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Flexible Contract, Flexible Morale? Microcredit Design and Repayment Discipline

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ABSTRACT

Flexible repayment benefits borrowers, but practitioners fear increased moral hazard. Investigating their concerns requires disentangling repayment choices from repayment capacity, which is typically infeasible in field studies. We use a lab-in-the-field experiment with 645 microcredit borrowers to cleanly identify the effect of repayment flexibility on moral hazard. We also quantify social pressure. Payoff maximization predicts low repayment in our rigid benchmark contract, and increased repayment with flexibility. Results suggest the opposite: Repayment in the rigid contract is high, and drops substantially under flexible repayment. Social pressure decreases. Our results are consistent with a strong social norm for repayment, which is weakened by introducing flexibility. Norms, which may be inculcated by the lender, may help explain several recent puzzles in microfinance research, including high and equal repayment rates across individual- and joint-liability contracts, and excessive peer pressure. Importantly, norm-driven behavior may erode with the introduction of flexibility.

JEL Classification: G41, G21, D90, C90

> *"We pledge to attend regularly the weekly Center meetings, to utilize our loans for the purpose approved, to save and pay our installments weekly, to use our increased incomes for the benefit of our families, to ensure that other members of our group and Center do likewise and to take collective responsibility if they do not."*
>
> Official weekly pledge, recited at each center meeting (Grameen Foundation 2010).

1 | Introduction

Microcredit has long been praised for its innovative product design, which extended access to finance to a new segment of the market: low-income borrowers without sufficient collateral.[1] Joint-liability lending uses social capital to overcome screening and monitoring problems, and to provide mutual insurance (Besley and Coate 1995; Armendáriz 1999; Iyer et al. 2016). Rigid repayment schedules with high-frequency, same-sized installments are thought to instill repayment routine and morale (Armendáriz and Morduch 2010; Bauer et al. 2012; Meyer 2002; Labie et al. 2017). Indeed, microcredit providers emphasize that repayment rigidity plays an important role in preventing strategic default, that is, the choice to default despite having the capacity to repay. However, both of these building blocks have been criticized as not fit for purpose: Joint liability may induce excessive peer pressure (Montgomery 1996; Karim 2008; Czura 2015b). Rigid repayments make it challenging to match cash flows and lead to underinvestment (Karlan and Mullainathan 2007).

While microlenders have responded by offering more individual-liability contracts, they remain reluctant to offer more flexible repayment (Labie et al. 2017). This is surprising for two reasons. First, providing borrowers with flexibility in when to repay, and thus enabling them to condition repayments on shock realizations, may increase investments in high-return projects. A series of recent field experiments confirms that repayment flexibility increases income by fostering investment in more profitable projects (Field et al. 2013; Czura 2015a; Barboni and Agarwal Forthcoming; Battaglia et al. 2023; Field and Pande 2008).[2] Given increasing commercialization and competition in the sector (De Quidt et al. 2018), lenders have incentives to engage in product innovations that benefit their customers, including flexible repayment schemes. Second, the concern that flexible repayment timing may increase strategic default contradicts standard economic predictions: Flexibility *increases* the monetary incentives to repay, as the possibility to postpone repayments reduces the risk of a shock-induced default, and thus increases the expected benefits of repayment. It also lowers the effective interest rate. Strategic default should thus *decrease* with flexibility. Field experiments show both increases (Field et al. 2013; Czura 2015a; Brune et al. 2025) and decreases (Barboni and Agarwal Forthcoming; Battaglia et al. 2023) in overall default rates under flexible repayment. However, field studies cannot address practitioners' concern about the decision to repay the loan or strategically default (ex-post moral hazard): This requires a separate observation of repayment capacity and repayment decisions, which is typically not feasible in the field. This paper fills this gap, and proposes an explanation why flexible repayment contracts are largely absent in practice despite the observed benefits for borrowers.

We cleanly identify ex-post moral hazard under flexible repayment conditions, and compare it to that under rigid repayment. Using a lab-in-the-field experiment with 645 microcredit borrowers in the Philippines, we study how flexibility (the option to defer repayments and make up for them later) affects individual loan repayment choices. Participants play a repayment game in which a loan needs to be repaid over three periods, and idiosyncratic shocks affect repayment capacity. To provide insights into mechanisms, we randomize individual and group loans, which differ in their liability structure and the possibility to show disapproval through peer punishment. We present four main results. First, repayment in rigid contracts is high and constant across individual and joint-liability contracts: 66% of participants choose to fully repay, despite the fact that repayment is monetarily unprofitable. Second, peer punishment is excessive and sequentially irrational: 51% punish non-repayment caused by observable shocks, that is, when punishment cannot discipline group members. Third, individuals choose to repay less often when they have discretion in when to repay: Flexibility *increases* strategic default by 50% (16 percentage points). This result holds irrespective of the liability structure, and despite a setting that controls for present bias. Fourth, flexibility reduces peer punishment by around half. Our results are consistent with a strong social norm for repayment, whose effect is weakened by introducing flexibility. We illustrate our hypothesis using a theoretical framework of loan repayment in the presence of social norms. In addition, we provide evidence from an incentivized norm elicitation experiment that flexibility creates uncertainty in socially appropriate behavior.

Our lab-in-the-field setting has a number of unique advantages: First, we disentangle repayment capacity from the choice to repay, and thus cleanly identify ex-post moral hazard. Second, we measure social pressure in an incentive-compatible way through costly punishment choices. Observing punishment when shocks are fully visible to peers lets us speak to recent concerns about excessive social pressure in microcredit. Third, we minimize distance to borrowers' natural environment: Experimental sessions are run with borrowing peers in existing microcredit centers in their weekly meeting locations. Repayment decisions are framed using terminology from real lending contracts. This field context allows us to build upon the experience and the existing social capital present in the centers.

In light of our results, we discuss an understudied driving force in microcredit repayment: social norms. Through the client induction process as well as meeting and reciting pledges every week (see quote at the beginning of this paper), clients internalize what it means to be a 'good borrower': to pay installments every week without fail, and to take collective responsibility for the behavior of their peers (Grameen Foundation 2010). This image of a good borrower, as shaped by the lender, closely relates to the concept of identity in organizations (see the seminal work by Akerlof and Kranton 2000, 2002, 2005). Microfinance organizations have strong incentives to inculcate a sense of identity in their borrowers, with associated norms for good behavior. If they deviate from the prescribed behavior, borrowers suffer penalties which can be psychological (e.g., cognitive dissonance, guilt, shame) or social (reputation). Identity models can hence serve as a microfoundation for social norms—shared perceptions of what behavior is appropriate for whom and in which situation (Akerlof and Kranton 2005; Fischer and Huddart 2008).[3] Specifically, norms for 'good borrowers' may compel individuals to pay installments, even if this is not strategically optimal in a monetary sense. Similarly, these norms may induce peers to punish excessively, for example, for non-repayment in case of observable shocks.[4] Social norms could help explain two recent puzzles in microfinance research: First, why repayment rates do not differ between individual- and joint-liability contracts, especially when weekly group meetings are held constant (Giné and Karlan 2014; Attanasio et al. 2015). Second, why peer pressure appears to be excessive and sequentially irrational (Montgomery 1996; Karim 2008; Czura 2015b). In addition, and most relevant for our findings, applying the norm may no longer be straightforward when repayment flexibility gives borrowers discretion whether or not to repay at a given point in time. As a result, uncertainty in socially prescribed behavior may lower incentives for repayment.

In our mechanism section, we present suggestive evidence for installment-based social norms. We start by showing theoretically how an exogenous norm affects repayment incentives. Social norms and dynamic incentives act as substitutes in encouraging high repayment rates. Introducing flexibility unambiguously leads to higher repayment rates absent social norms. However, when repayment is sustained by social norms, introducing flexibility can lead to the erosion of these norms, and increase default rates. Using this framework, we then examine our empirical findings in more detail. In linking theory and experiment, we interpret the peer punishment we observe in our joint-liability treatments as a reflection of the prevailing social norms.[5] To

measure social norms and investigate their alignment with punishment behavior in our lab setting, we conduct an incentivized norm elicitation experiment following Krupka and Weber (2013). In a small sample of borrowers from the same lender ($N = 44$), we find that social norms for repayment mirror the punishment patterns we observe in our experiment: Default is rated less socially inappropriate, and with more dispersion in the ratings, if borrowers use flexibility to defer payments before they default. Our results suggest that flexibility may decrease repayment by creating uncertainty in the socially prescribed behavior for good borrowers.

Our study builds on and contributes to the literature in four ways. To our knowledge, we are the first to identify ex-post moral hazard in a flexible repayment setting, as well as the effect of flexibility on ex-post moral hazard. With this, we speak to two strands of literature. On the one hand, a few studies isolate the role of ex-post moral hazard in lending, and argue that it plays an important role in rigid repayment contracts (Karlan and Zinman 2009; Breza 2014; Gertler et al. 2024). We document that ex-post moral hazard is even more important when repayment timing is flexible. The other strand is a growing literature on flexible repayment schedules. This literature documents positive effects on investments, and mixed evidence on overall default rates (which are affected by both shocks and strategic behavior): Field et al. (2013) study the effects of a grace period between loan disbursement and the start of repayment and find increases in business profits at the expense of higher default. Barboni and Agarwal (Forthcoming) study self-selection into flexible microloans, which allow for 3-months repayment holidays (with 1-month advance notice), but carry higher interest rates than rigid loans. Offering this contract leads to increased repayment rates and business revenues. Neither of these studies give borrowers discretion on whether to repay at a given moment, and thus to condition repayments on shock realizations. Closer to our definition of flexibility, Czura (2015a) examines repayment that allows for occasional skips. She finds suggestive evidence of increased investments, higher income, and higher defaults, though these are obfuscated by a crisis of the lender. Battaglia et al. (2023) offer borrowers with a good credit history to delay up to 2 monthly repayments at any time. They find improved business outcomes and lower defaults, and argue that the insurance value of flexibility facilitates increased entrepreneurial risk-taking. Most recently, Brune et al. (2025) offer up to three skips in a 12-months loan and find no effect on revenue and profits, but an increase in defaults. The most flexible credit is assessed by Aragón et al. (2020) who find large effects of fully flexible credit lines on short-term profits, but cannot assess effects on defaults. We complement this work by isolating the strategic incentives under flexible repayment, independent of borrower selection, project choices, and shock-induced defaults. We argue that flexibility has a hidden cost, in that it may create uncertainty in the socially appropriate repayment behavior. This effect may be masked in the existing field evidence by the observed positive effects on investment choices.

Second, we provide theoretical and empirical evidence on social norms in lending. The importance of social norms has been well-documented outside of credit markets, including norms for risk sharing in village economies (Jakiela and Ozier 2016), productivity in firms (Huck et al. 2012), or xenophobia (Bursztyn et al. 2020). In the context of lending, attention to the role of social norms for repayment has been limited. Suggestive evidence includes Guiso et al. (2013), who show that survey measures of 'morality' predict defaults on mortgage loans. In a field experiment in Islamic banking, Bursztyn et al. (2019) find that a moral appeal reduces credit card delinquency. Bu and Liao (2001) and Dhami et al. (2022) point to the the role of guilt and shame for loan repayment in microfinance, consistent with the presence of social norms. We argue that high-repayment equilibria in microcredit may be sustained by social norms. We provide a theoretical framework showing that social norms can be an important determinant for repayment when dynamic incentives are weak. While in a small sample, our incentivized norm elicitation is the first of its kind in microfinance.

