

How do Borrowers Respond to a Debt Moratorium? Experimental Evidence from Consumer Loans in India^{*}

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Abstract

Debt moratoria that allow borrowers to postpone loan payments are a frequently used tool intended to soften the impact of economic crises. We conduct a nationwide experiment with a large consumer lender in India to study how debt forbearance offers affect loan repayment and banking relationships. In the experiment, borrowers receive forbearance offers that are presented either as an initiative of their lender or the result of government regulation. We find that delinquent borrowers who are offered a debt moratorium by their lender are 4 percentage points (7 percent) *less likely* to default on their loan, while forbearance has no effect on repayment if it is granted by the regulator. Borrowers who are offered forbearance by their lender also have higher demand for future interactions with the lender: in a follow-up experiment conducted several months after the main intervention, demand for a non-credit product offered by the lender is 10 percentage points (27 percent) higher among customers who were offered repayment flexibility by the lender than among customers who received a moratorium offer presented as an initiative of the regulator. Overall, our results suggest that, rather than generating moral hazard, debt forbearance can improve loan repayment and support the creation of longer-term banking relationships not only for liquidity but also for relational contracting reasons. This provides a rationale for offering repayment flexibility even in settings where lenders are not required to provide forbearance.

JEL: G2, G5, O12

Keywords: Debt forbearance, moral hazard, relational contracting

*This version: February 24, 2023. We are grateful for discussions with Viral Acharya, Deniz Aydin, Iwan Barankay, Daniel Björkegren, Emily Breza, Martin Brown, Greg Buchak, Leonardo Burstzyn, Anusha Chari, Shawn Cole, Stefano DellaVigna, Mert Demirer, Xavier Giné, Luigi Guiso, Jonas Hjort, Tullio Jappelli, Gianmarco León-Ciliotta, Nicola Limodio, John List, Gregor Matvos, David McKenzie, Muhammad Meki, Robert Metcalfe, Tarun Ramadorai, Rodney Ramcharan, Imran Rasul, Gautam Rao, Claudia Robles-Garcia, Chris Roth, Farzad Saidi, Amit Seru, Janis Skrastins, Jonathan Zinman, and Jeffrey Zwiebel as well as comments and suggestions from seminar and conference participants. We are especially grateful to Shivashish Chatterjee and the staff of DMI Finance for making this research possible. This project was reviewed in advance and approved by the Institutional Review Board at Stanford University (Protocol #IRB-55386). The experiments are registered with the American Economic Association registry for randomized control trials (AEARCTR-0006109). The opinions expressed in this paper do not necessarily represent the views of the World Bank, its executive directors, or the countries they represent.

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1 Introduction

Debt forbearance policies that allow borrowers to postpone loan payments are a popular tool to soften the impact of economic downturns and have been used to an unprecedented extent in recent crises. More than 80 countries around the world enacted debt moratoria for individuals and firms in response to the Covid-19 crisis.¹ In the United States alone, financial institutions granted more than \$2 trillion in debt forbearance to approximately 60 million borrowers over this period (Cherry et al., 2021). However, despite their enormous practical importance, the effects of forbearance policies on borrower expectations and behavior remain poorly understood. On the one hand, repayment deferrals can mitigate financial distress by easing liquidity constraints and strengthening borrowers' *ability to pay* (Aydin, 2021; Ganong and Noel, 2020). When repayment flexibility is granted by a private lender, this may also signal an investment in the banking relationship and improve loan repayment through an effect on borrowers' *willingness to repay*.² This may partly explain why forbearance is common even in markets where it is not mandated.³ On the other hand, a common concern with repayment deferrals is that they may generate expectations of lenient credit enforcement and future forbearance and give rise to moral hazard through this channel.⁴

In this paper, we study the borrower response to debt forbearance using a nationwide field experiment conducted in the context of a large debt moratorium program in India. We take advantage of a collaboration with a leading consumer finance lender, which allows us to issue randomized debt moratorium offers in accordance with India's forbearance policy for consumer loans in place at the time of the experiment. We first report results from our main experiment which varies whether delinquent borrowers are offered forbearance or not and how forbearance offers are presented to the customer. In the experiment, late-paying borrowers are randomly assigned to receive debt forbearance offers that are truthfully presented either as being *granted voluntarily by a private lender* or *extended as the result of government regulation*, or to one of several placebo and control treatments that contain no forbearance offer. We observe the impact of forbearance offers on borrower beliefs as well as the real stakes decisions to repay one's loan. In a second experiment, we explore the impact of forbearance offers on longer-term banking relationships and demand for future interactions with the lender. To do so, we design a product adoption experiment in which borrowers who received one of the two forbearance offers are contacted with an offer for a personal loan or a non-credit financial product several months after having received a forbearance offer. The treatment conditions vary whether the financial product is clearly marketed as a product of the lender or offered without reference to the name of the lender. In combination, the forbearance and product adoption experiments allow us to

¹ See World Bank (2022) and International Monetary Fund (2022).

² Forbearance can be interpreted as a flexible contract, which banks can use to intensify relationships with specific borrowers. Bolton et al. (2016) illustrate this point theoretically and provide evidence from lending terms during crises.

³ Cherry et al. (2021), for example, note that forbearance was common in the markets for auto loans and jumbo mortgages, where there was no regulatory requirement to grant repayment deferrals. Forbearance is also common in many markets for consumer finance where it is not mandated. See Supplementary Appendix A for an example from Europe.

⁴ The potential moral hazard costs of forbearance policies are a frequent topic in the news media. See, for example, "Moral hazard! Moratorium extension may trigger more defaults", The Economic Times, May 22, 2020, on consumer loan forbearance in India or "Biden's student loan dilemma: America's two-year experiment in debt deferral has had unintended consequences". New York Times The Daily podcast, April 18, 2022, on student loans in the U.S.

examine the immediate impact of forbearance offers on borrower expectations and credit discipline, as well as their potential impacts on relational contracting and longer-term banking relationships.

We find that borrowers who receive a moratorium offer presented as an initiative of their lender are 4 percentage points (7 percent) *less* likely to default on their loan than borrowers who are not offered a moratorium. The offer has no statistically significant impact on loan repayment if it is presented as an initiative of the regulator. Turning to the impact of forbearance offers on banking relationships, we show that borrowers who are granted repayment flexibility by their lender are significantly more likely to want to engage with the lender in the future. In the product adoption experiment, borrowers who received a moratorium offer from their lender in the main experiment have 10 percentage points (27 percent) higher demand for a non-credit product offered by the lender than participants who had received a forbearance offer with identical terms presented as an initiative of the regulator. At the same time, borrowers who received a forbearance offer presented as an initiative of their lender had the same demand for personal loans marketed by the lender as borrowers in the regulator condition, which suggests that the demand for future interactions with the lender is not driven by expectations of lenient enforcement or expectations that it is easier to renegotiate contracts with this lender, which could give rise to moral hazard. Overall, the results suggest that allowing lenders to take credit for forbearance policies can alleviate financial distress without damaging the lender's reputation for credit enforcement and strengthen longer-term banking relationships for relational contracting reasons (i.e. the anticipation of benefits from a continued banking relationship).

Our experiment takes advantage of a unique policy context that enables us to provide causal evidence on the response to forbearance offers in a real stakes environment. Measuring the effects of debt forbearance on borrower behavior is challenging for several reasons. Payment deferrals are typically endogenous to borrower and lender characteristics, and episodes of debt forbearance also tend to coincide with large economic crises that further confound the impact of repayment flexibility on borrower behavior and expectations. We overcome these challenges by working with a leading consumer finance lender at a time when a national consumer debt moratorium policy was in place in India. Importantly, the policy guidance at the time of the experiment encouraged lenders to provide further relief but did not strictly *require* them to offer repayment deferrals to all customers. This feature of the policy enables us to issue moratorium offers that are fully compliant with the terms of the national policy and to randomize whether a customer is offered debt relief as well as the manner in which moratorium offers are presented. The offers in our experiment are fully truthful, because the experiment takes place at a point in time when both the statement that the moratorium is offered as a result of regulatory guidance and the statement that it is offered by the lender are true.

In the first part of the paper, we examine how randomized moratorium offers affect borrower expectations and loan repayment. In addition to the main effects on repayment of the loans covered by the moratorium offers, we examine the impact of forbearance offers on *overall credit discipline*. To do so, we combine repayment data from our partner firm with credit bureau information that captures the *universe* of loan payments for customers in our sample. We establish that borrowers who receive a moratorium offer from their lender prioritize payments for loans covered by the moratorium and are significantly less likely to default, which holds both for those with and without outstanding loans

from other lenders. Treated borrowers with other loans, however, de-prioritize repayment of those loans, and more so if forbearance was granted by the lender than by the government. This result suggests that promoting competition between lenders may have meaningful implications for overall loan performance during crises, given that forbearance policies can exert externalities across lenders.

We explore several competing mechanisms that can explain *why* moratorium offers extended by one's lender improve loan repayment. Intuitively, temporary debt forbearance may have positive effects on loan repayment through two main channels. First, temporary payment deferrals may improve a borrower's ability to repay by relaxing temporary liquidity constraints. We rule out this possibility by showing that forbearance offers framed as coming from the lender affect loan repayment, while contractually *identical* offers framed as an initiative of the regulator do not. We additionally show that the take-up rate of the two offers is the same and that there is no differential selection into forbearance along observable characteristics. This implies that differences in repayment behavior between the two groups cannot be explained by an effect of forbearance offers on borrowers' *ability to pay*. Second, borrowers may prioritize repayments to a lender that granted them a moratorium out of a sense of reciprocity. Such reciprocal behavior could be either entirely altruistic or motivated by strategic considerations. It could be, for instance, that borrowers who are granted repayment flexibility by their lender want to return the favor and prioritize loan repayment to the lender without expectation of any future benefits. Alternatively, borrowers may interpret the offer as an investment in the banking relationship that highlights the importance of maintaining a good repayment record to safeguard the option of doing business with the lender in the future. We refer to this as 'strategic reciprocity'.

To provide more evidence on these two possible interpretations, we show that loan repayment improves most strongly for borrowers for whom the forbearance offer is immediately valuable. This includes, for instance, borrowers who suffered large income losses, and borrowers who are especially concerned about maintaining a good credit score, and could indicate either strategic or non-strategic reciprocity. Moreover, we present direct survey evidence to explore how borrowers interpret the forbearance offer and its implications for their relationship with the lender. We show that borrowers who received a moratorium offer framed as an initiative of the lender are *more likely* to believe that the offer was extended only to the *most* creditworthy borrowers, and that the main rationale for timely loan repayment is the prospect of qualifying for future loans from the lender that extended the forbearance offer. Overall, these results are most consistent with the interpretation that rather than triggering a non-strategic (or purely 'altruistic') sense of reciprocity, moratorium offers extended by the lender improve repayment because they make the option value of a continued relationship with the lender salient to the borrower.

In the second part of the paper, we examine the implications of forbearance offers for the establishment of longer-term banking relationships, and confirm this interpretation. One striking finding from the main experiment is that borrowers who receive a forbearance offer from their lender are more likely to report that they would like to do business with the lender in the future. This demand for future interaction with the lender could be explained by two different motivations with sharply different implications for the selection into longer term banking relationships. On the one hand, it could be that borrowers interpret forbearance offers from the lender as a signal that it is easier to renegotiate

contracts with the lender in the event of financial distress, or that the lender’s debt collection practices will be lenient going forward. This could lead to the selection of borrowers with higher credit risk into repeated interactions and longer term relationships with the lender and would therefore have negative implications for the profitability of the surviving lending relationships. On the other hand, it is possible that borrowers who are granted repayment flexibility have higher demand for the lender’s products independently of beliefs about the lenders’ collection and renegotiation practices. If this mechanism is at play, it could foster the establishment of more profitable banking relationships.

We design a product adoption experiment to test these competing mechanisms. In the experiment, borrowers who had received one of the debt forbearance offer treatments in the main experiment received a marketing call in which they were offered a financial product. The marketing calls took place after the moratorium period had ended and between three months and a year after participants had received the forbearance offer treatment. Borrowers were randomly assigned to receive either a marketing call that invited them to apply for a personal loan whose terms can—at least in principle—be renegotiated *ex post*, or a marketing call that offered the opportunity to purchase an “enhanced credit report”, a non-credit product that involves only a one-shot interaction with the lender and whose terms cannot be modified *ex post*.

The treatments of the product adoption experiment vary whether the offers are *branded* and prominently mentioned the name of the lender, or *non-branded* and do not mention the name of the lender. This real stakes design allows us to test whether borrowers that had been offered debt forbearance by their lender have causally higher demand for future interactions with the lender. If borrowers select into continued banking relationships for moral hazard reasons, one would expect this to lead to an immediate increase in demand for personal loans, but not for the non-credit product which merely signals a continued commitment to the lender that preserves the option of obtaining a loan in the future but has no immediate payoff to the borrower.

We find evidence that forbearance offers granted by one’s lender strengthen demand for future engagement with the lender. While there are no meaningful differences in demand for personal loans between treatment conditions, borrowers who received a moratorium offer from the lender in the main experiment have 10 percentage points (27 percent) higher demand for the branded non-credit product than borrowers who received debt forbearance offers framed as an initiative of the regulator. Because there is no scope for *ex post* renegotiation in the case of the non-credit product, the results suggest that borrowers wish to deepen their relationship with the lender that granted forbearance for reasons other than making the inference that it is easy to renegotiate financial contracts with the lender. These findings from a fully incentivized product adoption experiment indicate that, in our setting, forbearance offers appear to create neither moral hazard in short-term loan repayment nor moral hazard in the longer-term selection into banking relationships.

Our results have several implications for the design of debt relief policies. Regulators and private financial institutions have often been reluctant to grant temporary repayment deferrals because of the widespread assumption that such policies can damage credit discipline. Indeed, in a survey representative of the Indian population, conducted as part of our study supports this assumption—66 percent of respondents state that they expect debt moratoria to have a negative effect on timely

loan repayment. In sharp contrast to this view, we provide evidence that temporary debt forbearance has no negative effect on loan repayment and does not create expectations of future debt relief or lenient credit enforcement, which are the main channels through which one would expect repayment flexibility to generate moral hazard. Instead, we show that—if properly designed—temporary debt forbearance can improve loan repayment, generate soft information about customers' willingness to repay and lead to potentially advantageous selection into banking relationships.⁵

This paper contributes to several strands of the literature. First, our paper speaks to a literature on repayment delinquency and debt relief (Agarwal et al., 2011, 2017, 2022; Abel and Fuster, 2021; Fuster and Willen, 2017; Dobbie and Song, 2015, 2020; Ponticelli and Alencar, 2016). One strand of this literature examines the sources of repayment delinquency and finds short-term liquidity constraints and negative life events to be the primary drivers of non-repayment and bankruptcy filings among households (Ganong and Noel, 2020, 2022). One implication of these findings is that temporary repayment deferrals that relax liquidity constraints may be more effective at preventing insolvencies than previously thought, especially in situations where the underlying economic shock is transitory in nature. Supporting these results, Aydin (2021) compares the impact of alternative forms of debt relief in a randomized experiment and finds that temporary forbearance is especially effective at preventing late-cycle delinquencies among liquidity constrained borrowers. Similarly, Barboni and Agarwal (2021) and Battaglia, Gulesci and Madestam (2021) show that microfinance contracts that allow temporary repayment deferrals improve borrower outcomes because they provide insurance when liquidity is needed. We add to this literature by providing evidence on the tradeoff between the liquidity benefits and potential moral hazard costs of forbearance in a setting where it is possible to measure both repayment behavior and borrower expectations.⁶ In contrast to existing work focusing on the purely liquidity impacts of forbearance, we additionally consider the impact of forbearance on banking relationships and beliefs about the lender.

Second, our paper contributes to a literature on relational contracting and the evolution of banking relationships (Brown et al., 2004; Petersen and Rajan, 1994, 2002; Macchiavello, 2022). One somewhat puzzling empirical fact is that forbearance is widely offered in markets where it is not mandated. This includes the setting of our experiment, where banks offered forbearance even though they were merely encouraged but not required to grant payment deferrals by the regulator. The effect of repayment flexibility on banking relationships may provide a partial explanation for this pattern. Theory suggests that there is much scope for relational contracting in the credit market and that banks can, for instance, offer more generous loan terms to signal an investment in the banking relationship to strengthen their ties with specific customers. Indeed, empirical evidence shows that banks appear to offer continuation lending at more flexible terms to their best customers during economic downturns (Bolton and Freixas, 2000; Bolton et al., 2016). We advance this literature by providing the first causal evidence on how borrowers interpret offers of debt forbearance and how such offers affect loan repayment and the demand for future interactions with the lender.

