history through the country's public credit registry, the *Credit Information Center of Vietnam (CIC)*, after paying a nominal fee of ₫ 50,000 (US$ 2) per record.

Social reference. When applying, borrowers are also asked to provide contact information of their social acquaintances, who then serve as references in their applications.[11] As part of the screening process, the loan officers then contact these references to verify information about the borrower and, if possible, grasp any cues about the borrower's credibility. As a result, all social connections in our sample are credible and verified of actual interactions. Our partner bank asks for at least two references. The most frequent type of social connections that the bank asks for is work-related such as colleagues or supervisors. Another common source of reference is through the bank's referral programs. In these programs, current borrowers of the bank refer their acquaintances such as friends or relatives to open an account and apply for a credit card in exchange for a small financial reward. As such, the types of social relations in the borrower pool are naturally well diverse.[12]

Billing cycle. There is a monthly cycle of billing and payment. The billing date is set to be the fifth of every month. The bank offers a no-interest period of 45 days, making the due date on the twentieth every month. The bank requires a minimum payment equal to 8% of the borrower's total outstanding balance or ₫ 300,000 (US$ 13) (whichever amount is higher). If borrowers do not make the required payment by the due date, the bank sends a reminding text message on the following day. The bank also charges a late payment fee equivalent to 3-6% of the outstanding balance. Additionally,

[9] See the translated version of our partner bank's application form in Appendix A.1 for more details.

[10] Those that do not have a full-time employment contract will need to pledge collateral to get a loan. Consequently, a significant portion of the population has been excluded from the credit system. Ways to relax this constraint would greatly improve access to finance for the unbanked population.

[11] Appendix A.2 provides a sample of credit card application form in dual language (English and Vietnamese) from a foreign bank operating in Vietnam as a reference point. There is a section that asks for information of reference on the bottom right corner of page 2.

[12] The diversity of relationship types is an important feature of our setting that helps shed light on the underlying mechanisms that are driving the social image incentives.

if they do not pay the full balance by the due date, they will have to pay for interest on the balance for the entire month. Figure 2 summarizes the payment cycle and points of intervention.

Credit registry. In addition to the financial penalty, late-paying borrowers also face the penalty of credit reporting. If borrowers do not make the minimum payment on or before 10 days after the due date (the thirtieth of every month), they are considered delinquent, and their delinquencies are reported to CIC.[13] Even if the debts are eventually repaid, the negative entries remain in the record for up to three years, depending on when they are paid. Specifically, an entry remains for one year if the debt is paid within 30 days from the due date (type I delinquent) and three years if it is paid within 90 days (type II delinquent). Delinquent marks, especially type II delinquencies, significantly diminish a borrower's access to the formal credit sector in the future, almost surely precluding them from getting an unsecured loan. Their only remaining option is a fully collateralized loan, which also comes at an exceedingly high cost of borrowing. Finally, a borrower is considered in default if their balance remains outstanding for more than 90 days after the due date and default remains in their credit history for five years.

2.2 Experimental design

We design the experiment to answer the 3 research questions outlined earlier: (1) estimate the treatment effects of social stigma on repayment behaviors, (2) quantify the effectiveness of social reputation incentives in enforcing repayment, (3) explore the underlying reasons why borrowers respond to social image concerns (see Figure 1 for a graphical description of the experimental design).

We first randomly assign each borrower in our sample one reference from their list of references so that we have (sufficient) variation in the types of social connections. This variation allows us to analyze borrowers' behaviors under different (randomly assigned) social contexts, in combination with heterogeneity in borrower characteristics, to shed light on the underlying motivations for social image *(Question 3)*.

The borrowers are then given an offer to have their assigned reference be notified of their payment status in case they become delinquent, i.e. missing the 10 days deadline after the monthly due date. Borrowers who do not respond or respond but decline the offer are put into Condition *N*. They will receive the usual communication from the banks as all other borrowers, including a standard reminder text message when they miss their payment due date. Among borrowers who agree to have their assigned references notified of their delinquencies, we implement a random draw to determine

[13] It should be noted that unlike consulting the CIC for borrower's credit history, reporting borrower's payment performance is mandatory. Banks are required to file reports at the end of every month.

their actual treatments. Borrowers assigned to the main treated group (Condition *TS*) would actually have their non-payment to be disclosed. Borrowers who would not have their non-payment disclosed are assigned to the control group (Condition *C*).

Since borrowers in Condition *TS* and Condition *C* all agree to the disclosure of their payment status but have *randomly determined difference* in actually having the disclosure, the differences in their repayment behaviors can control for the selection effect and represent the treatment effects (*Question 1*). On the other hand, borrowers in Condition *C* and *N* are different in their revealed preferences about having the disclosure but face *randomly determined similarity* in having no threat of non-payment disclosure. Thus, comparing their repayment behavior can control for the treatment effects and provides an estimate of the selection effects.

Finally, following Bursztyn et al. (2019), we implement two other treatments for benchmarking purposes among the remaining borrowers who agree to the offer. The first benchmarking treatment is a financial incentive exercise, which allows us to measure the impact of social image in monetary terms. Specifically, borrowers randomly assigned to Condition *TF* will receive a large cash rebate if they repay before the deadline. A valid concern with this treatment, however, is that the effects (if any) are sensitive to the size of the cash rebate offered and, thus, have little external comparative power. To address this concern, we add a second benchmarking treatment (Condition *TC*) involving the impact of credit reputation incentives - another type of material incentives that has been shown to be important in other markets (Liberman, 2016; Liao et al., 2019). As credit reputation or information sharing is a common feature in many credit systems, this exercise will provide a more comparable cross-sample benchmark. Together, these additional treatments will allow us to quantify and benchmark the effects of social reputation against other, extensively studied, repayment enforcement mechanisms (*Question 2*).

2.3 Implementation

To operationalize the conceptual design, we worked closely with our partner bank in designing and launching a commercial program that could generate the desired experimental conditions. Appendix A.3 provides the program script in details.

Practical considerations. There are several requirements that the program being offered needed to satisfy. *First*, given an average monthly delinquency rate of 2%, the program needed to be sufficiently desirable so that the number of borrowers accepting the arrangement would be large enough to yield a meaningful sample size of delinquency. We achieved this by doing two things: one, we phrased our program as an initiative for the bank to be able to offer borrowers with customized services and

better borrowing terms if the borrowers can credibly communicate their private types to the bank; two, we offered financial rewards via a lottery to incentivize borrowers into the program.

In order to gauge how acceptance rate would respond to financial incentives, in November 2018, we asked a random pool of 300 borrowers if they would be willing to let the bank inform their references should they become delinquent, accompanied by varying degrees and forms of financial reward. To our surprise, 43% of them responded with a yes to an offer with no explicit financial incentives. By being willing to pledge their social reputation, borrowers wanted to signal to the bank that they were good borrowers, hoping to receive more favorable borrowing terms such as higher credit limit or lower interest rate. We then applied this idea in phrasing our actual program.

Besides, we provided financial incentivss to induce higher participation rate. We initially suggested rewarding borrowers with a lower interest rate for participation. However, due to regulatory and organizational reasons, our partner bank was not able to accommodate the proposal at this stage.[14] More crucially, from a methodological standpoint, changing borrowing terms can give rise to confounding income effects. More favorable borrowing terms would *inadvertently* give treated borrowers systematically higher repayment ability that could bias the results in favor of finding a positive impact on repayment likelihood. After ruling out the interest rate reward, we found lottery to be the most effective in terms of balancing financial costs and turnout rate among all forms of monetary compensation that we surveyed.

Second, the program needed to appear as natural as possible so that borrowers would behave as in their typical environment. In terms of timing, we decided to launch the program in February, after the Vietnamese traditional New Year, to avoid any contamination from the seasonality in spending and borrowing behavior around that time of the year. One unique feature about the new year, though, is that Vietnamese people traditionally give each other lucky money as a wish for good fortune. As a practice, banks in Vietnam have also routinely run commercial programs in the form of lucky money give-out during the new year. As such, our "lucky money" lottery format fitted naturally with the timing of the experiment.[15]

Third, we needed to be able to justify the randomization. We emphasized the limited scope of the program as this is a brand-new initiative that our partner bank recently developed. As a result, only a group of borrowers can be accepted into the lottery, and the randomization we implemented is to ensure fairness among borrowers.

[14] Still, they expected that if the strategy proved to be useful, they would consider a full-fledged plan to incorporate the policy in their screening and pricing procedure.

[15] Commercial program is a universal attribute of the banking industry in Vietnam. All banks run various types of commercial programs throughout the year, of which lottery is one of the most common. At the time of the intervention, our partner bank was having concurrently eleven commercial programs. There should be no reasons to believe that borrowers would think differently about our program.

Program details. On February 15, 2019, we sent out the information about the program to 10,000 randomly selected credit card borrowers.[16] A link then redirected them to a secure site where they could answer survey questions and choose to participate in the program.[17] We asked them questions about (1) their social networks, (2) their choice of digital products as a proxy for how much they care about social image, (3) their credit relationship with the reference, and (4) their previous experience with default behavior in their social circle. Finally, we asked whether they agree to take the offer and the reasons for declining if they chose to do so. The lottery schedule included a first prize of ₫ 100,000,000 ($ 4,500), an amount equivalent to almost a year of income for the median borrower in our sample. Overall, there were more than 100 different prizes totalling ₫ 300,000,000 ($ 13,500).[18] The fact that borrowers' participation is randomized, conditional on having their agreement, was communicated clearly to the borrowers before they could make the decision. When borrowers agreed to participate in the program, a random number between 0 and 100 was generated on-site to determine the group to which each borrower would belong. As described above, in addition to the main treated and control groups, we also created two other conditions to serve as the benchmark for the main treatment effects of interest. Borrowers were immediately informed of their assigned conditions so that there would be no ambiguity.

Specifically, if the number is less than or equal to 30, the borrower was put in the main social reporting treated group (Condition TS) and received the following message.

> *Congratulations! Your random number is [the drawn number]. You have been selected to participate in the program. Your lottery ticket is [borrower ID number]. The lottery results will be announced on 03/05/2019. Please remember that as part of the program, your [assigned reference] will be notified of your payment status in case you are 10 days past your due date.*

If the number is greater than 30 but less than or equal to 60, the borrower was put in the control group (Condition C) and received the following message.

> *We are sorry that you have not been lucky this time. Your random number is [the drawn number]. Since your participation was not authorized, your [assigned reference] will NOT be notified of your payment status whatsoever. Please check out our many other programs.*

[16] See Figure 1 for a graphical description of the intervention timeline and payment cycle.

[17] As noted above, Appendix A.3.2 provides detailed script of the prompt.

[18] The lottery was drawn, results were communicated, and prizes were given to participants in the first week of March, which was right after the end of the intervention. The timing of the announcement ensured that borrowers did not make repayment decisions under the expectation to win some prizes. Another concern is that given the financial prizes, the treated group has more financial resources, on average, to meet their repayment obligations. However, it should be noted that the number of prizewinner makes up only 1% of our sample. Treatment effects are very similar if we exclude those that won.

If the drawn number is greater than 60 but less than or equal to 80, the borrower was assigned to the financial incentive group (Condition TF) and offered a rebate equal to their late payment fee if they make the required payment before the deadline.[19]

> *We are sorry that you have not been lucky this time. Your random number is [the drawn number]. Since your participation was not authorized, your [assigned reference] will NOT be notified of your payment status whatsoever. However, as our special thank you to your acceptance, we would like to offer you another opportunity. You will receive a cash rebate equal to your late payment fee if you make the required minimum payment before the 10-day deadline. The cash rebate will be credited to your balance immediately after you make the payment on time.*

Finally, if the number is greater than 80, the borrower was put in the credit reputation group (Condition TC) and received the following message which explain the adverse effect of delinquency on the borrower's future access to credit.

> *We are sorry that you have not been lucky this time. Your random number is [the drawn number]. Since your participation was not authorized, your [assigned reference] will NOT be notified of your payment status whatsoever. However, please note that all non-payments are reported to the National Credit Information Center (CIC) monthly. Banks consult CIC for borrowers' credit history before making lending decisions. Non-payment records will diminish your ability to borrow in the future.*

By the time the program closed, we had received 9088 responses, corresponding to a 91% response rate. 2513 borrowers declined to participate, which means that together 3425 borrowers (34.25 %) belonged to Condition N and 6575 (65.75 %) participants accepted the offer.[20] The randomization among those who agreed yielded 1963 borrowers to the main treated group TS and 1968 to the control group C. In addition, 1318 and 1325 borrowers were randomly assigned to condition TC (credit reputation) and condition TF (financial incentive), respectively.

All offers were binding for one year from March 2019 to March 2020, during which we observed and recorded borrowers' repayment behavior. Every month, borrowers received their credit card statement on the fifth and had until the twentieth to pay the balance. If they did not pay by the

[19] Our partner bank charges a late fee of 3-6% of the outstanding balance or ₫ 100,000 whichever amount is larger. The amount of financial reward is generally in line with what was implemented in previous studies. For instance, Bursztyn et al. (2019) implemented a cash rebate that is equal to 50% of the minimum required payment or 4% of the outstanding balance.

[20] First, absent any financial rewards, 43% of borrowers in our pilot survey agreed that the bank could inform their social references. Second, as our financial reward for participation is a lottery, which entails uncertainty, borrowers' decision to participate depends crucially on their expectations about their chance of winning the lottery. Our pilot survey in November 2018 revealed that subjects are generally overconfident in their estimates, especially male subjects. The fact that 70% of our sample being males might be a factor contributing to the relatively high acceptance rate.

twentieth, a reminder message was sent to their phone number on the twenty-first. A second message was sent out on the twenty-eighth, two days before the repayment deadline, if they still did not pay by then. The message content differed according to their respective conditions. Specifically, the main treated group (Condition TS) received the following text message. Appendix A.3.3 presents detailed messages for other groups.

```
Your [name of card] [month] balance of [amount] has past the due date.  Please
make a payment before [repayment deadline].  Minimum payment:[amount].  Otherwise,
as per our agreement, we will notify your [assigned reference] of your delinquency.
Ignore the message if you have already paid.  Call [program contact] for more
details.
```

2.4 Data and Summary Statistics

The dataset we use in our analysis combines administrative data from our partner bank, information from the survey administered within the experiment as well as outcomes from the experiment. Panel A of Table 1 presents a summary of borrower characteristics, while Panel B reports statistics about experiment conditions such as response and acceptance rates.

Administrative Data. We first obtain information about borrowers using the bank's administrative data. The data is as of February 2019 when we identified our sample with most information being reported by the borrowers at the time of application. The bank also shared data on borrowers' credit card usage covering the 12 months before our intervention (that is from March 2018 to February 2019). The median borrower in our sample is married male, 37 years old, has a bachelor degree, earns a monthly income of ₫ 8,800,000 (US$ 383) and has a fair credit rating.[21]

In terms of credit card usage, the median credit card user has a history of 16 months, a credit limit of ₫ 26,000,000 (US$ 1130), which is equivalent to approximately three times monthly income. In February 2018, the bank launched a new product that allowed credit card borrowers to finance household durable goods (e.g., laptops, refrigerators, vehicles, etc.) via an installment plan embedded into the card payment. Using this plan, borrowers can purchase up to the card limit and pay off the balance over 3, 6, 9 or 12 months instead of paying all at once.[22] The plan's monthly payment is then added towards the card monthly balance whereas the remaining balance of the installment loan accumulates towards debts outstanding. Therefore, the amount due every month comprises of two components: the normal purchases of goods and services and the scheduled installment payment if the

[21] Credit scores and ratings are from the bank's internal scoring system.

[22] This also means that borrowers have strong preferences for higher credit limits.

borrower has an outstanding installment loan. The median average monthly balance is ₫ 4,230,000 (US$ 183) of which ₫ 3,740,000 (US$ 162) is from purchases. The median card user has, on average, ₫ 6,200,000 (US$ 268) debt outstanding every month, equal to 69% of monthly income.