Third, we add to the literature on mechanisms to overcome credit market failures. Similar to Giné et al. (2010) and Dhami et al. (2022), we take a systematic approach to unpacking such mechanisms in the context of microfinance.[6] One prominent mechanism in this literature is the role of social capital in maintaining high repayment rates (Armendáriz 1999; Besley and Coate 1995; Ghatak and Guinnane 1999; Karlan 2007; Wydick 1999). Social capital predicts differences in repayment between individual- and joint-liability contracts (De Quidt et al. 2016). However, recent empirical studies do not find different repayment rates between individual- and joint-liability contracts, especially when weekly group meetings are held constant (Giné and Karlan 2014; Attanasio et al. 2015). Our evidence for social norms as a driver of loan repayment helps to explain this puzzle. While we are ultimately agnostic about the source of these norms, a possible microfoundation comes from the work on identity in organizations (Akerlof and Kranton 2005). Identity models can also explain the comprehensive measures taken by lenders to instill a culture of good borrowing. With the exogenous variation in the liability structure, we further help to consolidate findings from previous studies on flexible loan repayment, which use both individual- and joint-liability contracts.[7]

Fourth, as one of the few papers to measure and quantify peer punishment in a microfinance context, we innovate by studying its interaction with the contract structure. Standard models of group lending universally predict zero punishment in equilibrium: The credible threat of social sanctions is enough (Besley and Coate 1995; Armendáriz 1999). By contrast, a rich literature on coordination games documents that people frequently engage in costly and non-credible punishment (Fehr and Gächter 2000, 2002; Masclet et al. 2003; Henrich et al. 2006, 2010). Evidence on peer punishment in microfinance has been largely qualitative or anecdotal.[8] Czura (2015b) documents and quantifies excessive punishment in microfinance, relative to game-theoretical and fairness benchmarks. We confirm and complement her findings by showing how excessive peer pressure reacts to changes in repayment structure.

The paper proceeds as follows: Section 2 describes the experimental design. Section 3 outlines the empirical strategy and Section 4 presents results on repayment, flexibility use, and punishment. Section 5 presents theoretical and empirical evidence for social norms. Section 6 concludes.

2 | Experiment

2.1 | Design

We design a microcredit repayment game to analyze ex-post moral hazard. The experiment is set in a world of asymmetric information, where borrowers but not lenders observe project returns. We take a partial equilibrium approach, and focus entirely on the borrower's decision whether or not to repay the loan once project returns are realized. The borrower's monetary incentives are determined by a stochastic income process, the repayment installments, the future benefits from repaying the loan, and any discounting. At this point, the loan amount and the investment choice are sunk. Further, we do not model the lender—the market interest rate enters exogenously (through the required repayment amounts), and thus our results apply independently of the lender market structure.

The experiment varies two features of the loan contract: First, the repayment schedule is either rigid or flexible. Rigid schedules impose repayments every period, while flexible schedules allow for discretion in when to repay. Second, borrowers are either individually or jointly liable for their loans. Joint-liability loans include the possibility of punishment from borrowing peers. We describe the resulting four treatments below (see Figure A1) and motivate major design choices in Section 2.3.

To facilitate clean comparisons across different liability structures, we focus on individual choices in all treatments. We use the strategy method throughout all treatments: Decisions are elicited for different realizations of income shocks, and choices are selected randomly for payout at the end of the session.[9] By observing repayment choices that are contingent on income realization, we can identify ex-post moral hazard. To build on social capital that participants have accumulated outside the lab during their microcredit borrowing routine, we use loaded framing and explain the setup and all choices in the context of microfinance.

2.1.1 | Individual Liability (IL)

Setup The standard game models a simple credit repayment choice under risk over three periods. An individual takes out a loan which is automatically invested into a risky project and generates a per-period income of $y_t = 2R$ with probability $1 - \theta$, and $y_t = 0$ with probability $\theta = 0.25$. The loan requires a repayment R in periods $t = 1, 2, 3$, where the total repayment of $3R$ covers both loan principal and interest. In the experiment, each R is represented by one income token and the shock is framed as a thief who steals the entire income of a given period. Each period, the individual makes a choice between two actions: make the required repayment R (and consume her remaining income R), or consume her entire income $2R$. The individual cannot save. When $y_t = 0$, neither repayment nor consumption is possible. A loan is considered to be in default after the first non-repayment, whether due to choice or bad luck, for the rest of the game. Repayment in all periods yields a 'continuation value' V, a future benefit that reflects dynamic incentives, such as the utility from access to future loans or improved loan conditions (Giné et al. 2012).

Payoffs In the experiment, V is a payment of 100 pesos, paid in cash 1 month after the experimental sessions. All experimental income allotted to consumption (income not spent on repayment nor lost to a shock) can be spent right after the session on a vast selection of consumption items. In the spirit of Jackson and Yariv (2014) and the shrinking pies in bargaining experiments (see Roth 1995), we induce discounting across periods by reducing the consumption value of income tokens: One token R is worth 40, 30, and 20 pesos in period 1, 2, and 3, respectively, implying that future repayments are discounted. The total value of receiving one R in each of the three periods is 90 pesos.[10]

Strategic Considerations We consider two main strategies to be important in *IL*: first, choosing to repay when not encountering shocks (*RRR*) and second, defaulting on all three installments (*DDD*). In the presence of income shocks, the expected payout from always repaying (and receiving V if no shocks arrive) is 122 pesos (see Appendix D for an overview of expected payouts). The expected payout from *DDD* is 135 pesos. A payoff-maximizing and risk-neutral individual should therefore choose to default.[11] A person who places value on being a good borrower (we discuss reasons for this below), might sacrifice some expected payoff and choose *RRR*. Our payoff calibration is not intended to exactly match default rates observed in the field (see Section 2.3). Instead, it provides a theoretical benchmark of no repayment, and thus allows us to discriminate between payoff-maximizers and participants who are motivated by additional factors.

Elicitation of Choices Throughout the experiment, we use the strategy method to elicit decisions for different realizations of income shocks. In *IL*, we ask participants for their repayment choice in each period if no shock arrives in the given period, that is, whether they would like to repay R and consume R, or not repay and consume their entire income $2R$.[12] We omit the repayment question for the case that a shock arrives, as participants have no choice to make in this case (this changes in the flexibility treatments). Further, we ask for the repayment choice if a shock arrived in the previous period, that is, repayment after a loan is in default. Shocks are only realized at the end of the session, which implies that there is no feedback between periods or treatments (see Section 2.2 and Figure A2 for procedures).

2.1.2 | Individual Liability and Flexibility (IL-Flex)

Setup We design flexibility as the option to defer a repayment installment to the next period. This option is framed as a pass token that sets the repayment obligation for the current period to zero, but requires a double repayment in the subsequent period. By using the pass token when an income shock arrives, borrowers can avoid defaulting on the current installment, that is, they can self-insure. Each borrower receives one pass token, which can be used either in period 1, in period 2, or not at all (see Figure 1). Flexibility cannot be used in period 3, which serves as a catch-up period for repayments from period 2. Failure to make a double repayment results in default, as do shocks once the pass token has been used. We assume that it is not possible (or not cost-effective) for the lender to observe shocks, which means borrowers can use flexibility independent of shock arrival.

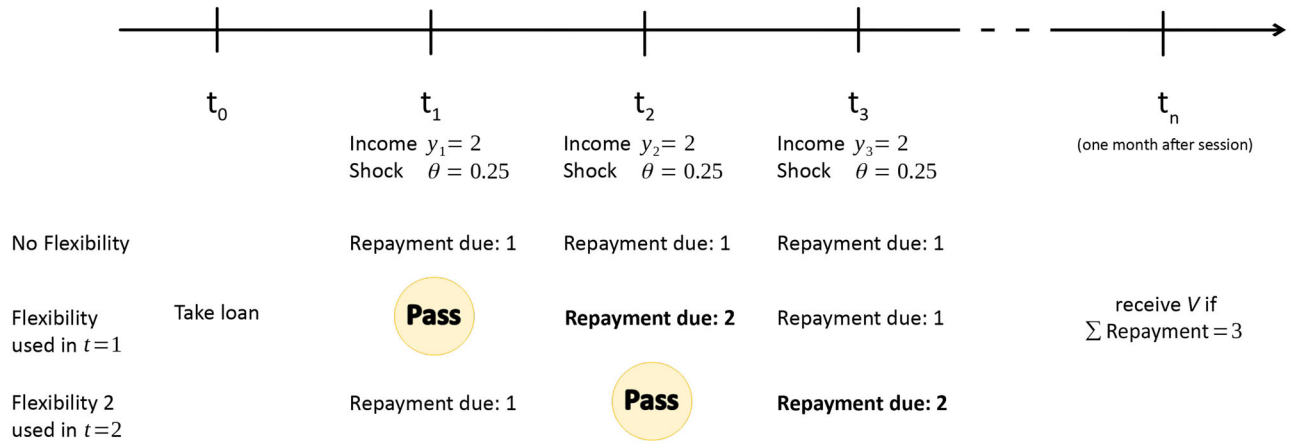

FIGURE 1 | Experimental design (*IL* and *IL-flex*).

Since flexibility is intended as a shock-coping mechanism, we label the use of flexibility to increase consumption as 'misuse' for the analysis. Experimental instructions were neutral and non-judgmental.

Strategic Considerations Rather than reserving flexibility use for the self-insurance of idiosyncratic shocks, the borrower may choose to misuse flexibility to increase early consumption by delaying repayment until the next period. It is tempting to do so: Immediate consumption increases by R, while the future loss is $\delta(1-\theta)R$, where δ captures the experimentally induced reduction of R's purchasing power over time.[13] This creates a trade-off in period 1: Using the pass token in period 1 means that it cannot be used to insure shocks in period 2. The probability of a shock-induced default increases from θ (period 3 shock) to $\theta+(1-\theta)\theta$ (shock in periods 2 or 3). The trade-off between early consumption and default risk is reflected in the expected payouts (Table D1): Misuse in period 1 becomes more attractive as the (delayed) continuation value V is more heavily discounted. There is no trade-off to flexibility use in period 2. Irrespective of the timing of flexibility use, the risk of default due to shocks is lower in *IL-flex* than in *IL*, as shocks are always insurable in period 1. As a result of this insurance provision, as well as the reduced effective interest rate from delayed payments, the overall monetary incentive to repay the loan is increased in *IL-flex* relative to *IL* (Table D1).

Elicitation of Choices The pass token enlarges the action space, so we elicit more choices in *IL-flex*. Borrowers state their repayment choices and use of flexibility conditional on the arrival of income shocks. Figure A2 illustrates shock conditions and choices for each period.

2.1.3 | Joint Liability (JL)

Setup We model joint liability as a two-person borrowing group that is jointly responsible for repaying $2R$ in each period. Borrowers choose individually and simultaneously whether to repay or not. To keep the game simple, and in line with customary microfinance practices, joint liability is enforced automatically: If a borrower chooses to repay in a given period, but her partner does not, she automatically repays for her partner as well, that is, mutual insurance is invoked.[14] The bank does not distinguish between the source of repayment: As long as $2R$ is repaid in each period, both borrowers will receive V. We then measure peer pressure via the possibility to send punishment points (framed as 'dislike' tokens) to one's partner. Participants can choose between allocating zero, one or two punishment points conditional on the action of their partner. Each point costs the sender five pesos of her 70 pesos show-up fee, and reduces the receiver's show-up fee by 15 pesos. Importantly, participants make all repayment and punishment decisions without feedback. They learn both shock realizations and their partner's choices at the end of the session (we outline procedures in Section 2.2).

