Gender Differences In Reaction To Enforcement Mechanisms: A Large-Scale Natural Field Experiment
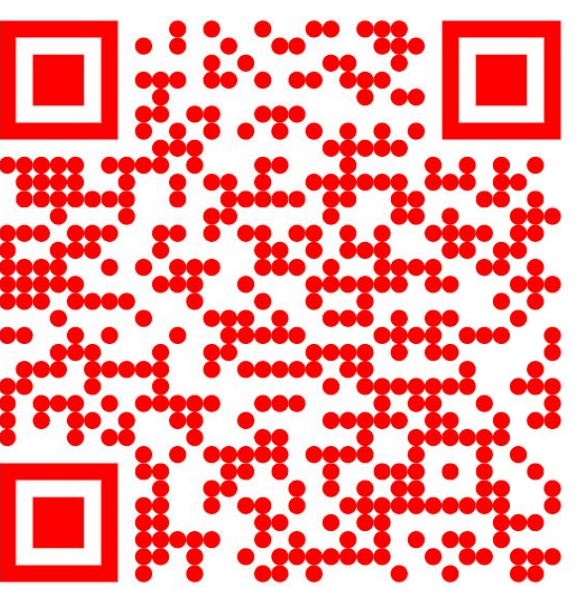
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Introduction

Are there any gender differences in the responsiveness to different enforcement mechanisms? While understanding such gender differences may help policymakers improve laws and regulations, empirical evidence is scarce. We fill this gap by conducting a natural field experiment that follows 58,345 borrowers from a shadow bank. The experiment randomizes borrowers into treatments that send different text messages encouraging borrowers to repay loans on time. Compared to a reminder, the messages inducing social pressure and financial incentives reduce the overall overdue rate. However, women are more responsive to social pressure, while men are more sensitive to financial incentives. Other pre-existing characteristics between men and women cannot fully explain the gender gap. These results imply the potential importance of a gender-dependent mechanism to enhance compliance.

Contribution to Literature

1. Influence behaviors using messages:
   We test messages that induce social and financial incentives and find these messages can significantly reduce the overdue rate of loans from a shadow bank.

2. Economics of genders:
   Men and women react differently to messages; customizing messages according to borrowers' genders may enhance compliance. This result also brings attention to the equity-quality puzzle in financial markets.

3. Design of enforcement mechanisms:
   We compare the efficacy of peer effects and monetary incentives and provide a methodological tool for policymakers to enhance the overall deterrence effect by customizing enforcement mechanisms.

Experimental Design

The borrowing process
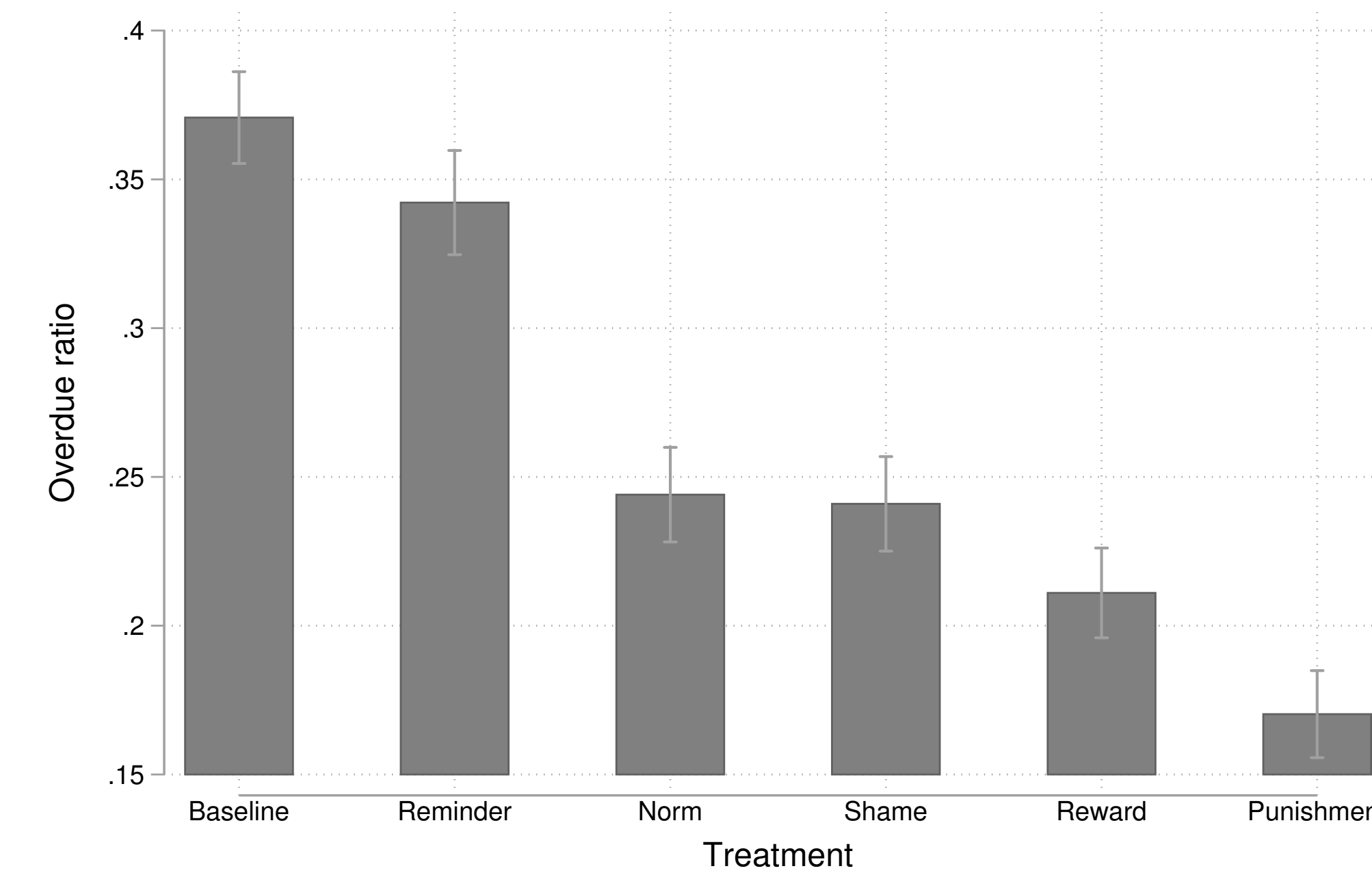Before taking out a loan, a borrower has to provide the following materials:

1. A copy of the unique **national ID**, which contains demographic information including gender at birth.

2. Contact information of five friends and/or family members who agree to be the borrower's **endorsers**. The platform verifies all proposed endorsers to ensure they are genuinely related to the borrower. The platform may contact the endorsers if the borrower breaks a contract, but they are NOT liable for the unpaid debts.

3. An application specifying the **amount of money** s/he would like to borrow and the **loan duration (term)**. After providing these materials, the prospective borrower has to negotiate an **interest rate** with the shadow bank. The shadow bank then informs (prospective) lenders about the proposed loan and lets them decide whether to lend money to the borrower. Once the amount requested is fulfilled, the borrower gets the money and must repay principal and interest (accumulating daily) in one installment before the term ends; otherwise, the borrower may face monetary penalties and lawsuits.

Treatments
We send each borrower a test message (except in the baseline) one day before the corresponding due date if the repayment is not made earlier. Each message is randomly drawn from the following:

- **Baseline** ($n = 3768$: 1585 women and 2183 men): No message is sent.

- **Reminder** ($n = 2823$: 1165 women and 1658 men): A simple reminder asking the participant to repay on time.

- **Norm** ($n = 2807$: 1166 women and 1641 men): A message stating most borrowers make timely repayments and suggesting the borrower do the same.

- **Shame** ($n = 2789$: 1161 women and 1628 men): A message stating the borrower's endorsers would be notified if the repayment is overdue.

- **Reward** ($n = 2815$: 1172 women and 1643 men): A message promising to reduce the interest rate for future loans by 5% if the repayment is on time.

- **Punishment** ($n = 2543$: 1022 women and 1521 men): A message stating the interest rate for future loans will increase by 5% if the repayment is overdue.

Hypotheses

Hypothesis 1: All of the treatments reduce the overdue rate as compared with the baseline because the literature finds that people suffer from limited attention and respond to social and financial incentives.

Hypothesis 2: Women respond more than men to the social incentives (Norm and Shame). *Ex-ante gender differences*: women nominate more family members as endorsers. In Chinese culture, kinship is considered stronger than friendship. Thus, shame from a family member is likely to carry more weight than shame from a friend. *Literature*: women respond to the Norm and Shame treatments more than men in other contexts.

Hypothesis 3: Both genders respond more to Punishment than Reward, but it is unclear which gender is likely to respond more to these incentives. *Ex-ante gender differences*: Women borrower more at a higher frequency. If women continue to borrow more in the future, then the monetary size of the financial incentive is more for women. *Literature*: Men are more responsive to monetary incentives. People are susceptible to loss aversion.