⁵ We do not have sufficient data on future loan repayment to conclusively demonstrate *advantageous selection* into banking relationships. However, results from the product adoption experiment indicate that demand for future interactions with the lender is not explained by *adverse selection* or an intent to engage in moral hazard in the future.

⁶ See also Giné and Kanz (2018) and Indarte (2022) for evidence on the moral hazard costs of debt relief.

Finally, our paper is related to a growing body of research on the role of non-monetary motivations in debt repayment. A large body of research shows that household financial decisions are shaped by behavioral factors (see [Stango and Zinman 2022](#); [Kuchler and Pagel 2021](#)). Moral and reputational considerations, for example, play an important role in debt repayment ([Guiso et al., 2013](#); [Bursztyn et al., 2019](#)), and peer effects and social image concerns have been shown to influence economic decisions in many naturally occurring markets, including the market for consumer credit ([List, 2006](#); [Bursztyn et al., 2014, 2017](#)). We add to this literature by exploring the role of social preferences and strategic reciprocity in the establishment of banking relationships. Specifically, we show that forbearance offers presented as an initiative of the lender reduce default and increase demand for future interactions with the lender, and explore to what extent such reciprocal behavior is explained by social preferences towards a lender who makes an investment in the lending relationship, as opposed to strategic motives on the part of the borrower.

The remainder of the paper proceeds as follows. Section 2 outlines the institutional context of our study and provides motivating evidence on beliefs about debt forbearance in the population. Section 3 presents the design and results of the main debt forbearance experiment. In Section 4 we report the results of a complementary product adoption experiment to explore the effects of forbearance offer on repeated interactions and longer term banking relationships, and section 5 concludes.

2 Background and Motivating Evidence

2.1 Debt Forbearance for Consumer Loans in India

The experiment we describe in this paper is set in India, one of the world's largest markets for consumer finance, and takes advantage of a unique policy setting created by the extensive debt relief measures enacted in response to the Covid-19 pandemic. In March 2020, India experienced a first sharp rise of cases and the Indian government responded by declaring a nationwide lockdown. The lockdown was announced at short notice and severely disrupted economic activity across the country.

To mitigate the effects on households and firms, the *Reserve Bank of India*, similar to regulators in many other countries, announced an emergency package that included a number of monetary and financial policy measures aimed at averting widespread financial distress. The package had a large forbearance component and included a first debt moratorium policy under which bank and non-bank lenders were instructed to offer payment deferrals on individual and small business loans from March 1, 2020 through May 31, 2020. This first phase of the moratorium was eventually extended for another three months until August 31, 2020 and covered 40 percent of *all* outstanding loans in India.

Importantly, the policy did not *require* lenders to offer a moratorium to delinquent borrowers, but provided very strong incentives to do so, as it allowed them to avoid higher risk provisioning rates for delinquent loans covered by the moratorium. That is, lenders did not have to provision for possible credit losses on their balance sheets for loans covered by the moratorium, whereas risk provisioning rates (which are treated as an expense on a bank's balance sheet) would have increased sharply with an increase in delinquencies among these loans. As a result, practically all bank and non-bank lenders

in India complied with the policy and offered repayment deferrals to eligible borrowers.⁷ However, all credit bureau reporting was paused in this first phase, and loans covered by the moratorium were not reclassified as restructured or non-performing.

Once the first phase of the moratorium ended, a second phase started where lenders were still encouraged to grant forbearance to borrowers in need. However, the incentives for doing so were reduced, as loans covered by a moratorium now had to be restructured, which entails processing costs and higher risk provisioning requirements but is still preferable to the standard requirement of having to declare loans as nonperforming if they remain in arrears for more than three months. In practice, lenders in this second phase weighed the administrative cost of offering payment deferrals against the credit risk among their customer population.

We conducted our main experiment during this second phase of India's consumer credit moratorium, when debt forbearance was still widely granted but had become *de facto* optional from the perspective of the lender. While banks could still avoid classifying loans as nonperforming if they granted forbearance during this time window, this now entailed a non-zero cost of marking these loans as restructured. As a result, banks exercised greater discretion in making customers eligible for repayment deferrals and generally offered forbearance only to customers with a realistic prospect of eventual repayment. This provides an ideal setting for our experiment in which we vary whether customers receive a moratorium offer as well as whether this offer is presented as an initiative of the lender or the regulator.

2.2 Beliefs about Debt Forbearance in the Population

The impact of debt relief policies has been a hotly contested topic of public debate, with proponents emphasizing their stabilizing effects and critics worrying about their potential to generate moral hazard.⁸ To provide additional motivating evidence for our study, we conducted a nationwide online survey in India with a sample of respondents representative of the population of consumer loan borrowers in terms of age, income, and gender. In the survey, we elicited borrower opinions about the likely effect of debt forbearance policies.⁹ The results show that even in the case of an aggregate shock where forbearance can be reasonably assumed to benefit primarily borrowers in genuine financial distress, respondents overwhelmingly expect that repayment deferrals will generate moral hazard and damage overall credit discipline.

Figure 1 summarizes the main results of the survey.¹⁰ We first asked borrowers whether they

⁷ Lenders were allowed to continue charging interest. The issue of compound interest during the moratorium, i.e. interest on accrued interest, was argued before the Supreme Court of India. Ultimately, borrowers ended up paying simple interest, with the government reimbursing lenders for the difference between simple and compound interest.

⁸ In addition to the debate on repayment flexibility for individual borrowers, there has also been a debate on *regulatory forbearance*, which describes policies that allow banks to postpone the recognition of credit risks. Chari et al. (2021) examine the effects of such policies enacted in the aftermath of the 2007-2009 global financial crisis in India and show that they led to widespread incentive distortions, “evergreening” of *de facto* non-performing loans, and credit misallocation.

⁹ Our approach for this descriptive exercise is similar to recent work that has used online surveys with representative populations to examine how people form opinions about social issues and public policies (see, for example, Stantcheva, 2020). We report descriptive statistics for the survey population in Table B.1 in the Supplementary Appendix. Table B.2 provides summary statistics on the responses to the online survey.

¹⁰ The full survey instrument and additional results are available in Table B.1 in the Supplementary Appendix.

thought that forbearance extended through India's first debt relief package, which is the setting of our study, had benefited households that were in actual financial distress and needed support. Consistent with interpreting the pandemic as an aggregate shock, respondents believe that this is the case: 51.8 percent of respondents think that most beneficiaries needed and deserved relief, and only 1.71 percent think that most beneficiaries did not need or deserve debt forbearance.¹¹

Second, we asked borrowers how they thought a repayment moratorium would affect beliefs about the lender —the primary channel through which one would expect debt forbearance to generate moral hazard. We first asked respondents whether they agreed with the statement "*if a private lender gives more debt relief than others, their borrowers might take them less seriously and de-prioritize making payments to that lender*", which captures the idea that forbearance granted by private lenders reduces loan repayment because it damages the lender's reputation and creates expectations of lenient credit enforcement. We find that 65 percent of respondents agree with this statement. We then asked respondents whether they agreed with the statement "*widespread debt relief can discourage borrowers who are able to pay their debts from paying them in the future*" to capture beliefs about the effect of forbearance on overall credit discipline. A similarly high share (66 percent) of respondents agreed with this statement.

We additionally asked borrowers about their expectations of future debt relief, which is another channel through which debt forbearance could weaken credit discipline and generate moral hazard. Specifically, respondents were asked whether they expected that there would be another debt moratorium in the event that India would experience future waves of the pandemic similar to the events that triggered the first round of debt forbearance in India. The overwhelming majority of respondents in our representative sample of the population (72.93 percent) believe this to be "likely" or "very likely". We then ask whether borrowers expect future forbearance to be offered by private banks or the government, and find that 63 percent of respondents believe that banks are likely or very likely to offer forbearance in the future while an overwhelming majority of 84 percent of respondents believe that future forbearance will be granted as the result of a government or regulator initiative.

Finally, we also compare prior beliefs in the population to prior beliefs among experts, elicited through the Social Science Prediction Platform (DellaVigna et al., 2019). The results, reported in the Supplementary Appendix, show that expert predictions differ from those in the population of borrowers. Experts are more optimistic about the effect of forbearance on debt repayment and on average predict positive treatment effects of debt forbearance offers on loan repayment. To match the design of our experiment, we asked experts to predict the effect of forbearance offered by the regulator and forbearance offered by one's lender. Interestingly, we find that the median expert *overestimates* the effect of forbearance offered by the regulator, and *underestimates* the differential effect of forbearance offered by a private lender on both repayment rates and on the demand for doing business with the lender in the future.

In sum, the results of a survey representative of the borrower population illustrate that respondents overwhelmingly expect repayment deferrals to have negative implications for credit discipline. Moreover, respondents believe that loan repayment could be impacted negatively through two alternative

¹¹ In total, 39.9 percent of respondents think that some beneficiaries needed and deserved relief, and 6.6 percent of respondents think some beneficiaries did not need or deserve debt forbearance.

channels: the anticipation of future relief and expectations of more lenient credit enforcement by lenders that grant repayment deferrals.

3 The Debt Forbearance Experiment

3.1 Setting and Sample Population

We partnered with a large consumer finance lender in India to conduct a natural field experiment ([Harrison and List, 2004](#)), in which the lender extended randomized debt forbearance offers to its customers. Our partner is one of India's leading consumer finance lenders, has more than 35 million individual customers across the country and offers a range of consumer financial products. Within the lender's customer population, we focus on borrowers that had taken out a consumer loan to purchase a mobile phone. At the time of our experiment over 13 million loans of this type were outstanding, and we focus on loans that had missed at least two monthly payments. The loans in our sample have a mean (median) tenor of 7.8 months (8 months), a median amount of Rs 10,955 (US \$150) ¹², and a constant interest rate of 12 percent APR, which is similar to the characteristics of the typical consumer loan in India.¹³ The loans are collateralized by the mobile phone, and the lender has the ability to remotely restrict the phone's ability to use data or make outgoing calls in the event that a borrower misses their monthly payments. Importantly, borrowers in this population are likely to be contactable by phone, which allows us to implement a nationwide experiment that is integrated into the lender's regular interaction with its customers over the phone. The forbearance offers in our experiment are extended through the lender's standard communication channels, have real stakes, and are fully compliant with the terms of India's national debt moratorium policy in place at the time of our experiment.

3.2 Experimental Protocol

The main experiment was implemented between November 2020 and March 2021, after India's first phase of the national debt moratorium had ended and while lenders were encouraged, but not required, by the regulator to offer additional debt forbearance to their customers. This allows us to extend real stakes debt forbearance offers that are truthfully framed as being granted either as an initiative of the lender or as a result of government policy.

The experiment was conducted in several rounds, corresponding to the lender's monthly repayment cycle. Each month, the lender shared a list of borrowers that had failed to make their required monthly loan payment. The size of each monthly borrower cohort was thus determined by the size of the lender's 30-day delinquency portfolio at this point in time. This sample was further restricted to borrowers that had been making regular payments prior to this date and whose loans had not previously been restructured or modified. Through this process, the lender shared a sample of more than 51,660 customers that qualified for debt forbearance according to its internal criteria. We excluded

¹² We use the Jan 1, 2021 exchange rate of Rp 73 per US\$ for all currency conversions in this paper.

¹³ The median (average) consumer loan recorded in credit bureau data for this population has an amount of Rs 12,800 (Rs 15,000), a median (average) interest rate of 16.5% (19.5%), and a median (average) tenor of 7 months (8.9 months).

from this sample any borrowers who, if they accepted a forbearance offer, would not complete repayment of their loan by April 1, 2022 even with perfect repayment, and this resulted in a potential experimental sample of 45,605 borrowers.

We worked with the lender to randomly assign customers in the sample frame to one of the debt forbearance offer or control treatments. Professional customer service representatives from the lender's call center then attempted to reach customers on an assigned list to extend a debt forbearance offer or deliver one of the control scripts. Each customer service representative was given a randomly assigned script and list of customers to contact at the beginning of each work day. The customer service representatives made up to four call attempts for each customer in the sample, and only customers who could be reached using this protocol are included in our balance tests and estimation sample. Out of the 45,605 potential experimental borrowers, the effective estimation sample includes 9,623 borrowers that were successfully contacted over the course of the experiment. The sample includes customers from 26 states of mainland India (see Figure 2). Call recordings were audited throughout the study to ensure that the lender's customer service representatives followed the experimental protocol and assigned scripts. In total, 16 customer service representatives made an average of 122 call attempts per day for a total of 88 days over the course of the experiment.

3.3 Treatment Conditions

Borrowers in the sample were randomly and individually assigned to one of four treatment conditions, which included two variations of a debt forbearance offer, one placebo treatment and one control condition. The two debt forbearance offers extended in the experiment are identical in all terms and conditions but vary whether the offer is presented as an initiative of the lender or the regulator. The remaining treatments shed light on alternative mechanisms and allow us to benchmark the impacts of temporary debt forbearance against standard repayment reminders and debt enforcement.

3.3.1 Debt forbearance: relationship offer

The first of our two debt forbearance treatment conditions offered customers a three-month payment deferral on their loan that was framed as an initiative of the lender. In total, 1,901 of the contacted borrowers were assigned to this treatment, which presented the offer as follows:

At [lender name], we care about our customers and truly value your business. We understand that people all over India are facing great hardships due to the current economic situation. Helping our valued customers in these challenging times is our first priority at [lender name]. That is why we are offering you repayment flexibility on your loan.

Borrowers assigned to this treatment were then informed about the terms of the offer and asked if they would like to enrol in the debt forbearance program, which required payment of a small one-time processing fee of Rs 350 through the lender's payment portal. Borrowers who accepted the offer were provided with additional information about the terms and conditions of the forbearance program as

part of the sign-up process. To understand how sensitive take-up of the offer is to price, we assigned 177 contacted borrowers to receive the relationship offer with a higher processing fee of Rs 500.¹⁴

3.3.2 Debt forbearance: regulator offer

The second of our debt forbearance treatments, which was assigned to a total of 1,829 contacted borrowers, is identical to the first, with the exception that the offer is framed as being extended as the result of regulatory guidance, rather than the generosity of the lender. In this treatment, the offer was introduced as follows:

We are extending an offer in accordance with guidelines issued by the Reserve Bank of India to all lending institutions to help customers manage their finances in the current economic crisis. As a result of guidance issued by the Reserve Bank of India, we are offering you repayment flexibility on your loan, comparable to programs offered by most other lenders.

The customer service representative then informed borrowers assigned to this treatment about the terms of the offer, which were identical to those in the relationship offer treatment condition, and asked whether they would like to pay the processing fee of Rs 350 and enroll in the program. As in the relationship offer condition, borrowers who accepted the forbearance offer were provided with additional information about the terms and conditions as part of the sign-up process. Similarly, we assigned 146 of these customers to receive the regulator forbearance offer at the slightly higher price of Rs 500 to estimate how sensitive take-up of the offer is to the processing fee.

3.3.3 Placebo call: friendly call

In addition to the forbearance conditions, 2,452 contacted customers were assigned to the placebo call condition, which allows us to explore whether the response to receiving a forbearance offer could be explained by customers being treated in a more friendly way. In this treatment condition, customers received a friendly call in which a customer service representative highlighted the lender's commitment to its customers using a script similar to the relationship offer condition. However, in the relationship placebo condition no forbearance offer is extended and customers are instead simply invited to access to informational resources and offered help with navigating different payment methods.

3.3.4 Control group: repayment reminder

Finally, 3,441 contacted customers were assigned to the control group, which was designed to replicate the lender's standard repayment reminder calls. Customers assigned to this condition received a call from a customer service representative who reminded them that their payment was past due, and asked the customer to commit to a time frame for making the payment as per the lender's standard practice. This treatment serves as the main control group in our analysis.

¹⁴ For the mean loan, this processing fee is equivalent to an internal rate of return (IRR) of 19 percent, making it a cheaper form of credit than most external sources of credit that customers in our sample can access.

3.4 Data and Descriptive Statistics

To measure the impact of debt forbearance on subsequent repayment behavior and borrower outcomes, we combine data from the experiment with administrative data from the lender, as well as the detailed pre- and post-intervention credit history of all borrowers in our sample that are covered by the Indian credit bureau.¹⁵

3.4.1 Administrative data

In preparation for the experiment, the lender shared administrative data on customer demographics, loan characteristics, as well as data on prior borrowing and repayment from the lender's data and credit bureau information at the time of loan application, for all customers in the sample frame.