Strategic Considerations As in *IL*, the two main strategies in *JL* are *RRR* and *DDD*. While free-riding in only one or two periods is possible, our setup does not allow borrowers to condition own repayment choices on partner's choices. Given simultaneous repayment choices and no feedback, the key difference to *IL* is in payoffs: A decision to repay in a given period costs either one or two income tokens, depending on the unknown repayment choice of an anonymous partner in the session. The repayment decision can thus be understood as a signal of repayment capacity, in which case the borrower is held liable for her partner's repayment. Choosing to repay might result in no consumption in that period in case the partner does not repay. All punishment choices are incredible threats as partners only learn whether they were punished after making their own repayment decisions.

Elicitation of Choices For repayments, the elicitation of choices proceeds as in *IL*, that is, borrowers decide to repay each period, contingent (only) on the realization of income shocks. In contrast to repayment choices, punishment choices are conditional on *both* the arrival of shocks and the partner's behavior: We elicit punishment in case the partner (1) repays, (2) does not repay and faces no shock, and (3) does not repay and faces a shock (see upper panel of Figure F3). In addition to these incentivized measures for repayment and punishment, we ask for (non-incentivized) beliefs of the partner's repayment and punishment choices.

2.1.4 | Joint Liability and Flexibility (JL-Flex)

Setup We examine the interaction of joint liability and flexibility in a two-person borrowing group, where both partners have one pass token and can defer one repayment installment to the next period (see Figure F2). The same rules apply as in *JL* and *IL-flex*.

Strategic Considerations Borrowers can now choose between self-insurance and mutual insurance when a shock arrives. Mutual insurance may be associated with peer punishment, even when the borrower is mechanically unable to repay (Czura 2015b). If peers punish when they have to repay for their partner, self-insurance through repayment flexibility may avoid punishment, but comes at the cost of making a double repayment in the next period. By design, mutual insurance and self-insurance through flexibility crowd each other out: In a period when a borrower uses the pass token, her repayment obligation is reduced to zero. She cannot simultaneously insure her partner's repayment (for instance, because this would reveal to the lender that she does not have a shock). In the next period, the borrower needs her full income for her own double repayment, which again leaves no scope for insuring her partner. If she faces a shock when the double repayment is due, her partner cannot insure her, since the group repayment obligation $3R$ exceeds the group income $2R$.

Elicitation of Choices The elicitation of repayment choices proceeds as in *IL-flex* (see Figure F2). As in the *JL* treatment, incentivized punishment decisions are elicited for each single-period action of the partner (which now include flexibility use and its repayment), and conditional on the arrival of shocks (see Figure F3). In addition, we ask for (non-incentivized) beliefs about the partner's use of flexibility.

2.2 | Procedures

2.2.1 | Experimental Variation

We use a mixture of a within- and between-subject design, illustrated in Figure A1. We first randomize the liability structure at the session level within pairs of geographically closeby centers. Within a given session, we ask each participant to make decisions (i) absent flexible repayment and (ii) with flexible repayments: 17 IL-Sessions run *IL* and *IL-flex* treatments, while 16 JL-Sessions run *IL*, *JL* and *JL-flex* treatments. While *IL* is run in both session types to facilitate comparisons, time constraints made it impractical to run all four treatments in the same session. For similar reasons and to facilitate comprehension, we do not vary the order of treatments, but allow them to naturally build upon each other. Appendix Cdiscusses the consistency of our findings with the presence of order effects between the treatments.

2.2.2 | Realization of Payments

At the end of the session, we randomly select one of the treatments to be paid out. Participants realize the shocks for each period by drawing chips from a black bag, which contains one shock chip and three non-shock chips (capturing $\theta = 0.25$). In *JL* treatments, we then match participants randomly and anonymously with a partner from the same session to calculate payoffs. Punishment is implemented for one randomly selected period, based on repayment choices and the shock realization. Average earnings amounted to 202 pesos (roughly four euros), which equals approximately a daily wage for our sample population. There were three types of payments: First, the show-up fee of 70 pesos was paid in cash at the end of the session. It was reduced by any punishment activity (five [ten] pesos for sending one [two] punishment tokens and 15 pesos for each punishment token received; so a maximum of 40 pesos could be deducted). Second, the continuation value V was paid as 100 pesos in cash, handed out by a research assistant in the borrowing center 1 month after the session.[15] Third, the income tokens earned in the microcredit game could be traded for items from a consumption table (see Figure G1), containing a variety of products such as sweets, food staples, household items and beauty products, offered at typical market prices. All consumption was paid out in kind, which captures the temptation of immediate consumption and prevents the use of experimental payouts for non-consumption purposes, such as loan repayment.

2.2.3 | Session Organization

Sessions lasted about 3h on average and had around 20 participants. After registration, participants completed a short survey covering incentivized measures of risk and time preferences over money, as well as questions regarding their borrowing group. All activities are listed in Figure A2. The general setup of the microfinance repayment game was explained extensively using flip chart graphics, test questions, and three practice rounds. Practice rounds included immediate shock realizations to allow for experimentation with different actions and immediate feedback. If more than five participants failed one of the test questions, the explanations were repeated. Experimental choices were noted in private by local research assistants using paper and pen.

2.3 | Discussion of Design Choices

To focus on the interaction of repayment flexibility and joint liability, as well as on repayment choices of individual borrowers, the experimental design entails several simplifications that merit discussion.

2.3.1 | Rigidity of Repayment Schedule

Our baseline repayment schedule is rigid in that it does not allow for incomplete or late repayments. The severity of the shock excludes partial repayment within a period, and savings constraints prevent borrowers from making repayments using past income.[16] The dynamic incentive V is lost as soon as one installment is missed. These simplifying assumptions lead to a binary and stylized classification of default, and default rates which are higher than those observed in the field. Yet, there is a direct correspondence with real-life borrowing settings: Our default measure captures any form of delinquency that is punished by the lender by withholding future benefits to the borrower. Delinquencies are important for the lender: First, it is costly for the lender to chase after delinquent borrowers (Aleem 1990). Second, they indicate the quality of the loan portfolio.

Measures of delinquency, including the portfolio-at-risk, guide decisions on loan restructuring and loan loss allowances. Last, they also directly affect the lender's profitability, since the loan portfolio is revolving more slowly (Rosenberg 1999; Athreya et al. 2018). As a result, lenders frequently condition dynamic repayment incentives on reliable on-time repayment, rather than simply on non-default. Our lender, for example, offers larger loan sizes and improved conditions as well as different loan types only to borrowers who always repay their weekly installments. Delinquent borrowers forego these dynamic repayment incentives, even if they end up completely repaying their loan. In our experiment, V captures such dynamic repayment incentives.

2.3.2 | Implementation of *JL*

In order to study the effects of the liability structure while keeping the setup simple and comparable across *IL* and *JL* treatments, we take the following measures: We have two-person borrowing groups, repayment choices are taken simultaneously such that they cannot be conditioned on the partner's choices, and joint liability is automatically enforced. These design choices are commonly used simplifications in microfinance lab experiments (Abbink et al. 2006; Cassar et al. 2007; Giné et al. 2010; Cason et al. 2012). First, the reduction of the usual 5- to 2-person groups makes strategic considerations regarding partner's choices easier. Compared to individual liability, a 2-person group retains the behavioral aspects of joint liability, for which group size (2, 4, or 8) matters only weakly (Abbink et al. 2006).[17] Second, not allowing for communication or feedback on partner's choices allows us to focus on the effect of liability. Third, automatic enforcement of joint liability reduces the decision space, which is important to focus on repayment choices and ex-post moral hazard. Moreover, it is a realistic representation of how microfinance institutions put joint liability into practice. For example, our partner organization instructs the loan officer to prolong the weekly group meeting until all repayments are made.

We allow for peer punishment in *JL* but not in *IL* treatments. Our peer punishment is specific to borrowers who are jointly liable for each other, and thus cannot be directly applied to individual-liability contracts.[18] We do not separate joint liability from peer pressure, as joint-liability lending is fundamentally based on social capital (Stiglitz 1990; Besley and Coate 1995; Ghatak and Guinnane 1999; Karlan 2007). Finally, we restrict punishment to one random period. It would have been more realistic to condition punishments on past repayment history, or to allow punishments every period. However, the dimensionality of this would have been prohibitive in our experimental setting. Our single-period punishments can be used to calculate the expected level of punishment for any three-period strategy, see Appendix E.

2.3.3 | Implementation of Flexibility

Our design focuses on the consumption versus insurance trade-off from giving borrowers the ability to ad-hoc postpone repayments. Three periods and one pass token are the minimum required to do this. The assumption that shocks in period 3 are not insurable scales the expected benefit of repayment by $(1-\theta)$. Since this holds across treatments, it does not affect the game dynamics. We do not attach a price to the use of flexibility to avoid a confound from an increased repayment burden (as in Karlan and Zinman 2009). Our estimate of the effect of flexibility on ex-post moral hazard is thus a conservative lower bound.

With joint liability, repayment flexibility provides borrowers with an alternative mechanism to insure their repayment against income shocks. For covariate shocks, flexibility provides a superior shock-coping mechanism relative to mutual insurance. For individual shocks, flexibility can help as well. However, using flexibility in these cases may partially crowd out the capacity to provide mutual insurance in real lending groups: In the presence of savings constraints, allowing borrowers to bunch repayment installments together puts added pressure on the current period's income, which decreases their capacity to insure others.[19] Our design is stylized and highlights this trade-off.

2.4 | Study Setting and Sample Recruitment

We conducted experimental sessions in 33 borrowing centers of the microfinance institution Ahon Sa Hirap (ASHI), across three provinces of the Philippines: Rizal, Laguna, and Antique. All clients are organized in groups of five borrowers. Each group is part of a borrowing center, consisting of two to eight groups, in which weekly repayment meetings take place. Of the 33 centers, 27 centers (covering 82% of our participants) offer joint-liability loans for general business activities. Joint liability is enforced both within the borrowing groups, and between groups on the center level. The remaining six centers—all in the more rural Antique province—offer loans with individual liability for agricultural production. Despite this variation, all clients attend weekly group repayment meetings in their center. Regular joint-liability loans are repaid over 25, 50 or 100 weeks. Individual-liability agricultural clients service only interest payments on a weekly basis, and repay the principal at harvest time (up to 6 months after loan disbursal, depending on the crop cycle). Loan sizes range from 2000 to 100,000 pesos, and average 14,350 pesos (281 EUR) for the most recent loan.[20] The typical annual interest rate is 24% flat, equivalent to 46% on a declining balance.

Importantly for the interpretation of our results, the lender takes various measures to instill a strong culture of good borrowing: In both individual- and joint-liability centers, borrowers and loan officers jointly recite a pledge at every weekly meeting (similar to the Grameen pledge quoted at the start of this paper), in which they promise to faithfully make their repayment installments and take responsibility for one another. In addition to the weekly meetings, social activities are organized at the center level to build solidarity between borrowers.

We identified borrowing centers with at least 20 borrowers and a center meeting hall with seating. From each center's exhaustive member list, we randomly invited 20 members to participate in a session (one session per center); five members were invited as backup. Invitation letters were handed out 1 week in advance

TABLE 1 | Borrower characteristics (administrative data).