Survey Data. We incorporated a survey into the prompt that was sent out to the experiment subjects in February 2019. We intended to learn about borrower's social networks as well as their relationships with the references. The collected information would potentially help us further examine the social pressure that shapes borrower's decisions.

The first set of questions asks borrowers about their social networks, such as the number of connections on their Facebook and LinkedIn accounts and how often they interact on social media. This gives us a proxy for the depth of their social networks as well as the extent they care about social interactions. 95% of borrowers reported using Facebook compared to only 60% of borrowers answered having a LinkedIn account.[23] The median borrower has 500-1000 "friends" on Facebook and spend 1-2 hours every day on the platform.

The second set of questions asks about borrower's credit relationships with their references. When asked if they have ever borrowed from the reference, 21% of borrowers responded that they have. We then asked them to estimate the likelihood that they would borrow from the references if they need to borrow some money in the future on a scale from 1 to 5. 45% indicated from possible to likely (3 to 5). We will use these answers to identify variation in the extent that these social connections can serve as an alternative source of credit in lieu of formal bank loans.

Finally, we conduct a test of covariate balance for all four experimental conditions. Results in Appendix Table B.1 show no significant differences in all baseline characteristics across the four groups, indicating that the randomization was successful.

3 Social Reputation and Delinquency

3.1 Baseline Results

The baseline specification examines to which the social reporting treatment explains the likelihood of delinquency:

$$D_i = \alpha + \beta T_i^{TS} + \Psi \mathbf{X}_i + \varepsilon_i \tag{1}$$

[23] Facebook is extremely popular in Vietnam, even among the older population. The social media platform has gained significant popularity in Vietnam in recent years due to its ability to connect people for various purposes from political discussion to small business e-commerce. As such, the number of connections on Facebook is a reasonable proxy for the depth of social network.

Our main outcome of interest is D_i, which is an indicator that takes value one if borrower i is delinquent on their debts at least once during one year of the experiment. Consistent with the bank's procedure, we define delinquency as failure to make the required payment by the end of the 10-day grace period, which also triggers a notification to the borrower's reference. The variable of interest is T_i^{TS} which is an indicator for borrower i being in condition TS and receiving social reporting treatment. $\mathbf{X}_i$ is a vector of control variables that account for borrower and account characteristics (age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention).

In addition to cross-sectional tests, we also estimate the treatment effects in a panel setting using a pooled regression and a panel regression with fixed effects:

$$\begin{aligned} D_{it} &= \alpha + T_i^{TS} + \varepsilon_{it} \\ D_{it} &= \alpha + \beta Post_t \times T_i^{TS} + \mu_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{2}$$

In this specification, D_{it} takes value of 1 if borrower i becomes delinquent in month t and 0 otherwise. $Post_t$ is an indicator for the post-intervention period, from March 2019 to February 2020. As in Equation 1, T_i^{TS} is an indicator for borrower i receiving the social reporting treatment. The pooled regression includes only post period. The panel regression includes borrower fixed effects (μ_i) and month fixed effects (δ_t).[24] β is the coefficient of interest, which captures the effects of (within-borrower) changes in repayment behavior of the treated group compared to that of the control group.

Table 2 reports estimates of the baseline specifications in the cross-section, using a linear probability model. We first look at raw effects, without any control variables, in column (1). Compared to the control group, borrowers under the social reporting treatment condition reduces delinquency by 2.2 percentage points, equivalent to a drop of 20% from the 10.98% base rate in the control group. The estimates stay the same when we add borrower-level covariates in column (2).

Table B2 in Appendix B reports estimates of the baseline specifications for panel specifications. Column (1) shows that the effect is also significant at 5 percent level, with an economic magnitude even higher than the cross-sectional result. The share of delinquent borrower-month in the treated group decreases by 0.6 percentage points, equivalent to a 30% reduction from the 2.0% base rate of the control group. We believe the difference in economic magnitude is simply because cross-sectional results do not take into account the effects of repeated delinquencies. That is, one delinquent borrower is counted once in cross-sectional data but can have multiple delinquencies in the panel sample.

[24] Given that our data on borrower characteristics is at cross-sectional level, controls for borrower characteristics would nonetheless be subsumed by the borrower fixed effects. However, random assignment guarantees that changes in unobserved characteristics (if any) are orthogonal to the treatment.

Intensive Margins. In addition to the extensive margin results, we also investigate if there are any effects on the intensive margins. We test if treated borrowers pay differently from borrowers in the control group, conditional on repaying before the delinquency deadline using the following specification:

$$P_i = \alpha + \beta T_i^{TS} + \Psi \mathbf{X}_i + \varepsilon_i \tag{3}$$

where P_i is the average monthly ratio of payment to balance due. To study the intensive margins, we only include the observations in which borrowers are not delinquent. Results reported in columns (3) and (4) of Table 1 show that there are no statistically significant difference in payments across treated and control borrowers. Panel results in columns (3) and (4) of Table 2 show a similar effects. In fact, treated borrowers pay slightly less than control borrowers. In untabulated results, we find that borrowers in the treated group are also more likely to pay the required minimum payments than borrowers in the control group (5.9% vs. 5.5% of borrower-month observations), most likely to avoid triggering the social notification.[25] This possibly explains why on average they are repaying less than the control borrowers.

3.2 Understanding Treatment Effects

The evidence from the previous section suggests a strong increase in repayment rates in response to the social reporting treatment. We now explore different mechanisms that can generate the observed treatment effect.

3.2.1 Late Payment

We start by investigating the effects of social reporting treatment on late payment by estimating a specification similar to Equation 1, except that our outcome of interest now is an indicator for whether borrowers fail to make the required payment by the due date on the twentieth of each month. Columns (1) and (2) Table 3 reports estimation results and shows that there is a statistically *insignificant* reduction in late payment rate among treated borrowers compared to the control group. The economic magnitude is approximately 6.5% of the base rate (1.0 percentage points reduction compared to base rate of 15.8% in the control group). Given that $Pr(Delinquency) = Pr(Late) \times Pr(Delinquency|Late)$, we then further examine the effects of the social reporting treatment on delinquency conditional on borrowers already being late on their payments. Results in Columns (3) and (4) of Table 3 show a significant increase in repayment rate among treated late-paying borrowers. The treated group reduces delinquency by 10.9 percentage points, compared to the 52.3% delinquent rate of the control group, which is equivalent to a 21% reduction. Together these results suggest that

[25] Borrowers still have to incur interest payments for the remaining balance.

there is indeed a strong incentive to avoid disclosure of delinquency beyond a reminding effect that makes borrowers pay more attention to repay on time.

3.2.2 Credit Take-ups

Since the financial product is a revolving credit card, it is possible that borrowers preemptively reduce credit taking to avoid the scenario of being unable to repay. To better understand this relationship, we next examine whether borrowers adjust their credit take-up in response to being treated.

Figure 3 visually illustrates the evolution of credit utilization by the treated and control groups from before to after our intervention. We plot three different measures of credit levels: the monthly balance due (top panel) and the two components that make up the balance due: monthly purchases (middle panel) and total outstanding debts from the installment loan (bottom panel), all scaled by income for compatibility. The figure shows that while there are no discernible differences between treated and control groups prior to the intervention, the treated group exhibits a drop in monthly balance after the intervention. The bottom two panels show a reduction in both purchases and debts outstanding, suggesting that the change in card balance is a result of a cutback in spending as well as a lower tendency to take on installment loans. To better understand the magnitudes, we run a panel regression of credit take-ups on the treatment of the form similar to Equation 2:

$$C_i = \alpha + \beta T_i^{TS} + \Psi \mathbf{X}_i + \varepsilon_i \tag{4}$$

Where C_i is one of the three measures for credit levels: $Balance-to-Income$, $Purchase-to-Income$ and $Debt-to-Income$. Regression results in Panel A of Table 4 show an overall reduction of 4.0% in the monthly balance due by borrowers in the treated group compared to the control group. The decrease in debt take-up is larger, at 7% of the median level by the control group, while the change in purchases is substantially smaller at 3.7%.[26] In general, results are consistent with the interpretation that treated borrowers, under the threat of having their delinquency revealed, are taking preemptive action to reduce their risk exposure by consuming less credit. The lower exposure should give them greater capacity to cope with unexpected cash-flow shocks, reducing the probability that cash-flow constraint becomes binding and triggers delinquency.

[26]Please note that there is an upward trend in borrowing over time. The higher level of purchases is simply due to inflation and rather small to be able to explain all the increase in the balance due. The increase in debts, on the other hand, is substantial: 12 percentage points from a pre-intervention median of 69%, that is a 17% growth in debt intake within one year. It appeared that borrowers quickly make use of the installment loan feature embedded in the credit card. The adoption also explains the significant increase in delinquency compared to the pre-intervention period.

3.2.3 Ex-ante vs. Ex-post

We then ask if the documented effect of social image on delinquency is driven entirely by ex-ante preemptive action, or there also exists an ex-post effect in the sense that borrowers exert more effort to repay after consuming credit. The following pieces of evidence suggest that the treatment effects are largely driven by ex-post incentives.

First, in Panel A of Table 5, we replicate the regression of delinquency indicator on treatment dummy as in Equation 1 but add $Balance-to-Income$ or $Debt-to-Income$ to control for the debt levels in each month. Results show that debt levels indeed have a statistically significant and positive relationship with delinquency. Economically, a one standard deviation decrease in $Balance-to-Income$ is associated with 2.5 percentage points decrease in the delinquency rate. We interpret the positive association as either a higher willingness to repay as a result of lower financial benefits of delinquency or higher ability to repay as a result of lower debt burdens. However, we also notice that the effect of social reputation treatment on delinquency outcome remains significant even after controlling for level of debts. It suggests that reduced debt-taking, while moderates the treatment effect, does not fully explain the reduction in delinquency. More importantly, the coefficient estimates imply that changes in debt levels can only explain a small fraction of the treatment effects. Combining results from Table 4 and Table 5 suggests that the 0.02 reduction in $Balance-to-Income$ can only translate into $0.02 \times 0.133 = 0.0027$ or 0.27 percentage points reduction in treatment effects. That is only 12% of the documented treatment effects. In other words, in order for credit take-up to fully explain the observed treatment effects of 2.2 pp, the reduction in $Balance-to-Income$ would have to be 8 times larger.

Second, we provide evidence on repayment behaviors of a sub-sample of borrowers who are unlikely to be able to adjust their debt levels in a meaningful way after the intervention. The months leading to our intervention are the biggest holiday season in a year, which always observes soaring consumption. Some 50% of borrowers took out an installment loan[27] shortly before our intervention and, as a result, had a large amount of debt outstanding by the time we sent out the program. First, it is important to point out that borrowers did not anticipate our program at the time they made the decisions to take on these installment loans. Second, the loans were generally large such that it took up the credit limit and, therefore, borrowers were unlikely to be able to adjust their credit level immediately after the intervention. Indeed, as Appendix Table B.3 shows, there is a statistically significant reduction in monthly purchases; that is, these borrowers were also trying to reduce credit taking. Still, their debt levels remained high, and so did the monthly installment payments. As a result, the reduction

[27] These loans are mostly taken out for housing innovation purposes. Vietnamese people believe that the new year is the most important moment of a year. One way or another, most families try to get something new for their houses in the new year.

in purchases alone was not sufficient to reduce the balances in a meaningful way.[28] Overall, we argue that as these borrowers were not able to (quickly) adjust their balance due to preexisting debts that were unrelated to our treatment, differences in repayment rates between the treated and control groups must be mostly driven by ex-post changes in efforts or incentives to repay. We apply the same regression as in Equation 1 to the sub-sample of these borrowers and report estimation results in Panel B of Table 5. Results indicate that while the economic magnitudes are smaller than those from the entire sample, the reduction in delinquency rate remains statistically significant. Specifically, delinquency drops by 1.6 percentage points or 15% of the base rate, compared to 20% in the whole sample.

To sum up, the evidence reveals that there exist both ex-ante and ex-post treatment effects. Ex-ante, borrowers take preemptive action to reduce their risk exposure by consuming less credit. The lower exposure moderates the likelihood that cash-flow constraints become binding or make marginal utility of cash-on-hand less responsive to income shocks. Ex-post, concerns about social images either incentivize treated borrowers to exert more efforts to repay or decrease the net benefit of strategic default. However, further analysis confirms that the effects on repayment rates are mainly explained by ex-post incentives to avoid reputational damage caused by delinquency disclosure rather than reductions in ex-ante credit take-ups.

3.2.4 Financing Repayment: Income, Savings and Lender Substitution

To further understand borrower's ex-post repayment behaviors, we investigate different ways borrowers can use to pay for the debts. Specifically, we examine the effects of social treatment on borrowers' income, savings, and repayment at other lenders and report the results in Table 6.

We first obtain data on monthly direct deposit into salary accounts of the borrowers as a proxy for their incomes. Approximately 46% of the participants in our program have their salary accounts at our partner bank. We find no significant effects of the social treatment on earnings, either in absolute terms ($DepositAmount$) or relative terms ($Deposit/Income$). Wages tend to be sticky and it is unlikely that borrowers can increase their incomes within such a short period of time. The results, however, should be taken as suggestive only as this measure neither captures other sources of income nor covers the entire sample of borrowers.

We then examine if borrowers withdraw from their saving accounts to pay for the debts. Only 17% of the participants have a saving account at our partner bank. The most common type of saving account in Vietnam is similar to a term certificate of deposit. Customers lend their money

[28] Recall that even in the whole sample, the reduction in purchases is also small compared to the reduction in loan levels. Purchases of goods and services, especially necessity goods related to daily activities, are in general more sticky.

to the bank for a specific term and earn interests accordingly. We find a significant difference in the likelihood of withdrawing from the saving accounts between the treated and the control borrowers. Borrowers treated with the social reporting treatment are 5.6% more likely to withdraw from their saving accounts. It should be noted that there is significant cost associated with liquidating the saving accounts prematurely as the borrower would have to forfeit all the earned interests. The difference between the forfeited earnings from the saving accounts and the interests saved from paying the credit card on time can also be interpreted as borrower's willingness to pay to protect their social image.

Finally, we investigate borrower's repayment at other lenders (if any). It is possible that borrowers may be delinquent at other institutions to provide liquidity for the payment. In order to study this question, we purchase credit reports on all borrowers in our sample from the CIC. The reports are for April 2020 cycle and would indicate if the borrowers have been delinquent at any regulated depository institutions at any time during the 12-month period before April 2020. We then apply a regression similar to the baseline specification with the depending variable now being an indicator if a borrower has been delinquent at least once (at any lending institutions). We report the result in column (4) of Table 6 and find evidence of weak substitution across lenders. The difference in overall delinquency between treated and control is 1.9 percentage points, around 11% of the base rate compared to the 20% reduction in our baseline. The difference remains (weakly) significant at 10% level. We also note that the majority of borrowers do not have credit relationship with any institutions other than our partner bank. This may limit the borrowers' ability to perfectly substitute their delinquency.

Overall, it appears that treated borrowers either become delinquent elsewhere or withdraw from their savings to pay-off the loans. This suggests they are willing to take costly actions to preserve their social image. However, due to data limitation, we do not observe borrowers' activity in the informal setting such as informal income or borrowing from pawn shops. As such, these results should be taken as suggestive only.