We first obtained information on borrower and loan characteristics as well the full repayment records of all borrowers in the sample from the lender. We aggregate these data to monthly frequency, corresponding to the monthly repayment cycles and construct a dummy variable indicating whether a borrower has made their loan payment by the required due date. The lender additionally shared data on the origination and end date of each loan, from which we construct an indicator variable for loans that are repaid in full and on time.

In a second step, we merged the loan and repayment data with the complete credit history of all borrowers that had a record in the Indian credit bureau. The credit bureau data was accessed after the experiment had concluded and includes the borrower's credit score at the time of loan origination as well as a monthly record of all loans and loan payments for each borrower. Each monthly record includes the amount of the loan, the type of the loan, the date the loan was disbursed, and the days-past-due of payments on each loan for the last 36 months. We use the credit bureau data to construct indicators of monthly loan repayment and delinquency across the credit market.

Table 1 reports summary statistics at baseline and tests of randomization balance for all contacted customers that are part of our estimation sample. Table 1, column (1), shows summary statistics for all contacted customers. The average customer in our sample is male, 33 years old, has an income of Rs 40,000 (US\$ 528), and a loan of Rs 11,810 Rs (US\$162) with a monthly payment of Rs 1,450 (US\$ 21) outstanding. On average, borrowers in the sample had taken out 0.38 prior loans recorded in credit bureau data. However, a substantial fraction of borrowers (67 percent) has no credit record. The credit scores of borrowers for whom a record was available are relatively high at 731 out of 800. Table 1 columns (2) to (5) report summary statistics for the same baseline borrower and loan characteristics for each treatment condition separately, and Table 1, column (6) reports a test of equality of means across treatment groups, which confirms that the randomization was successful.

¹⁵ The Indian credit bureau, TransUnion CIBIL, was founded in 2000 and currently covers approximately 63 percent of adults in India (World Bank, 2022). Consumer credit scores in India range from 300 to 900, with scores between 700-749 labeled 'good' and scores above 750 labeled 'excellent'.

3.4.2 Measurement of repayment outcomes and borrower beliefs

The main outcomes of interest in the debt forbearance experiment are loan repayment, as observed in the lender's administrative data and credit bureau records for all borrowers in the sample, and beliefs about credit enforcement the likelihood of future forbearance. In this section, we describe the measurement of each of these outcomes in turn.

Loan repayment. We observe repayment of loans in our experiment using administrative data provided by the lender. Based on this data, we construct our main outcome variable *loan repaid*. Figure A.2 in the Supplementary Appendix shows a stylized timeline of loan repayment. It is worth noting that making loan payments in full and on time is indeed a choice variable in our setting. The vast majority of customers make payments using a digital payments link each month (81 percent). Only a small fraction of customers (11 percent) use the lender's automatic payment option and a similarly small number of customers make payments in cash (3 percent).

Our primary measure of loan repayment is the variable *loan repaid*, which is an indicator equal to one if a loan has been repaid in full. The lender measures repayment one day after a borrower is scheduled to make their final monthly payment. If the lender receives this payment the loan is closed and reported as repaid to the credit bureau. Because borrowers who accept one of the moratorium offers in our experiment not only pause payments, but also have the tenor of their loan extended by three months, we measure repayment for all loans three months after the initial due date of the last payment for each loan.¹⁶ We construct the outcome *loan repaid* for loans in the experiment and for all loans from other lenders that appear in credit bureau data of borrowers in our sample.

Borrower beliefs. The second group of outcomes we use in our analysis are measures of borrower beliefs. Examining the impact of moratorium offers on borrower beliefs allows us to test for the precise mechanisms through which forbearance can give rise to moral hazard, for example by generating expectations of lenient credit enforcement or future forbearance.

The main survey we use for this purpose is an incentivized elicitation exercise in which borrowers who received one of our experimental treatments are asked whether they expect banks or the regulator to offer another moratorium in the event of a future crisis. Specifically, we asked a sample of 645 borrowers who had participated the experiment whether they expected another debt moratorium to be extended by private lenders or the government in the event that India would experience another wave of the pandemic in the next 12 months as severe as the one that had triggered the initial round of debt forbearance measures.¹⁷ Borrowers were incentivized with a lottery in which they could win a cash prize of Rs 5,000 (US\$ 68) if their prediction was correct.

To measure expectations about lenient credit enforcement in the future, we additionally asked a sample of 259 borrowers who had participated in our experiment whether they expected credit enforcement to be more lenient, less lenient or about the same in the next 12 months. Since, in contrast

¹⁶ This is a conservative approach which might underestimate the true effect of moratorium offers on loan repayment, given that repayment of loans that opt into the moratorium is measured at the end date while repayment of all other loans additionally takes into account payments made in the three months after the original end date of the loan, thus potentially overstating repayment for borrowers in the control. We conduct a number of robustness checks with alternative definitions of loan repayment and find that these have no material impact on our results. The results are available upon request.

¹⁷ Borrowers were randomly assigned to a the question eliciting incentivized expectations about either a moratorium issued by banks (320 respondents) or a moratorium issued by the regulator (325 respondents).

to a debt moratorium, there is no clear trigger event for lenient credit enforcement, only the two questions about expectations of future forbearance were incentivized.

3.4.3 Descriptives: take-up of moratorium offers

Participaton in debt moratoria is usually optional, so that borrowers with urgent liquidity needs can “draw” on payment deferrals if needed. In our empirical analysis, we thus rely entirely on intent-to-treat (ITT) effects. That is, we examine the effect of *receiving* a forbearance offer, rather than the effect of selecting into the offer. Nonetheless, understanding the demand for forbearance is of independent interest. In this section, we therefore report descriptive statistics on acceptance of forbearance offers before moving to the analysis of the debt forbearance experiment.

Table B.3 in the Supplementary Appendix reports raw take-up rates for the relationship and regulator offer conditions. Overall, 13 percent of contacted customers accepted the forbearance offer and paid the processing fee to have their payment schedule adapted. At 12.5 percent versus 13.5 percent there is no meaningful difference in acceptance rates between the regulator and relationship offers and Table B.4 reports a test of balanced covariates, which indicates that there was no differential selection into the two forbearance offers along observable loan and borrower characteristics. The acceptance rates in our experiment are comparable to those observed in similar programs. [Cherry et al. \(2021\)](#), for example, report that in the United States only 10 percent of borrowers opted into forbearance in the case of mortgages eligible for repayment deferrals under the CARES Act.¹⁸

We additionally test how price sensitive customers are with respect to the processing or restructuring fees that are typically charged to enroll in a forbearance offer. In our experiment, the baseline processing fee was Rs 350 (approximately 3 percent of the median loan amount). We tested the effect of increasing this fee to Rs 500 with a subset of customers assigned to the relationship and regulator offer treatment conditions. Table B.5 in the Supplementary Appendix reports the results. We find that borrowers in our setting are quite price sensitive: the acceptance rate of the offer drops by nearly half at the higher processing fee with an implied price elasticity of 1.2. This high sensitivity to the small take-up fee offers an explanation for why so many borrowers who default ex-post choose not to accept the forbearance offer.

3.5 Empirical Specification and Results

We estimate treatment effects of debt forbearance on borrower behavior and expectations using regression equations of the general form:

$$Y_i = \phi_1 T_{1,i} + \dots \phi_3 T_{3,u} + \gamma X_i + \varepsilon_i \quad (1)$$

where Y_i is an outcome of interest for individual i , $T_{1,i} \dots T_{3,i}$ are dummy variables for the three experimental treatment conditions, X_i is a matrix of controls, and ε_i is a stochastic error term.¹⁹ The

¹⁸ The contactability rate is also the same between the relationship and regulator offers, which is the main comparison of interest throughout the paper.

¹⁹ Our main results are unchanged when we use heteroskedasticity-robust standard errors (our baseline specification), or cluster-robust standard errors at the level of the caller-treatment-day.

omitted group throughout our analysis is the repayment reminder condition, in which customers received a call with the lender's standard repayment request. Regressions are estimated using the sample of all clients who received a forbearance offer, so that the parameters ϕ_k should be interpreted as intent-to-treat (ITT) effects. That is, the treatment effect coefficients measure the effect of receiving a forbearance offer, rather than the effect of accepting the offer.

3.5.1 Loan repayment

We begin by examining the effect of debt forbearance offers on loan repayment. As reflected in our survey of beliefs about debt relief in the population, reported in Section 2, there is widespread concern that granting repayment flexibility will create moral hazard in loan repayment by damaging the reputation of the lender or generating expectations of future relief. We test this hypothesis by examining whether receiving a debt forbearance offer reduces the likelihood that borrowers repay their loans fully and on time. In addition, we test whether the repayment response differs when the repayment moratorium is framed as an initiative of the lender or the regulator. Intuitively, if granting repayment flexibility during a crisis damages the reputation of the lender or generates expectations of lenient credit enforcement in the future, one would expect this effect to be *less* pronounced if forbearance is presented as an initiative of the regulator rather than the lender.

Table 2, reports the results. We find that none of the forbearance offers extended as part of our experiment had a negative impact on loan repayment. We find no impact of forbearance offers on loan repayment when the offer is framed as an initiative of the regulator ($b=0.003$, $s.e.=0.015$). By contrast, we find that forbearance offers *improve* loan repayment when the offer is presented as an initiative of the lender. The likelihood of loan default is 4 percentage points (6.9 percent) lower in the relationship offer treatment condition ($b=0.041$, $s.e.=0.015$) and the difference between the two offers is statistically significant at the 5 percent level ($b=0.037$, $s.e.=0.015$).

3.5.2 Borrower beliefs

In Table 3, we turn to the effect of forbearance on borrower expectations. The dependent variables in the table are responses to a survey designed to test for expectations of future forbearance and lenient debt enforcement, the two principal channels through which one would expect debt moratoria to generate moral hazard. We show that, consistent with the absence of moral hazard in response to forbearance offers, repayment deferrals have no effect on borrower expectations.

In Table 3, columns (1) and (2), we first report treatment effects of debt moratorium offers on expectations of future forbearance, elicited through an incentivized survey exercise as described in Section 3.4. The point estimates are negative for both the relationship and regulator offers, suggesting that borrowers believe that receiving a debt forbearance offer in fact makes it slightly *less* likely to be offered repayment flexibility in the future from either the government or a commercial bank. In Table 3, column (3), we report treatment effects on expectations of lenient credit enforcement, using responses from a non-incentivized elicitation exercise. The point estimates are positive but close to zero, especially for the relationship offer ($b=0.049$ $s.e.=0.221$). Taken together, the results indicate that

receiving a debt forbearance offer does not lead borrowers to expect additional forbearance or more lenient credit enforcement in the future. This is consistent with the absence of a negative effect of forbearance offers on loan repayment in both the regulator and relationship forbearance offer treatment conditions.²⁰

3.5.3 Overall credit discipline

We next examine the impact of debt performance on overall credit discipline. The results in the previous section show that none of the debt moratorium offers issued in our experiment generate moral hazard in loan repayment and, on the contrary, improve loan repayment when the lender is allowed to take credit for the forbearance offer. A natural question to ask is whether this represents an overall improvement in credit discipline or whether the improved repayment of loans covered by a moratorium offer comes at the cost of higher delinquency and default on other loans.

Intuitively, three scenarios are possible. First, it could be that moratorium offers improve repayment of the loan covered by the moratorium but do not affect the repayment of other loans leading to a net improvement of loan performance. Second, borrowers might prioritize the repayment of loans covered by a moratorium but still allocate a fixed amount to debt repayment each month, so that overall loan repayment remains unchanged. Finally, it is possible that prioritizing repayment of a loan covered by a moratorium causes borrowers to miss payments on more than one other loan, thus creating negative spillover effects and worsening overall loan repayment.

Table 4 reports treatment effect estimates of loan forbearance on loans from the treatment lender (who offered forbearance) and from other lenders in the marketplace. In columns (1) and (5) we replicate our main result in the samples of borrowers who did and did not have other pre-existing loans outstanding, using the same outcomes as in Table 4. While only about 20 percent of borrowers have another loan outstanding, inflating our standard errors in this small subsample, our main result broadly holds in both groups: forbearance from the lender increases repayment, and more so than forbearance from the government. Column (2) reports treatment effects on the repayment of loans other than those covered by the moratorium offer and shows that the relationship offer causes a significant de-prioritization of loans to other lenders, approximately equal in size to the treatment effect on the lender's loans in the group without outside loans. Column (4) examines the treatment effects on overall credit discipline and considers the share of all loans paid, aggregating across all lenders including the treatment lender. The results show that the treatments on average have no positive effect on the likelihood that a customer pays their loans in aggregate. In fact, we find an economically small negative effect of the regulator offer on loan repayment ($b=-0.020$, $s.e.=0.027$). However, receiving a moratorium offer framed as an initiative of one's lender may improve overall credit discipline, although with low statistical confidence ($b=0.014$, $s.e.=0.027$).

Taken together, the results indicate that forbearance offers extended by the lender cause borrowers

²⁰ Note that these results also make it unlikely that the absence of a negative effect of forbearance offers on loan repayment is the combined result of moral hazard (lower willingness to pay) being offset by greater liquidity among moratorium takers (higher ability to pay). There is no evidence that being offered forbearance raises expectations of lenient credit enforcement or future forbearance, which are the two primary channels that would lower borrowers' willingness to repay. Moreover, the take-up of the offers is low, implying a limited effect on ability to pay.

to de-prioritize the repayment of loans from other lenders, but do not have significant negative effects on overall credit discipline – rather, they create a reallocation of resources across outstanding loans.

3.6 Interpreting the Results: *Why do Forbearance Offers Affect Loan Repayment?*

In this section, we attempt to distinguish between alternative mechanisms that can explain why loan repayment improves in response to moratorium offers presented as an initiative of the lender.

The finding that borrowers prioritize payments to a lender that offered them repayment flexibility in times of financial distress is *a priori* consistent with a number of *strategic* and *non-strategic* motivations. One possibility is that forbearance offers affect repayment through a relaxation in financial constraints and improvements in recipients *ability to repay*. Alternatively, there are a number of mechanisms that could explain why borrowers exhibit a higher *willingness to repay* after receiving an offer from their lender. On the one hand, it could be that forbearance offers increases loan repayment because of a purely non-strategic sense of reciprocity. That is, borrowers might be grateful that their lender offered them help in difficult times and wish to return the favor by prioritizing payments to the lender without any expectation of future benefits from the lending relationship. On the one hand, it could be that the offers remind borrowers of the value of their relationship with the lender and highlight the importance of timely loan repayment as a signal to the lender and an investment in a continued banking relationship.

To understand which of these interpretations is most consistent with our findings, we show three sets of results. First, we discuss evidence related to the take-up of forbearance offers. Second, we present results from an elicitation exercise designed to understand how borrowers in our experiment interpreted the regulator and relationship offers. Third, we examine which types of borrowers exhibit the strongest repayment response to the relationship offer.

3.6.1 Impacts on financial constraints

We first examine whether the improvement in loan repayment in response to the relationship offer could be explained by a relaxation of financial constraints and differential changes in the *ability*, rather than the *willingness to repay* as a result of the forbearance offers. There are several pieces of evidence that allow us to rule this out. First, note that the terms of the relationship and regulator offers are identical and that, therefore, the two offers have the same effect on a borrower's finances, if taken up. However, as Table 2 shows, repayment improves only in the relationship offer treatment condition.

Second, we show in Tables B.3 and B.4 in the Supplementary Appendix that there is no difference in take-up between the two forbearance offers (13 percent versus 12 percent, p-value 0.47), and both financial characteristics and borrower demographics are balanced across borrowers in the two treatment groups that accept the offer. Hence, the results are also not explained by differential take-up of forbearance offers across treatment conditions.

Third, we note that our main result is an intent-to-treat estimate (which measures the effect of receiving an offer, rather than the effect of accepting the offer). Moreover, Table B.11 in the Supplementary Appendix reports results of a simple heterogeneity exercise that begins by splitting the sample

based on the predicted likelihood of take-up according to baseline characteristics, and then estimates treatment effects for the borrowers that are most and least likely to accept the debt moratorium offer. The results show that the treatment effect is in fact economically and statistically significant among borrowers with a below-90th-percentile probability of accepting the offer. In other words, our results suggest that merely receiving the relationship offer reduces the likelihood of loan default, regardless of whether the borrower accepts the offer and benefits from a temporary relaxation of financial constraints or not.