	Means			Difference
	Total	IL-session	JL-session	IL vs. JL
Variable	(1)	(2)	(3)	(4)
Female	0.931	0.954	0.907	−0.046
	(0.254)	(0.210)	(0.290)	(0.483)
Age	46.546	46.606	46.483	−0.122
	(11.745)	(12.180)	(11.299)	(0.944)
Probability of living below NPL	45.218	47.213	43.142	−4.071
	(31.591)	(32.666)	(30.353)	(0.500)
Electricity	0.802	0.783	0.821	0.038
	(0.399)	(0.413)	(0.384)	(0.659)
Water	0.230	0.181	0.278	0.097
	(0.421)	(0.386)	(0.449)	(0.321)
Landline	0.022	0.028	0.016	−0.012
	(0.147)	(0.166)	(0.125)	(0.512)
Education of female head: at least secondary graduate	0.506	0.473	0.541	0.067
	(0.500)	(0.500)	(0.499)	(0.362)
Loan Amount in ₱ 1000	14.350	13.765	14.963	1.198
	(11.087)	(10.156)	(11.974)	(0.438)
Main income: Enterprise	0.466	0.463	0.469	0.007
	(0.499)	(0.500)	(0.500)	(0.955)
Main income: Farming	0.261	0.242	0.278	0.035
	(0.439)	(0.429)	(0.449)	(0.806)
Iron roof	0.754	0.715	0.794	0.079
	(0.431)	(0.452)	(0.405)	(0.363)
AGAP Center Dummy	0.179	0.174	0.184	0.010
	(0.383)	(0.380)	(0.388)	(0.942)
New member	0.239	0.263	0.213	−0.049
	(0.427)	(0.441)	(0.411)	(0.671)
F-Test for joint significance (*p*-value)				0.437
Observations	577	305	272	577

Note: The table presents means and standard deviations (in parentheses) for administrative variables. Column (2) shows data for participants in IL-Sessions (who play *IL* and *IL-Flex*). Column (3) shows data for participants in JL-Sessions (who play *IL* as a benchmark, then *JL* and *JL*-Flex). See Section 2.2 for details on procedures. Column (4) reports differences and p-values in parentheses from regressions with standard errors clustered at the session level. NPL refers to the national poverty line. New member indicates membership duration of less than one year. All variables except age, probability of living below NPL, and loan amount are binary. *** p <0.01, ** p <0.05, * p <0.1.

during the center meeting. Sessions took place in the center meeting hall on different days than the weekly meetings. Participation was voluntary, and participants were assured that their choices in the experiment would not be revealed to the lender.

In total, 645 participants took part in 33 sessions in spring 2016. Our main analysis sample consists of 577 participants: three participants left after the intake survey, 37 could not be analyzed due to enumerator errors in recording answers, and 28 did not pass our comprehension test.[21] Table 1 presents background characteristics of our participants, and shows that session type (IL vs. JL) is balanced on observables. Our sample is predominantly female, and on average 47 years old. Around half have completed secondary school. The main sources of household income are own non-farm businesses (47%) and farming (26%). Forty-five percent of our sample households live below the national poverty line (national average: 21%), as measured by the PPI index. Eighty percent are connected to the electricity grid, 23% to piped water, and 2% to the landline telephone grid. Three-quarters live in a house with an iron roof (as opposed to a palm roof).

3 | Empirical Strategy

A key advantage of our lab-in-the-field experiment is that we can observe repayment choices separately from realized outcomes. Given our interest in ex-post moral hazard, our analysis focuses on individual choices in response to contract design features. In particular, we examine choice data regarding loan repayment, the use of flexibility, and peer punishment.

3.1 | Overall Loan Repayment

We identify ex-post moral hazard as the fraction of participants who fail to repay their loan absent income shocks, that is, despite being fully capable of repaying. To do so, we follow individuals' repayment choices along the *no-shock path*: In each period, participants choose to repay or not, conditional on not suffering a shock in the current period but without knowing whether shocks will arrive in the future. The no-shock path refers to the paths of the game tree where shocks are possible ex-ante, but do not arrive ex-post. This is a useful concept for analysis purposes: The borrower can repay in all periods, and any failure to do so must be the result of moral hazard.[22] Our main outcome of interest is a binary variable for full repayment—meaning the individual either repays every period, or uses flexibility and then repays.[23] To make treatments comparable, we apply this variable definition to choices in both individual- and joint-liability conditions, and abstract from group repayment outcomes. We estimate the effect of flexibility on repayment using the linear probability model

$$Repay_{its} = \alpha + \beta_F flexible_t + \lambda_s + \epsilon_{its} \quad (1)$$

where $Repay_{its}$ indicates full repayment of individual i in treatment t in session s, and the binary variable $flexible_t$ switches on for treatments with flexible repayment conditions (*IL-flex* or *JL-flex*). Repayment regressions use within-individual variation in flexibility, and are run separately by session type: We estimate the effect of flexibility on repayment in IL-Sessions by comparing choices in treatments $t = \{IL, IL\text{-}flex\}$ and in JL-Sessions by comparing $t = \{JL, JL\text{-}flex\}$. The coefficient β_F thus estimates the effect of flexible repayment for a given liability structure. We include session fixed effects λ_s and cluster errors ϵ_{its} at the level of the individual. We additionally estimate the effect of joint liability on repayment by running

$$Repay_{its} = \alpha + \beta_L joint_t + \epsilon_{its} \quad (2)$$

for treatments $t = \{IL, JL\}$. The indicator $joint_t$ is equal to one if treatment $t = JL$ and zero otherwise, other variables are defined as above. For the main result, we pool between-subject variation (*IL* choices in IL-Sessions vs. *JL* choices in JL-Sessions) and within-subject variation (*IL* and *JL* choices in JL-Sessions). We also estimate the effect of liability in the presence of flexibility, comparing *IL-Flex* and *JL-Flex* choices (between-subject). Figure A1 illustrates key comparisons between treatments.

3.2 | Use of Flexibility

We further study the effect of the liability structure on the use of flexibility, that is, the choice to defer payments. The liability structure was randomized by session, leading to a between-subject design that compares the *IL-flex* and *JL-flex* treatments. Two distinctions are necessary: Flexibility can be used in case of shocks or absent shocks, and it can be used earlier (period 1, thus foregoing insurance if used absent shocks) or later (period 2). We index the resulting four scenarios by $c = \{T1\ no\ shock,\ T1\ shock,\ T2\ no\ shock,\ T2\ shock\}$, and create a binary variable $Flexuse^c$ for whether a participant chooses to use flexibility in a given scenario. We use a linear probability model to estimate

$$Flexuse^c_{its} = \alpha + \beta^c_U joint_t + \epsilon^c_{its} \quad (3)$$

where $Flexuse^c_{its}$ indicates flexibility use in scenario c by individual i in treatment t in session s. The binary variable $joint_t$ now switches on for treatment $t = JL\text{-}flex$ (the omitted category is *IL-flex)*, and β_U is the effect of the liability structure on the use of flexibility. Finally, since liability was randomized between sessions, we cluster errors ϵ^c_{its} at the session level, resulting in 33 clusters for Equation (3).[24]

3.3 | Punishment

Our two joint-liability treatments, *JL* and *JL-flex*, allow for peer punishment. We analyze punishment for repayment and flexibility choices, conditional on shock realizations. Since flexible repayment expands the choice set, we compare the non-repayment choice in *JL* to each non-repayment action with flexibility, that is, misuse of flexibity, non-repayment, and non-repayment of flexibility. For each choice pair, we run OLS on

$$Punish_{its} = \alpha + \beta_P flexible_t + \lambda_s + \epsilon_{its} \quad (4)$$

where $Punish_{its}$ denotes the level of punishment by individual i in treatment t in session s. For a given choice of the partner, the level of punishment is the number of punishment tokens chosen (0, 1, or 2). We express punishment as a proportion [0, 1] of the maximum possible punishment to facilitate later comparisons with our norm elicitation study. The treatment variable $flexible_t$ is an indicator for treatment $t = JL\text{-}flex$ (the omitted category is *JL*), and β_P is the effect of flexible repayment on punishment for a given choice combination. As in previous specifications using within-individual variation in flexibility, we include session fixed effects λ_s and cluster errors ϵ_{its} at the level of the individual.

4 | Results

The next two sections present our key results on the cost and benefits of flexible repayment. Regarding ex-post moral hazard, we find no difference in repayment rates across liability structures, but higher strategic default with flexibility. Regarding social pressure, we document high levels of peer punishment which are reduced when introducing flexibility. We show that these results are consistent with the presence of social norms, and provide supporting evidence in Section 5.

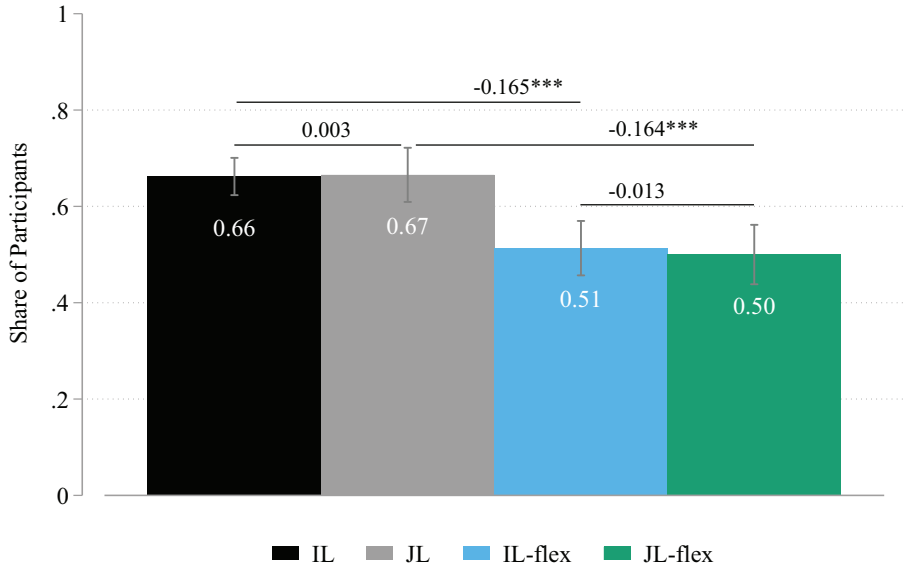

FIGURE 2 | Individual full repayment.

Notes: Binary indicator for full repayment. Coefficients from OLS regressions and standard errors clustered at the individual level (shown in Table A1). ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.

4.1 | Overall Loan Repayment

Overall, repayment rates are high: In all treatments, more than 50% of participants repay, despite the fact that repayment was designed to be monetarily unprofitable (see Section 2.1). As Figure 2 shows, flexibility has a substantial impact on repayment behavior: *IL-flex* reduces repayment by 16.5 percentage points relative to *IL*. Equivalently, strategic default increases by 46%. Numbers are similar with joint liability: Looking at individual choice data, *JL-flex* reduces repayment by 16.4 percentage points relative to *JL*, equivalent to a 58% increase in strategic default on the overall loan (when evaluated at the individual level).

We find no significant differences across liability structures, neither with nor without flexibility. In *IL* and *JL*, 66.2% and 66.5% of participants fully repay their loan, whereas in *IL-flex* and *JL-flex*, 51.3% and 50.0% do so.[25] The group features in the joint liability setting—mutual insurance and peer punishment—do not appear to influence individual repayment choices on average.[26] We summarize these findings in Result 1.

Result 1. Repayment rates are high relative to monetary incentives, and do not differ across liability structure. Flexibility increases strategic default by 16 percentage points (50%).