4 Benchmarking the Treatment Effect

While previous section shows a nontrivial effects of social reporting treatment, we need a benchmark to assess the economic importance of the effects. In order to quantify the value of social image, we follow Bursztyn et al. (2019) and employ the following specification on the benchmarking treatments:

$$D_i = \alpha + \beta^{TS} T_i^{TS} + \beta^{TC} T_i^{TC} + \beta^{TF} T_i^{TF} + \Psi \mathbf{X}_i + \varepsilon_i \tag{5}$$

where the T^{TS}, T^{TC} and T^{TF} are indicators for borrower i being in the social reporting group TS, financial incentive group TF and credit report group TC, respectively. We first use estimates on

TS and TF to construct a confidence interval of the ratio between the effect of social reporting treatment and that of cash treatment, which allows us to conservatively bound the effects of social reporting in monetary terms. We then do a similar exercise for TC to estimate the value of credit reputation which, in turn, can be used to compare with results from other studies (Liberman, 2016; Bursztyn et al., 2019). Bursztyn et al. (2019) is the closest to this paper in terms of methodology. They, however, implemented their credit reputation treatment on a sample of late-paying borrowers in Indonesia. Therefore, for the purpose of external consistency in a benchmarking exercise, we also estimate Equation 5 at the event-level on a sample of instances when borrowers are late on their payments. We report the results of the benchmarking treatments in Table 7 with columns (1)-(2) for the cross-sectional tests and columns (3)-(4) for the event-level tests.

Step 1: Willingness-to-pay. First, Table 7 shows that financial rewards do not significantly affect repayment. As a result, we observe a significant difference between the effect of social and financial incentives both in the cross-section and at the late-paying event level. To maintain external consistency, we use the event-level results to construct our confidence intervals. The 95% confidence interval between the cash treatment coefficient and social treatment coefficient is estimated to be [-0.273,0.645], indicating that social incentive effects are at least 1/0.645=155% of those of financial incentives. Given that the median rebate offered was ₫ 517,000, the social reporting treatment is at least effective as a cash reward of ₫ 801,000 or approximately 9.1% of median monthly income. We interpret this number as the minimum amount of money the bank would have to offer the borrowers to induce a similar repayment rate as the social reporting treatment. In other words, by repaying more without any monetary rewards, borrowers in the social treatment group are willing to pay that much to protect their social image.

Step 2: Credit Reputation Comparison. Second, we find a statistically and economically strong effect of the credit reporting treatment on repayment. Borrowers in the credit treatment reduces their delinquency by 2.8 percentage points, compared to 2.2 percentage points of the social treatment over the same period.[29] The difference, however, is statistically insignificant, suggesting that social reporting are similarly effective as the formal mechanism of credit reporting.[30]

As in step 1, we next calculate the 95% confidence interval for the ratio between the cash treatment

[29]Survey evidence indicates the treatment changed borrower's behaviors through both the extensive and the intensive margins. In terms of extensive margin, 23% of the borrowers indicated no knowledge of the credit registry. As such, the treatment did increase the awareness of credit reporting among these borrowers. In terms of intensive margin, even those that stated knowing the credit registry displayed a poor grasp of how the credit registry functions as well as the implications of registry entry. The treatment seemed to make borrowers realize the severe consequences of being reported to the credit registry.

[30]There is a drop in coefficient magnitude when we add a control for debt levels in the panel sample, similar to the case with social incentive suggesting a similar mechanism. When borrowers are made aware of the costly consequences of delinquency, they reduce their leverage to increase capacity to deal with unexpected shocks.

coefficient and the credit reputation coefficient and find that the reputational incentive is at least $1/.524 = 191\%$ as effective as the financial reward. We can similarly interpret this number as borrowers are willing to pay ₫ 987,000 or approximately 11.2% of median monthly income to maintain a clean credit record. To put this number in perspective, Bursztyn et al. (2019) use a similar treatment on a sample of credit card borrowers in Indonesia and find they are willing to pay 13% of monthly income to maintain good credit reputation. Liberman (2016), on the other hand, estimates the willingness-to-pay for clean credit record among a sample of Chilean credit card borrowers to be 11% monthly income.

Overall, the results suggest that first, the effectiveness of social reporting in enforcing repayment appears to be not significantly less than that of credit reporting and second, borrowers in our setting are equally responsive to credit reporting as borrowers in other (similar) markets.

5 Understanding social pressure

Our analysis in the previous section presents strong evidence of significantly higher repayment rates by borrowers in response to social image concerns. We now explore different hypotheses for *why* borrowers respond to such concerns and present tests to distinguish between these alternative explanations. Appendix Table B.4 presents results from a "naive" regression in which we interact the treatment with a number of borrower personal traits. Results indicate that treatment effects are weaker when the borrower is older, married, has a higher credit score, has higher income as well as a narrower social network proxied by the number of connections in their Facebook account. However, we recognize the complexity and nuances of social interactions. As such, we take these "naive" regression results as the starting point upon which we build more theory-grounded empirical tests.

5.1 Framework

To guide our empirical analysis, we adopt the framework for prosocial behavior by Bénabou & Tirole (2006), with the addition of introducing heterogeneous social groups. While they model reputational incentives in interactions with other intrinsic and extrinsic incentives for prosocial behaviors, we focus on the social reputation aspect. To facilitate our discussion, consider a borrower i deciding whether to default $d_i \in \{0, 1\}$ which can be visible to a social group j. The borrower's utility depends on group j's beliefs about their type, that is being considered high type (e.g. financially successful, trustworthy) is more socially desirable than being considered low type (e.g. financially struggling, untrustworthy) and, therefore, yields higher utility for the borrower. The desirability of high types can be instrumental (meaning being high type makes the borrower a more attractive match in social

interactions such as in friendship, in marriage or in labor market), or purely affective as a hedonic goods (that is being high type brings social esteem while being low type brings shame). Now we can represent the utility from social image as:

$$S_{ij} = \lambda_{ij} E_j(v_i|d_i) Pr_j(d_i) \tag{6}$$

In this equation, $Pr_j(d_i)$ represents the probability that others in the reference group j observe i's delinquency. The main treatment in our experiment is designed to manipulate this term. Next, the term $E_j(v_i|d_i)$ corresponds to how the observer updates their beliefs about i's type conditional on observing the delinquency. Finally, λ_{ij} represents how borrower i cares about being perceived as low type by group j , which can be a combination of both hedonic and instrumental reasons. Our analysis in this section focuses on this λ_{ij} term.

One implication of this framework is that while hedonic motives are fixed preferences,[31] the instrumental motives will depend on the informational and economic content of the social contexts in which the borrower's action is observed. In other words, λ_{ij} are expected to be different across reference groups j for the same borrower i if borrower's actions are driven by instrumental incentives. We cannot observe the counterfactual situation in which the same borrower behaves under a different social context, but our random assignment ensures that borrowers in different groups of social references are comparable. As such, our first test is to examine whether *comparable* borrowers react differently when they are assigned *different* types of social connections.

5.2 Social contexts

Our detailed and verified data on a borrower's social references encompasses a wide range of social ties. We split our sample into three main types of social connection that we believe can approximate the actual social networks of an average person: relatives or kinship, social friends such as classmates and co-workers including colleagues, supervisors or business partners.[32] We then reestimate Equation 1 on each sub-sample. In each of these regressions, we compare borrowers in the treated group with a comparable borrower in the control group who, by pure chance, ended up with the same type of connection. Borrowers in both groups must have put down in their applications, was randomly assigned, and then agreed to the same type of social connection. Their only difference is in having the (randomly assigned) disclosure treatment or not. As such, the regression results represent the direct treatment effects of each specific type of social relations.

[31] We still allow for heterogeneity in borrower preferences.

[32] The relative group does not include direct family members as they are not qualified as references to the bank. This group includes extended family members who become references almost exclusively through the referral program. The co-worker group covers all work-related relationships.

We present results in Table 8 and want to highlight two pieces of finding. First, the treatment effects are different depending on who the reference is. There is a weak negative (statistically insignificant) treatment effect when the notified reference is a relative, with an economic magnitude of roughly 5% of the base delinquency rate. In contrast, when the notified reference is a relative or a co-worker, the treatment effects are highly significant, both statistically and economically. The reduction in delinquency of treated group ranges from 24% in the friend sub-sample to 30% in the co-worker sub-sample. Second, the acceptance rates, i.e., the shares of borrowers within each social context agreed to have the conditional disclosure, are also significantly different across the groups. While the relative group had an acceptance rate as high as 80%, only 58% of borrowers who have a co-worker as the assigned reference accepted the disclosure arrangement. This disparity suggests that there exist differential *expected* reputational costs of delinquency among the three groups as well. Together, results on acceptance rates and treatment effects consistently indicate that there is a higher reputational cost of non-payment associated with the outer social circle. While these results appear to support the theoretical prediction of borrower's instrumental preferences (the λ_{ij} term), they are also consistent with the information explanation (the $E_j(v_i|d_i)$ term).

Information Asymmetry. According to this alternative hypothesis, people in a borrower's inner social circle (e.g., family, kinship) may have more information about the borrower than those in the outer social group (e.g., friends, co-workers). As a result, the probability that people in the inner circle update their beliefs about the borrower's type, conditional on observing the delinquency, is smaller compared to those in the outer circle. That is $E_j(v_i|d_i)$ in the social disutility term S_{ij} is smaller for relatives than friends or co-workers. We investigate two distinct (not necessarily mutually exclusive) channels through which the effects can operate.

Knowledge of Delinquency. In the first channel, people in the inner social circle may come to know about the borrower's financial condition regardless of the notification from the bank, that is relatives are less likely to find the bank's disclosure as *new* information and, therefore, less likely to update their beliefs following the disclosure than friends and co-workers. We find this is not the case. Starting from the September payment cycle, we surveyed the reference of delinquent borrowers in the treated group. On the day after the delinquency deadline, instead of sending out the messages that would inform the reference of borrower's delinquency, we contacted the reference and asked them directly if they knew that the borrower missed their payment.[33] 10.1 % of relative references and 8.2% of friend references responded yes, while only 5.8% of the co-worker references were aware of the borrower's financial status. However, the three proportions are not statistically significantly different from one another, suggesting that people in the inner social circle are not more likely to know about the borrower's delinquency than people in the outer circle. We also surveyed the frequency of interaction

[33]See Appendix A.3.4 for the detailed script of the call.

between the reference and the borrower. Answers from the references indicate that as a matter of fact, borrowers have more interactions with friends and co-workers than relatives. In short, the survey evidence suggests that there does not exist a difference in the probability that different social groups come to know of borrower's delinquency outside the setting of our experiment, at least within the 10-day time frame.[34]

Beliefs Updating. In the second channel, lower level of information asymmetry within the inner social circle means that relatives may have a better assessment of the borrower's true type than friends or co-workers. Consequently, the revelation of delinquency, albeit still new information, is unlikely to change their beliefs about borrower's financial condition as much as those of the people in the outer circle. While this difference in updating behaviors is possible, we find it does not seem to be explaining the results. Specifically, when we examine the treatment effects among borrowers who have job security within the co-worker sub-sample, we find no significant effects. If the large treatment effect in the co-worker sub-sample was driven by a higher likelihood of updating beliefs among co-workers, we should expect to see a significant treatment effect with this sub-sample as well. In contrast, the null results suggest that is not the case and highlight the fact that the differential effects of reputation across social contexts are relative to borrower characteristics, which we will explore in more detail in the next section.

Hedonic vs. Instrumental Preferences. Overall, results from these additional tests and surveys indicate that it is more likely to be variation in how much borrowers care about their images rather than variation in information asymmetry that is driving the different responses across social contexts. Moreover, the random assignment of social reference rules out the possibility that treated borrowers may *systematically* be of different types with different hedonic preferences for reputation from borrowers in the control group. As such, following our theoretical predictions, we interpret the differential effects across social groups as evidence of the instrumental role of reputation.

Comments on hedonic motivations. If we assume that there are no instrumental motives associated with reputation in the context of relatives, i.e., if we put an upper bound on the effects of hedonic motivations, then the null result in the relative sub-sample suggests that hedonic motivations are not strong enough to significantly influence borrower's default decisions. This appears to be at odds with the findings in some earlier work. For example, DellaVigna et al. (2012) and Dellavigna et al. (2017) find that people donate and vote to avoid looking bad to survey takers who presumably they would never interact with again. As such, both papers show evidence of social image incentives

[34]While our survey evidence cannot rule out the possibility that relatives may come to know of borrower's delinquency over longer-term, the fact that borrowers are more likely to disclose negative information about themselves to their relatives suggest that their decisions are less sensitive to relative's judgments and reactions.

even in context of no potential future instrumental gains.

Bénabou & Tirole (2006) provide a framework that can reconcile these seemingly contradicting implications between our results and previous studies. The explanation lies in the non-linearity of the individual's participation in prosocial behaviors in relation to the financial stake. Simply put, a higher financial stake makes it more likely to interpret the individual's good deed as being greedy as opposed to being a good person. As a result, the response function exhibits a kink shape in which responses peak at low level of monetary incentives like in the case of these two studies.[35] Participation then reverses and dissipates at higher level of monetary incentives like in our setting.[36]

5.3 The Instrumental Role of Credit Information

To further examine the instrumental role of reputation concerning credit information, we examine how *different* borrowers react differently to the *same* social context, by combining heterogeneity in borrower characteristics with variation in the reference group. Specifically, we will explore the effects of delinquency disclosure in three different social environments, namely informal credit market, labor market, and marriage market.

5.3.1 Informal Credit Market

We first explore the informal credit market hypothesis. A fairly large literature in economics suggests that social networks can act as a safety net for households to insure against negative shocks (Kinnan & Townsend, 2012; Jackson, Rodriguez-Barraquer & Tan, 2012; Ambrus, Mobius & Szeidl, 2014). In addition, Lee & Persson (2016) provides survey evidence that informal borrowing from kins and friends are common. In this framework, borrowers care about how people in their social network update their beliefs about them, in particular about their financial behavior, precisely because that can impact their chance to tap into the social network for credit in times of need. Therefore, we hypothesize that under the informal credit market credibility channel, borrowers would respond more strongly when their delinquencies are to be disclosed to the references that they are more likely to borrow from.

In our setting, we obtained information on the credit relationship between borrowers and their social references through surveying. We ask borrower (1) if they have ever borrowed from the reference

[35] The estimated value of social pressure is $ 2-4 in the case of voting (Dellavigna et al., 2017) and $ 5-15 in the case of donation (DellaVigna et al., 2012)

[36] They also suggest it can greatly benefit our understanding of the topic if empirical work can expand to situations in which opportunity costs are nontrivial and vary across subjects. As such, the high financial stake nature in our setting can also be considered one of our contributions.

and (2) to rate on a scale from 1 to 5 how likely they would borrow from the reference if they need to in the future. Their answers to the two questions are highly correlated. In fact, all borrowers who answered yes in the first question indicated from likely to very likely in the second question. Given information in the second question is forward-looking, we use it to build our measure of borrowing likelihood. We then run the following regression to examine the differential effects of social image with respect to varying degrees of credit ties:

$$D_i = \alpha + \beta T_i^{TS} + \lambda HighBorrowing_i + \gamma T_i^{TS} \times HighBorrowing_i + \Psi \mathbf{X}_i + \varepsilon_i \tag{7}$$

where $HighBorrowing$ is a dummy that takes one if borrower i indicates "likely" to "very likely" to borrow and zero otherwise. The parameters of interest, γ, is expected to be negative under the informal credit reputation hypothesis. In contrast, results in Table 9 suggest otherwise. The interaction terms are positive and weakly statistically significant, regardless of having controls for borrower characteristics or not. The empirical results suggest that contrary to our priors, social image incentives become less effective when borrowers have strong credit relationships with their social references. We believe this seemingly contradictory results stem from the fact that informal credit market functions in a different fashion than the formal arms-length market. As Lee & Persson (2016)'s model shows, people lend to others in their social network as a gesture of offering a helping hand. In most cases, the loans are not meant to be an investment because they are the borrower's last resort. Our findings and interpretation are also consistent with their survey evidence that most loans from kinship or friends indeed have incredibly low interest or even negative returns in some instances. In short, our findings suggest that concerns about reputation in the informal credit market are unlikely to be driving the treatment effects.