Taken together, this provides evidence that the improvement in repayment in response to forbearance offers framed as an initiative of the lender is not explained by the temporary relaxation of credit constraints and differential changes in the ability to repay as a result of accepting the moratorium.

3.6.2 How do borrowers interpret the offer?

Having ruled out that forbearance offers impact repayment through a change in the ability to repay, we next explore alternative channels through which the offers could affect the *willingness* to repay.

To do so, we first present evidence from a survey designed to understand how borrowers interpret the forbearance offers extended in our experiment (first-order beliefs) and what they expect the lender to infer from their response to the offer (second-order beliefs). The results are informative about alternative signaling interpretations of our main result. We collected this information using a follow-up survey with 190 borrowers who had received either the regulator or relationship forbearance offer. In the survey, respondents were asked (i) how they thought recipients of the offer had been chosen, (ii) what they thought their response to the offer would signal to the lender and (iii) what they thought was the main rationale for timely loan repayment.

Table 5 reports the results of this exercise by comparing responses of experimental participants assigned to the regulator and relationship offer treatment conditions, respectively. We first asked respondents about how they thought recipients of the offers were selected. Respondents in the regulator offer group were 11 percentage points (28 percent) more likely to respond that they thought offers were issued to *all borrowers* than respondents in the relationship offer group, who were 14 percentage points (48 percent) more likely to believe that forbearance offers were issued only to the lender's *most creditworthy* borrowers. This makes it unlikely that loan repayment improves because customers interpret a forbearance offer from the lender as a signal that they have been singled out as a troubled borrower and overcompensate by prioritizing payments to the lender to prove their creditworthiness. Contrary to this specific mechanism, borrowers in the relationship offer treatment assume that the lender would extend repayment deferrals only to its most creditworthy customers.

We next asked borrowers how they thought accepting the offer would affect their creditworthiness in the eyes of the lender. We find that borrowers in the relationship offer condition are 14 percentage points (82 percent) more likely to believe that accepting a forbearance offer is not interpreted as a signal of creditworthiness by the lender than borrowers in the regulator offer condition. This is consistent with the first-order belief that recipients of the relationship offer were selected from the lender's most creditworthy customers, so that—in this relatively homogeneous group—there is little additional information to be gained from observing whether a borrower accepts or declines the offer.

Finally, we asked borrowers in the relationship and forbearance offer conditions about their main motivation for timely loan repayment. In line with the interpretation that a forbearance offer issued explicitly by one's lender reminds borrowers about the value of a continued relationship with the lender, borrowers in the relationship offer treatment group are 18 percentage points more likely to respond that their primary motivation for timely repayment is the possibility of obtaining future credit from the lender. We can distinguish this channel from the possibility that the relationship offer serves as a reminder about the general benefits of timely debt repayment beyond the relationship with one specific lender: borrowers in the relationship offer condition are slightly less likely than borrowers in the regulator offer condition to state that their main motivation for timely loan repayment is to maintain a good credit score and obtain loans from other lenders in the future.

Overall, the survey evidence is most consistent with the interpretation that—rather than triggering a sense of pure, non-strategic, reciprocity—the forbearance offers remind borrowers of the value of a continued relationship with the lender and improve loan repayment because customers wish to safeguard the option of doing business with the lender in the future.

3.6.3 Whose repayment responds to a forbearance offer?

We next examine which loan and borrower characteristics are associated with the largest repayment increases in response to the relationship offer. That is, we ask which types of borrowers have a higher willingness to repay their lender after receiving a forbearance offer from them. We find that the borrowers who show the strongest improvements in repayment are those for whom the offer is most immediately valuable. This includes borrowers who suffered larger income losses as a result of the crisis, and borrowers who are especially concerned about maintaining a good credit score.

To examine treatment effect heterogeneity in a disciplined manner, we use the machine learning approach developed by [Chernozhukov et al. \(2018\)](#). This approach is specifically designed to provide uniform inference when there are many dimensions along which treatment effects may be heterogeneous, which is often the case in randomized experiments. When there are many potential dimensions of heterogeneity, inference typically suffers from problems of over-fitting and multiple hypothesis testing. [Chernozhukov et al. \(2018\)](#) solve this problem by constructing sample splits based on the combination of all dimensions of heterogeneity simultaneously. Specifically, the algorithm sorts the data into quintiles $\gamma_1 \dots \gamma_5$, using cross-validated machine learning to maximize the ability of characteristics Z to predict the conditional average treatment effect.²¹ The estimation then provides a single p -value which tests whether the Group Average Treatment Effects (GATES) of the most-affected group γ_5 and least-affected group γ_1 are significantly different. By consolidating the information content of all variables simultaneously into a single p -value, this avoids inference problems created by multiple hypothesis testing. In addition to the group treatment effects, the method additionally produces a Classification Analysis (CLAN), which summarises the characteristics of the most affected and least affected groups γ_5 and γ_1 , and tests whether each characteristic is statistically different in the

²¹ This approach is a general framework which can incorporate many different machine learning methods. We use a random forest with 1,000 trees of 100 elements and two folds of cross-validation, following [Breza et al. \(2020\)](#) who show that these parameters work well in a setting similar to ours.

most affected and least affected groups.²²

Table 6 reports the results of this analysis. We run the algorithm using our main outcome variable *loan repaid*. Our main coefficient of interest is the difference in treatment effect between the relationship and the regulator offer, so we include borrowers in either of those two conditions, and compare the relationship offer as the "treatment" to the regulator offer as the "control" in this analysis. The GATES analysis finds an estimated treatment effect of 0.074 on the most-affected quintile γ_5 , nearly double the main effect on the overall population. The estimated treatment effect in the least-affected quintile γ_1 , on the other hand, is zero. Because of sample size limitations we lack sufficient statistical power in the loan level analysis to reject the null hypothesis that the treatment effect is homogeneous across the population.

While there is no statistical evidence that treatment effect heterogeneity is large in our setting, we do find some evidence that the effect of the relationship offer on repayment is larger for borrowers with larger loans and shorter remaining loan durations. Turning to heterogeneity among borrower characteristics, the results show that the treatment effect is larger for borrowers with lower initial credit scores and a shorter credit history (and thus worse outside options in the credit market), borrowers who suffered especially large income losses during the pandemic, and borrowers who are especially concerned about maintaining a good credit score. The treatment effect of the relationship offer on loan repayment is also larger for borrowers who state that they would not expect banks to help customers who are facing difficulties making their payments. In other words, borrowers respond more strongly if they are *surprised* to be offered forbearance by their lender.

These results highlight that overall, borrowers for whom the repayment offer is immediately valuable, for example, borrowers who have larger loans outstanding, borrowers who suffered especially large income losses, or borrowers who are worried that their temporary inability to repay will tarnish their credit score, are more responsive to the relationship offer.²³

²² Note that this method cannot test whether any one characteristic is responsible for the heterogeneity in treatment effects, given that there is no exogenous variation in characteristics. For example, the CLAN analysis may reveal that the most-affected group have higher incomes and larger loans than the least-affected group. It is not possible to determine which of these correlated variables is responsible for the heterogeneity.

²³ In Appendix Table B.8, we supplement this analysis with a conventional heterogeneous treatment effect analysis. Specifically, for each variable in the vector of borrower and loan characteristics Z_i considered in the machine learning analysis, we construct an indicator $I(Z_i) = 1[Z_i > Z_{median}]$ equal to 1 if borrower i has an above-median value of Z_i and zero otherwise. We then estimate variations of equation (1) that include interactions between the relationship offer treatment dummy T_i^1 and the loan and borrower characteristics indicators $I(Z_i)$ (along with both terms uninteracted). While specific estimates naturally differ between the two exercises, some of the main characteristics along which treatment effects are heterogeneous are similar in the two exercises, such as the remaining duration of the loan, and the extent to which borrowers care about maintaining a good credit score. Because some borrower characteristics used in the heterogeneity analysis are elicited in an endline survey, several months after participants received one of the treatment or control messages, we verify that the treatments have no effect on survey responses. The results, reported in Appendix Table B.9, show that there are no treatment effects on any of the survey outcomes.

4 Debt Moratoria and Banking Relationships: The Product Adoption Experiment

In this section, we examine whether debt forbearance offers extended by the lender can strengthen banking relationships in the longer term. This also tests the intuition that forbearance offers improve repayment because borrowers interpret them as an investment in the relationship that makes the option value of a continued association with the lender salient to the borrower.

If offers of repayment flexibility indeed affect the demand for future interactions with the lender, this could be explained by two sets of motivations with sharply different implications for the selection into longer-term banking relationships. On the one hand, it could be that borrowers interpret forbearance offers as a signal that it is easier to renegotiate contracts with the lender in the event of financial distress, or that the lender's debt collection practices will be lenient going forward. This could lead to the selection of borrowers with higher credit risk into continued interactions with the lender and would therefore have negative implications for the profitability of the surviving lending relationships. On the other hand, it is possible that borrowers who are granted repayment flexibility have higher demand for the lender's products independently of beliefs about the lenders' collection and renegotiation practices. Intuitively, it is possible that customers interpret an offer of repayment flexibility as an investment in the relationship and reciprocate by choosing to do business with the bank that offered them forbearance in difficult times. If this mechanism is at play, offering repayment flexibility could be a profitable strategy, because it allows the bank to obtain soft information about its customers, identify the most creditworthy borrowers and tie them into profitable banking relationships.

To examine the impact of debt forbearance offers on banking relationships, we conduct a complementary product adoption experiment that is designed to distinguish between these alternative mechanisms. In the experiment, we contacted a randomly chosen subset of 1,160 borrowers who had received one of the debt forbearance offer treatments in the main experiment. These borrowers were randomly assigned to receive either a marketing call that invited them to apply for a personal loan whose terms can—at least in principle—be renegotiated *ex post*, or a marketing call that offered the opportunity to purchase an “enhanced credit report”, a non-credit product that involves only a one-shot interaction with the lender and whose terms cannot be modified *ex post*. The treatments of the product adoption experiment also vary whether the offers are *branded* and prominently mentioned the name of the lender, or *non-branded* and do not mention the name of the lender. This real stakes design allows us to test whether borrowers that had been offered debt forbearance by their lender have causally higher demand for future interactions with the lender. If borrowers select into continued banking relationships for moral hazard reasons, one would expect this to lead to an immediate increase in demand for personal loans, but not for the non-credit product which merely signals a continued commitment to the lender that preserves the option of obtaining a loan in the future but has no immediate payoff to the borrower.

4.1 The financial products

To ensure that our experiment is able to separately identify demand for the lender's products stemming from consumer inferences about the ability to renegotiate financial contracts, as opposed to demand due to a willingness to reciprocate the lender's investment in the banking relationship, our experiment uses two types of financial products. Borrowers who received a forbearance offer in the main experiment are offered either the opportunity to apply for an uncollateralized personal loan or to purchase a non-credit product that is sold at a fixed price, whose terms cannot be modified *ex post*, and which does not require repeated interaction with the lender. If moral hazard is at play, it would operate through the first channel described above: borrowers who interpret the forbearance offer as a signal that the lender is more likely to grant future relief should have *immediately* higher demand for *ex post* renegotiable loans, but not for the non-credit product which has no scope for renegotiation and may merely improve the odds of obtaining a loan at some point in the future.

Consumer loans. The consumer loan offered in the experiment is a standard Rp 30,000 (US\$ 411) uncollateralized personal loan with an annualized interest rate of 28 percent APR. These loans are paid off in monthly installments, have a tenor of 12 months, and are very similar to the lender's most common consumer loan product. The lender's standard procedure for offering these loans is to check a borrower's credit history and then issue loan offers only to pre-approved customers. Because all borrowers in our sample have been delinquent at least once and would therefore be likely to fail the lender's credit check, the implementation of our experiment uses a slight modification to the lender's usual procedure. Instead of pre-qualifying borrowers, we extended an offer to apply for the loan to a random sample of borrowers that had participated in the main experiment. The lender then evaluated the loan applications and extended a loan to the most creditworthy borrowers to ensure that credit offers are truthful and the exercise has real stakes. We design two variations of the loan offer, one "*branded*" version, in which the marketing call for the loan prominently mentions the name of the lender and one "*unbranded*" version, in which the identity of the lender is only revealed once a customer accepts the offer and follows the link to submit their application.²⁴

Non-credit product. In addition, we worked with the lender to design a non-credit product that is similar to the products routinely offered by consumer lenders in India but—in contrast to a loan—has no scope for *ex post* renegotiation. Specifically, we adapted a credit information product that explains the individual components of a borrower's credit report and provides actionable advice on how a borrower can improve their credit score. These customized "credit intelligence reports" were available in the Indian market prior to our experiment. They are generated by a third party firm that has agreements with numerous banks in India, which customize these reports and offer them to their clients for a fee. We worked with the lender and the third party firm to design two versions of these credit reports: a "*branded*" version of the report, which is clearly identified as a product of the lender both in the marketing call and in the accompanying sign-up link which prominently displays the lender's name and branding, and an "*unbranded*" version, which contains identical information but is

²⁴ The regulator requires the name of the lender to appear on the loan application. We therefore measure demand at the end of the marketing call by asking the customer whether they would like to apply for the loan. That is, *before* the identity of the lender is revealed to all applicants, including those in the "*unbranded offer*" control group.

not identified as a product of the lender in the marketing call and for which the name of the lender is only revealed once a customer accepts the offer and follows the link to submit their application. ²⁵

4.2 Experimental protocol and design

4.2.1 Sample

To implement the product adoption experiment, the lender's sales representatives attempted to reach a sample of 3,806 customers who had received the *relationship offer* or *regulator offer* offer in the main experiment. The marketing calls took place between six months and one year after customers had received the initial offer. In total, we reached 1,160 customers and extended 528 personal loan offers and 632 offers for the non-credit product.

4.2.2 Treatment conditions

The customers in our sample were randomly assigned to one of two "cross-sell" treatment conditions, which varied whether the customer was offered a *branded* version of the product offer, which marketed the product using the lender's name and branding, and an *unbranded* version that was identical to the branded offer but was not identified with the lender.

In the unbranded offer treatments, each product was introduced with a neutral script that did not mention the lender's name. In the case of the consumer loan, the product was introduced as follows:

We are calling because we would like to invite you to apply for our new [name of product] personal loan. This convenient loan in the amount of Rs 30,000 can be used for your personal consumption or cash needs.

Similarly, the unbranded script for the non-credit product introduced the credit intelligence reports without reference to the name of the lender:

We are calling to offer you our new [product name] financial health report. This report will give you a clear overview over your credit profile that is easy to understand.

In the branded offer treatment conditions, the sales representatives used scripts that were identical, with the exception that they emphasized that the sales representative was extending the offer on behalf of the lender. The branded script for the personal loan introduced the product as follows:

We are calling from [name of lender], from whom you have previously taken out a loan. As a valued [name of lender] customer we would like to invite you to apply for our new [name of product] personal loan. This convenient loan in the amount of Rs 30,000 can be used for your personal consumption or cash needs.

²⁵ The variation in branding allows us to rule out the possibility that increased demand for the informational product is due to increased demand for information, given that the unbranded and branded informational products have the same informational value and differ only in branding.

The branded offer for the non-credit product correspondingly introduced the credit intelligence reports with a prominent reference to the name of the lender:

We are calling from [lender name] from whom you have previously taken out a loan. As a valued [lender name] customer, we would like to offer you our new [product name] financial health report. This report will give you a clear overview over your credit profile that is easy to understand.

The sales representative then explained the details of each offer using a script that was identical for the two offers and asked the customer whether they were interested in applying for the consumer loan or purchasing the credit intelligence report. If the customer expressed interest, the sales representative sent them a payment link. Because the payment link must, for legal reasons, disclose the identity of the lender, the main outcome of interest in our analysis is whether a customer expresses interest in purchasing the product and requests a payment link.

4.3 Results: demand for the branded financial product

We find that customers who were offered repayment flexibility framed as an initiative of the lender in the main experiment are significantly more likely to purchase the branded version of the non-credit product, but do not have higher demand for personal loans marketed by the lender.²⁶

Figure 5 displays unconditional means of product take-up for all treatment combinations in the forbearance and product adoption experiments. Figure 5, Panel (a), reports take-up rates for branded and unbranded personal loans, respectively. The figure shows that demand for loans is overall high, but not statistically different across treatment combinations. In particular, there are no statistically or economically significant differences in demand for the branded and unbranded versions of the personal loan, and this result does not differ between borrowers that had received the relationship moratorium offer ($p\text{-value}=0.240$) or the regulator moratorium offer in the main experiment ($p\text{-value}=0.690$).