4.2 | Use of Flexibility

Each participant has one pass token, which allows her to postpone a repayment either in period 1, in period 2, or not at all. Borrowers can use this flexibility to insure their repayment capacity against an income shock (henceforth 'self-insure using flexibility'), but they can also misuse it to increase early consumption absent shocks. We focus on flexibility use in period 1, when the trade-off between early consumption and insurance is most pronounced. We observe near-universal use of flexibility in case a shock hits, with no difference between the *IL-flex* and *JL-flex* treatments (left panel of Figure 3). This indicates that participants understand the insurance value of flexibility. For participants in *JL-flex*, we additionally infer that self-insurance against income shocks is widely preferred to mutual insurance by their borrowing peer. This is notable insofar as self-insurance through flexibility requires a double repayment in the next period, while mutual insurance does not.

We also observe substantial use of flexibility absent shocks: 55% of participants in *IL-flex* and 29% of participants in *JL-flex* misuse flexibility when no shocks arrive in period 1 (right panel of Figure 3). The lower rate of misuse in *JL-flex* is consistent with increased costs: Flexibility use eliminates mutual insurance possibilities in the current and the next period.[27]

Result 2. Flexibility is used to insure income shocks. However, there is substantial misuse of flexibility to increase early consumption, especially in individual-liability contracts.

4.3 | Peer Punishment

We observe punishment choices for each action the partner can take (see Figure F3). To simplify the illustration, we focus on punishment for single-period actions. Borrowers ultimately face the expected punishment across their three-period strategy, weighted by the risk of shocks. However, all main insights from single-period punishments are confirmed when considering the expected punishment for entire strategies. We present results on expected punishments in Appendix E.

To facilitate later comparisons with our norm elicitation, we report punishment levels in shares of the maximum possible punishment (two tokens). Punishment is widely used. Figure 4 shows that non-repayment absent shocks is punished with 61%

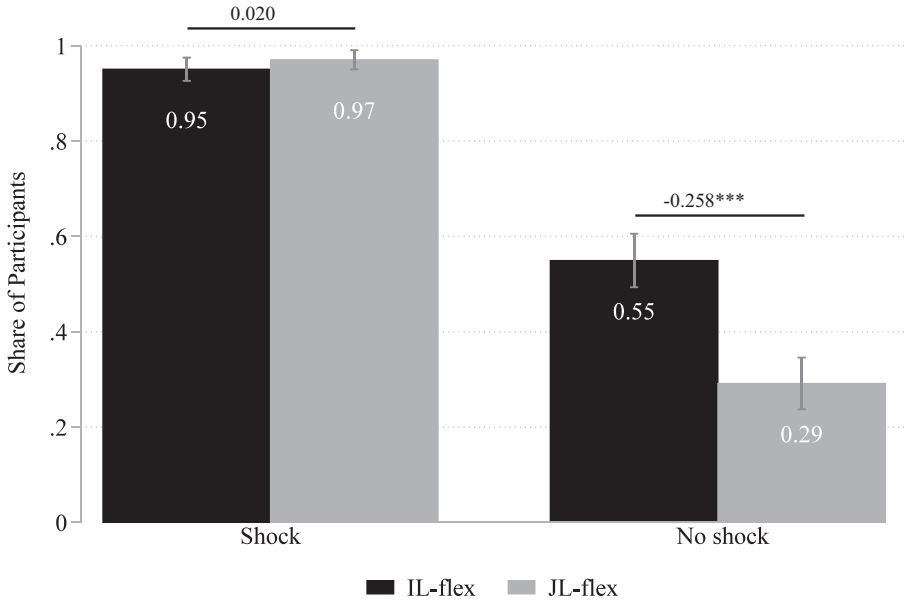

FIGURE 3 | Use of flexibility.

Notes: Share of participants who use flexibility in period 1. Coefficients from OLS regressions comparing the use of flexibility in the respective scenario, with *IL-flex* as the reference category and standard errors clustered at session level (shown in Table A2). ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

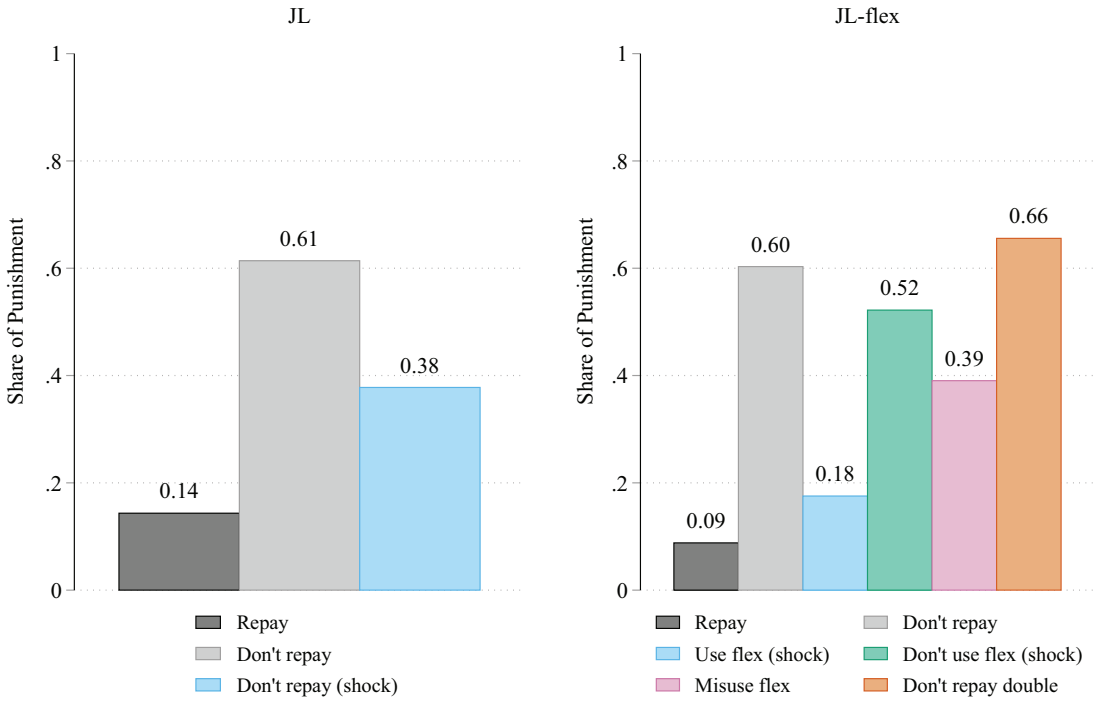

FIGURE 4 | Level of punishment (single-period actions).

Notes: Level of punishment: share of punishment tokens relative to the maximum possible punishment (two tokens). Incidence of punishment shown in Figure A3. Punishment choices are conditional on partner's action and shock arrival as indicated.

(60%) in *JL* (*JL-flex*). In *JL*, we also find high levels of punishment (38%) when the partner cannot repay due to a shock. Since shocks are fully observable and make it impossible to repay, this result underscores recent concerns about excessive or anti-social peer pressure in microfinance (we discuss this further in Section 5.1). Surprisingly, even repayment actions receive non-zero punishment levels (14% and 9%, respectively), potentially to uphold a general sense of pressure.

Flexibility gives rise to additional actions. When hit by a shock, participants can either self-insure by using their pass token, or rely on their partner to repay. Punishment for these two cases is shown in the middle two bars of the right panel in Figure 4. Using flexibility reduces the level of punishment by 20 percentage points, corresponding to a 53% decrease relative to punishment for a shock in *JL*.[28] In contrast, relying on one's partner to insure shocks increases the level of punishment by 14 percentage points (37%) as compared to punishment for a shock in *JL*.[29] This behavior indicates that self-insurance through flexibility is clearly preferred over relying on the partner to repay.

Absent shocks, flexibility provides a way to reduce the punishment for defaulting on one's loan: Figure 4 (right panel) reveals that misuse of flexibility is punished less (39%) than simply defaulting on an installment (60%), despite the fact that no repayment occurs in either case. This is not compensated by a significantly higher punishment for defaulting on the subsequent double installment (66%). Columns 4 and 8 of Table A3, Panel A, confirm that neither the level nor the incidence of punishment increase significantly when comparing single- to double-installment default.[30]

Result 3. Flexibility reduces the punishment for missing installments due to shocks (excessive punishment) by half, and thus the punishment of borrowers who repay their loan and use flexibility responsibly. However, flexibility also reduces the expected punishment for strategic default.

4.4 | Discussion of Results

We presented several key repayment results. First, we find that repayment rates are high relative to monetary incentives, and do not differ across liability structures. Second, repayment decreases with flexibility, again independent of the liability structure.

The high share of borrowers choosing to repay in all three periods in our lab-in-the-field experiment is consistent with the near-complete repayment rates that the partner institution reports for its borrowers: In the years 2014 to 2018, the repayment rate was consistently around 96%. A qualification is warranted that loans are not considered in default and written off until several years after maturity, and that delinquencies were substantially more common. Using administrative data from the lender, there is a weak positive correlation of real-life behavior as captured by different borrower quality measures and behavior in our experiment (see Table A5).

Our finding that flexibility lowers repayment is in line with Field et al. (2013), who find higher defaults with a grace period, and Brune et al. (2025), who document larger defaults with repayment skips. It stands in contrast to Barboni and Agarwal (Forthcoming) and Battaglia et al. (2023), who find lower defaults with temporary repayment waivers made available to selected clients with a good repayment record. All four studies include endogenous project selection (ex-ante moral hazard), and defaults that may be driven by shocks.[31] We abstract from these and show that *strategic* defaults increase with flexibility. The estimated effect size is large, but in line with other microfinance experiments. For example, Giné et al. (2010) find treatment effects of around 30% on loan repayment with variations in dynamic incentives, monitoring, and partner choice.

Our finding that the liability structure does not affect repayment is in line with Giné and Karlan (2014) and Attanasio et al. (2015), who find similar repayment rates in individual- and joint liability contracts in randomized field experiments. Taken together, these results suggest that the liability structure per se (including the threat of punishment from jointly liable peers) does not meaningfully drive repayment behavior.

If punishment from borrowing peers is ineffective, then why do people punish? We observe high levels of punishment for missing installments due to (fully observable) shocks. Flexibility halves this punishment for borrowers who use flexibility to self-insure their loan repayment, but it also reduces punishment for strategic default. It is difficult to rationalize the observed levels of punishment with expected payoff maximization. Punishment is costly, and not credible in the sense that punishment decisions are revealed only after repayment choices have been made (see Section 2.1). However, non-credible punishment is frequently observed in the literature (Fehr and Gächter 2000, 2002; Masclet et al. 2003; Henrich et al. 2006, 2010). There is broad consensus that peer punishment depends on intentions for non-cooperation (Charness and Levine 2007; Rand et al. 2015; Battigalli et al. 2019; Akerlof 2016). Peers' inferences about intentions or types may explain the punishment we observe for default or flexibility misuse, but it does not explain why peers punish for shock-induced non-repayment (see also Czura 2015b). Alternatively, Aina et al. (2020) highlight that unfulfilled expectations about material outcomes may cause frustration, leading to punishment that is based on outcomes rather than intentions. This may explain why peers punish when they have to repay for their partner, but it would predict the same level of punishment for all types of non-repayment, irrespective of shock arrival. Explaining the punishment patterns we observe with existing theories would thus require a mixture of intention-based and outcome-based frustration. An explanation based on anger and frustration is made even less likely by our use of the strategy method, which is generally understood to produce a lower bound for emotionally motivated outcomes (Aina et al. 2020; Brandts and Charness 2011).

We propose an alternative explanation in the following section: Our punishment patterns may reflect the existing social norms. Disciplining peers may be part of the norm (see pledge in Grameen Foundation 2010). Alternatively, punishment may be driven by resentment of actions that violate norms (Kimbrough and Vostroknutov 2023b, 2023a), or for signaling own norm conformism (Khalmetski and Ockenfels 2024). In any of these cases, peer punishment will mirror participants' attitudes regarding socially desirable repayment behavior, even when it has no deterrent effect. If flexibility increases the uncertainty about socially desirable behavior, social norms can explain both lower punishments and lower repayment rates.