5.3.2 Labor Market

Next, we study the effects of social reporting treatments in the context of employment incentives. Credit checks for job screening is a common practice in the US (Society of Human Resource Managers, 2012). In a survey in 2012 by the policy group DEMOS, 10% of respondents reported lost employment opportunities due to bad credit (DEMOS, 2012). A number of papers also document meaningful and important relationships between credit market information and employment outcomes (Bos et al., 2018; Cortés, Glover & Tasci, 2018).

Given that bad credit information may impact employment prospects, we expect borrowers to respond more strongly when they have less bargaining power over their employment. We construct three measures of employment tenure for borrowers in our sample. The first proxy is an indicator whether borrowers work in the public sector where job security is almost surely guaranteed. The

other two are dummies that specify whether borrowers have worked at the current job for at least 5 and 3 years, respectively. As such, the level of job security decreases from the first measure to the third one. To examine the differential effects of social image with respect to levels of job security, we then interact the three measures of tenure with the co-worker disclosure treatment in the following specification

$$D_i = \alpha + \beta T_i^{TS} + \lambda Tenure_i + \gamma T_i^{TS} \times Tenure_i + \Psi \mathbf{X}_i + \varepsilon_i \tag{8}$$

Results in Table 10 confirm that treatment effects are significantly weaker when treated borrowers have higher job security. Additionally, the differential effects are highly consistent with the degree of job security: the difference is strongest when borrowers work in public sector, remains significant, albeit at slightly smaller magnitude, when borrowers have more than 5 years experience at their workplace and becomes insignificant when our measure of tenure is 3 years of working experience. Overall, the findings strongly corroborate the labor market concern explanation.

5.3.3 Marriage Market

Marriage market incentives have been documented to have an impact on how individuals make economic decisions in a few contexts. For instance, Bursztyn, Fujiwara & Pallais (2017) in a study of MBA students find that single women actively opt out of employability-enhancing activities, mainly out of concerns that career ambition can make them less desirable in the marriage market. The response is mostly a manifestation of differential preferences for marriage partners between men and women. Fisman et al. (2006) find that while men respond more to physical attractiveness, women put greater weight on the intelligence, race, and socio-economic conditions of the partner. It is also the norm in Vietnam (and probably many other societies) that the male partner is the main provider of a household.

Given this heterogeneous preferences of men and women in the marriage market, we expect that the single male borrowers would care more about the publicity of their financial performance than married male or female borrowers. Besides, most people look for marriage partners among their peers. Therefore, we conjecture that credit information is more likely to matter for this purpose when the reference is a friend rather than a relative. To empirically test this hypothesis, we perform the following regression on a sub-sample of male borrowers:

$$\begin{aligned} D_i = \alpha + \beta T_i^{TS} + \gamma Single_i + \delta Friend_i + \\ \zeta T_i^{TS} \times Single_i + \eta Single_i \times Friend_i + \lambda Friend_i \times Single_i + \\ \xi T_i^{TS} \times Single_i \times Friend_i + \Psi \mathbf{X}_i + \varepsilon_i \end{aligned} \tag{9}$$

Our parameter of interest, ξ, captures the difference in treatment effects between single and married

males in the friend context that is above and beyond the difference in the relative context. For ξ to identify the effects of marriage market incentives, it is critical that the parallel trend holds. In other words, the differences in other roles of social reputation between the unmarried male vs. married male are the same in the "Relatives" and "Friends" groups. As such, our specification controls for the differences in treatment effects due to other factors that we discussed above such as differences in social contexts or credit relationships. Indeed, results in Table 11 show a significant and negative estimate for ξ. As a placebo test, we do not find a similar difference for the female sub-sample. As a matter of fact, the coefficient on the triple interaction term for the female sample is positive rather than negative, albeit statistically insignificant. We interpret this as evidence that single male borrowers are responding to marriage market incentives.[37]

Overall, our analysis of heterogeneous treatment effects suggests that social image concerns are more likely to be driven by instrumental than hedonic motives, at least in the context of debt repayment. We find small (and statistically insignificant) effects in settings where we expect no instrumental role of social interactions. Further analysis reveals that the instrumental role of credit information mostly relates to reputation in social contexts such as labor or marriage market rather than the informal credit market.

6 Selection Discussion

It should be noted that the treatment effects documented are only applicable to the borrowers who accepted our offer. In this section, we investigate the differences between the two groups of borrowers: those accepted and those rejected, and discuss if and how the effects can be extended from one group to the other.

Acceptance Decision. We first compare borrowers who responded to our offer to those who did not. Column (1) of Panel A, Table 12 presents regression results of the *ResponseDummy* on a set of borrower characteristics. We find borrowers who did not reply have significantly higher income and a longer history with the bank. It appears that the marginal benefits of the offer was not high enough to attract (the attention of) these borrowers. We also observe no response from a significant portion of borrowers who "decided" to default around the time of the intervention, which helps explain the

[37]Recent developments in Vietnam makes this channel even more relevant. Vietnam's neighboring country, China, has been experiencing severe gender imbalance in their demographics for a long time, as a result of the one-child policy. The distorted gender ratio has pushed up the bride price in the domestic marriage market and driven many Chinese men to find a wife outside of China. Given its geographical and cultural proximity, Vietnam has been one of the most sought-after alternatives. This additional demand, in turn, has substantially increased the outside options for Vietnamese women in the marriage market. See A distorted sex ratio is playing havoc with marriage in China, *The Economist*, Nov 23, 2017 for example.

negative relationship between past delinquent and the response indicator.[38]

Next, among those responding, we compare borrowers who accepted the offer to those who declined to examine their motivations for the decision. Results in column (2) Panel A, Table 12 indicate that the two groups of borrowers are different along several dimensions. Those who accepted are more likely to be female, married, have higher income, higher education but also less likely to own a house, newer customers, have lower employment level and lower credit rating. Our pilot survey indicates that many borrowers have a strong incentive to signal their creditworthiness to the bank. 43% of borrowers asked agreed to have the disclosure arrangement without any financial incentives. This incentive to signal is strongest among new customers with lower credit ratings, who hope to receive better borrowing terms if they can credibly communicate their unobserved qualities to the bank.

Selection Effects. Recall that our experimental design allows for identifying selection effects by comparing the repayment rate of borrowers who agreed to participate but did not have the disclosure arrangement in Condition C and borrowers who did not agree or did not respond in Condition N. The two groups of borrower are different in their revealed preferences about having the disclosure but face *randomly determined similarity* in having no threat of non-payment disclosure. Results in columns (1) and (2) of Panel B, Table 12 show that the selection effects are not statistically significant. Borrowers who opted in (but ended up not having the disclosure threat) do not pay significantly more than borrowers who opted out.

The key to reconcile the null ex-post repayment result and the significant differences in ex-ante characteristics lie in the fact that borrowers select on the *expected* value of acceptance. The benefits of the acceptance include expected value of the lottery and expected value of signaling. The cost of acceptance is the expected loss of social image that entails two dimensions: probability of default and the social cost conditional on default. This leads to a pooling equilibrium in which both good borrowers (those with low probability of default) and bad borrowers who do not care about social image opt in. If there are enough bad borrowers then the delinquency rate of those opting in would be averaged out and similar to those opting out.

Moral Hazard, Adverse Selection and Anticipated Efforts. However, the earlier results on preemptive reduction in borrowing imply that that the null selection effects can also be driven by ex-ante expectation of changes in ex-post risk taking. That is borrowers with high default probability and strong preference for social image opt in knowing that they can reduce their credit take-up ex-post, if necessary. When they end up having no social disclosure threat (like the ones in Condition C), they

[38]Default is defined as a failure to make a payment within 90 days of the due date. As such, there is a lag from the time a borrower makes their default decision to the time we can identify default. For instance, if a borrower is determined to be in default in May 2019, then the month of decision is Feb 2019.

would default more, equalizing the average default rate to those opting out. To help better understand this conjecture, we compare the selection effect of the entire sample to that of borrowers with existing debts who cannot easily adjust their debt levels. The sub-sample results show a statistically significant selection effect. Borrowers who do not agree are 2.2 percentage points more likely to be delinquent than borrowers who agree. When we include borrower characteristics that are common predictors of repayment, the difference remains significant at 2.0 percentage points. This significant difference suggests that most borrowers care about social image, and consequently, their responses can help screen their creditworthiness, provided that the debt is taken before the response.

We use Figure 4 to summarize these findings. For illustration purposes, consider two types of borrowers. Borrower A is a liquidity-driven defaulter who only defaults when a random and severe income shock, such as a job loss, makes the cash-flow constraint bind so that they become unable to repay. Borrower B, in contrast, is a strategic defaulter in a sense that when exposed to a mild balance sheet shock that does not lead to an inability to repay, but their marginal utility of cash-on-hand might increase as a result of this shock and trigger default when it is high enough. As our findings illustrate, there exist both ex-ante and ex-post treatment effects. Ex-ante, borrowers take preemptive action to reduce their risk exposure by consuming less credit. As a result, it is less likely that cash-flow constraints become binding for borrowers like Borrower A or makes Borrower B's marginal utility of cash-on-hand less responsive to the income shock. Ex-post, concerns about social images incentivize treated borrowers to either exert more efforts to repay or decrease the net benefit of strategic default (e.g., increase Borrower B's marginal cost of default). When borrowers have the flexibility to adjust their credit take-up (as the case of credit card users), more (bad) borrowers (like Borrower B) will select into the program generating a small selection effect and a high moral hazard effect. On the other hand, when borrowers do not have the flexibility (as the case of installment loan borrowers), fewer (bad) borrowers select into the program, generating a large selection effect and a small moral hazard effect.[39]

7 Conclusion

In this paper, we conduct a randomized controlled experiment with the credit card borrowers of a large retail bank in Vietnam to study the effects of social image incentives on debt repayments. Our experiment takes advantage of the fact that banks in Vietnam routinely ask borrowers upon application to provide contact information of their social connections, who then serve as their references. Working with our partner bank, we designed and implemented a program that generated

[39] Karlan & Zinman (2009) also find strong evidence of moral hazard and weaker evidence of adverse selection problems when borrowers can select not only on risk type but also on anticipated effort like the case with revolving credit.

experimental conditions in which each borrower made repayment decisions with or without having their repayment outcome randomly communicated to their references.

We find that social image concerns significantly increase debt repayment. Our conservative estimates suggest that social reputation incentives are highly effective when compared to the impacts of credit reputation, whose effects are shown to be quantitatively similar to those in other emerging economies (Liberman, 2016; Bursztyn et al., 2019). Additional tests provide evidence supporting the view that social image concerns are driven mostly by instrumental motives rather than hedonic motivations. In other words, borrowers are responding to the concern that the revelation of non-payment sends a negative signal to their social networks and makes them a less attractive match in social interactions such as in the labor or marriage market. As such, social disclosure is particularly effective at deterring default by high-risk individuals who are likely to be strategic defaulters. We estimate the median value of additional financial benefits to induce the same rate of default in treated borrowers as in the control group to be 45% of monthly income.

Our findings make valuable implications regarding how effective incentives to preserve social reputation can serve as an enforcement device in the context of debt contracts. More broadly speaking, studying how these reputational costs affect repayment decisions is also meaningful for our understanding of household debt decisions and their implications for credit markets as well as economic activities in the aggregate.

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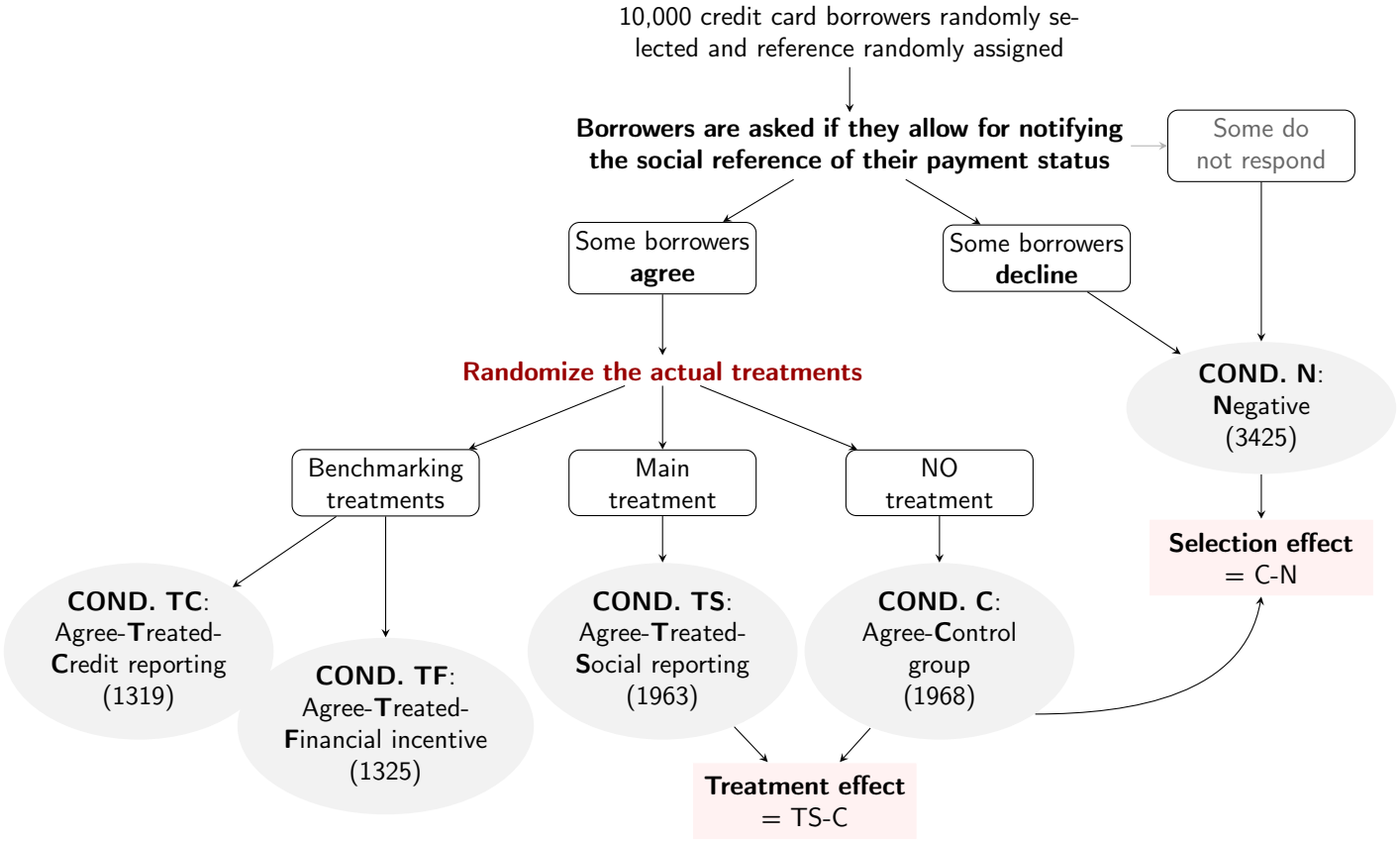
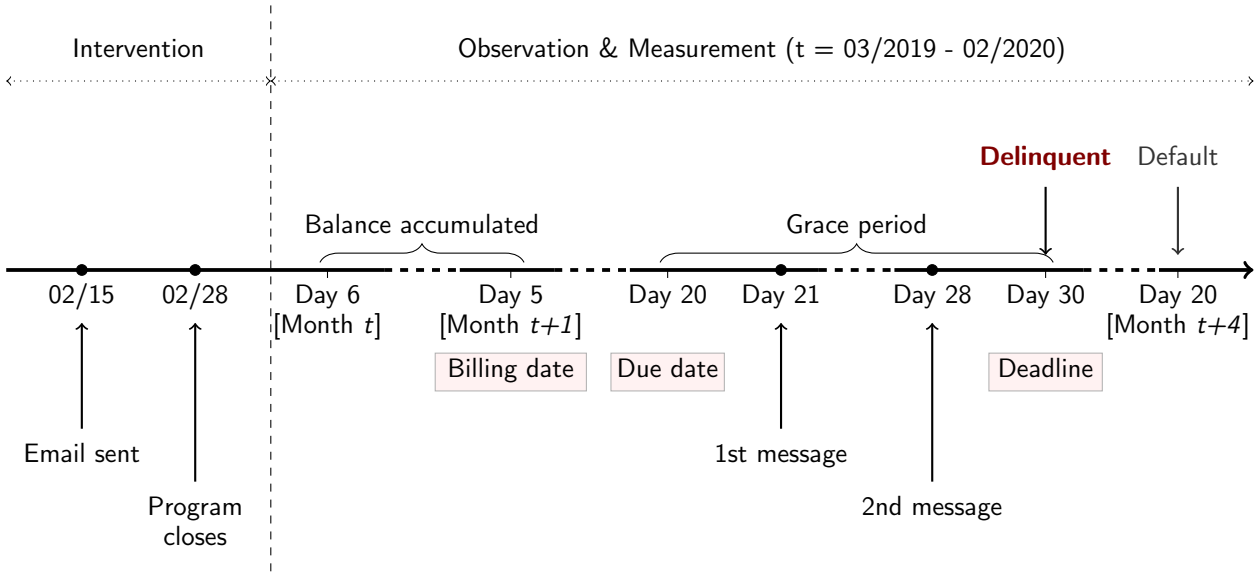
Figure 1 – Experimental Design



Notes: This figure outlines the design of the experiment. We start with a random sample of 10000 credit card borrowers. For each borrower, we randomly select a reference from their pool of references. In our intervention, we sent out a program to the borrowers, asking if they agree to let the bank share with this reference of their payment status if they become delinquent. The program then drew a random number to assign those who agreed into 4 different conditions: those with the random number in [0,30], (30,60], (60,80], (80,100] are respectively assigned to the social reporting treatment group, the control group, the financial incentive treatment group and the credit reporting treatment group.