In Figure 5, Panel (b), we plot unconditional means for the non-credit product. The figure shows that borrowers who had been offered repayment flexibility by their lender were more than 10 percentage points more likely to take up the product when it was branded as a product of the lender than when they received a nondescript offer without reference to the lender ($p\text{-value}=0.048$), with take-up rates of 35.7 percent and 25.2 percent for the branded and unbranded offers, respectively. Moreover, take-up of the branded product among borrowers who were offered the moratorium by the lender was also about 10 percentage points higher ($p\text{-value}=0.072$) than take-up among those who were offered the forbearance by the regulator (26.1 percent). In contrast, there is no similar pattern of demand for the branded product among borrowers who received debt forbearance offers framed as an initiative of the regulator in the main experiment. In fact, at 26.1 percent, take-up of the branded product is slightly lower than take-up of the unbranded product at 30.8 percent in this group ($p\text{-value}=0.347$). Similarly, demand for the unbranded product is not affected by the source of the forbearance offer ($p\text{-value}=0.258$).

²⁶ We limit our analysis to borrowers for whom no more than one year has elapsed between the debt forbearance and follow-up product offers. The effect is slightly weaker but still present among customers who receive a follow-up product offer from the lender after more than one year.

Table 7 presents the results of the product adoption experiment in regression format, without controls in column (1) and controlling for the full set of caller and offer date fixed effects for the forbearance and product adoption experiments in column (2). The difference between take-up rates of the branded product across forbearance conditions for the non-branded products is statistically significant in both specifications and slightly larger when we control for the full set of experimental conditions ($b=0.152$, s.e.=0.073 and $b=0.206$, s.e.=0.100). By contrast, there are no meaningful differences between demand for the loan product across the different treatment combinations.

4.4 Product adoption experiment: discussion

Overall, the results of the product adoption experiment show that borrowers who are offered repayment deferrals by their lender are more willing to deepen their banking relationship with the lender, and suggest that this demand for future interactions with the lender is not explained by the expectation that it will be possible to renegotiate with the lender. Our preferred explanation for why we do not detect an effect of the relationship offer on immediate demand for the personal loan itself is that demand for loans is mostly driven by idiosyncratic and relatively rare shocks to customer's liquidity, but that customers value the *option* of future loans from the lender, contributing to demand for the non-credit product as a way of maintaining the financial relationship.²⁷

The design of the product adoption experiment allows us to rule out several potential explanations that could explain the pattern of our results. First, it could be that customers who are granted repayment flexibility at a time when they are facing financial distress are more interested in deepening their relationship with the lender because the offer causes them to infer that the lender will be more willing to renegotiate financial contracts in the future. This mechanism—which could give rise to future moral hazard and adverse selection into banking relationships—is ruled out by the result that borrowers who were offered repayment flexibility by the lender do not have higher demand for personal loans, whose terms can at least in principle be renegotiated *ex post*, from the lender than borrowers who were not offered repayment flexibility. Second, it could be that forbearance offers generate demand for the non-credit product (an enhanced credit report) because they prime customers to think about the importance of maintaining a good credit score. We can also rule out this channel, given that all participants of the product adoption experiment had received a debt forbearance offer in the main experiment, yet only customers in the relationship offer treatment exhibit higher demand for the lender's products in the product adoption experiment. Moreover, this would not differentially affect the adoption of branded and unbranded credit reports.

To understand which causal mechanism is most consistent with increased demand for future interactions with the lender in response to the relationship offer, we present results from two sets of follow-up exercises. We first report heterogeneous treatment effects for the product adoption exercise in Table B.10 in the Supplementary Appendix to better understand which borrower characteristics correlate with demand for future interactions with the lender. While we cannot conclusively show which borrower characteristics are most predictive of demand for the non-credit product due to sample

²⁷ Customers overwhelmingly report that the possibility of taking out future loans from the lender is the major reason to accept the non-loan product offer (B.12).

size limitations, the pattern of results from this exercise is broadly consistent with the analysis of heterogeneity in the loan repayment response to repayment flexibility.

To further examine what motivates borrowers to deepen their relationship with the lender, we conducted a small follow-up survey with customers in the product adoption experiment. While we cannot statistically distinguish the responses of participants in the regulator offer treatment from the responses of participants in the relationship offer treatment, the results provide some stylized evidence consistent with the results from the loan repayment analysis. The overwhelming majority (70 percent) of customers who express interest in the non-credit product state that the main reason for doing so is that they may want to apply for a loan from the lender in the future. About 50 percent of borrowers interviewed for follow-up believe that their lender is overall better than its competitors and 30 percent believe that the lender is a better match for their specific needs than its competitors. The latter number is slightly higher (33 percent) for borrowers who received a personalized forbearance offer from their lender. Although these results must be interpreted with caution given sample size limitations, the overall picture that emerges is consistent with the interpretation that forbearance offers extended by the lender highlight the value of the banking relationship and create incentives to engage with the lender in an effort to preserve the option of doing business with the lender in the future.

If this interpretation is correct, one additional implication is that borrowers with fewer outside options should have higher demand for continued interactions with the lender. To test this, we examine whether borrowers with a shorter credit history and borrowers who live in areas with fewer banks—two proxies for more limited outside options—respond differently to the product offer. Results by number of banks are shown in Table B.13, and for credit histories in Table 6. We find suggestive evidence that supports this conclusion: point estimates indicate that borrowers without a formal credit history and borrowers in areas with fewer banks are more likely to repay their loans and more likely to accept the non-credit product offer in the follow-up experiment, though standard errors around these estimates are large so that they should be interpreted as merely suggestive.

Taken together, the results from our two complementary experiments suggest that, rather than damaging credit discipline, repayment flexibility offered by one's lender can improve loan repayment in the short term and foster the establishment of banking relationships in the longer term. Importantly, we show that the demand for future engagement with the lender is not explained by motives that could create moral hazard in future interactions with the lender. Hence, repayment flexibility offered by a bank can be interpreted as an *investment* in the banking relationship that can be profitable because it helps the bank identify customers with the highest willingness and ability to repay and ties them into longer term banking relationships. This is analogous to studies on relational contracting (Fehr and List, 2004) that have shown that investments into relationships by one contracting party can generate information about the contracting party and promote trust and trustworthy behavior.

5 Conclusion

This paper uses a nationwide randomized experiment in India to estimate the effects of debt moratorium offers on borrower beliefs and loan repayment. Contrary to widely held assumptions, we find

that the debt forbearance offers extended as part of our experiment do not change borrower beliefs in a way that could give rise to moral hazard. On the contrary, when lenders are able to take credit for granting repayment flexibility and moratorium offers are framed as an initiative of the lender, loan repayment improves substantially once the moratorium expires. We can rule out a number of confounding mechanisms, including reminder effects and the relaxation of financial constraints and additionally show that forbearance offers also have no negative spillover effects on the repayment of other loans. Using data on the universe of outstanding loans for borrowers in our sample, we show that forbearance causes borrowers to prioritize loan repayments to the lender that offered forbearance and away from other lenders. This substitution result has interesting implications for the relationship between competition and credit discipline, which we leave for future work to explore.

Moreover, our findings suggest a mechanism through which repayment deferrals presented as an initiative of one's lender improve loan performance. Consistent with the interpretation that the offer reminds borrowers about the value of a continued relationship with their lender, borrowers in the relationship offer group are significantly more likely to state that their main rationale for timely loan repayment is to preserve the option of doing business with the lender that granted repayment flexibility in the future, rather than achieving an overall improvement in their credit score.

We show that, in addition to the immediate benefit of improved loan repayment, granting repayment deferrals in a crisis can also strengthen banking relationships in the longer term. The results from our complementary product adoption experiment show that borrowers who are offered repayment flexibility by their lender have causally higher demand for the products of a lender that offered them forbearance in difficult times. Importantly, we find that borrowers who received a forbearance offer from their lender have higher demand only for a *non-credit* product marketed by the lender while demand for personal loans is overall high but does not differ depending on what type of forbearance offer customers received in the main experiment. This suggests that demand for repeated interactions and a continued relationship with the lender is not explained by expectations of renegotiation of credit contracts or weak enforcement that could give rise to moral hazard in the future. On the contrary, forbearance presented as an initiative of the lender can generate soft information and help the lender tie its most creditworthy customers into more profitable longer term banking relationships.

An important consideration for the external validity of our results is the nature of the economic shock that motivates forbearance. In our experiment, forbearance is offered in response to an aggregate shock, a scenario in which one might expect less strategic default and more default due to genuine liquidity constraints than in normal times. We would not expect this to compromise the external validity of our results, given that the overwhelming majority of forbearance programs are enacted in response to large and aggregate crisis events. Finally, concerns about the impacts of forbearance on credit discipline often arise in relation to state owned banks, which may face incentives to offer forbearance for political reasons. While our experiment is conducted entirely with a private bank and we have no evidence on the reaction to forbearance offered by state-owned banks, some of our results can shed light on the likely differences in the borrower response to forbearance by identity of the lender. We show that even borrowers who are *most surprised* to receive a forbearance offer from a private bank do not update negatively about the credibility of the bank and leniency of future debt

enforcement. One would expect *even less* updating in response to a forbearance offer from state-owned banks that are widely understood to face political incentives for the lenient treatment of borrowers (see, for example, Cole, 2009). On the other hand, we also find that the positive repayment response and demand for future interactions with the lender are strongest for borrowers who are most surprised to receive a forbearance offer. Under the assumption that borrowers are overall less surprised to receive forbearance from a state owned bank, this would imply that our estimates on the relationship between forbearance and banking relationships should be interpreted as an upper bound.

Our results have a number of direct implications for the design of consumer debt moratoria. First, our results suggest that the moral hazard costs of debt forbearance may have been significantly overstated relative to the benefits of such policies for consumers, at least in our setting. In our experiment, neither a moratorium offered by the government, nor a moratorium offered by an individual bank has a negative effect on loan repayment. Second, our findings suggest that allowing lenders to take credit for offering forbearance during a crisis can be an efficient strategy. We show that a lender can improve loan repayment and strengthen banking relationships by offering moratoria to borrowers who are affected by a temporary aggregate shock. Lenders should be cautious, however, with offering similar flexibility to borrowers who are affected by idiosyncratic shocks, as these offers might be more likely to generate expectation of future forbearance or lenient enforcement by the lender.

There are a number of areas for future research that could help to more fully explore the implications of our findings for the design of forbearance policies. First, it would be useful to assess to what extent the response to forbearance offers we document in the market for consumer credit carries over to other loan types, such as larger collateralized loans. Second, it would be interesting to explore how the identity of the lender affects the response to forbearance offers. In our analysis we show that repayment improves most strongly for borrowers who are surprised by an offer of repayment flexibility from their bank. This would have important implications in emerging markets where state-owned banks are dominant and could imply different reactions to forbearance offers from lenders with a high degree of state-ownership that borrowers would rationally expect to be more lenient in a crisis. The design of our study, which is conducted with a single lender in the market, also leaves us unable to speak to the equilibrium implications of competition between lenders on loan servicing. While these questions are beyond the scope of our paper, they represent a promising direction for future work.

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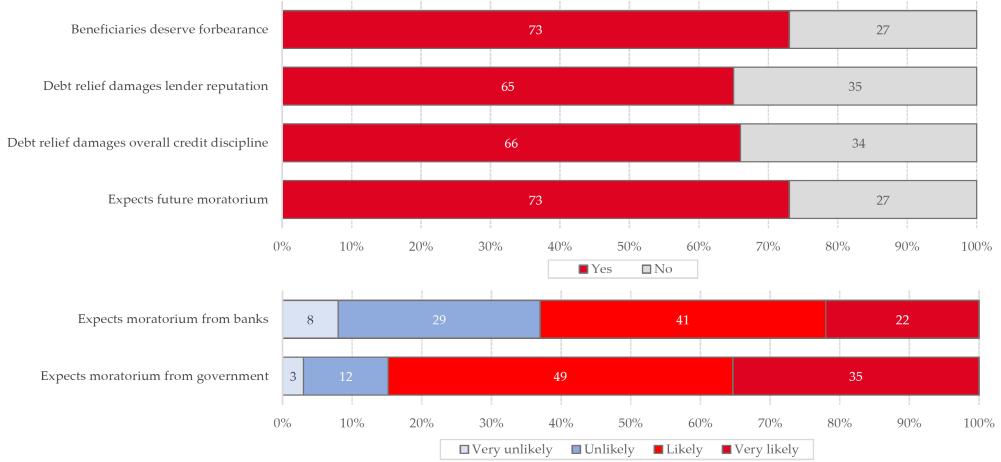
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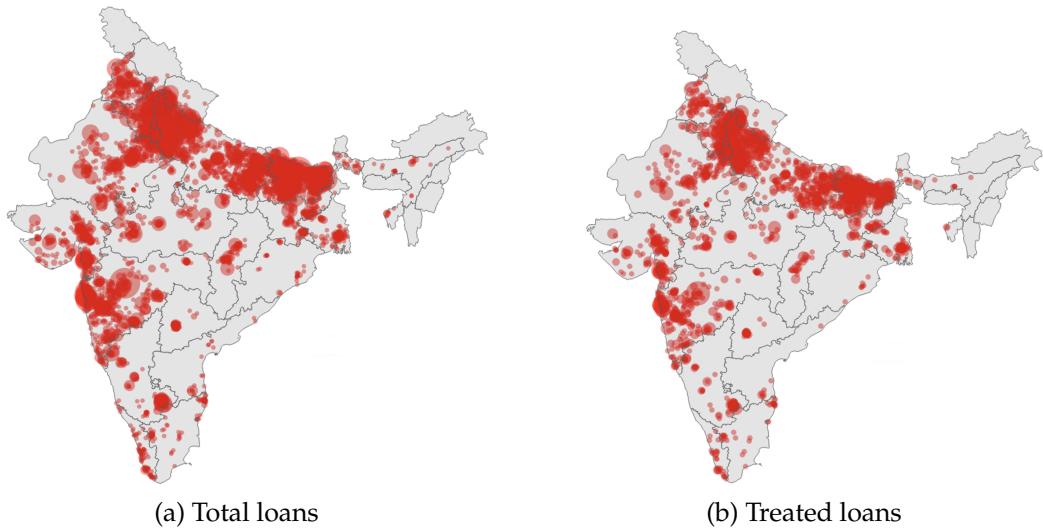
Figures

Figure 1: Beliefs about Debt Forbearance in the Population



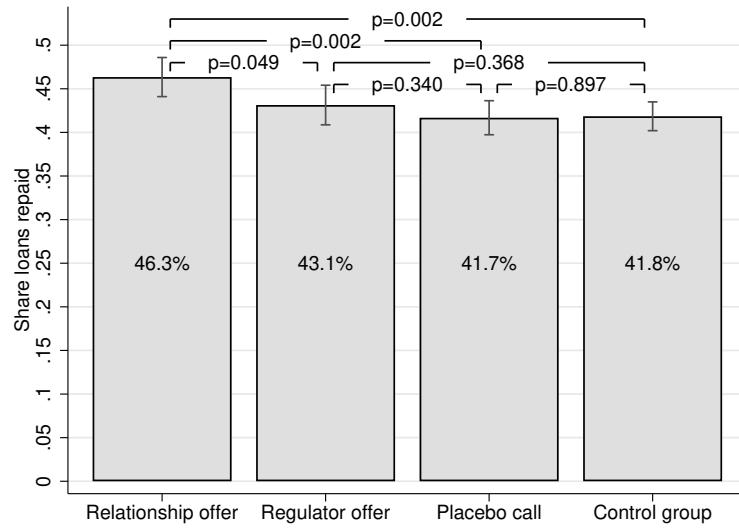
Notes: The figure summarizes responses from a nationwide online survey on beliefs about debt forbearance in the population (N=1,404). The survey was conducted with a sample of respondents representative of the population of consumer loan borrowers in terms of age, income, and gender. The sample was restricted to borrowers who had taken out at least one loan in the year prior to the survey.