5 | Evidence for Social Norms

In this section, we present several pieces of evidence to support social norms as a consistent explanation of our repayment

and punishment results, assuming that participants apply their existing borrowing norms in the lab. In doing so, we follow research showing that lab behavior captures real-life norms (e.g., Kimbrough and Vostroknutov 2016; Huang and Low 2017), especially with framed instructions (e.g., Chang et al.2019). We start with a brief general discussion of social norms in microfinance in Section 5.1. Section 5.2 proceeds with a simple theoretical framework of loan repayment in the presence of an exogenous social norm. We derive theoretical predictions, and use these in Section 5.3 to re-examine our empirical findings. Section 5.4 reports the results from an incentivized norm elicitation following the methodology of Krupka and Weber (2013).

5.1 | Social Norms and Microfinance

We hypothesize that lender-induced social norms may be an important missing puzzle piece in understanding the existing evidence on microfinance repayment. Many microfinance institutions, including our partner organization, put great emphasis on shaping the picture of what constitutes a good borrower.[32] A prominent illustration is that borrowers recite a pledge at the beginning of every meeting to pay all weekly installments, support each other, and help to maintain discipline within the group (Grameen Foundation 2010; also see the weekly joint oath discussed in Breza 2014). As in the Grameen pledge quoted at the beginning of this paper, this is true even when explicit joint liability has been abandoned in favor of individual liability contracts. Existing evidence linking borrower's repayment choices to social norms is largely qualitative.[33] Further suggestive evidence comes from substantial default and delinquency rates in mobile lending, which lacks the personal interactions that may be required to instill social norms (Kaffenberger et al. 2018; Fiorin et al. 2023).

The existence of social norms may reconcile several puzzles observed in microfinance research. First, empirical studies find no repayment differences between individual liability and joint liability (Giné and Karlan 2014; Attanasio et al. 2015), and speculate that social image concerns are sufficient to maintain the consistently high observed repayment rates.[34] Social image concerns may directly emerge from norms for good borrower behavior. Second, the reputation of microfinance group lending has long been tarnished with reports of excessive pressure and monitoring (Montgomery 1996; Rahman 1999; Karim 2008), culminating in the borrower suicides which led to the 2010 Andhra Pradesh microfinance crisis (studied, e.g., in Breza and Kinnan 2021). Czura (2015b) quantifies peer punishment in a lab-in-the-field experiment with microcredit borrowers in rural India. She confirms that borrowers punish excessively relative to both game-theoretical and fairness-related benchmarks, and speculates that borrowers have internalized the mission indoctrination of the microlender. Lender-induced social norms can explain excessive punishment if disciplining peers is part of the norm, or if punishment is driven by resentment of norm violations. Finally, a social norm that induces borrowers to make each weekly (or monthly) installment may explain why the introduction of repayment flexibility reduces repayment rates. Having discretion on whether to repay at a given moment or not creates uncertainty in the socially prescribed behavior.[35] This may offer borrowers a way to dodge some of the punishment usually associated with strategic default.

5.2 | Theory: Loan Repayment with Social Norms

This section presents a simple model of loan repayment that is consistent with our empirical findings. To illustrate the basic mechanism, we focus on the case of individual liability, and impose an exogenous social norm on repayment. We provide a brief summary here, and full details in Appendix B. Suppose an agent invests a loan into a risky project, which requires a repayment R in periods $t = 1, 2, 3$. The per-period discount rate is δ. Repaying the loan in full yields a continuation value V in $T = n$, which represents dynamic incentives such as access to future loans. The project generates a risky income of $y_t = 2R$ with probability $1 - \theta$, and $y_t = 0$ with probability θ. There are no savings. We introduce a social norm for good borrowing behavior, which prescribes clients to repay when each installment is due. As a consequence, clients suffer a psychological cost κ each time they fail to make a scheduled repayment, including in the case of income shocks.[36] Assume $0 < \kappa < R$. In the benchmark case of rigid repayment, the borrower repays for sufficiently high levels of dynamic incentives, or sufficiently strong social norms.

We introduce flexibility with a pass token, which allows the borrower to postpone a current repayment obligation to the next period. Flexibility induces a trade-off between early consumption and insurance. The social norm compels the borrower to make a repayment when asked, but now she is given discretion whether or not to repay at a given point in time. As a result, the social norm is either weakened or uncertain. The psychological cost for not repaying (while invoking flexibility) becomes $\lambda\kappa$, with $0 < \lambda < 1$ representing alternatively a scale parameter or a probability that the cost κ will be incurred. Since the social norm imposes a penalty for not repaying when asked, we assume that the penalty for defaulting on the subsequent double repayment is still κ.[37]

Several key predictions emerge. (i) Absent social norms, loan repayment is more incentive-compatible with flexibility: The option to insure repayment against income shocks increases the probability that V can be obtained, and thus reduces incentives for strategic default. (ii) As social norms become stronger, repayment increases in both rigid and flexible contracts. The agent increasingly repays to avoid norm penalties, rather than to obtain V. However, this shift in the individuals' repayment objective means that there are relatively more defaults in flexible contracts: The social norm has less bite when agents have discretion. For sufficiently strong social norms $\kappa \geq (1 - (1 - \theta)\delta)R$, strategic default will be higher in flexible contracts. Finally, (iii) those who choose strategic default will use flexibility at first, and then default on its repayment (rather than defaulting straight away).

5.3 | Loan Repayment Paths

We now re-examine our findings in light of the proposed framework with installment-based social norms. The basic mechanisms apply independently of liability structure. Our main result is in line with the predictions in Section 5.2: Repayment is higher under rigid than under flexible repayment conditions. To gain

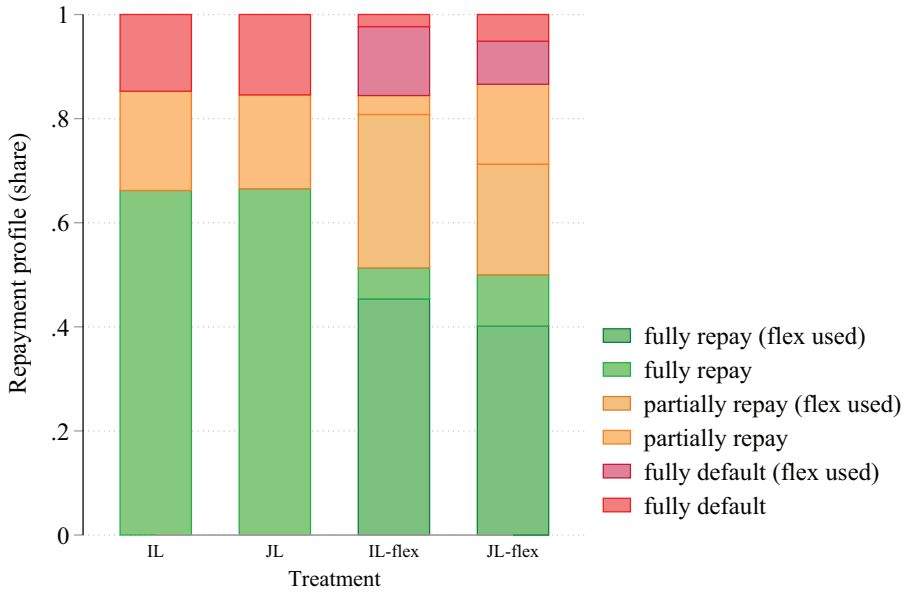

FIGURE 5 | Repayment profiles (no-shock path).

Notes: Fraction of participants who fully repay, partially repay and fully default in each treatment. For the flexibility treatments, the graph additionally indicates for each of the three scenarios whether flexibility has been used.

more detailed insights, we examine repayment profiles on the no-shock path. Figure 5 distinguishes participants based on whether they used flexibility and whether they repaid their loan in full (three tokens), repaid it partially (one or two tokens, considered a default), or fully defaulted (no tokens). Between *IL* and *JL* the distribution of repayment profiles is nearly identical: 66% fully repay all three tokens, 15% fully default on all three installments, and 18%–19% partially repay one or two installments. The lack of differences between *IL* and *JL* is in line with the interpretation that borrowers bring their existing norms into the lab, which influences lab repayment choices in *IL* and *JL* alike. Between *IL-flex* and *JL-flex* the distribution of repayment profiles also looks very similar. In *IL-flex* (*JL-flex*), 51.3% (50.0%) fully repay all three tokens, with 45.4% (40.2%) using flexibility to do so. Finally, 15.6% (13.4%) fully default on all three installments, and 33.1% (36.6%) partially repay one or two installments.

In addition to the main repayment result, our data are consistent with a further model prediction: Using flexibility to postpone repayments before defaulting on them appears to dominate defaulting straight away: Default with flexibility use largely replaces straight default in both *IL-flex* (85% of defaults) and *JL-flex* (62%). The overall share of full default is not affected by flexible repayment conditions. Somewhat more puzzling, we find non-negligible amounts of partial loan repayment in all repayment conditions. Moreover, the drop in overall repayment in the flexibility treatments is exclusively driven by an increase in partial repayments. Partial loan repayments forfeit the dynamic incentives, and are dominated by either full default (if $\kappa < R$) or full repayment (if $\kappa \geq R$).[38]

Why does partial repayment increase with flexibility? Post-session conversations with participants suggest that flexible repayment conditions generated uncertainty in socially appropriate behavior, which gave participants more room for strategic misinterpretation (in line with Bicchieri et al. 2023 and Kuang and Bicchieri 2024). Flexibility effectively excused occasional non-repayment, albeit with strict conditions on making up postponed installments. Consistent with a large literature on motivated beliefs and biased information processing (e.g., Zimmermann 2020), as well as on moral wiggle room (Dana et al. 2007), borrowers may have convinced themselves that the occasional missing of installments is approved by the lender, even beyond correctly used pass tokens.[39] Such borrowers may fully repay under rigid repayment conditions, where social norms define a narrow range of acceptable behaviors and provide no slack for missing installments. Flexible conditions may provide a welcome excuse to move to partial loan repayment, while maintaining the image of a good borrower to both oneself and the lender. Specifically, Bicchieri and Garzino Demo (2025) suggests that less *specific* norms, that is, a larger range of acceptable behaviors, leave more room for self-serving interpretation. Appendix C discusses two alternative explanations—confusion and artificial discounting—which are less consistent with our results.

5.4 | Norm Elicitation Experiment

Based on the discussed empirical support for social norms in our experimental data, we hypothesize that our participants bring these social norms from their real-life borrowing context to our experiment. Qualitative interviews[40] and administrative records[41] provide suggestive evidence that the lender's efforts to instill a culture of good borrowing (see Section 2.4) are successful. To measure the prevailing social norms in microcredit directly, we collected additional data in April 2019 on borrowers of the same lender in eight centers in Laguna province. Appendix H.1 provides details on this sample.

TABLE 2 | Norm results.