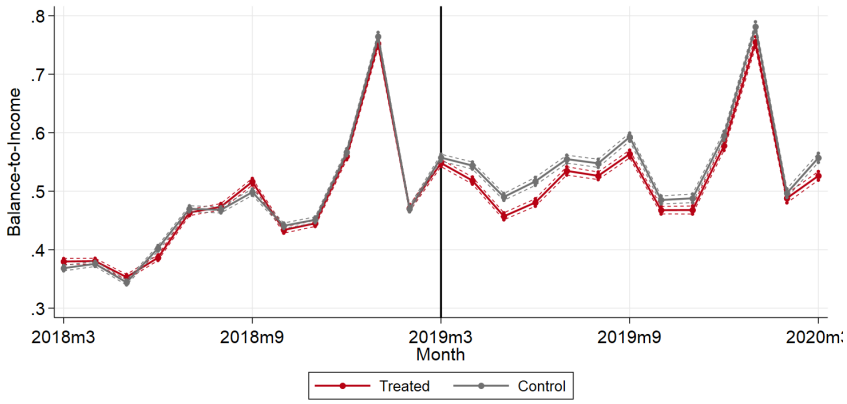
Figure 2 – Experiment Timeline



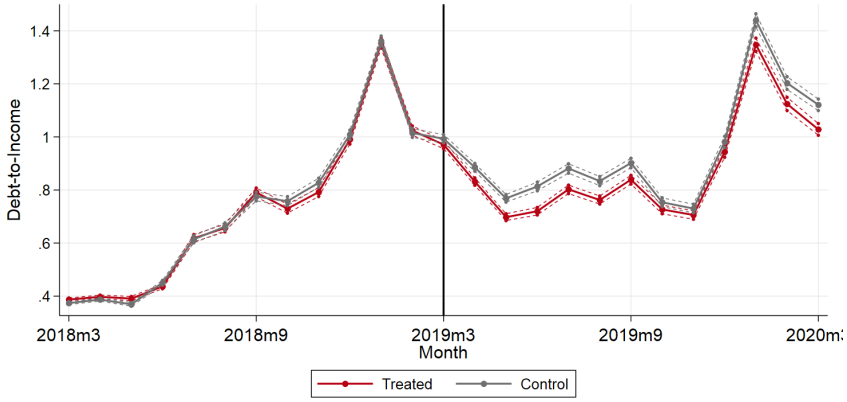
Notes: The figure shows the credit card billing cycle and timing of the intervention. We sent out the program on 02/15/2019 and stop receiving responses by 02/28/2019. We follow borrowers' repayment behavior for one year after the intervention from 03/2019 to 02/2020. Every month, borrowers receive their statements on the 5th and have until the 20th day of the following month to pay. One day after the due date, the bank sends a reminder text message to all borrowers who miss their payment. On the 28th day of the month (two days before the repayment deadline), the bank sends another reminder to all those who do not make their payments by that date. Message contents differ depending on the assigned treatment. Non-payment by the end of the 30th day is recorded as delinquency.

Figure 3 – Credit Take-up: Treated vs. Control

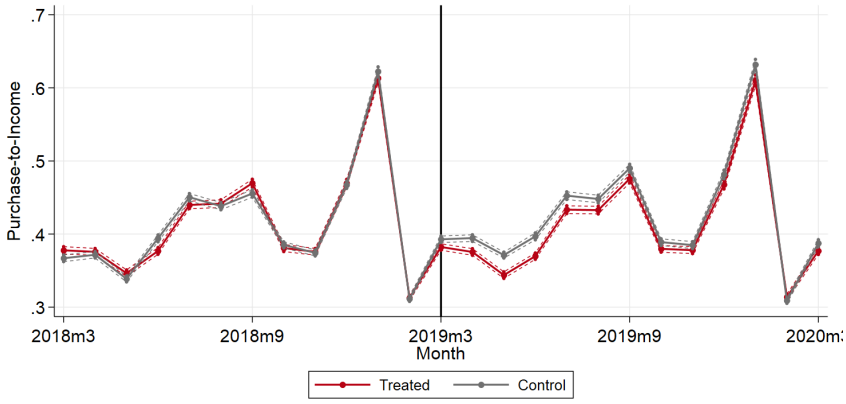
(a) Card Balance



(b) Debts

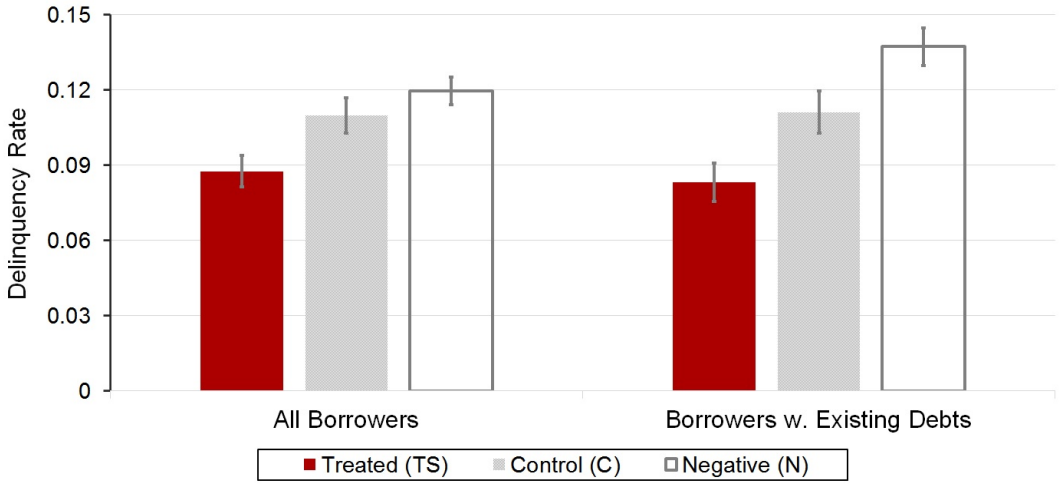


(c) Purchases



Notes: This figure displays monthly credit take-up by the treated and control groups from one year before the intervention (March 2018) to one year after the intervention (March 2020). The red solid line represents the treated group (Condition TS) with the red dotted lines represent its 95% confidence bound. The grey dashed line represents the control group (Condition C) with the grey dotted lines represent its 95% confidence bound. Panel (a) shows the average monthly balance which includes monthly purchases and an installment payment if the borrowers have an outstanding installment plan. Panel (b) shows monthly purchases only. Panel (c) shows the total level of debts outstanding.

Figure 4 – Delinquent Rate by Treatment Groups



Notes: This figure graphs delinquency rate of different treatment groups. Red solid bars represent the treated group (Condition TS). Grey solid bars represent the control group (Condition C). Hollow bars represent borrowers who declined or did not respond (Condition N). The error bars represent the 95% confidence interval. The left panel shows delinquency rate of all borrowers in the experiment. The right panel shows delinquency rate of borrowers with outstanding installment loans at the onset of the intervention. The difference between the red solid and the grey solid bars represents treatment effects while the difference between the grey solid and the hollow bars represents selection effects.

Table 1 – Summary Statistics

Panel A: Borrower Statistics

	Obs	Mean	Sd	p5	p50	p95
Borrower characteristics						
Age	10000	37.98	7.33	27	37	52
Male	10000	0.70	0.46	0	1	1
Married	10000	0.72	0.45	0	1	1
Schooling (years)	9999	14.93	1.48	13	16	16
Home ownership	10000	0.30	0.46	0	0	1
Employment	9998	2.17	0.47	2	2	3
(1: Associate - 4: High level manager)						
Monthly income (đ m)	10000	11.70	10.77	5.10	8.80	27.05
(US$)		510	468	222	383	1176
Credit Score	10000	623.20	54.32	533	622	712
Credit Rating	10000	2.99	1.10	1	3	5
(1: Bad - 5: Excellent)						
Public sector	9998	0.18	0.38	0	0	1
Delinquent in the past 12 months	10000	0.07	0.25	0	0	1
Credit card usage						
Card history (months)	10000	15.95	7.45	4.00	16.00	29.00
Credit limit (đ m)	10000	34.44	34.39	12.00	26.00	85.00
(US$)		1653	1627	565	1261	3913
Limit to Income	10000	2.89	0.63	1.93	2.93	3.96
Card Balance (đ m)	10000	5.19	4.43	1.80	4.23	10.97
(US$)		225	192	78	183	475
Balance to Income	10000	0.49	0.22	0.19	0.46	0.83
Purchase (đ m)	10000	4.55	4.19	1.48	3.74	9.69
(US$)		197	181	64	162	419
Purchase to Income	10000	0.43	0.21	0.15	0.40	0.76
Debt level (đ m)	10000	8.44	8.13	2.01	6.20	21.58
(US$)		365	352	87	268	934
Debt to Income	10000	0.75	0.40	0.23	0.69	1.54
Utilization	10000	0.25	0.13	0.07	0.24	0.49
Social connections						
Facebook connections	9088	1.82	0.87	1	2	3
(0: Not use Facebook, 1:<500, 2:500-1000, 3:1000-2000, 4:>2000 connections)						
LinkedIn connections	9088	1.19	1.17	0	1	3
(0: Not use LinkedIn, 1:<250, 2:250-500, 3:500-1000, 4:>1000 connections)						
Same city	9088	0.92	0.28			
Borrowed	9088	0.23	0.42	0	0	1
Borrowing likelihood	9088	2.33	1.23	1	2	5
(1: Very unlikely - 5: Very likely)						

Panel B: Response statistics

Responded	9088
Accepted	6575
Control group (Condition C)	1968
Social Reporting treatment (Condition TS)	1963
Financial Incentive Treatment (Condition TF)	1325
Credit Reporting Treatment (Condition TC)	1319

Note: Panel A reports summary statistics for the sample. Data on borrower characteristics and card usage is from our partner bank's administrative data. Data on social connections is from the survey we sent out together with the intervention. See Appendix A.3.2 for detailed script of the survey. Panel B reports statistics on the response and acceptance rate as well as the experiment conditions.

Table 2 – Baseline Result: Social Treatment and Delinquency

Dependent variable =	Extensive Margins		Intensive Margins	
	Delinquent Dummy		*Payment-to-Balance*	
	(1)	(2)	(3)	(4)
Social Reporting Treatment	-0.022**	-0.022**	-0.002	-0.003
	(-2.33)	(-2.32)	(-1.21)	(-1.24)
Age		-0.001		-0.000
		(-1.40)		(-0.18)
Male		0.017*		-0.002
		(1.67)		(-0.90)
Married		-0.043***		0.003
		(-3.20)		(1.08)
Ln(Income)		-0.030**		0.002
		(-2.34)		(0.75)
Schooling		-0.002		-0.000
		(-0.76)		(-0.48)
Home ownership		0.013		-0.000
		(1.17)		(-0.17)
Employment		-0.018*		0.001
		(-1.75)		(0.33)
Credit Rating		-0.031***		0.005***
		(-7.32)		(4.80)
Past Delinquent		0.050**	0.001	
		(2.25)		(0.33)
Observations	3931	3931	3915	3915
R^2	0.001	0.034	0.001	0.008
Control group Base rate	0.110	0.110	0.977	0.977

Notes: This table reports regression results of the baseline specification. Social Reporting Treatment is an indicator for being assigned to the Social Reporting Treatment group (Condition TS). Columns (1) and (2) present results for cross-sectional regressions on the extensive margins as in Equation 1. The dependent variable is an indicator whether a borrower is delinquent at least once during sample period. Columns (3) and (4) present results for cross-sectional regressions on the intensive margins. The dependent variable is the average monthly ratio of payment to balance due, conditional on the borrower paying before the delinquency deadline. The set of control variables include age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 3 – Understanding Treatment Effects: Late Payment

Dependent variable =	Late Payment		Delinquency Conditional on Late	
	Late Dummy		*Delinquent Dummy*	
	(1)	(2)	(3)	(4)
Social Reporting Treatment	-0.010	-0.009	-0.109***	-0.082***
	(-0.90)	(-0.78)	(-4.27)	(-3.32)
Month FE	No	No	No	Yes
Controls	No	Yes	No	Yes
Observations	3931	3931	1528	1528
R^2	0.001	0.040	0.012	0.138
Control group Base Rate	0.158	0.158	0.523	0.523

Notes: This table reports estimates on the relationship between social reporting and late payment behavior. Columns (1) and (2) report cross-sectional regression results of an indicator for being late at least once during the sample period on the Social Reporting Treatment dummy. Columns (3) and (4) report regression results of an indicator for being delinquent on the Social Reporting Treatment dummy for a sample of instances where borrowers are late on their payments. The set of control for borrower characteristics includes age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention). t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 4 – Understanding Treatment Effects: Credit Take-up

Dependent variable =	*Balance-to-Income*		*Purchase-to-Income*		*Debt-to-Income*	
	(1)	(2)	(3)	(4)	(5)	(6)
Social Reporting Treatment	-0.021***	-0.022***	-0.015**	-0.015***	-0.062***	-0.066***
	(-3.12)	(-3.48)	(-2.43)	(-2.66)	(-4.55)	(-5.17)
Controls	No	Yes	No	Yes	No	Yes
Observations	3931	3931	3931	3931	3931	3931
R^2	0.004	0.149	0.002	0.151	0.005	0.115
Control group Median level	0.525	0.525	0.410	0.410	0.856	0.856

Notes: This table reports cross-sectional regression results of credit take-ups on the Social Reporting Treatment dummy as in Equation 4. Columns (1) and (2) reports results for the overall credit level in which the dependent variable is the monthly average $Balance - to - Income$. The overall balance is then decomposed into purchases and debt level to account for the embedded installment loans. Accordingly, the dependent variables are the monthly average $Purchase - to - Income$ in columns (3) and (4) are and the monthly average $Debt - to - Income$ in columns (5) and (6), respectively. t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5 – Understanding Treatment Effects: Ex-ante vs. Ex-post