Figure 2: Sample and Treated Loans



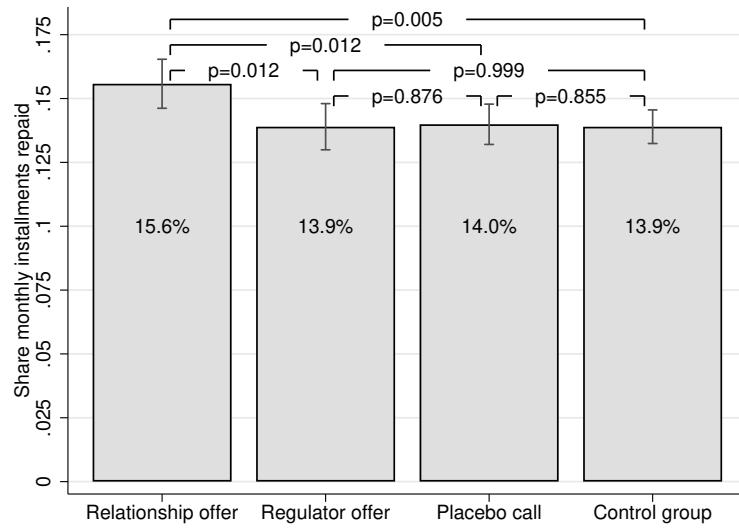
Notes: The figure shows the geographical distribution of loans assigned to one of the debt forbearance treatment conditions (N=51,660) in panel (a) and loans in the estimation sample (N=9,623) in panel (b). Each circle represents a postal code and is scaled by the number of loans in that location.

Figure 3: Treatment Effects – Main Experiment (Loan Repayment)



Notes: The figure shows loan repayment rates in each of the four treatment conditions in the main experiment. Loan repayment is measured three months after the original end date of the loan. Error bars indicate 95% confidence intervals. Horizontal bars show p -values for t -tests of equality of means across treatment conditions, estimated using robust standard errors.

Figure 4: Treatment Effects – Main Experiment (Monthly Payment Made)

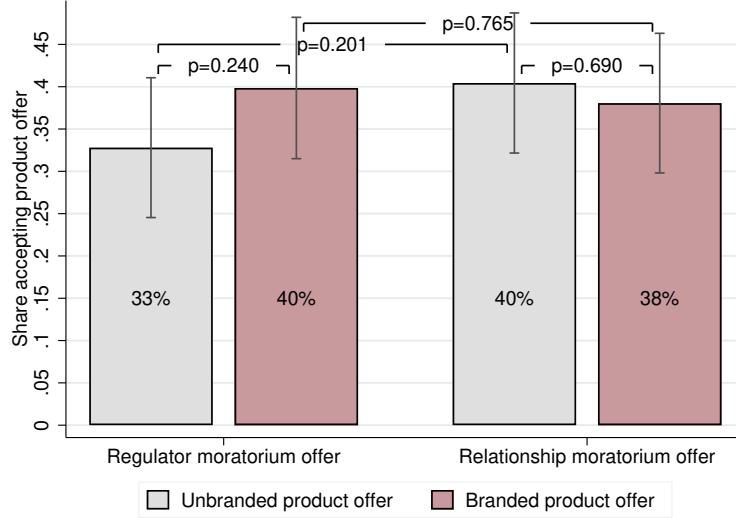


Notes: The figure shows the fraction of customers making their monthly loan payments on time in each of the four treatment conditions in the main experiment. Monthly loan repayment is measured as an indicator equal to one if a borrower makes their monthly payment in full and on time. Error bars indicate 95% confidence intervals. Horizontal bars show p -values for t -tests of equality of means across treatment conditions, estimated using standard errors clustered at the borrower level.

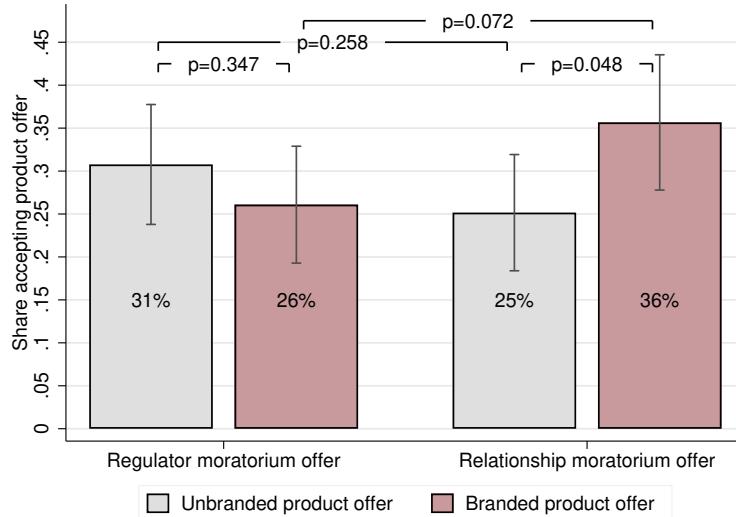
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Figure 5: Treatment Effects – Product Adoption Experiment

Panel A: personal loan



Panel B: non-credit product



Notes: Panel A displays the results of the product adoption experiment for the credit product. Panel B displays the results for the non-credit product. The two bars on the left display product adoption rates in the branded and unbranded product offer conditions for borrowers who received the regulator moratorium offer in the main experiment. The two bars on the right display product adoption rates in the branded and unbranded product offer conditions for borrowers who received the relationship moratorium offer in the main experiment. Error bars indicate 95% confidence intervals. Horizontal bars show p -values for t -tests of equality of means across treatment conditions, estimated using robust standard errors.

Tables

Table 1: Summary Statistics and Balance of Covariates

	Full Sample (1)	Relationship Offer (2)	Regulator Offer (3)	Friendly Call (4)	Collection Call (5)	p-value (6)
<i>Panel A: Borrower characteristics</i>						
Reported income, Rs '000	39.73 [58.03]	38.49 (1.57)	38.69 (2.17)	40.17 (1.47)	39.51 (1.30)	0.86
Female	0.10 [0.30]	0.11 (0.01)	0.10 (0.01)	0.11 (0.01)	0.11 (0.01)	0.96
Age	33.17 [8.70]	33.86 (0.30)	33.61 (0.27)	33.02 (0.22)	33.15 (0.21)	0.07
No credit history	0.67 [0.47]	0.69 (0.01)	0.67 (0.01)	0.68 (0.01)	0.67 (0.01)	0.45
Credit score	730.98 [51.38]	731.25 (2.31)	727.08 (2.09)	729.93 (2.08)	731.11 (1.67)	0.42
<i>Panel B: Loan characteristics</i>						
Principal, Rs '000	11.81 [6.58]	12.23 (0.19)	12.08 (0.17)	11.88 (0.14)	11.89 (0.11)	0.35
Balance, Rs '000	7.05 [5.63]	7.44 (0.14)	7.26 (0.14)	7.39 (0.12)	7.43 (0.10)	0.72
Monthly payment, Rs '000	1.45 [0.75]	1.50 (0.02)	1.46 (0.02)	1.46 (0.02)	1.47 (0.01)	0.48
Loan duration (months)	7.80 [0.91]	7.76 (0.02)	7.77 (0.02)	7.77 (0.02)	7.79 (0.02)	0.81
Months remaining	5.08 [2.37]	5.19 (0.06)	5.15 (0.06)	5.32 (0.06)	5.31 (0.05)	0.08
Day called	8.12 [4.40]	7.99 (0.37)	8.39 (0.36)	8.45 (0.38)	8.54 (0.34)	0.70
<i>Panel C: Borrower credit history</i>						
Prior loans	0.38 [1.03]	0.37 (0.02)	0.42 (0.03)	0.34 (0.02)	0.35 (0.02)	0.06
Prior defaults	0.00 [0.03]	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.15
Prior forbearance	0.17 [0.37]	0.19 (0.01)	0.20 (0.01)	0.17 (0.01)	0.17 (0.01)	0.09
Observations	9,622	1,901	1,829	2,451	3,441	

Notes: The table reports summary statistics for contacted borrowers and tests of covariate balance. Panel A reports summary statistics on borrower characteristics from the lender's administrative data and credit reports, panel B reports summary statistics on loan characteristics observed in the lender's administrative data, and panel C reports summary statistics on borrowers' credit history based on credit bureau data. Column (1) shows summary statistics for the entire sample with standard deviations in brackets, columns (2) to (5) shows means for each variable across treatment conditions, with standard errors in parentheses. column (6) reports the p-value of equality of means across the four main treatment conditions. Because the sampling proportions were changed after the fourth month of the experiment, all balance tests control for an indicator equal to one for all months after this date. Column (1) may differ from weighted averages of columns (2) to (5) for this same reason.

Table 2: Treatment Effects: Loan Repayment

	Loan repaid	
	(1)	(2)
[1] Relationship offer	0.039*** (0.014)	0.041*** (0.015)
[2] Regulator offer	0.003 (0.014)	0.003 (0.015)
[3] Placebo call	-0.003 (0.013)	-0.003 (0.013)
Test: [1]–[2]	0.036** (0.014)	0.037** (0.015)
Month FE	Yes	Yes
Day and caller FE	No	Yes
Fee FE	No	Yes
Control group mean	0.42	0.42
R-squared	0.03	0.03
Observations	9,623	9,623

Notes: This table shows treatment effects of debt forbearance on loan repayment. Each column shows results from a separate regression. The dependent variable is an indicator equal to 1 if a borrower completed loan repayment within 90 days of the due date, which is the cutoff after which the lender is required to classify the loan as nonperforming. Robust standard errors at the individual borrower level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Treatment Effects: Borrower Expectations

	Expects forbearance from banks	Expects forbearance from government	Expects lax enforcement
	(1)	(2)	(3)
[1] Relationship offer	-0.074 (0.196)	-0.023 (0.122)	0.049 (0.221)
[2] Regulator offer	-0.024 (0.185)	-0.030 (0.156)	0.143 (0.298)
Test: [1]–[2]	-0.049 (0.191)	0.007 (0.140)	-0.094 (0.262)
Test: Any – No Offer	-0.042 (0.085)	-0.026 (0.075)	0.085 (0.114)
Month FE	Yes	Yes	Yes
Treatment day x caller FE	Yes	Yes	Yes
Survey day x caller FE	Yes	Yes	Yes
Control group mean	0.67	0.68	0.36
R-squared	0.71	0.65	0.84
Observations	320	325	259

Notes: This table shows treatment effects of debt forbearance on expectations of future debt relief. Each column shows results from a separate regression. The dependent variable in column (1) is an indicator equal to 1 if a respondent answered that they expect another round of debt forbearance to be extended by private lenders. The dependent variable in column (2) is an indicator equal to 1 if a respondent answered that they expect another round of debt forbearance to be extended by the government. Both outcomes were elicited in separate incentivized belief elicitation exercises (i.e. each borrower received one or the other randomly). Robust standard errors at the individual borrower level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Treatment Effects: Debt Forbearance and Loan Repayment, All Loans

	Other loans				No other loans (5)
	Paid lender (1)	Didn't pay others (2)	Prioritized lender (3)	Share loans paid (4)	
[1] Relationship offer	0.061* (0.033)	0.039** (0.018)	0.030** (0.013)	0.014 (0.027)	0.039** (0.016)
[2] Regulator offer	0.002 (0.033)	0.019 (0.017)	0.012 (0.011)	-0.020 (0.027)	0.005 (0.017)
[3] Friendly call	0.052* (0.031)	0.004 (0.016)	0.015 (0.010)	0.022 (0.025)	-0.015 (0.015)
Test: [1]–[2]	0.059 (0.033)	0.021 (0.018)	0.017 (0.012)	0.034 (0.027)	0.034* (0.016)
Month FE	Yes	Yes	Yes	Yes	Yes
Day and caller FE	Yes	Yes	Yes	Yes	Yes
Control group mean	0.43	0.06	0.02	0.62	0.42
R-squared	0.04	0.03	0.03	0.04	0.03
Observations	1,931	1,931	1,931	1,931	7,692

Notes: This table reports treatment effects of debt moratorium offers on loan repayment on loans from the treatment lender (who extended the debt moratorium offer) as well as other lenders in the marketplace. Each column shows results from a separate regression. Columns (1) to (4) are estimated on borrowers with outstanding loans from non-treatment lenders at the time of treatment. The dependent variables in columns (1) to (3) are indicators equal to 1 if a borrower paid the treatment lender, failed to make at least one payment to another lender, and made their payment to the lender that extended the moratorium offer while failing to make a payment to another lender, respectively. The dependent variable in column (4) is the total share of loan payments made in full and on time in a given month. The dependent variable in column (5) is the same as column (1), but estimated on borrowers whose only outstanding loan at the time of treatment was the treatment lender. Robust standard errors at the borrower level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: How do Borrowers Interpret the Offer?

Question	Mean		Difference	SE	N		
	Regulator offer	Relationship offer					
(1)	(2)	(3)	(4)	(5)			
[1] Eligibility for forbearance offers							
Believes offer given to all customers	0.49	0.39	-0.11	(0.07)	190		
Believes offer given to least creditworthy	0.22	0.18	-0.03	(0.06)	190		
Believes offer given to most creditworthy	0.29	0.43	0.14**	(0.07)	190		
[2] Does acceptance of the offer signal creditworthiness?							
Accepting sends no signal	0.17	0.31	0.14**	(0.07)	158		
Accepting sends positive signal	0.32	0.21	-0.11	(0.07)	158		
Accepting sends negative signal	0.51	0.48	-0.03	(0.08)	158		
[3] What is the main rationale for timely loan repayment?							
Reason to repay loans is morality	0.15	0.09	-0.06	(0.05)	147		
Reason to repay loans is penalties	0.17	0.11	-0.06	(0.06)	147		
Reason to repay loans is future loans from lender	0.03	0.21	0.18***	(0.05)	147		
Reason to repay loans is credit score	0.65	0.59	-0.06	(0.08)	147		

Notes: The table shows the results from a follow-up survey that elicited beliefs about the offer and beliefs about loan repayment and creditworthiness from a random sample of survey participants who had received either the relationship or regulator forbearance offer.

Table 6: Treatment Effect Heterogeneity

Panel A: Machine Learning CLAN	Loan repaid			
	Most affected		Least affected	Difference
	γ_5 (1)	γ_1 (2)	$\gamma_5 - \gamma_1$ (3)	p -value (4)
<i>Loan characteristics</i>				
Loan balance	7,896 (7200,8565)	6,188 (5515,6842)	1,589 (689,2465)	[0.001]
No credit score	0.761 (0.716,0.806)	0.572 (0.525,0.618)	0.188 (0.126,0.252)	[0.000]
Prime credit score	0.178 (0.136,0.220)	0.365 (0.321,0.407)	-0.180 (-0.238,-0.120)	[0.000]
Months remaining	4.396 (4.161,4.625)	4.909 (4.678,5.144)	-0.499 (-0.836,-0.175)	[0.005]
<i>Borrower characteristics</i>				
Government responsible for relief	0.770 (0.755,0.786)	0.788 (0.772,0.803)	-0.019 (-0.040,0.003)	[0.184]
Banks responsible for relief	0.812 (0.797,0.827)	0.836 (0.821,0.851)	-0.024 (-0.045,-0.003)	[0.054]
Large income drop	0.227 (0.211,0.242)	0.180 (0.164,0.195)	0.047 (0.025,0.069)	[0.000]
Financial distress	0.504 (0.481,0.527)	0.464 (0.441,0.487)	0.039 (0.007,0.072)	[0.035]
High financial literacy	0.454 (0.434,0.474)	0.437 (0.417,0.458)	0.017 (-0.011,0.046)	[0.484]
Credit score matters	0.771 (0.756,0.785)	0.748 (0.734,0.762)	0.022 (0.003,0.043)	[0.051]
<i>Panel B: Machine Learning GATES</i>				
Group ATE	0.070 (-0.027,0.167)	-0.004 (-0.100,0.091)	0.075 (-0.061,0.211)	[0.539]

Notes: The table shows machine learning estimates of treatment effect heterogeneity for loan repayment. The dependent variable is a dummy equal to one if a loan was repaid in full and on time. For each loan and borrower characteristic, the table reports classification analysis (CLAN) coefficients for the most and least affected groups in Panel A and sorted group average treatment effects (GATES) coefficients in Panel B. The sample is divided into $K = 5$ groups, γ_K , based on the quintiles of the machine learning proxy predictor $S(Z)$. Medians over 100 splits. 90% confidence intervals in parentheses, p -values for the hypothesis that the parameter is equal to zero are reported in brackets.