Panel A	**Punishment vs. norms**								
	Level of punishment in experiment (0-1) ($N = 272$)	**Norm elicitation inappropriateness (0-1) ($N = 44$)**							
				Percent of respondents					
Action	**Mean**	**Mean**	**SD**	**+++**	**++**	**+**	**−**	**−−**	**− − −**
No flexibility									
Repay	0.14	0.06	0.12	**73**	25	0	2	0	0
Don't repay (shock)	0.38	0.85	0.15	0	0	2	14	**43**	41
Don't repay	0.61	0.86	0.19	0	2	2	14	25	**57**
Flexibility									
Repay	0.09	0.23	0.27	**48**	14	20	11	7	0
Use flex (shock)	0.18	0.47	0.30	5	**39**	11	11	30	5
Misuse flex	0.39	0.69	0.28	5	7	14	14	**39**	23
Don't repay (shock)	0.52	0.77	0.28	7	2	2	18	30	**41**
Don't repay	0.6	0.9	0.16	0	0	5	5	30	**61**
Action in subsequent period									
No flex: Don't repay, second time		0.89	0.21	0	7	0	2	23	**68**
Flex: Don't repay double	0.66	0.9	0.18	0	2	2	5	25	**66**

Panel B	**Norms: Main comparisons**		
Action	Mean	SD	Wilcoxon signed-rank test
Use of flex in case of shock			$p < 0.001$
No flex: Don't repay (shock) vs.	0.85	0.15	
Flex: Use flex (shock)	0.47	0.3	
Don't repay in two consecutive periods (per-period averages)			$p < 0.001$
No flex: Don't repay & Don't repay, second time vs.	0.88	0.17	
Flex: Misuse flex & Don't repay double	0.79	0.20	

Note: The table is ordered according to the severity of actions (measured in terms of punishment or inappropriateness). Punishment refers to choices in the experiment in the *JL* and *JL-flex* treatments. Norm vignettes refer to the repayment choice in week 3 in a 25-week loan cycle, except for 'Action in subsequent period', which refers to week 4. Inappropriateness of a given action is measured on a six-point Likert-scale (+++ indicating very high social appropriateness, - - - very high social inappropriateness), rescaled for comparability to 0-1 with higher numbers indicating higher inappropriateness. For implementation reasons, the inappropriateness rating of 'Don't repay double' conditions on the previous misuse of flexibility, while the corresponding punishment does not condition on why flexibility was used.

We use state-of-the-art experimental methods to elicit existing norms in an incentivized manner. Consistent with Krupka and Weber (2013), we elicit norms in a separate sample drawn from the same borrower population.[42] In eight different borrower centers (eight sessions), a total of 44 clients evaluate different vignettes that closely mirror the scenarios in our experiment. Borrowers rate the social appropriateness of each possible repayment choice. They are incentivized not to reveal their own valuations, but to match those of others. Krupka and Weber (2013) show that norms manifest themselves as the focal point in a matching coordination game. This elicitation procedure works irrespective of whether the norm itself is an outcome of coordination (e.g., Brock and Durlauf 2001), or has a different origin (e.g., the lender).

Vignettes describe the loan repayment behavior of a fictitious client, Maria, in a nearby joint-liability loan center (see Appendix H.3). As in the experiment, vignettes refer to single-period actions under either rigid or flexible repayment conditions, and build in observable income shocks.[43] Participants rated the social appropriateness of each vignette on a six-point Likert-scale from 1 'very socially inappropriate' to 6 'very socially appropriate', using different smileys to illustrate the options. Participants received a bonus payment if their rating of a randomly drawn vignette matched the rating of another randomly drawn participant:[44] A bonus of 50 pesos was paid for an exact match, and 20 pesos for a one-point deviation. All participants received a participation payment of 50 pesos. Analogous to the experiment, the order of the vignettes was kept constant to ease the exposition (first rigid, then flexible repayment conditions), and all participants rated all vignettes.

These data allow us to answer the following questions: (i) Is there a social norm for repayment? (ii) If yes, do norms mirror the punishment patterns we observe in our experiment? (iii) Does

the applicability of these norms become more uncertain in the presence of flexibility? Table 2 sets out the results. On (i), we find strong evidence for the existence of social norms for repayment: 73% of participants rate repayment as 'very appropriate' and 25% as 'mostly appropriate', suggesting a strong focal point in the coordination game. Perhaps more surprisingly, 84% rate non-repayment following a shock as either 'very inappropriate' or 'mostly inappropriate', suggesting that social norms do not excuse non-repayment even when it is unavoidable. On (ii), we find suggestive evidence that the punishment we observe reflects the underlying social norms: The ranking of actions by appropriateness is the same in the norm elicitation as in the punishment choices (see Table 2). Non-repayment due to a shock is rated nearly as inappropriate as strategic default — an even more extreme result than for punishment, potentially due to the fact that punishment was intrinsically costly while appropriateness ratings were incentivized on coordination. A further parallel is that norms clearly favor using flexibility to self-insure against shocks, rather than to rely on peers. This provides useful insights on what may drive punishment behavior in the experiment: Section 4.4 discusses frustration as a possible driver of punishment, as participants were directly affected by their peer's repayment decisions. In contrast, norm study participants are unaffected observers. The fact that we continue to see this pattern is more consistent with norms as a direct driver of experimental punishment.

Does the applicability of norms become uncertain in the presence of flexibility? The most direct evidence for question (iii) is the dispersion of appropriateness ratings: The more participants struggle to coordinate on the same rating, the more uncertainty there is in what constitutes socially desirable behavior.[45] Table 2 shows that the modal rating for strategic default (very inappropriate) is chosen by 57% of participants, compared to 39% of participants who choose the modal rating (mostly inappropriate) for flexibility misuse, despite the fact that both equate to the non-repayment of an installment. Moreover, all six rating options are chosen by at least 5% of participants for flexibility misuse, with 26% giving a *positive* rating (for strategic default: 4%). The dispersion of ratings becomes even larger for flexibility use in case of shocks: Ratings are distributed nearly symmetrically, with 39% rating flexibility use as 'mostly appropriate' and 30% rating it as 'mostly inappropriate'. Our results suggest substantial uncertainty in how to apply existing repayment norms to flexible repayment conditions.[46]

An additional way to test question (iii) comes from prediction (iii) as well as our repayment results (Figure 5): Both in theory and empirics, using flexibility first and then defaulting largely dominates defaulting straight away. In Appendix E, we show that the expected punishment for strategic default is lower when repayments are postponed by first using flexibility (Figure E1). We observe a similar pattern in social appropriateness rankings, in a sample disconnected from our experiment: In addition to the vignettes about repayment behavior in a given week, we added selected vignettes about repayment in 2 consecutive weeks (see Appendix H.3). Averaging the appropriateness rating of two consecutive non-repayments yields 0.88 (SD 0.17). In contrast, misusing flexibility and then defaulting on the double installment appears to be less inappropriate (average 0.79 (SD 0.20), Wilcoxon signed-rank test p-value < 0.001). This result is driven by an increased relative appropriateness of misusing flexibility, while defaulting on a double installment is considered as inappropriate as a second single-installment default (Table 2). This is consistent with norms centered on repaying when due, rather than on the repayment amount. Figure A4 shows the distribution of the combined ratings and confirms an increased dispersion with flexibility, suggesting higher uncertainty.[47]

If flexibility creates uncertainty in socially appropriate behavior, can our norm elicitation explain the observed frequency of partial repayments? Section 5.3 speculated that participants may have interpreted flexibility as a signal that occasional non-repayment is acceptable, in line with studies on moral wiggle room and motivated reasoning (Gino et al. 2016). Unfortunately, this mechanism would not show up in our norm elicitation: Motivated reasoning needs a motivation. In contrast to our experimental participants, norm elicitation respondents are not directly affected by their interpretation of the repayment conditions, and thus have no incentive to strategically misinterpret them.

6 | Conclusion

We study repayment choices under both rigid and flexible repayment conditions in a lab-in-the-field experiment with real microcredit borrowers. Although repayment is not payoff-maximizing in our setting, we find high repayment rates across both individual- and joint-liability contracts. The introduction of flexibility increases strategic defaults on the overall loan by 50%. Flexibility also reduces peer punishment in joint-liability contracts — both when it is used to insure income shocks, and when it is used to increase early consumption absent shocks.

Our results are consistent with a strong social norm on repayment, which participants bring to our sessions from their real-life borrowing experience. Through meeting and reciting pledges every week, clients internalize what it means to be a good borrower: to pay installments every week, and to discipline peers. We draw parallels to existing work on identity in organizations (Akerlof and Kranton 2005), and point out that microfinance organizations have strong incentives to inculcate a sense of identity in their borrowers, with associated norms for good behavior. Such norms could help explain not only the high repayment rates and punishment patterns in our experiment, but also two recent puzzles in microfinance research: First, why repayment rates do not differ between individual- and joint-liability contracts. Second, why peer pressure appears to be excessive and sequentially irrational. Furthermore, if social norms refer to weekly installments, the discretion introduced by repayment flexibility means that applying the norm may no longer be straightforward. In turn, uncertainty in socially prescribed behavior may increase ex-post moral hazard. We present supporting evidence for this explanation using a theoretical framework, and from the first incentivized norm elicitation study in microfinance.

Our results also broaden the recent discussion on flexible repayment in microfinance. Existing evidence suggests that flexible repayment can increase profits by facilitating high-risk, high-return investment (Field et al. 2013; Barboni and Agarwal Forthcoming; Battaglia et al. 2023). Our results reveal an additional benefit of flexible repayment schemes: they may

reduce excessive social pressure in group lending (documented in Czura 2015b, Karim 2008, Rahman 1999, and Montgomery 1996), by providing borrowers with a way to self-insure against income fluctuations. However, our results also suggest that flexibility may destabilize high-repayment equilibria which are sustained by social norms. We hypothesize that motivated beliefs may act to exacerbate the consequences of norm uncertainty (Bicchieri et al. 2023). This is particularly important in settings with observable actions, as small changes in feedback can lead to unraveling of a norm (Hill et al. 2012; Bursztyn et al. 2020).

Several caveats apply. First, our experiment newly introduces flexible repayment terms. We cannot speak directly to whether and how norms would adjust to flexibility over time. Having said that, the nature of flexibility is to give the borrower discretion in whether to repay or not at a given moment. This may create uncertainty in socially appropriate behavior which does not simply resolve over time: Yoeli et al. (2022) and Bicchieri and Garzino Demo (2025) suggest that norms conditioned on simple categorical distinctions (like sticking to an initial plan) are easier to sustain than norms that permit a larger or continuous range of behaviors, due to both enforcement constraints and self-serving interpretations. More practically, lenders may be constrained in what kind of norms may be induced: A major benefit of rigid, no-exceptions rules on weekly repayments is that they are simple, and can easily be integrated into the pledge that borrowers recite at the start of every meeting. This constraint is consistent with our result that norms do not seem to allow for shock-induced non-repayment. Inducing a norm on exactly *when* flexibility use is acceptable may be more complicated, especially since repayment capacity is hard to quantify in practice.

Furthermore, we study a particular type of flexibility — discretion in the timing of repayment (as in Brune et al. 2025, Battaglia et al. 2023, and Czura 2015a). Different flexibility designs may have different implications for norm uncertainty. Neither the 2-months grace period in Field et al. (2013) nor the (pre-planned) repayment holidays in Barboni and Agarwal (Forthcoming) give borrowers any discretion in whether to repay at a given point in time. While these flexibility designs make socially appropriate behavior more straightforward, they do not provide insurance against shocks. This is important in light of Battaglia et al. (2023), who show that increased profits from flexibility appear to be driven by insurance provision rather than by the easing of credit constraints. Our results point to a fundamental trade-off in the design of repayment: Giving borrowers the ability to condition repayments on unobservable (or uncontractable) shocks necessarily requires giving them discretion in whether to repay at a given point in time. Discretion may increase moral hazard, both through present bias (studied theoretically in Fischer and Ghatak 2016), and through uncertainty in social norms.