Panel A: Delinquency and Debt Levels

Dependent variable = Delinquent dummy				
Debt Levels =	*Balance Due*		*Total Debt Outstanding*	
	(1)	(2)	(3)	(4)
Social Reporting Treatment	-0.019**	-0.018*	-0.020**	-0.017*
	(-2.04)	(-1.94)	(-2.12)	(-1.82)
Debt Levels	0.133***	0.168***	0.032***	0.071***
	(5.41)	(6.41)	(2.79)	(5.88)
Controls	No	Yes	No	Yes
Observations	3931	3931	3931	3931
R^2	0.010	0.047	0.003	0.043

Panel B: Delinquency among Borrowers with Existing Installment Plan

Dependent variable = Delinquent dummy		
	(1)	(2)
Social Reporting Treatment	-0.016*	-0.016*
	(-1.72)	(-1.75)
Controls	No	Yes
Observations	2450	2450
R^2	0.001	0.016
Control group Delinquency rate	0.062	0.062

Notes: Panel A reports regression results of the baseline specification with the addition of a control for debt levels ($Balance - to - Income$ in columns (1) and (2), and $Debt - to - Income$ in columns (3) and (4)). Panel B reports regression results of the baseline specification on the sample of borrowers with outstanding installment loans at the time of intervention. The set of control variable includes age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 6 – Understanding Treatment Effects: Income, Savings and Lender Substitution

	Earnings		Savings	Lender Substitution
Dependent variable=	*Deposit*	*Deposit/Inc*	*Withdrawal Dummy*	*Other Delinquency*
	(1)	(2)	(3)	(4)
Social Reporting Treatment	-0.473	0.009	0.056*	-0.019*
	(-1.23)	(1.60)	(1.77)	(-1.67)
Controls	Yes	Yes	Yes	Yes
Observations	1671	1671	686	3931
R^2	0.273	0.011	0.112	0.029
Control group Base Level	12.60	1.40	0.225	0.164

Notes: This table reports the regression results of the dependent variable as shown in the column header on the Social Reporting Treatment dummy. In column (1), the dependent variable is the monthly deposit into the borrower's salary account at the the bank. In column (2), the dependent variable is the deposit amount scaled by borrower's income level in record. In column (3), the dependent variable is an indicator if the borrower withdraw from their saving accounts at least once during the sample period. In column (4), the dependent variable is an indicator if the borrower becomes delinquent on any of the lenders at least once during the sample period. The set of control variable includes age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. Together, the table presents analysis on sources of funding for repayment. t-stat from robust standard errors in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 7 – Benchmarking: Credit Reputation and Financial Incentive

Dependent variable = Delinquent dummy				
	Cross-section		Late Sample	
	(1)	(2)	(3)	(4)
Social Reporting Treatment	-0.022**	-0.022**	-0.109***	-0.087***
	(-2.33)	(-2.33)	(-4.27)	(-3.56)
Financial Incentive Treatment	-0.003	-0.003	-0.020	-0.017
	(-0.30)	(-0.30)	(-0.75)	(-0.67)
Credit Reporting Treatment	-0.026**	-0.028***	-0.135***	-0.120***
	(-2.54)	(-2.69)	(-4.75)	(-4.24)
Social Reporting − Financial Incentive	-0.019**	-0.018**	-0.089***	-0.070***
	(-1.77)	(-1.77)	(-3.16)	(-2.66)
Social Reporting − Credit Reporting	0.004	0.006	0.026	0.033
	(0.43)	(0.59)	(0.90)	(1.16)
Month FE	No	No	No	Yes
Controls	No	Yes	No	Yes
Observations	6575	6574	2566	2564
R^2	0.001	0.030	0.011	0.130
Control group Delinquency rate	0.110	0.110	0.523	0.523

Notes: This table reports regression estimates of Equation 5. Column (1) and (2) presents results for cross-sectional regressions. The set of control variable includes age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. Columns (3) and (4) restrict the sample to late paying events only. "Social Reporting - Financial Incentive" presents the difference between the coefficients on "Social Reporting" and "Financial Incentive". "Social Reporting - Credit Reporting" presents the difference between the coefficients on "Social Reporting" and "Credit Reporting". t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 8 – Heterogeneous Effects: Social Groups

Dependent variable = Delinquent dummy						
	Relatives		Friends		Co-workers	
	(1)	(2)	(3)	(4)	(5)	(6)
Social Reporting Treatment	-0.006	-0.003	-0.028*	-0.026*	-0.028*	-0.032**
	(-0.29)	(-0.16)	(-1.80)	(-1.70)	(-1.87)	(-2.18)
Controls	No	Yes	No	Yes	No	Yes
Observations	1062	1062	1434	1434	1435	1435
R^2	0.000	0.058	0.002	0.025	0.002	0.045
Control group Delinquency rate	0.116	0.116	0.110	0.110	0.104	0.104
Control group Acceptance rate	0.80	0.80	0.66	0.66	0.58	0.58

Notes: This table reports regression estimates for Equation 1 on different sub-samples to examine heterogeneity of treatment effects with respect to the types of social relationships. The dependent variable is an indicator whether a borrower is delinquent at least once during the sample period. The set of controls for borrower characteristics include age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 9 – Instrumental Role of Credit Information: Informal Credit Market

Dependent variable = Delinquent dummy		
	(1)	(2)
Social Reporting Treatment	-0.039***	-0.039***
	(-3.30)	(-3.33)
High Borrowing Likelihood	0.012	0.013
	(0.83)	(0.91)
High Likelihood × Treated	0.038*	0.039**
	(1.95)	(2.04)
Controls	No	Yes
Observations	3931	3931
R^2	0.005	0.038

Notes: This table reports our estimates for Equation 7 which examines differential treatment effects with respect to the likelihood that borrowers borrow from their social network. The dependent variable is an indicator whether a borrower is delinquent at least once during the sample period. *HighLikelihood* is a dummy that takes 1 when a borrower indicates "likely" to "very likely" to borrow from their assigned reference if they needed to and 0 otherwise. The set of control variables includes age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 10 – Instrumental Role of Credit Information: Labor Market

Dependent variable = Delinquent dummy						
	Tenure = 3 yrs+		Tenure = 5 yrs+		Tenure = Public sector	
	(1)	(2)	(3)	(4)	(5)	(6)
Social Reporting Treatment	-0.038*	-0.046**	-0.046**	-0.052***	-0.042**	-0.047***
	(-1.68)	(-2.06)	(-2.32)	(-2.61)	(-2.57)	(-2.86)
High Tenure	-0.032	-0.024	-0.052**	-0.039*	-0.016	-0.021
	(-1.40)	(-1.02)	(-2.35)	(-1.77)	(-0.57)	(-0.75)
High Tenure × Treatment	0.021	0.028	0.051*	0.052*	0.072*	0.073*
	(0.68)	(0.93)	(1.69)	(1.77)	(1.77)	(1.83)
Controls	No	Yes	No	Yes	No	Yes
Observations	1426	1426	1426	1426	1433	1433
R^2	0.004	0.046	0.006	0.047	0.006	0.047

Notes: This table reports our estimates for Equation 8 which examines differential treatment effects in terms of job tenure in the context of Co-worker reference group. The dependent variable is an indicator whether a borrower is delinquent at least once during the sample period. *Tenure* is a dummy that takes 1 when a borrower meets the tenure definition indicated in the top row: having worked for more than 3 years at the current workplace in columns (1) and (2), more than 5 years in columns (3) and (4) and working in the public sector in columns (5) and (6). The set of control variables includes age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 11 – Instrumental Role of Credit Information: Marriage Market

Dependent variable = Delinquent dummy				
	Male Borrowers		Female Borrowers	
	(1)	(2)	(3)	(4)
Social Reporting Treatment	-0.023	-0.003	0.007	0.018
	(-0.89)	(-0.10)	(0.20)	(0.51)
Friends	-0.025	-0.020	0.023	0.025
	(-1.09)	(-0.89)	(0.63)	(0.71)
Single	0.095**	0.086**	-0.017	-0.030
	(2.31)	(2.15)	(-0.36)	(-0.60)
Treatment × Friends	0.045	0.022	-0.046	-0.053
	(1.36)	(0.66)	(-0.96)	(-1.11)
Treatment × Single	0.025	-0.013	-0.023	-0.032
	(0.44)	(-0.24)	(-0.35)	(-0.49)
Friends × Single	0.030	0.021	0.034	0.038
	(0.54)	(0.38)	(0.51)	(0.57)
Treatment × Friends × Single	-0.209***	-0.160**	0.046	0.051
	(-2.87)	(-2.27)	(0.48)	(0.53)
Controls	No	Yes	No	Yes
Observations	1723	1723	775	775
R^2	0.025	0.071	0.005	0.018

Notes: This table reports our estimates for Equation 9 which examines differential treatment effects of single and married males in different social contexts. Dependent variable is an indicator whether a borrower is delinquent at least once during the sample period. *Friends* is a dummy that takes 1 if a borrower is assigned Friends reference group and 0 otherwise. *Single* is a dummy that takes 1 if a borrower is not married and 0 otherwise. Columns (1) and (2) report results for male sample while Columns (3) and (4) report results for female sample. The set of control variables includes age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention. Robust standard errors in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 12 – Selection Effects

Panel A: Acceptance and Borrower Characteristics

Dependent variable =	*Response Dummy*	*Acceptance Dummy*
	(1)	(2)
Age	-0.000	0.001
	(-0.93)	(1.03)
Male	0.001	-0.042***
	(0.22)	(-4.04)
Married	-0.007	0.035***
	(-1.03)	(3.03)
Ln(Income)	-0.089***	0.143***
	(-9.32)	(11.23)
Schooling	-0.002	0.008**
	(-0.99)	(2.39)
Home ownership	-0.008	-0.065***
	(-1.09)	(-5.90)
Employment	0.004	-0.024**
	(0.60)	(-2.14)
Credit Rating	-0.001	-0.025***
	(-0.40)	(-5.72)
Public sector	0.002	-0.012
	(0.26)	(-1.01)
Past Delinquent	-0.030**	-0.038**
	(-2.43)	(-2.03)
Card history	0.001***	-0.001*
	(2.65)	(-1.72)
Observations	9998	9087
R^2	0.030	0.028

Panel B: Selection Effects

Dependent variable = Delinquent Dummy				
	Whole sample		Existing Debt	
	(1)	(2)	(3)	(4)
Accept	-0.010	-0.007	-0.022*	-0.020*
	(-1.11)	(-0.86)	(-1.90)	(-1.81)
Controls	No	Yes	No	Yes
Observations	5393	5392	3516	3516
R^2	0.000	0.116	0.001	0.125
Control group Delinquency rate	0.110	0.110	0.111	0.111

Notes: Panel A reports regression results of Acceptance Dummy, an indicator that takes takes value 1 if if the borrower agreed to but not authorized to participate (Condition C) and 0 if the borrower declined to participate or did not respond (Condition N), on borrower characteristics. Panel B reports regression results of delinquency indicator on the selection dummy, *Decline*, The set of control variables include age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention We report the mean delinquency rate of the control group C. Column (1) and (2) present results on the entire sample while column (3) and (4) restrict the sample to borrowers with outstanding installment loans at the time of intervention. t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Appendix A Experimental Documentation

A.1 The Application form

CREDIT CARD APPLICATION FORM AND CONTRACT

1. CARD REQUEST

Card type: ☐ JCB Sakura Card ☐ Visa Card

Card level: ☐ Platinum ☐ Gold ☐ Classic

Requested credit limit: _____

(In words: _____VND)

(In case your request is not approved, THE BANK will issue another card with level/limit corresponding to your eligibility)

Mailing address: ☐ Permanent Address ☐ Current Address ☐ Work Address

Please send my card and card PIN to:

☐ THE BANK branch: _____

☐ My mailing address (delivery fee may apply)

Method of receiving monthly statement:

☐ Via post, to my mailing address

☐ Via e-mail ☐ Via post and email

2. APPLICANT INFORMATION

Personal Information

Full name *(as appeared on National ID card/Passport):* _____

Name printed on card: *(in CAPITAL, no accent marks, similar to full name or name with middle initials, max 21 characters including spaces)*

Gender: ☐ Male ☐ Female

Date of Birth (DD/MM/YY): _____/_____/_____ Nationality: _____

National ID/Passport number: _____

Date of Issuance (DD/MM/YY): _____/_____/_____ Place of Issuance: _____

Place of Birth: _____

Hometown: _____

Level of Education: ☐ Secondary ☐ High School ☐ Associate ☐ Bachelor ☐ Master/PhD

Marital Status: ☐ Single ☐ Married ☐ Divorced ☐ Other (specify): _____

Type of Residential Property:

☐ Self-owned ☐ Rental ☐ Living with parents ☐ Other (specify): _____

Transportation: ☐ Car (owned) ☐ Motorbike ☐ Public Transportation

Number of independents: _____

Contact information

Permanent Address: (#/Street name) _____ (Ward) _____

(District)_____ (Province) _____

Current Address (if different from permanent address*:*

(#/Street name) _____ (Ward) _____

(District)_____ (Province) _____

Length of stay at Current address: _____years _____months

Home phone: _____ Mobile phone: _____ E-mail: _____

3. EMPLOYMENT DETAILS

Employment Status: ☐ Full-time ☐ Part-time ☐ Self-employed

☐ Retired ☐ Student ☐ Other: _____

Employer Name: _____ Phone: _____

Employer Address: (#/Street name) _____ (Ward) _____

(District)_____ (Province) _____

Company type: ☐ State-owned ☐ Foreign owned ☐ Joint stock

☐ Limited liability ☐ Sole/Self-employed ☐ Other

Type of Employment Contract: ☐ < 1 year ☐ 1 -3 years ☐ Permanent ☐ Other (specify): _____

Current Position: _____

Time in Current Employment: _____years _____months

Years of working experience: _____years _____months

Previous place of work:_____

4. FINANCIAL INFORMATION

Income Information

Monthly Salary: _____

Other monthly income: _____

Source: ☐ House rent ☐ Business ☐ Transportation rent ☐ Other: _____

Payroll Type: ☐ Direct Deposit at THE BANK

☐ Direct Deposit at Bank: _____

☐ Cash ☐ Other

Monthly Expenditure: _____

Credit Information

Number of credit cards owned: ☐ 1-2 ☐ 3-5 ☐ More than 5 ☐ None

Credit relationship with other institutionas: ☐ Yes ☐ No

Loan/ Credit card	Name of Institution	Loan Amount/ Credit limit	Outstanding balance	Collateral	Monthly payment

5. REFERENCE INFORMATION

Name	Relationship with applicant	Mobile phone	E-mail	Work address

6. COLLATERAL DETAILS FOR CREDIT CARD ACCOUNT (IF ANY)

Type of security: ☐ Unsecured ☐ Partially Secured ☐ Fully Secured

☐ Cash Deposit
Amount: _____ *In words:* _____

Escrow Account: _____ At branch: _____

☐ Saving Passbook

Book #: _____ Value: _____ Denomination currency: _____

Term: _____ Due date: _____ Issuer: _____

☐ Other type of collateral (specify): _____

7. Supplementary Cardholders

	Supplementary Holder 1	**Supplementary Holder 2**
Name		
Gender	☐ Male ☐ Female	☐ Male ☐ Female
Date of Birth		
Nationality		
Name printed on card		
National ID/Passport No.		
Date of Issuance		
Place of Issuance		
Relationship to Primary Holder		
Permanent Address		
Mailing address		
Email		
Mobile phone		
Monthly credit limit (if any)		

8. Direct Auto Debit Authorization

We authorize THE BANK to debit my/ our account(s) opened with THE BANK any amount payable (or any shortfall to any agreed amount payable) on monthly due date to settle my/ our credit card account(s). If auto debit fails 3 consecutive times due to insufficient fund in my/ our nominated account(s) on due date, I/ we agree that my authorization for auto debit is deactivated whilst I am still responsible for paying my credit card on due date by any other payment method.