Table 7: Treatment Effects: Product Adoption Experiment

	Personal loan		Non-credit product	
	Accepted offer			
	(1)	(2)	(3)	(4)
[1] Relationship moratorium offer	0.076 (0.060)	0.119 (0.115)	-0.056 (0.050)	-0.080 (0.076)
[2] Branded product offer	0.070 (0.060)	0.286 (0.255)	-0.047 (0.050)	-0.043 (0.108)
[1]x[2]	-0.094 (0.085)	-0.153 (0.133)	0.152** (0.073)	0.206** (0.100)
Month FE	No	Yes	No	Yes
Day and caller FE	No	Yes	No	Yes
R-squared	0.004	0.542	0.008	0.450
Observations	528	528	632	632

Notes: This table shows treatment effect estimates from the cross-selling experiment. Columns (1) and (2) display the results of the product adoption experiment for the credit product. Columns (3) and (4) display the results for the non-credit product. Each column reports results from a separate regression. The sample in all regressions is restricted to borrowers who received a debt moratorium offer in the main experiment and were approached with a cross-sell offer no more than one year after receiving the moratorium offer. The dependent variable in all regressions is a dummy equal to 1 if a participant accepted the cross-sell offer. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Supplementary Appendix (For Online Publication)

A Appendix Figures

Figure A.1: Example of a Moratorium Offer



Dear [REDACTED],

I am happy to announce the launch of "UniCredit for Italy", our latest initiative designed to offer you the support you need in these difficult times.

At UniCredit, we are committed every day to help each individual and company achieve a better future. Every action we take - whether it is consulting, granting a loan or a mortgage, or offering financial flexibility - aims to provide you with the freedom and opportunity to live the life you want, to create the business and the path that are most important to you. From buying a home for your family, starting a new business, or expanding and growing an existing one.

We want to support you in the best way possible, because we know it has never been as important as it is right now. All of us will have to face the consequences of what is happening in Europe and the rising cost of living. We at UniCredit will continue to work hard to mitigate the impact these events will have on your family and business in any way we can.

With "UniCredit for Italy", we want to offer you maximum support in achieving the future you want, despite the challenges that await us all.

There is no doubt that these are difficult times, but I assure you that we will do everything possible to help you and to build a better tomorrow together. For these reasons, UniCredit is preparing to launch four main initiatives:

Liquidity for businesses

Discover the possibilities of obtaining new finance, with CreditPiù, to support liquidity needs to meet the rising costs of energy or raw materials.

Debt moratorium for enterprises

Discover the new moratorium for the suspension of the payment of loan installments, for the principal amount only, up to a maximum of 12 months. You can request it from 05/09/2022 to 31/12/2022. Check the eligibility requirements, application procedures and economic conditions.

Zero rate installments

Find out how you can pay in installments at zero rate the amounts, for purchases and utilities, booked on your Flexia card from 1/10/22 to 12/31/22.

Mortgage repayment flexibility

Find out how to suspend the installments of the UniCredit Mortgage or reduce the monthly payment through a modification of the repayment plan.

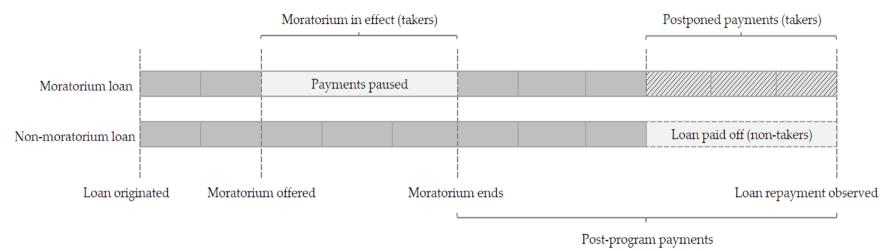
A warm greeting, and thanks for the trust you place in us every day.

A handwritten signature in black ink, appearing to read 'Andrea Orcel'.

Andrea Orcel, Group CEO and Head of Italy, UniCredit

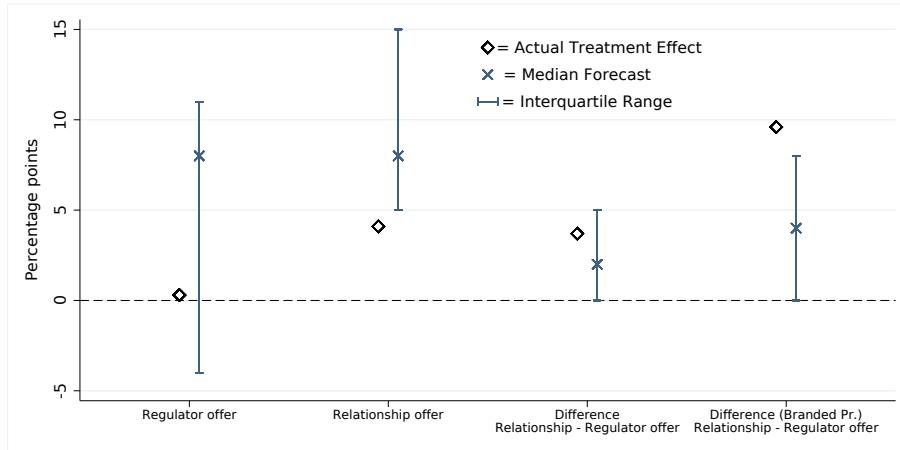
Notes: The figure shows an example of an actual moratorium offer extended to customers of the Italian bank UniCredit (translated from Italian using Google Translate). The moratorium offer applies to small business loans and mortgages at a time when banks were not mandated to provide debt forbearance in either credit market.

Figure A.2: Forbearance Experiment – Timeline and Measurement of Outcomes



Notes: The figure shows a schematic timeline of the loan repayment outcomes *monthly loan payment* and *loan repaid* and illustrates how each is observed for loans that opt into the moratorium and all other loans, respectively. Loans that opt into the moratorium have their monthly loan payments paused for three months, the tenor of their loan is extended by three months and the missed payments are added to the end of the loan. Loans are considered fully repaid if a borrower has made all payments by the end of this extended loan closing date.

Figure A.3: Expert Predictions versus Experiment Results



Notes: This figure summarizes expert predictions about the expected treatment effects of our experiment. The bars show the interquartile range (25th to 75th percentiles) of the predictions for a given treatment effect. We also show the median prediction (X) and the actual point estimates (diamond) of the treatment effects. “Regulator offer” refers to the effect of the regulator offer in the debt forbearance experiment, with respect to the control group. “Relationship offer” refers to the effect of the relationship offer in the debt forbearance experiment, with respect to the control group. “Difference Relationship - Regulator offer” refers to the effect of the relationship offer in the debt forbearance experiment, with respect to the regulator offer. “Difference (Branded Pr.) Relationship - Regulator offer” refers to the effect of the relationship offer in the branded non-credit product treatment arm of the product adoption experiment, with respect to the regulator offer.

B Appendix Tables

Table B.1: Summary Statistics: Debt Relief Survey

	<i>N</i> (1)	Mean (2)	Median (3)	StDev (4)
<i>Panel A: All Respondents</i>				
Loan outstanding	1,404	0.47	0	0.50
Ever had loan	1,404	0.65	1	0.48
Male	1,404	0.53	1	0.50
Age	1,404	35.52	35	12.32
Employed	1,404	0.79	1	0.41
Income	1,283	84,704	42,000	298,417
<i>Panel B: Respondents with loan outstanding</i>				
Male	653	0.55	1	0.50
Age	653	36.67	35	10.61
Employed	653	0.92	1	0.28
Income	642	114,010	50,000	408,938

Notes: The table shows summary statistics for the respondent population of a nationally representative online survey on debt forbearance. Panel (a) shows descriptives for all respondents, panel (b) shows descriptives for respondents that had at least one loan outstanding at the time of the survey. The survey was conducted between December 1, 2021 and January 31, 2022 using an online survey platform. We restrict the sample to the 1,404 respondents who passed a standard attention check question administered as part of the survey.

Table B.2: Representative Online Survey: Responses

	Percent			
	(1)	(2)	(3)	(4)
	Yes, agree	No, disagree		
Widespread debt relief can discourage borrowers who are able to pay their debts from paying them in the future.		66.10	33.90	
If a private lender gives more debt relief than others, their borrowers might take them less seriously and de-prioritize making payments to that lender.		64.96	35.04	
If there is another spike in Covid-19 cases with more 200,000 cases per day within the next 12 months, how likely do you think it is that the Government of India will grant another debt moratorium to borrowers, similar to those offered in the past.		72.93	27.07	
Suppose that a borrower who <i>is not in need</i> and has no problems making their loan payments is offered a debt moratorium (repayment holiday). How likely do you think it is that they would take up the repayment holiday, even if they do not need it?	Very unlikely	Unlikely	Likely	Very likely
	6.77	21.58	43.80	27.85
Now suppose that a borrower who <i>is in need</i> and has problems making their loan payments is offered a debt moratorium (repayment holiday). How likely do you think it is that this would have a negative effect on their repayment behavior in the future?	9.12	27.71	40.46	22.72
Suppose there is an economic crisis and borrowers everywhere in India are having difficulties making their loan payments on time. How likely do you think that the government will offer a debt moratorium to borrowers in this situation?	3.42	12.35	49.00	35.33
Suppose there is an economic crisis and borrowers everywhere in India are having difficulties making their loan payments on time. How likely do you think that private banks will offer debt moratoria to borrowers in this situation?	8.05	28.70	40.88	22.36
Suppose there is an economic crisis and borrowers everywhere in India are having difficulties making their loan payments on time. How likely do you think that microfinance institutions will offer debt moratoria to borrowers in this situation?	13.11	33.62	35.97	17.31

Notes: The table shows response frequencies for the main questions of a nationally representative online survey on debt forbearance. The sample is restricted to the 1,404 respondents who passed a standard attention check question administered as part of the survey.

Table B.3: Main Experiment: Treatment Cells and Takeup Rates

Treatment (1)	Assigned (2)	Contacted (3)	Accepted offer (4)	Acceptance rate (5)
[1] Relationship offer	11,730	1,901	257	0.135
[2] Regulator offer	10,962	1,829	228	0.125
[3] Placebo call	9,326	2,452	0	0.000
[4] Control group	13,587	3,441	0	0.000
Total	45,605	9,623	485	

Notes: The table shows treatment cell sizes and takeup rates of forbearance offers in the debt forbearance experiment.

Table B.4: Balance of Covariates: Forbearance Takers

	Offer accepted (1)	Relationship Offer (2)	Regulator Offer (3)	p-value (4)
<i>Panel A: Borrower characteristics</i>				
Reported income ('000 INR)	39.977 [59.798]	41.697 (4.926)	37.965 (4.897)	0.592
No credit history	0.641 [0.480]	0.634 (0.028)	0.649 (0.032)	0.726
Credit score	736.891 [47.479]	737.340 (5.403)	736.363 (5.746)	0.902
<i>Panel B: Loan characteristics</i>				
Principal ('000 INR)	13.929 [8.223]	14.153 (0.541)	13.676 (0.567)	0.543
Balance ('000 INR)	8.974 [7.000]	9.097 (0.442)	8.835 (0.474)	0.685
Monthly Payment ('000 INR)	1.735 [0.894]	1.760 (0.059)	1.706 (0.059)	0.520
Loan duration (months)	7.944 [0.935]	7.946 (0.059)	7.943 (0.067)	0.977
Loan age (months)	5.686 [2.546]	5.647 (0.169)	5.730 (0.154)	0.716
Day Called	9.466 [5.047]	9.105 (0.471)	9.873 (0.469)	0.249
<i>Panel C: Borrower credit history</i>				
Prior loans	3.815 [17.122]	4.311 (1.709)	3.276 (0.567)	0.566
Prior defaults	0.032 [0.177]	0.034 (0.014)	0.031 (0.013)	0.866
Observations	485	257	228	

Notes: The table shows summary statistics and tests of covariate balance for contacted borrowers who accepted one of the forbearance offers. Panel A reports summary statistics on borrower characteristics from the lender's administrative data and credit reports, panel B reports summary statistics on loan characteristics observed in administrative data from the lender, and panel C reports summary statistics on borrowers' credit history based on credit bureau data. Column (1) shows summary statistics for the entire sample, columns (2) shows summary statistics for customers who accepted the relationship offer and column (3) shows summary statistics for customers who accepted the regulator offer. Column (4) reports the *p*-value of equality of means across the two forbearance offer treatment conditions. At the foot of the table, we report a joint *F*-Test of all variables.

Table B.5: Forbearance Offer Take-up, by Price

	Offer accepted		
	Any offer (1)	Relationship offer (2)	Regulator offer (3)
High fee (Rs 500)	-0.053** (0.022)	-0.038 (0.026)	-0.069* (0.035)
Implied price elasticity	1.2	0.8	1.6
Month FE	Yes	Yes	Yes
Day and caller FE	No	No	No
DV mean	0.13	0.14	0.12
R-squared	0.01	0.01	0.01
Observations	3,730	1,901	1,829

Notes: This table reports treatment effects of price on take-up of forbearance offers. The outcome variable in all columns is an indicator equal to 1 if a contacted customer accepted the debt forbearance offer. Take-up is regressed on a dummy equal to 1 if a customer was assigned to receive the offer at the *high fee* of Rs 500 instead of the *regular fee* of Rs 350. The sample in column (1) includes all contacted customers who received a forbearance offer. In column (2), the sample is restricted to contacted customers assigned to the *relationship offer* condition, and column (3) restricts the sample to customers in the *regulator offer* treatment condition. Standard errors, clustered at the caller-offer date level in parentheses. p < 0.10, ** p < 0.05, *** p < 0.01.

Table B.6: Summary Statistics: Economic Survey

	Responses (1)	Mean (2)	Median (3)	St.dev (4)
Expects govt relief	1,334	0.66	1.00	0.47
Expects private relief	1,267	0.54	1.00	0.50
Covid-19 worsened finances	1,148	0.44	0.00	0.50
Income losses during Covid-19	967	0.57	1.00	0.50
Difficulty making payments	967	0.57	1.00	0.50
Feb 2020 income, Rs '000 per month	811	18.56	15.00	20.88
Dec 2021 income Rs '000 per month	714	15.80	12.00	22.71
Has bank account	994	0.93	1.00	0.26
Bank account age (yrs)	906	8.32	7.00	6.42
Used smartphone for income	977	0.18	0.00	0.38
Financial literacy (0-3)	858	1.57	2.00	0.81

Notes: The table reports summary statistics for the follow-up survey that elicited borrower responses on their economic situation, and beliefs about the likelihood of future debt forbearance from banks and private lenders. A subset of beliefs elicited were incentivized and are reported in Table 3.

Table B.7: Summary Statistics: Cross-Selling Experiment

Treatment (1)	Product (2)	Branding (3)	Contacted (4)	Accepted (5)	Acceptance rate (6)
All			1,160	385	0.332
Regulator offer	Personal loan	Unbranded	125	41	0.328
Regulator offer	Personal loan	Branded	133	53	0.398
Regulator offer	Non-credit product	Unbranded	169	52	0.308
Regulator offer	Non-credit product	Branded	161	42	0.261
Relationship offer	Personal loan	Unbranded	136	55	0.404
Relationship offer	Personal loan	Branded	134	51	0.381
Relationship offer	Non-credit product	Unbranded	159	40	0.252
Relationship offer	Non-credit product	Branded	143	51	0.357

Notes: The table shows take-up summary statistics for the cross-selling experiment. The sample for the experiment is restricted to customers who received either the regulator or relationship forbearance offers in the main experiment. “Treatment” refers to the offer extended to the participant in the main experiment, “Branding” refers to the treatments in the cross-selling experiment in which customers received either a branded or unbranded offer for a non-credit product from the lender.

Table B.8: Who Responds to Debt Moratoria? Treatment Effect Heterogeneity, OLS

	Large loan (1)	No credit score (2)	High credit score (3)	Long loan (4)	Gov resp. (5)	Banks resp. (6)	Large income drop (7)	Fin. distress (8)	Financial lit. (9)	Credit score matters (10)
Trait	-0.217*** (0.011)	0.032*** (0.012)	-0.064*** (0.012)	-0.260*** (0.011)	0.002 (0.048)	-0.021 (0.050)	-0.016 (0.048)	-0.049 (0.032)	0.033 (0.037)	-0.041 (0.057)
Relationship offer	0.032* (0.018)	0.031 (0.022)	0.047*** (0.015)	0.062*** (0.017)	0.036 (0.090)	-0.050 (0.099)	-0.028 (0.050)	-0.066 (0.051)	0.003 (0.056)	-0.284*** (0.097)
Relationship offer * trait	0.0114 (0.025)	0.0141 (0.027)	-0.0264 (0.028)	-0.0508** (0.024)	-0.152 (0.102)	-0.0514 (0.108)	0.176 (0.113)	0.0583 (0.073)	-0.0792 (0.082)	0.260** (0.111)
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day and caller FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,623	9,623	9,623	9,623	845	925	832	1215	971	654
R-squared	0.074	0.031	0.034	0.098	0.074	0.060	0.048	0.049	0.054	0.084

Notes: The table shows estimates of treatment effect heterogeneity. Each column shows results from a separate regression. The dependent variable in all regressions is an indicator equal to 1 if a customer made their monthly loan payment by the due date.