Future research is needed on the nature of social norms in lending, on how these are formed, and how they respond to changes to contract terms. The idea that repayment equilibria are sustained by social norms may help to explain a range of phenomena, including recent evidence that debt relief programs increase moral hazard even among borrowers who were not at risk of default (Giné and Kanz 2018; Kanz 2016). We believe that models of organizational identity may provide a promising avenue for understanding such norm dynamics.

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Data Availability Statement

The data and the code used in this paper can be accessed via openICPSR, https://doi.org/10.3886/E240976V1.

Endnotes

[1] While traditionally linked to the developing world, microfinance now serves underbanked populations in high-income countries including the United States, the United Kingdom, France, and Spain (see, e.g., Schaberg et al. 2019).

[2] 'Flexible repayment' has been used to refer to various repayment structures that diverge from rigid weekly repayments starting immediately after loan disbursal. Throughout this paper, we use 'repayment flexibility' for contracts which allow for *discretion* in when to repay, and thus enable borrowers to condition repayments on shock realizations (see, e.g., Brune et al. 2025; Czura 2015a; Battaglia et al. 2023; Bari et al. 2024).

[3] Bicchieri (2016) distinguishes between moral norms—doing something because it is *right*—and social norms—doing something because others expect it. As these concepts interact, and one may emerge from the other, we do not believe this distinction to be meaningful in our setting. For the remainder, we use "norm" and "social norm" interchangeably.

[4] Norms may induce punishment directly, if disciplining non-repaying borrowers is part of the norm (see pledge). Alternatively, peers may be angered by repayment norm violations, and express this anger in the form of punishment (Akerlof 2016). Psychological game theory offers several rationales for anger-based punishment, which we discuss in Section 4.4.

[5] Our evidence does not support an interpretation of punishment as a direct driver of repayment. Punishments are costly incredible threats that are small in magnitude relative to the stakes of repayment. We observe equal repayment rates between individual and joint liability, suggesting a limited role of punishments as an enforcement mechanism.

[6] While Giné et al. (2010) focus on ex-ante moral hazard and project choice as determinants of loan repayment in rigid contracts, we focus on ex-post moral hazard by separating repayment capacity from the choice to repay. Dhami et al. (2022) investigate psychological mechanisms in the context of ex-ante moral hazard.

[7] Field and Pande (2008) study joint-liability loans; and Field et al. (2013) and Battaglia et al. (2023) study individual-liability loans, the latter only offer flexibility to clients with a good repayment record. Barboni and Agarwal (Forthcoming) study former joint-liability borrowers with a good repayment record who are promoted to individual-liability loans. Group meetings are typically maintained regardless of the liability structure.

[8] A large body of qualitative evidence comes from anthropological case studies: Montgomery (1996), Rahman (1999), and Karim (2008) report cases of drastic social pressure on defaulting borrowers, such as verbal harassment, shaming in public, raiding of houses to confiscate assets for sale to cover the loan installments, or stripping down the defaulter's house completely. Baland et al. (2017) point out that punishment may take the form of social exclusion.

[9] In strategic interactions, the strategy method refers to the elicitation of contingent choices (Selten 1967). A review by Brandts and Charness (2011) finds that treatment effects observed with the strategy method are in all cases also observed with a direct-response method.

[10] The exchange rate in March 2016 was 51 PHP per EUR. The average daily income in our sample was about 200 PHP.

[11] Adding risk aversion as well as any temporal discounting between the session and the payment of V 1 month later would further increase the appeal of default.

[12] The elicitation contingent on income realization prevents borrowers from 'hiding' behind shocks towards our enumerators. This may downward bias strategic default rates in all treatments if participants have image concerns vis-á-vis the experimenter. De Quidt et al. (2018) estimate tight bounds for such demand effects, and show that they typically play a limited role.

[13] Note that our setting controls for present bias, in the sense that periods are too close together in real time to induce natural discounting (and consumption occurs at the end of the session). Present bias would not affect choices between periods (and thus decisions about flexibility use), but rather rescale the value of V (which is paid 1 month later). Empirically, we see no difference in repayment by measures of present bias (Table A11).

[14] See Section 2.3 for a more detailed discussion of our design choices.

[15] At the end of the session, participants received a voucher to confirm the payment. Trust is unlikely to be a significant concern given the long-standing reputation of the lender and the lender's regular weekly interactions with the borrowers.

[16] Savings constraints are a standard assumption in microfinance games (Abbink et al. 2006; Giné et al. 2010) and have been well-documented empirically (see, e.g., Bauer et al. 2012 or John 2020 on present bias and Baland et al. 2011 on financial pressure from relatives or friends).

[17] While larger groups have more potential for risk-sharing, group size is unlikely to affect our main findings. First, we focus on strategic default, measured as non-repayment even when no shocks arrive. Mutual insurance does affect ex-ante repayment incentives, but the effect is theoretically ambiguous, as free-riding incentives increase. Empirical evidence shows that repayment rates are similar in individual- and joint liability contracts, even when joint liability uses much larger groups than we do (Giné and Karlan 2014; Attanasio et al. 2015).

[18] Peer punishment is conceptually distinct from general third-party punishment, such as reputational loss in the community following norm violations. The latter is captured in our separate norm elicitation experiment (Section 5.4).

[19] Compare also Fischer and Ghatak (2016), who show theoretically that small and frequent repayments are more incentive-compatible for present-biased borrowers than allowing them to delay and bunch installments. In our setting, present bias would not affect choices between periods (footnote 13). Rather, present bias is one way to microfound the savings constraints which are built into our design.

[20] This average includes "incentive loans" for non-investment purposes, which serve as a dynamic incentive for borrowers who have repaid their regular loan on-time without delinquencies.

[21] We excluded participants from our main analysis if less than 75% of test questions overall or 50% of test questions from any one treatment were answered correctly. This exclusion does not affect our results (see Appendix C).

[22] The concept of the no-shock path has no bearing on the way choices were incentivized (see Section 2.3).

[23] In individual-liability conditions, this is equivalent to the repayment of three income tokens. In joint-liability conditions, full repayment costs between three and six income tokens given automatic enforcement (see Figure F2).

[24] We also provide wild cluster bootstrapped confidence intervals that account for the small number of clusters.

[25] The estimated effect of liability on repayment is robust to using within- or between-subject variation, see Table A1.

[26] We also find no differences by an incentivized Binswanger-style measure of risk aversion (Tables A8, A9 and A10), suggesting that the added consumption uncertainty from joint liability does not drive our results.

[27] According to our comprehension questions, 87% of participants were aware of this trade-off. Given the crowd-out between self-insurance and mutual insurance, there is some evidence that peers attempt to coordinate their use of flexibility: Using (non-incentivized) beliefs about partner's behavior, we find that participants' use of flexibility correlates with their belief that their partner will use flexibility, both in the case of shocks (Spearman's $\rho = 0.137$, $p = 0.0259$) and without (Spearman's $\rho = 0.279$, $p < 0.001$).

[28] Regression results for both level and incidence of punishment are shown in Panel B of Table A3.

[29] For implementation reasons, we cannot distinguish situations by whether the pass token is still available but not used, or no longer available. Thus, 'Don't use flex (shock)' refers to any situation where a shock hits and flexibility is not used.

[30] Ceiling effects cannot explain this phenomenon: Recall that participants assigned either zero, one, or two punishment points for a given action of their partner. Single-installment default is punished with zero (12%), or one point (56%), which means that a majority is able to increase the punishment for double-installment default if they want to.

[31] One way to reconcile the mixed evidence on overall default rates in the field is that different flexibility designs affect ex-ante project choice (and thus risk) in different ways.

[32] The Grameen Foundation (2010) actively promotes establishing a collective identity to maintain repayment morale. Such behavior is in line with predictions from a principal-agent model, in which the principal can instill a sense of organizational identity in the agent (Akerlof and Kranton 2005).

[33] For example, repayment in Morocco is low when microfinance institutions are perceived as illegitimate or loans are perceived as development aid (Morvant-Roux et al. 2014). Osmani (2016) claims that strict rules helped establish a social norm for repayment in Bangladesh.

[34] Importantly, both studies hold weekly group meetings constant across liability type: Giné and Karlan (2014) have meetings in both types, and Attanasio et al. (2015) in neither. De Quidt et al. (2016) and Feigenberg et al. (2013) argue that group meetings create social capital, which may help to generate implicit joint liability (side contracting) even in individual-liability contracts. Yet, this still predicts differential repay-

ment patterns across liability structures. We rule out side contracting in our experiment, and propose instead that group meetings may help lenders to publicly instill social norms.

[35] This uncertainty is not simply due to introducing a *new* repayment scheme, which would resolve over time. Rather, it is linked to the discretion itself (Yoeli et al. 2022, Bicchieri et al. 2023). We discuss this further in the conclusion.

[36] We follow Kimbrough and Vostroknutov (2016) in modeling deviations from the norm as disutility. One possible way to microfound this norm is using models of organizational identity (Akerlof and Kranton 2005): Borrowers derive utility from their social category – here, being a diligent borrower. However, they suffer a disutility from diverging from the ideal behavior for their category, due to cognitive dissonance, guilt, shame, or reputation loss.

[37] We present empirical support for this assumption in Section 5.4.

[38] With flexible repayment, strong social norms ($R \leq \kappa < 2R$) may make it optimal to repay single but not double installments. However, among partial repayments with flexibility use, over half of participants repay the double installment and default on the remaining single installment. See Table A6 for details on partial repayments.

[39] This would not be captured by our peer punishment measure, which imposes a constant linear penalty for each missed installment.

[40] We conduct qualitative interviews with 23 clients of the eight centers in which we elicit social norms (see below). We find that all but one borrower agree or strongly agree with statements that repaying is the moral thing to do, that they have learned this in their initial group training, and that the loan officer highlights the importance of repaying each week (see Table A7). These arguably lender-induced views are further reinforced in many borrowing groups: Two-thirds of respondents agree that the undesirability of non-repayment is discussed between group members.

[41] Data from the lender are consistent with heterogeneity in how much borrowers have internalized social norms on repayment, and norms becoming more powerful over time: We find positive associations of full repayment in the experiment with a measure of borrower quality, namely always repaying loan installments on time ($p = 0.10$). Repayment is lower for those who became clients within the last 12 months (see Table A7), suggesting that norms may take effect over time. Furthermore, new clients are significantly less likely to use flexibility responsibly (i.e., only to insure shocks).

[42] This prevents concerns about self-serving answers as participants do not face the incentives from the experiment. Erkut et al. (2015) show elicited norms are similar between stakeholders and spectators.

[43] To approach a more realistic borrowing scenario, we ask about repayment choices in week 3 (and in some cases, week 4) of a 25-week repayment cycle, when the first two weeks were repaid. Empirically, default on the first repayment installments is virtually non-existent. We avoid moving later into the repayment cycle and specifying the full previous repayment history, as this may be misperceived as a signal about the borrower's type or intentions.

[44] This is strategically equivalent to matching on the modal response, but was easier to understand for our participants.

[45] We conceptualize this as an uncertainty in *what* should be enforced, independent of the *strength* or the nature of the enforcement mechanism.

[46] The increase in dispersion cannot be explained by the fact that the Likert scales are bounding the latent appropriateness ratings. Using simulations with latent, uncensored appropriateness ratings, the increase in standard deviations that we see is larger than what would be implied by a shift in means away from the bounds in more than 98% of random samples.

[47] Bootstrapping the difference in standard deviations (1000 repetitions) of the ratings with and without flexibility yields a z-statistic of 1.98, p-value = 0.047.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.

Appendix S1: Internet Appendix.