☐ Authorize ☐ Do not authorize

From account: _____ at: _____

☐ Minimum balance[1] ☐ Full balance ☐_____ % outstanding balance (more than 5%)

9. ONLINE PAYMENT REGISTRATION

Kindly activate online payment function for below card(s)

☐ Primary card ☐ Supplementary card 1 ☐ Supplementary card 2

I/We hereby understand and agree to be fully responsible for all the risks regarding to online payment (if any)

[1]The amount of direct debit is automatically set to be equal to minimum balance if applicant does not specify.

10. INTERNET BANKING AND SMS BANKING REGISTRATION

Please provide if you are not currently registered for Internet Banking and SMS Banking services

SMS Banking

	Primary card	Supplementary card 1	Supplementary card 2
Inquiry	☐	☐	☐
Payment	☐	☐	☐

Internet Banking

	Primary card	Supplementary card 1	Supplementary card 2
Username	☐	☐	☐
Inquiry	☐	☐	☐
Standard	☐	☐	☐
Premiere	☐	☐	☐

CONFIRMATION

1. I/We confirm that the information given above is correct and complete and authorize the Bank to confirm this from any source that the Bank may choose.
2. By signing this Application, I/We confirm that we have read, understood fully the contents of Credit Card Cardholder Agreement as an intergral part of this Application Form (as attached below), including any future amendments there to, I/We hereby agree to be bound by such Terms and Conditions regulated in Credit Card Cardholder Agreement herewith. I/We understand that the Bank reserves the right to amend the Bank's Credit Card Cardholder Agreement from time to time, which will be binding upon me/us, and may notify me/us of any such alternations in any manner it thinks fit.
3. The signature(s) below shall also be my/our specimen signatures for all transactions relating to my/our card(s).

Date: _____

Primary card	Supplementary card 1	Supplementary card 2
(Sign and Print name)	*(Sign and Print name)*	*(Sign and Print name)*
Signature specimen 1	Signature specimen 1	Signature specimen 1
Signature specimen 2	Signature specimen 2	Signature specimen 2

A.2 Sample Application form

Giấy Đề Nghị Cấp Thẻ Tín Dụng ANZ Kiêm Hợp Đồng
ANZ Credit Card Application and Agreement

Vui lòng điền tất cả thông tin dưới đây để đề nghị/ Please complete all the sections of this application form:

Loại Thẻ tín dụng quốc tế ANZ Type of ANZ Credit Card	Thu nhập tối thiểu hàng tháng (VNĐ) Minimum Gross Monthly Income (VND)	Phí thường niên (VNĐ) Annual Fee (VND)
☐ Thẻ Travel Platinum Travel Platinum Card	20.000.000	1.500.000
☐ Thẻ Platinum Platinum Card	20.000.000	1.100.000
☐ Thẻ Vàng Gold Card	16.000.000	550.000
☐ Thẻ Chuẩn Classic Card	8.000.000	350.000

☐ Trong trường hợp không được cấp thẻ tín dụng đã chọn ở trên, bạn có muốn được cấp Thẻ tín dụng ANZ khác không? / If you are not offered the Credit Card selected above, do you wish to accept another ANZ Credit Card type?

Thông tin cá nhân/ Personal details

Họ tên (như trên CMND & Hộ chiếu)/ Full name (as shown on National Identification & Passport):

Họ/ Surname | Tên đệm/ Middle name | Tên/ Given name

Tên in nổi trên thẻ (chữ in, tối đa 19 ký tự kể cả khoảng trắng):
Name to appear on the card (max 19 characters, including space)

☐ Nam/ Male
☐ Nữ/ Female

Ngày sinh (ngày/tháng/năm) Date of Birth (dd/mm/yyyy) / /

Nơi sinh (thành phố, quốc gia):
Place of birth (town, country):

Số CMND/Hộ chiếu:
National ID/Passport No.

Quốc tịch:
Nationality

Địa chỉ thường trú/ Permanent residential address:

Số/ No.: | Tên đường/ Street:

Phường/ Ward:

Quận/ District: | Tỉnh, thành/ Province, city:

Địa chỉ tạm trú (nếu khác địa chỉ thường trú)/ Temporary residential address (if different from your permanent residential address):

Số/ No.: | Tên đường/ Street:

Phường/ Ward:

Quận/ District: | Tỉnh, thành/ Province, city:

Điện thoại liên lạc/ Home phone No.:

ĐTDĐ/ Mobile:

* Khách hàng đồng ý rằng đây là số điện thoại chính thức đăng ký với Ngân Hàng (có thể thay đổi tùy từng thời điểm theo phương thức do Ngân Hàng quy định). Các chỉ thị của Khách hàng thông qua số điện thoại đã đăng ký (bao gồm nhưng không giới hạn ở chỉ thị kích hoạt Thẻ tín dụng ANZ) sẽ có giá trị ràng buộc Khách hàng./ * The Customer agrees that this mobile is the official number registered with the Bank (subject to change from time to time through methods stipulated by the Bank). Any Customer's instructions through registered telephone number (including but not limited to ANZ Credit Card activation via text messaging) shall bind upon Customer.

Email:

* Bảng sao kê giao dịch hàng tháng sẽ được gửi đến địa chỉ email đăng ký ở trên. Vui lòng kiểm tra hộp thư rác (spam) hoặc các thiết bị lọc thư điện tử khác để nhận bảng sao kê giao dịch qua dịch vụ thư tín điện tử./ * Your monthly statement will be sent to the registered email above. Please check your email spam/firewall filter to receive eStatement from ANZ.

Quốc tịch thứ hai (nếu có):
2nd nationality (if any):

Địa chỉ thường trú nước ngoài (của quốc tịch thứ hai):
Overseas permanent residential address (of 2nd nationality):

Quốc tịch thứ ba (nếu có):
3rd nationality (if any):

Địa chỉ thường trú nước ngoài (của quốc tịch thứ ba):
Overseas permanent residential address (of 3rd nationality):

Tình trạng hôn nhân/ Marital status:
☐ Độc thân/ Single ☐ Đã lập gia đình/ Married ☐ Ly dị/ Divorced

Hình thức sở hữu nhà ở/ Home ownership:
☐ Sở hữu/ Owned ☐ Mua trả góp/ Mortgaged ☐ Thuê/ Rented
☐ Sống với bố mẹ/ người thân
Living with Parents
☐ Khác (Xin ghi rõ):
Others (please specify)

Thời gian ở tại địa chỉ hiện tại:
Years and months at current address
Năm Year | Tháng Month

Hiện tại bạn có phải là người cư trú Hoa Kỳ không (cư trú ở Hoa Kỳ hơn 183 ngày/ năm)?
Are you currently a US Resident (residing in the US for more than 183 days a year)?
☐ Có/ Yes ☐ Không/ No

Đối với người nước ngoài/ For foreigner:

Số tham chiếu của Thị thực cư trú:
Visa number

Ngày hết hạn lưu trú tại Việt Nam:
Visa expiry date
/ / Ngày/tháng/năm (dd/mm/yyyy)

Số người bạn đang chu cấp tài chính:
No. of dependants

Trình độ học vấn/ Education level:
☐ THCS Secondary ☐ THPT High school ☐ CĐ College ☐ ĐH University ☐ Thạc sĩ/Tiến sĩ Master/PhD

Mật mã liên lạc qua điện thoại (tối đa 06 ký tự):
Phone banking Security password (max 06 characters)
*Ghi chú: Mã số này không phải là số PIN/ *Note: Security password is not your PIN

Thông tin nghề nghiệp/ Employment details

☐ Đi làm/ Employed ☐ Tự kinh doanh/ Self Employed
☐ Khác (Xin ghi rõ)
Others (please specify):

Nơi công tác:
Company name

Địa chỉ cơ quan/ Company address:

Số/ No.: | Tên đường/ Street:

Phường/ Ward:

Quận/ District: | Tỉnh, thành/ Province, city:

Điện thoại liên lạc/ Home phone No.:

Giấy Đề Nghị Cấp Thẻ Tín Dụng ANZ Kiêm Hợp Đồng
ANZ Credit Card Application and Agreement

Loại hình doanh nghiệp/ Business type:

- ☐ Nhà nước / State-owned
- ☐ Nước ngoài/Liên doanh / Wholly Foreign Owned/Joint Venture
- ☐ Cổ phần / Joint-stock
- ☐ TNHH / Private limited
- ☐ Hợp danh/Tư nhân / Partnership/Sole Proprietary
- ☐ Khác (Xin ghi rõ): / Others (please specify)

Ngành nghề/ Industry:

- ☐ Nông nghiệp / Agricultural
- ☐ Xây dựng / Construction
- ☐ Tài chính/Ngân hàng / Finance/Banking
- ☐ Bảo hiểm / Insurance
- ☐ Sản xuất / Manufacturing
- ☐ Bất động sản / Real Estate
- ☐ Vận tải / Transportation
- ☐ Truyền thông / Media
- ☐ Bán buôn/Bán lẻ / Wholesale/Retail Trading
- ☐ Du lịch/Nhà hàng / Tourism/Restaurants
- ☐ Khác (xin ghi rõ) / Others (please specify):

Chức vụ/ Current position:

- ☐ Nhân viên / Clerk
- ☐ Chuyên viên / Officer
- ☐ Giám đốc / Manager
- ☐ Phó Tổng Giám đốc / Deputy General Director
- ☐ Tổng Giám đốc/Giám đốc Toàn Quốc / General Director/Country Manager
- ☐ Chủ Doanh Nghiệp / Owner

Thời gian công tác tại cơ quan hiện tại: / Time in current employment: Năm / Year ____ Tháng / Month ____

Lương cơ bản trước thuế hàng tháng / Gross Monthly Base Salary Before Tax	VNĐ
Phụ cấp hàng tháng / Monthly allowance	VNĐ
Thu nhập khác nếu có / Other income if any	VNĐ

Nơi công tác trước đây: / Previous company name

Thời gian công tác tại cơ quan trước đây: / Time in previous employment Năm / Year ____ Tháng / Month ____

Tổng thời gian công tác: / Years of working experience Năm / Year ____ Tháng / Month ____

Thông tin người hôn phối/người thân/ Spouse details

Họ tên (như trên CMND & Hộ chiếu)/ Full name (as shown on National Identification & Passport):

Họ/ Surname | Tên đệm/ Middle name | Tên/ Given name

- ☐ Đi làm / Employed
- ☐ Tự kinh doanh / Self Employed
- ☐ Khác (Xin ghi rõ): / Others (please specify)

Số CMND/Hộ chiếu: / National ID/Passport No.

Quốc tịch: / Nationality

Nơi công tác: / Company name

Địa chỉ cơ quan/ Company address:

Số/ No.: | Tên đường/ Street:

Phường/ Ward:

Quận/ District: | Tỉnh, thành/ Province, city:

Điện thoại liên lạc/ Home phone No.:

ĐTDĐ/ Mobile:

Thông tin tài chính/ Financial details

Bạn là khách hàng hiện tại của ANZ? / Are you existing ANZ customer? ☐ Có (chọn loại TK bên dưới) / Yes (please choose below) ☐ Không / No

- ☐ TK tiết kiệm / Deposit account
- ☐ TK vay / Loan account
- TK lương / Payroll

Thông Tin Tài Khoản/ Bank Account Details

Tên ngân hàng giao dịch chính / Name of your main Bank	Số tài khoản giao dịch / Bank account number

Thông Tin Các Khoản Vay/ Loan Details

	Tên Ngân Hàng/Công ty Tài Chính / Finance Company Name	Loại Vay / Type of loan	Khoản trả góp hàng tháng (VNĐ) / Monthly repayment (VND)
1.			
2.			

Thông Tin Thẻ Tín Dụng Khác/ Other Credit Card Details

	Tên Ngân Hàng/Công ty Tài Chính / Bank/Finance Company Name	Số thẻ / Card number	Mở thẻ từ năm / Member since
1.			
2.			

Nếu bạn có hơn hai khoản vay hoặc Thẻ tín dụng, vui lòng cung cấp thông tin chi tiết trên một trang giấy riêng.
If you have more than two loans or credit cards, please provide details on a separate page.

Thông tin tham chiếu/ Reference Information

Người tham chiếu là người có thể xác nhận thông tin của bạn là đúng (ví dụ như Giám đốc hay đồng nghiệp của bạn)./ A referee is someone that can confirm your identification, e.g. your Manager or colleague.

Họ tên/ Referee name:

Họ/ Surname | Tên đệm/ Middle name | Tên/ Given name

Địa chỉ/ Address:

Số/ No.: | Tên đường/ Street:

Phường/ Ward:

Quận/ District: | Tỉnh, thành/ Province, city:

Điện thoại liên lạc/ Home phone No.:

Điện thoại cơ quan/ Business phone No.:

ĐTDĐ/ Mobile:

Phần Dành Cho Người Nước Ngoài/ Foreigner Only

Vui lòng cung cấp thông tin liên lạc của một người nói tiếng Anh tại nước bản địa:
Please provide one permanent home country English speaking contact

Họ tên/ Full name:

Họ/ Surname | Tên đệm/ Middle name | Tên/ Given name

A.3 The Experiment Script

A.3.1 The Email Message

[Program Logo]

Dear Valued Customer,

Happy New Year! [Bank name] wish you a new year full of fortune and prosperity. [Bank name] thank you for choosing our services. To express our gratitude to you in the New Year, you have been chosen to receive an offer to participate in our latest program "Year of the Pig – Luck comes".

The purpose of the program is to provide us with more useful information about our clients, enabling us to provide terms and conditions that are tailored to the needs and conditions of each individual borrower. Participation will give you an opportunity to win one of the following fabulous prizes:

Prize	Number	Value
First prize	1	100,000,000
Second prizes	2	25,000,000
Third prizes	5	10,000,000
Lucky money	100	1,000,000
Total		300,000,000

The program is open until 02/28/2019 only and results will be announced by 03/05/2019. To participate in the program, please click here. If you have any questions, please contact [Program Contact].

Best regards,

[Bank name]

A.3.2 The Questionaire Script

[Program logo]

[Section: Beginning message]

Thank you for your interest in the program. Your answers will provide us with useful information that helps us tailor our products to the needs and conditions of each individual customers. To receive a lottery ticket, please answer all following questions and select “Agree” to the program conditions. If you have any questions, please contact _____ at _____.

[Section: Social network]

1. How many friends do you have on Facebook?
   - ☐ < 500
   - ☐ 500-1000
   - ☐ 1000-2000
   - ☐ >2000
   - ☐ Do not use Facebook

2. How much time do you spend on Facebook everyday?
   - ☐ < 30 minutes
   - ☐ 30 minutes – 1 hour
   - ☐ 1 – 2 hours
   - ☐ > 2 hours
   - ☐ Do not use Facebook

3. How many connections do you have on LinkedIn ?
   - ☐ <250
   - ☐ 250 - 500
   - ☐ 500 - 1000
   - ☐ >1000
   - ☐ Do not use LinkedIn

4. What is the brand of your phone?
   - ☐ Iphone
   - ☐ Samsung, Sony, LG and similar
   - ☐ Oppo, Xiaomi and similar
   - ☐ Do not use smartphone

[Section: Social references]

5. According to our database, one of your references is Mr/Ms. [Reference name] at [Reference contact number] who is your [Referee relationship]. Is this information correct?