Results

Result 1: The messages significantly reduce the overdue rate from 37.1% in the Baseline to 34.2% in the Reminder treatment ($p = 0.0167$), 24.4% in the Norm treatment ($p < 0.0001$), 24.1% in the Shame treatment ($p < 0.0001$), 21.1% in the Reward treatment ($p < 0.0001$) and 17.0% in the Punishment treatment ($p < 0.0001$). The data confirm Hypothesis 1 that participants respond to both financial and non-financial incentives. The results also suggest that borrowers are more responsive to financial incentives (i.e., Reward or Punishment) than to social incentives (i.e., Norm or Shame), $p < 0.0001$. In summary, Punishment is the most effective intervention in the experiment where the impact is not disaggregated by gender.
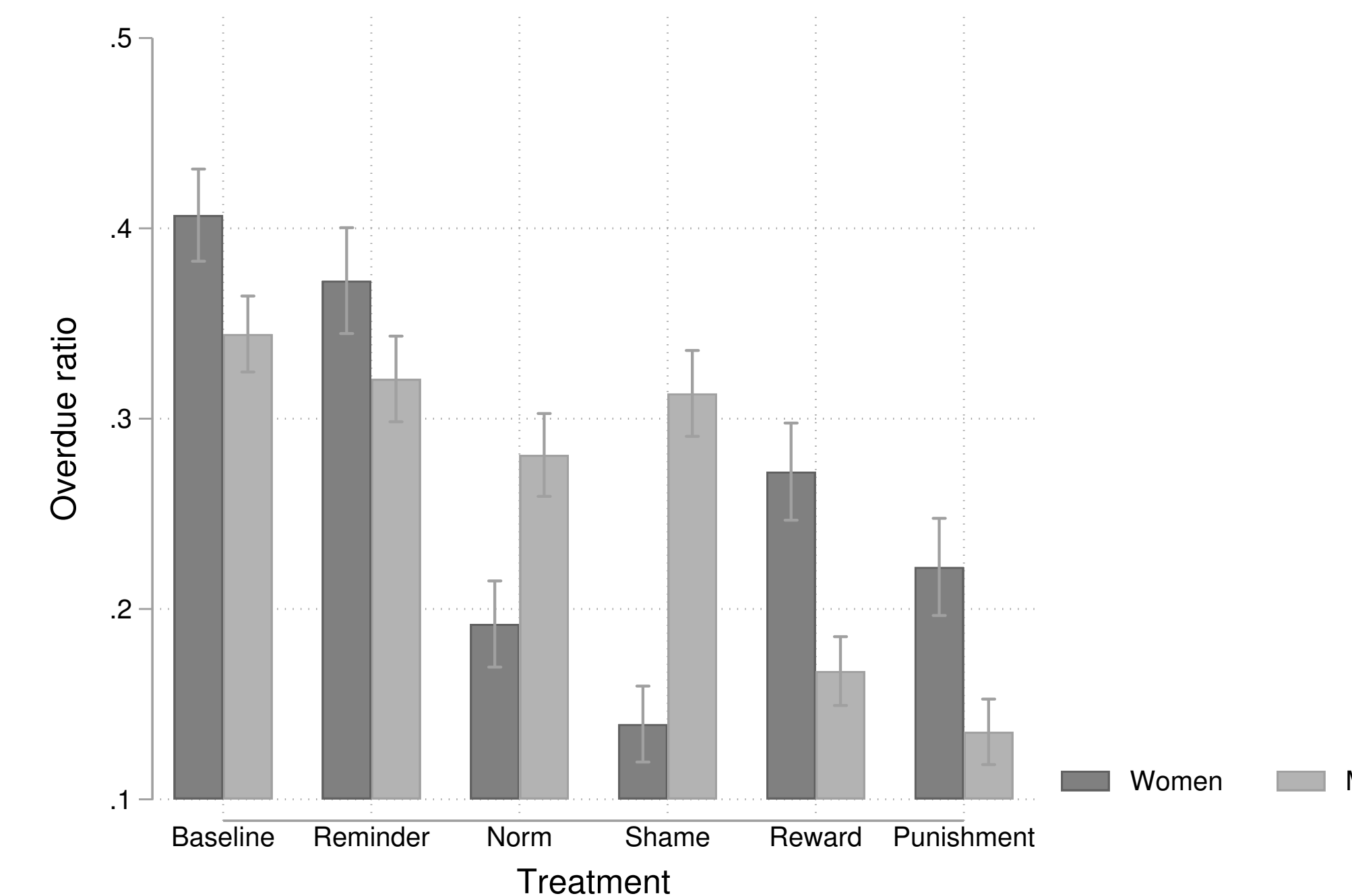
Result 2 & 3: As conjectured, responsiveness to the interventions is not gender-neutral. For women, the ranking of the mechanisms from the most effective to the least effective is Shame (14.0% overdue), Norm (19.2% overdue), Punishment (22.2% overdue), Reward (27.2% overdue), and Reminder (37.2% overdue). In contrast, the ranking for men is Punishment (13.5% overdue), Reward (16.7% overdue), Norm (28.1% overdue), Shame (31.3% overdue), and Reminder (32.1% overdue). Women are more responsive to Norm and Shame, while men are more responsive to Reward and Punishment. Customizing messages according to borrowers' gender can reduce the overall overdue rate.

Additional results: From further regression analyses, we find that the number of endorsers is indeed negatively correlated with the overdue rate. This pre-existing gender difference can explain part of the gender gap in the responsiveness to Shame. However, we fail to find that borrowing behavior in the past affects the overdue behavior. The gender differences in the financial treatments (Reward and Punishment) are not mainly driven by the size of monetary reward or punishment.