Standard errors, clustered at the loan level, in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

X.

Table B.9: Robustness – Test for Treatment Effects on Survey Outcomes

	Large loan (1)	No credit score (2)	High credit score (3)	Long loan (4)	Gov resp. (5)	Banks resp. (6)	Large income drop (7)	Fin. distress (8)	Financial lit. (9)	Credit score matters (10)
[1] Relationship offer	-0.023 (0.015)	0.024 (0.014)	-0.024 (0.013)	-0.016 (0.014)	-0.042 (0.043)	-0.087* (0.038)	-0.025 (0.041)	-0.042 (0.043)	-0.084 (0.049)	-0.097* (0.048)
[2] Regulator offer	-0.025 (0.015)	0.004 (0.014)	-0.010 (0.013)	-0.020 (0.015)	-0.034 (0.043)	-0.021 (0.036)	-0.017 (0.043)	0.022 (0.043)	-0.041 (0.048)	-0.091 (0.050)
[3] Placebo call	-0.005 (0.013)	0.010 (0.013)	-0.012 (0.012)	0.002 (0.013)	-0.032 (0.038)	-0.048 (0.032)	0.010 (0.039)	-0.007 (0.040)	0.053 (0.043)	-0.018 (0.040)
Observations	9,623	9,623	9,623	9,623	845	925	832	1,215	971	654
R-squared	0.057	0.014	0.020	0.086	0.040	0.057	0.034	0.034	0.054	0.058

Notes: The table test for the presence of treatment effects of debt moratorium offers on responses from the economic survey. Each column shows results from a separate regression. The dependent variables are responses to the question indicated at the top of each column. Standard errors, clustered at the caller-offer date level, in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.10: Treatment Effect Heterogeneity: Cross-Selling Experiment

	Offer accepted			
	Panel A: Machine Learning CLAN			
	Most affected	Least affected	Difference	
	γ_5 (1)	γ_1 (2)	$\gamma_5 - \gamma_1$ (3)	p -value (4)
Loan balance	7.132 (5.676,8.625)	5.621 (4.153,7.090)	1.571 (-0.491,3.645)	[0.263]
No credit score	0.573 (0.471,0.676)	0.798 (0.696,0.900)	-0.222 (-0.369,-0.076)	[0.006]
Prime credit score	0.381 (0.280,0.480)	0.141 (0.043,0.239)	0.231 (0.091,0.375)	[0.003]
Months remaining	4.305 (3.753,4.856)	4.867 (4.293,5.416)	-0.536 (-1.330,0.235)	[0.349]
Banks responsible	0.752 (0.709,0.791)	0.764 (0.724,0.806)	-0.019 (-0.075,0.040)	[1.000]
Government responsible	0.699 (0.658,0.738)	0.748 (0.707,0.789)	-0.055 (-0.113,-0.001)	[0.091]
Large income drop	0.188 (0.153,0.223)	0.192 (0.157,0.226)	-0.004 (-0.053,0.044)	[1.000]
Financial distress	0.436 (0.380,0.492)	0.427 (0.372,0.482)	0.009 (-0.070,0.088)	[1.000]
Financial literacy	0.501 (0.448,0.553)	0.551 (0.499,0.603)	-0.057 (-0.129,0.017)	[0.253]
Credit score important.	0.823 (0.791,0.854)	0.823 (0.792,0.854)	0.001 (-0.044,0.045)	[1.000]
<i>Panel B: Machine Learning GATES</i>				
Offer accepted	0.086 (-0.168,0.346)	0.126 (-0.162,0.422)	-0.039 (-0.426,0.345)	[1.000]

Notes: The table shows machine learning estimates of treatment effect heterogeneity for product take-up in the cross-selling experiment. The outcome variable in all columns is a dummy equal to one if a borrower assigned to the relationship offer treatment in the original experiment took up the product offer in the cross-sell experiment. For each loan and borrower characteristic, the table reports classification analysis (CLAN) coefficients for the most and least affected groups in Panel A and sorted group average treatment effects (GATES) coefficients in Panel B. The sample is divided into $K = 5$ groups, γ_K , based on the quintiles of the machine learning proxy predictor $S(Z)$. Medians over 100 splits. 90% confidence intervals in parentheses, p -values for the hypothesis that the parameter is equal to zero are reported in brackets.

Table B.11: Treatment Effect by Predicted Likelihood of Moratorium Take-up

Takeup:	Loan repaid								
	Low (1)	High (2)	Low (3)	High (4)	Low (5)	High (6)	Low (7)	High (8)	(9)
[1] Relationship offer	0.037** (0.016)	0.050 (0.043)	0.039** (0.016)	0.063 (0.040)	0.043*** (0.016)	0.007 (0.045)	0.038* (0.020)	0.031* (0.018)	-0.033 (0.031)
[2] Regulator offer	-0.001 (0.015)	0.020 (0.044)	0.004 (0.015)	-0.009 (0.040)	0.001 (0.015)	-0.006 (0.046)	0.013 (0.019)	-0.010 (0.019)	-0.030 (0.034)
[3] Placebo call	-0.005 (0.014)	-0.009 (0.039)	0.002 (0.013)	-0.053 (0.036)	0.000 (0.013)	-0.036 (0.035)	0.020 (0.017)	-0.030* (0.017)	-0.008 (0.012)
Test: [1]–[2]	0.039** (0.016)	0.030 (0.044)	0.035* (0.016)	0.072 (0.040)	0.042** (0.016)	0.014 (0.045)	0.025 (0.020)	0.041* (0.019)	-0.003 (0.032)
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day and caller FE	No	No	No	No	No	No	No	No	Yes
All Controls	No	No	No	No	No	No	No	No	Yes
Split	P(Any offer paid)	P(Rel offer paid)	P(Reg offer paid)	P(Control repaid loan)	Offer paid vs control				
Acceptance rate	0.11	0.31	0.11	0.29	0.11	0.29	0.15	0.11	1
Control group mean	0.43	0.32	0.43	0.32	0.42	0.37	0.27	0.57	0.42
R-squared	0.11	0.31	0.11	0.29	0.11	0.29	0.15	0.11	0.13
Observations	8,660	963	8,660	963	8,659	964	4,811	4,812	6,377

Notes: The table shows treatment effects of debt forbearance offers on total loan repayment, splitting the sample by predicted likelihood of forbearance takeup. Columns (1)–(8) split by whether the customer was in the 90th+ percentile of likelihood to accept the offer. Column (9) compares customers who accepted the offer to the entire control group. The dependent variable in all regressions is an indicator equal to 1 if a customer completed repayment of their loan. Standard errors, clustered at the caller-offer date level, in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.12: Product Adoption Experiment Follow-up

Question	Mean		Difference	SE	N
	Regulator offer	Relationship offer			
	(1)	(2)	(3)	(4)	(5)
[1] Reason for accepting product offer					
Lender has my interests in mind	0.09	0.11	0.02	(0.08)	59
I may want future loans	0.75	0.70	-0.05	(0.12)	59
I trust their products more than competitors	0.16	0.19	0.03	(0.10)	59
[2] Opinions about lender					
No better than competitors	0.20	0.19	-0.01	(0.11)	57
Better for me than competitors	0.30	0.33	0.03	(0.13)	57
Better overall than competitors	0.50	0.48	-0.02	(0.13)	57

Notes: The table shows responses to a survey which was administered to customers who accepted non-credit product offers with the lender's brand prominently advertised. The survey contained two questions with three options each as shown in the table. The order of responses as read by the surveyors were randomized at the individual borrower level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.13: Treatment Effects by Local Bank Competition

	Loan repaid	Offer accepted
	[Main experiment] (1)	[Product adoption experiment] (2)
[1] Relationship offer	0.032 (0.022)	0.015 (0.071)
[2] Low competition	-0.010 (0.024)	-0.118 (0.073)
[1] x [2]	0.019 (0.033)	0.168 (0.113)
Month FE	Yes	Yes
Day and caller FE	Yes	Yes
Regulator offer mean	0.43	0.26
R-squared	0.03	0.12
Observations	3,730	304

Notes: The table shows the treatment effects of debt forbearance offers on total loan repayment, splitting the sample by the number of banks in the customer's banking district as defined by the Government of India. The median customer's district contains 342 banks; the variable "Low competition" is an indicator for whether the customer's district contains fewer banks. Heteroskedasticity-robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C Experiment Scripts

C.1 Main experiment

I. Relationship offer

Hello, am I speaking with [customer name]? I am calling from [lender name] about your [loan name] loan. I would like to talk about an offer from [lender name] to unlock your phone. We would like to extend a special offer that we at [lender name] have personally designed to help our customers manage their finances in the current economic crisis.

At [lender name], we care about our customers and truly value your business. We understand that people all over India are facing great hardships due to the current economic situation. Helping our valued customers in these challenging times is our first priority at [lender name]. That is why we are offering you repayment flexibility on your loan.

We can make you the following offer: You will not have to make any payments for the next 3 months and your mobile phone will be unlocked and stay active during this time. If you accept the offer, it will be recorded as a restructured loan on your credit report. A one-time processing fee of Rs 350 will apply.

Would you like to avail this offer?

-No [continue]

-Yes [send customer payment link and confirm]

Thank you for being a valued [lender name] customer! If you have any questions, please know that we are always there to help you in any way we can for you, and you can reach our customer care number [phone number].

II. Regulator offer

Hello, am I speaking with [customer name]? I am calling from [lender name] about your [loan name] loan. We are extending an offer in accordance with guidelines issued by RBI to all lending institutions to help customers manage their finances in the current economic crisis.

As a result of guidance issued by RBI to all banks and non-bank financial institutions, we are offering you repayment flexibility on your [loan name] loan, comparable to programs offered by most other lenders.

We can make you the following offer: You will not have to make any payments for the next 3 months and your mobile phone will be unlocked and stay active during this time. If you accept this offer, it will be recorded as a restructured loan on your credit report. A one-time processing fee of Rs 350 will apply.

Would you like to avail this offer?

-No [continue]

-Yes [send customer payment link and confirm]

Thank you! If you have any questions, please refer to our customer care number [phone number].

III. Placebo call

Hello, am I speaking with [customer name]? I am calling from [lender name] about your [loan name] loan with some information.

We would like to let you know that we are here to help our valued customers manage their finances in the current economic crisis. That is why we updated our website with useful answers to the questions our customers might have. We have also updated our online chat bot. Do you have any questions or problems that we might be able to help you with today?

Thank you for being a valued [lender name] customer! If you have any further questions, please know that we are always there to help you in any way we can for you, and you can reach our customer care number [phone number].

IV. Control group: repayment reminder call

Hello, am I speaking with [customer name]? I am calling from [lender name] about your [loan name] loan. I am calling because your [loan name] loan is past due. We sent you an SMS message concerning this matter earlier. I wanted to ensure that there wasn't any technical problem if you already tried to make a payment, and otherwise find out how and when you intend to make a payment [pause to listen].

We will send you a payment link and ask you to please make a payment at your earliest convenience. Can you please confirm that you are planning to submit your loan payment this month? [Confirm when, and by what means, customer is planning to make payment]

Thank you! If you have any questions, please refer to our customer care number [phone number].

C.2 Product adoption experiment

I. Personal loan, branded

Dear [name],

We are calling from [lender name], from whom you have previously taken out a [loan name] loan. As a valued [lender name] customer we would like to invite you to apply for our new EasyCash personal loan. This convenient product is distributed through our [lender name] online platform in an amount of Rs 30,000 to be used for your personal consumption or cash needs.

If you are interested in this loan, I can send you an online link and help you complete the loan application in a few easy steps. Would you like me to send you the link?

II. Personal loan, unbranded

Dear [name],

We are calling because we would like to invite you to apply for our new EasyCash personal loan. This convenient product is distributed through an online platform in an amount of Rs 30,000 to be used for your personal consumption or cash needs.

If you are interested in this loan, I can send you an online link and help you complete the loan application in a few easy steps. Would you like me to send you the link?

III. Non-credit product, branded

Dear [Name],

We are calling from [Redacted], from whom you have previously taken out a [Redacted] mobile phone loan. As you know, [Redacted] has been deeply committed to helping its customers during these difficult times. As a valued [Redacted] customer, we would like to offer you our new [Redacted] financial health report. This report will give you a clear, easy to understand overview over your credit profile and contains all of the information that banks and other lenders use to assess your fitness for credit.

If you are interested in this product, I can send you an online link and help you complete the application in a few easy steps. Would you like me to send you the link?

IV. Non-credit product, unbranded

Dear [name],

We are calling because we would like to offer you our new [Redacted (name of partner, not lender)] financial health report. This report will give you a clear, easy to understand overview over your credit profile and contains all of the information that banks and other lenders use to assess your fitness for credit.

If you are interested in this product, I can send you an online link and help you complete the loan application in a few easy steps. Would you like me to send you the link?

D Survey instruments

D.1 Endline survey

We are calling from [lender name], from whom you have previously taken out a [loan name] loan. We are conducting a survey on how the Covid-19 crisis has affected consumers in India. Would you be willing to answer a few short questions about how the Covid-19 crisis has affected your economic situation? Your answers will be kept confidential and used for research purposes only, and your participation is completely voluntary. However, let me emphasize that it would be very helpful for us at [lender name] if you could take part in this survey.

1. Would you like to proceed?

- Yes
- No

[Respondent randomly assigned to 2a or 2b.]

2a. In view of the current spike in COVID-19 cases in India, how likely do you think it is that the Government of India will grant another debt repayment moratorium to borrowers, similar to those that were offered in the past.

Note that you can win a prize by answering this question, so please choose your answer carefully. In the case of another spike of cases, we will randomly select two respondents who will receive a gift card in the amount of INR 5,000 if their guess was correct.

- There will be another debt moratorium
- There will not be another debt moratorium

2b. In view of the current spike in COVID-19 cases in India, how likely do you think it is that the Top 5 private sector banks in India will grant another debt repayment moratorium to borrowers, similar to those that were offered in the past.

Note that you can win a prize by answering this question, so please choose your answer carefully. In the case of another spike of cases, we will randomly select two respondents who will receive a gift card in the amount of INR 5,000 if their guess was correct.

- There will be another debt moratorium
- There will not be another debt moratorium

3. Do you think that Banks are likely to give debt relief when borrowers face financial difficulties for no fault of their own?

- Likely
- Not likely

4. Do you think that Banks have a responsibility to give debt relief when borrowers face financial difficulties for no fault of their own?

- Yes
- No

5. Do you expect lenders in India to become more or less strict when it comes to collecting debts in the future (over the next year)?
 - Less strict
 - More strict
 - No change
6. Do you think that the Government is likely to give debt relief when borrowers face financial difficulties for no fault of their own?
 - Likely
 - Not likely
7. Do you think the Government has a responsibility to give debt relief when borrowers face financial difficulties for no fault of their own?
 - Yes
 - No
8. Compared to before February 2020 (so, before the Covid-19 crisis), how would you describe your overall financial situation?
 - Much worse off
 - Slightly worse off
 - Same as before
 - Slightly better off
 - Much better off
9. Have you experienced any of the following as a result of the Covid-19 crisis?
 - Temporary layoff or suspension of work (without pay)
 - * Yes
 - * No
 - Permanent layoff or suspension of work (without pay)
 - * Yes
 - * No
 - Reduction in salary
 - * Yes
 - * No
 - Delay in wage payment
 - * Yes
 - * No

10. As a result of the Covid-19 crisis, did you have trouble making monthly payments for:

- Rent
 - * Yes
 - * No
- Loans
 - * Yes
 - * No
- Utilities (electricity, gas etc.)
 - * Yes
 - * No

11. In a typical month before February 2020 (so, before the Covid-19 crisis), what was your total monthly income? [Respondent may choose not to share.]

12. Last month, what was your total monthly income? (Rs) [Respondent may choose not to share.]

13. How important is it to you to maintain a good credit score?

- Important
- Not important
- Do not know what a credit score is

14. In the past year, have you used your smartphone to earn income?

- Yes
- No

Finally, I would like to ask you some questions about your knowledge of financial products.

15. Suppose you had Rs 100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

- More than Rs 102
- Exactly Rs 102
- Less than Rs 102

16. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

- More than today
- Exactly the same
- Less than today

16. Buying a single company's stock usually provides a safer return than a stock mutual fund.

- True
- False