☐ Yes

☐ No

{If the customer chooses Yes, skip to Question 7}

6. Please update information about your reference

☐ E-mail _____

☐ Mobile _____

☐ Workplace _____

7. How long have you known Mr/Ms. [Reference name]?

{Open-ended question; fill in integer > 0}

8. Have you ever borrowed or are you currently borrowing from the above-mentioned reference?

☐ Yes

☐ No

9. If necessary, how likely will you borrow from the above-mentioned reference?

☐ Very unlikely

☐ Unlikely

☐ Medium

☐ Likely

☐ Very likely

[Section: Beliefs about payment performance]

10. Do you know anyone that has defaulted on their debts before?

- ☐ Yes
- ☐ No

11. Customers are normally offered a 10-day grace period after the due date to repay their balance. To the best of your knowledge, how many percent of borrowers do you estimate to miss the 10-day deadline every month?

- ☐ 2% or less
- ☐ 2-4%
- ☐ 4-6%
- ☐ 6-8%
- ☐ 8-10%
- ☐ 10% or more

12. To the best of your knowledge, how common is it that borrowers default on their debts?

- ☐ 2% or less
- ☐ 2-4%
- ☐ 4-6%
- ☐ 6-8%
- ☐ 8-10%
- ☐ 10% or more

[Section: Treatment]

Our “Year of the Pig – Luck comes” program offers you a chance to win one of following fabulous prizes:

Prize	Number	Value
First prize	1	100,000,000
Second prizes	2	25,000,000
Third prizes	5	10,000,000
Lucky money	100	1,000,000
Total		**300,000,000**

To receive a lottery ticket in the program, you simply need to allow the bank to notify the above-mentioned reference of your payment status in case you are 10 days past your due date. The program is binding for 1 year of your credit card usage from March 2019 to February 2020. It is important that you understand that we will send the notification message to your contact when **and only** when the 10 day deadline is past.

This is our special program to thank our valued customers and, therefore, is available to a limited set of customers only. As such, unfortunately, some of the customers that want to participate will not be able to actually participate.

Since we want to treat our customers fairly, we will randomly choose among customers who agree to participate. The software will draw a random integer between 1 and 100. If the number is 30 or less, the software will authorize the participation, meaning your reference will be notified in case you are 10 days past your due date. If the number is more than 30, the software will NOT authorize the participation, meaning your reference will NOT be notified.

Please understand that the decision you make now is final. If you decide to participate in the program, you will be giving us your consent. Therefore, if the random drawing authorizes the participation, we have your consent.

The program is open until 02/28/2019 only. Would you like to participate?

☐ Yes

☐ No

{If the customer chooses Yes}

Thank you for choosing to participate. Your random number is now being drawn ...

> [*If the number is less than or equal to 30*]
> Congratulations! Your random number is [the drawn number]. You have been selected to participate in the program. Your lottery ticket is [customer ID number]. The lottery results will be announced on 03/05/2019. Please remember that as part of the program, your [assigned reference] will be notified of your payment status in case you are 10 days past your due date.
>
> *{If the number is greater than 30 but less than or equal to 60}*
> We are sorry that you have not been lucky this time. Your random number is [the drawn number]. Since your participation was not authorized, your [assigned reference] will NOT be notified of your payment status whatsoever. Please check out our many other programs.
>
> *{If the drawn number is greater than 60 but less than or equal to 80}*
> We are sorry that you have not been lucky this time. Your random number is [the drawn number]. Since your participation was not authorized, your [assigned reference] will NOT be notified of your payment status whatsoever. However, as our special thank you to your acceptance, we would like to offer you another opportunity. You will receive a cash rebate equal to your late payment fee if you make the required minimum payment before the 10-day deadline. The cash rebate will be credited to your balance immediately after you make the payment on time.
>
> *{If the number is greater than 80}*
> We are sorry that you have not been lucky this time. Your random number is [the drawn number]. Since your participation was not authorized, your [assigned reference] will NOT be notified of your payment status whatsoever. However, please note that all non-payments are reported to the National Credit Information Center (CIC) monthly. Banks consult CIC for borrowers' credit history before making lending decisions. Non-payment records will diminish your ability to get credit in the future.

{If the customer chooses No}

11. We are sorry that you chose not to participate. Could you please let us know the reason for us to improve our services?

- ☐ The prizes are not sufficiently attractive
- ☐ Do not want to share information about your financial conditions
- ☐ Other _____

{If the customer does not choose the second response, skip to the End}

12. Could you please let us know the reason why you do not want to share information about your financial conditions (choose all that apply)

- ☐ May impact your social relationships
- ☐ May impact your professional relationships
- ☐ May impact your chance of borrowing from your social network
- ☐ You are not comfortable sharing your financial information in general
- ☐ Other _____

[Section: Ending message]

[Bank name] sincerely thank you for taking time to respond to our program. Your answers are valuable for us to improve our services. Should you have any questions about the program, please contact _____ at _____. Have a good day.

A.3.3 The Text Messages

Normal reminder message. Borrowers in the Condition C, Condition N and Condition NR received a normal reminder that the bank has routinely sent out to its borrowers and reads as follows.

> Your [name of card] [month] balance has past the due date. Please make a payment at your earliest convenience. Minimum payment: [amount]. Ignore the message if you have already paid. Call [Program contact] for more details.

Social incentive message. Borrowers in Condition TS received a text message that reminds them of the social disclosure arrangement and reads as follows.

> Your [name of card] [month] balance of [amount] has past the due date. Please make a payment before [repayment deadline]. Minimum payment:[amount]. Otherwise, as per our agreement, your [assigned social reference] will be notified of your delinquency. Ignore the message if you have already paid. Call [Program contact] for more details.

Financial incentive message. Borrowers in Condition TF received a text message that reminds them of the cash rebate offer.

> Your [name of card] [month] balance of [amount] has past the due date. Please make a payment before [repayment deadline] to receive a cash rebate equal to your late payment fee. Minimum payment: [amount]. Ignore the message if you have already paid. Call [Program contact] for more details.

Credit reputation message. Borrowers in Condition TC received a text message that reminds them of consequences of credit reporting and reads as follows.

> Your [name of card] [month] balance has past the due date. Please make a payment before [repayment deadline]. Minimum payment: [amount]. Note: late payments are reported monthly to the CIC which all banks consult. This will diminish your ability to get credit in the future. Call [Program contact] for more details.

Delinquency message to Reference. When borrowers in Condition TS are 10 days past the due date, their assigned references received a text message that informs them of the borrower's delinquency and reads as follows.

> [Bank name] - Your [Reference relationship], [Borrower's name], has not paid their balance for the last statement cycle. Please advise [Borrower's name] to contact us as soon as possible. Thank you.

A.3.4 The Delinquency Call

Good morning/afternoon!

Am I speaking to [Mr/Ms. Reference Name]? I am calling from [Bank Name] and would like to ask you about [Borrower Name], your [Reference Relationship]. He/she listed you as his/her reference in our database. May I ask you a few questions? This should take less than 3 minutes. May I?

1. Do you know that [Mr/Ms. Borrower Name] has a loan with us that has passed the due date 10 days?
   - Yes
   - No

   {*If Yes*}

2. How did you hear about that?
   - Directly from the borrower
   - From a third-party. Please specify.

   {*If No*}

3. Did you talk to [Mr/Ms. Borrower Name] during the last 10 days?
   - Yes
   - No
4. Did you talk to [Mr/Ms. Borrower Name] during the last month?
   - Yes
   - No
5. Do you feel like [Mr/Ms. Borrower Name] is struggling financially?
   - Yes
   - No

Thank you so much for your time. The next time you see [Borrower Name], please advise [Borrower Name] to contact us as soon as possible. Have a nice day.

Appendix B Supplementary Tables

Table B.1 – Covariate Balance

	Condition C (Control group)	Condition TS (Social Reporting)	Condition TF (Financial Incentive)	Condition TC (Credit Reporting)	p-value of the test			
					TS = TC = TF = C	TS = C	TC = C	TF = C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	38.02	38.21	38.23	38.04	0.75	0.41	0.40	0.95
	(7.04)	(7.14)	(7.18)	(7.00)				
Male	0.69	0.70	0.70	0.71	0.80	0.57	0.56	0.33
	(0.46)	(0.46)	(0.46)	(0.46)				
Married	0.73	0.72	0.73	0.72	0.88	0.53	0.94	0.53
	(0.44)	(0.45)	(0.44)	(0.45)				
Schooling	14.96	14.96	14.96	14.97	0.99	1.00	0.90	0.91
	(1.50)	(1.45)	(1.45)	(1.52)				
Home ownership	0.29	0.30	0.30	0.28	0.70	0.71	0.81	0.42
	(0.45)	(0.46)	(0.46)	(0.45)				
Employment	2.17	2.17	2.18	2.16	0.67	0.81	0.53	0.47
	(0.46)	(0.47)	(0.49)	(0.44)				
Monthly income	11.19	11.19	11.23	11.06	0.91	1.00	0.84	0.58
	(6.61)	(6.75)	(6.65)	(6.52)				
Credit Score	621.90	623.20	621.70	622.20	0.85	0.46	0.91	0.88
	(54.06)	(55.72)	(54.05)	(53.59)				
Credit Rating	2.96	2.99	2.95	2.97	0.63	0.36	0.67	0.82
	(1.10)	(1.13)	(1.10)	(1.09)				
Public sector	0.19	0.19	0.17	0.17	0.44	0.90	0.24	0.30
	(0.39)	(0.39)	(0.38)	(0.38)				
Past Delinquent	0.07	0.07	0.06	0.07	0.88	0.88	0.68	0.64
	(0.25)	(0.25)	(0.24)	(0.26)				
Card history	15.69	16.06	15.76	15.94	0.42	0.12	0.78	0.33
	(7.26)	(7.51)	(7.71)	(7.44)				
Limit to Income	2.86	2.89	2.86	2.88	0.44	0.20	0.81	0.43
	(0.63)	(0.65)	(0.65)	(0.64)				
Balance to Income	0.48	0.48	0.48	0.49	0.50	0.76	0.49	0.26
	(0.20)	(0.21)	(0.21)	(0.20)				
Purchase to Income	0.42	0.42	0.43	0.43	0.51	0.96	0.34	0.23
	(0.19)	(0.20)	(0.20)	(0.19)				
Debt to Income	0.75	0.74	0.75	0.76	0.71	0.53	0.60	0.63
	(0.40)	(0.40)	(0.39)	(0.41)				
Utilization	0.26	0.25	0.25	0.26	0.69	0.31	0.87	0.93
	(0.14)	(0.13)	(0.13)	(0.13)				
Facebook connections	1.80	1.80	1.79	1.82	0.78	0.93	0.77	0.45
	(0.85)	(0.86)	(0.90)	(0.87)				
LinkedIn connections	1.22	1.22	1.24	1.24	0.93	0.90	0.70	0.65
	(1.16)	(1.19)	(1.17)	(1.15)				
Same city	0.92	0.91	0.93	0.92	0.71	0.63	0.48	0.78
	(0.28)	(0.28)	(0.26)	(0.27)				
Borrowed	0.26	0.26	0.25	0.25	0.90	0.92	0.56	0.57
	(0.44)	(0.44)	(0.43)	(0.43)				
Borrowing likelihood	2.42	2.43	2.46	2.44	0.87	0.88	0.44	0.64
	(1.33)	(1.28)	(1.28)	(1.31)				
Relatives	0.28	0.27	0.26	0.26	0.61	0.55	0.24	0.28
	(0.45)	(0.44)	(0.44)	(0.44)				
Friends	0.36	0.37	0.37	0.35	0.66	0.43	0.70	0.62
	(0.48)	(0.48)	(0.48)	(0.48)				
Co-worker	0.37	0.36	0.38	0.39	0.33	0.81	0.49	0.14
	(0.48)	(0.48)	(0.49)	(0.49)				
Observations	1968	1963	1325	1319				

Notes: This table reports statistics for all experimental conditions and tests of covariate balance across treatment groups. Columns (1)-(4) report the mean and standard deviations for all four groups. Column (5) reports p-value for a test if the means are equal across all four groups. Columns (6)-(8) report p-value of a pairwise test that the mean of each variable in Social Incentive Condition TS, Credit Reputation Condition TC and Financial Incentive Condition TF, respectively, is the same as the Control group C.

Table B.2 – Baseline Result: Social Image and Delinquency - Panel

Dependent variable	*Delinquent Dummy*		*Payment-to-Balance*	
	(1)	(2)	(3)	(4)
Social Reporting Treatment	-0.006***		-0.002	
	(-3.37)		(-1.11)	
Post		0.014***		0.004
		(4.24)		(0.69)
Treatment × Post		-0.006***		-0.003
		(-2.69)		(-1.01)
Borrower FE	No	Yes	No	Yes
Month FE	No	Yes	No	Yes
Observations	44737	87934	44059	86811
R^2	0.003	0.036	0.005	0.041
Control group Base Rate	0.02	0.02	0.95	0.95

Notes: This table reports regression results of the baseline specification in the panel, as in Equation 2. Social Reporting Treatment is an indicator for being in Condition TS. In columns (1) and (2), the dependent variable is an indicator whether a borrower is delinquent in a month. In columns (3) and (4), the dependent variable is $Payment-to-Balance$, amount paid (conditional on paying before the deadline) divided by the amount due for a month. Columns (1) and (3) report results for a pooled regression on the post-intervention period. Columns (2) and (4) reports results for panel regression with borrower fixed effects and month fixed effects. Standard errors are clustered at borrower level. t-stat in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table B.3 – Credit Take-ups by Borrowers with Existing Installment Plans

Dependent variable =	Balance		Purchase		Debt	
	(1)	(2)	(3)	(4)	(5)	(6)
Social Reporting Treatment	-0.006	-0.009	-0.017**	-0.018**	-0.003	-0.010
	(-0.74)	(-1.11)	(-2.15)	(-2.46)	(-0.19)	(-0.61)
Controls	No	Yes	No	Yes	No	Yes
Observations	2450	2450	2450	2450	2450	2450
R^2	0.000	0.146	0.002	0.142	0.000	0.153
Control group Median	0.540	0.540	0.387	0.387	0.819	0.819

Notes: This table reports regression results of the dependent variables, shown in the top row, on the treatment dummy as in Equation 4 for a subset of borrowers with outstanding installment plan at the onset of the intervention. Columns (1), (2) and (3) present results for $Balance-to-Income$, $Purchase-to-Income$ and $Debt-to-Income$, respectively. Columns (2), (4) and (6) replicates and adds control variables for borrower characteristics (age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention). t-start from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table B.4 – Heterogeneity of Treatment Effects

Dependent variable = Delinquent Dummy							
	Age	Male	Married	Credit Score	Education	Income	Fb Connections
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High Trait	-0.053***	0.009	-0.082***	-0.030*	-0.011	-0.082***	0.001
	(-2.76)	(0.59)	(-4.32)	(-1.66)	(-0.44)	(-4.70)	(0.04)
Social Reporting Treatment	-0.052***	-0.033**	-0.079***	-0.063***	-0.020	-0.045***	-0.012
	(-3.61)	(-2.09)	(-3.74)	(-4.22)	(-1.29)	(-2.92)	(-1.14)
Treatment × High Trait	0.062***	0.016	0.079***	0.083***	-0.004	0.046**	-0.055**
	(3.33)	(0.83)	(3.37)	(4.43)	(-0.20)	(2.42)	(-2.19)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3931	3931	3931	3931	3931	3931	3931
R^2	0.037	0.034	0.038	0.039	0.034	0.040	0.037

Notes: The table shows heterogeneous treatment effects of the social reporting treatment across different borrower characteristics. The dependent variable in all columns is an indicator for whether a borrower is delinquent at least once during the sample period. The dummies for Male and Married are self-explanatory. The dummies for Age, Credit Score, Income and Facebook Connections are equal to one for borrowers with above median value in each trait respectively. The dummy on Education is equal to one for borrowers with bachelor degree and higher. All specifications include controls for borrower characteristics (age, gender dummy, marital status dummy, income, years of schooling, home ownership dummy, employment level, credit rating and a dummy for whether the borrower became delinquent at least once in the 12-month before the intervention). t-stat from robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.