

## Changing Gender Norms through Financial Incentives : Evidence from Female Home Ownership in India

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## Motivation

- Gender equality plays a crucial role in social development and economic growth. (Hsieh et al. (2019), Diebolt and Perrin (2013))
- India, the world's most populous country, ranks 108<sup>th</sup> out of 145 countries on gender equality.
- Female labor force participation has declined despite rapid economic growth which has become a growing concern for policymakers.
- Property rights and financial inclusion have been shown to play a significant role in advancing women's empowerment. (Riley (2024), Bartscher (2023), Field et al. (2021))
- This paper is to study whether a small mortgage-related financial incentive (nudge) offered to women in India can effectively enhance their intra-household financial decision-making.

## State Bank of India - “Her Ghar”

- Appointment of Arundhati Bhattacharya as the first female CEO for State Bank of India in Oct 2013.
- SBI announced discount in loan rate (5 basis points) for home loans made to women in December 2013.
- “Her Ghar” (Her Home)
  - The first (or sole) applicant must be a woman
  - The home must have a woman as the first owner
  - All loan applicants are liable for the full amount of the loan
  - Only applicable for new loans
- To empower women and promote home ownership among female borrowers.

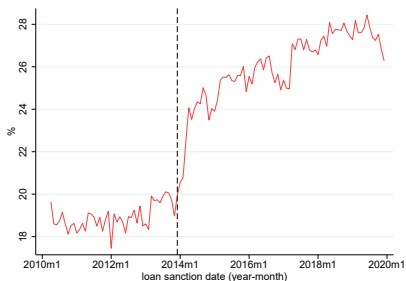


Arundhati  
Bhattacharya, SBI

## What was the value of the 5 bps discount?

- 5 basis points discount for “Her Loan”
- Typical loan rate in our sample – 7.5%
- For a 20-year loan with principal amount of Rs. 5 million
  - EMI @ 7.5% = Rs. 40,280
  - EMI @ 7.45% = RS. 40,127
  - EMI saving = Rs. 153 (US \$2.47 based on forex rate in Jan 2014)
  - The approximate monthly salary required for home loan is Rs. 80,000.
  - Present value of savings  $\approx$  0.38% of loan amount.
  - EMI saving as % of income  $\approx$  0.19%
- **Small ticket item BOTH for bank and for consumer– a nudge**

## Mortgage Loans by SBI



- The share of female loans rose by 25% immediately following the introduction of the 5-basis-point concession.
- The program has continued to the present. During our sample period, which extends to March 2020, the share of female loans steadily increased.

Figure 1: Share of Female Primary Borrowers

## Pan India Effect

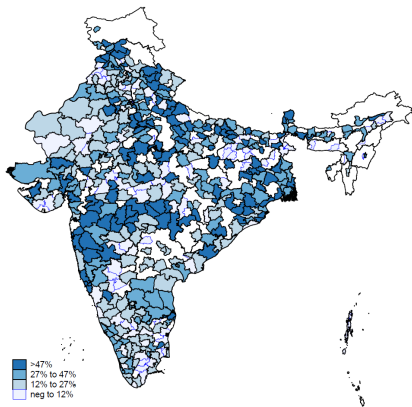


Figure 2: % Increase in Share of Female Primary Borrowers all over India

- % increase in female loans

$$\frac{(\%Female_{post} - \%Female_{pre})}{\%Female_{pre}}$$

Pre: 2010-2013, Post: 2014-2015

- The impact was across the entire country.

## Research Question and Results Summary

- How did this policy affect the credit risk of the female loan pool?
  - Relative to male loans, the income profile of the female loan pool remained unchanged, LTV increased by 0.5%, with no significant change in default probability.
- Does having a female as the primary borrower imply greater female participation in household financial decision-making?
  - Tokenism : a man put his wife's name first to get the discount
    - *Policy-induced female loans become more similar to pre-policy male loans, leading to a reduced gender gap in loans after the policy change.*
  - ↑ women involvement in household financial decision making
    - *Policy-induced female loans are similar to pre-policy female loans, so the gender gap remains unchanged/widened after the policy change.*

## Research Question and Results Summary

- Repayment decisions during the COVID moratorium policy period
- What is Moratorium Policy?
  - On March, 2020, Reserve Bank of India (RBI) permitted the banks to grant a moratorium of 3 months to amid the disruption of COVID-19. On May 2020, RBI further extended the period for another 3 months till Aug 2020.
  - Deferment of EMI; No waiving of principal or interest payment; Interest accrues on unpaid balances
  - After the moratorium period, EMI will increase marginally, and loan tenure is extended.
  - Only applicable to loans that were standard as of March 1, 2020
- How to response?
  - Serious cash flow difficulty - avail moratorium.
  - Otherwise, repay.

## Research Question and Results Summary

- **Main Finding** : Female loans originated after the nudge policy behave similarly to pre-policy female loans, providing no evidence that nudge merely generated tokenistic participation.
  - Female loans are 8% more likely to continue repayment during COVID.
  - Female borrowers make different financial decisions, enabling them to maintain repayment even during difficult times.
  - Such gender difference in repayment was related to state/district level metrics of female empowerment.
  - The gender gap persists for loans originated both before and after the nudge policy.
- Women's term deposit balances rose significantly in high-exposure districts, indicating broader empowerment effects from the female mortgage concession scheme.

## Data and Sample

- SBI data on home loans between 2010-2023.
- Data on primary borrower gender, income, residential location, Data on mortgage loan initial interest rate, loan amount, EMI (Equal Monthly Installment), tenure, and collateral value.
- Additional data on defaults, monthly repayment amount, prepayment from April 2015 till March 2023.
- Centre for Monitoring Indian Economy (CMIE) consumer surveys (2014) on education, finances, labour supply etc.
- Reserve Bank of India' BSR (Basic Statistics Returns) II branch-Year deposit data from 2012 to 2014.

## Summary Statistics

Panel A: Loans originated in 2013								
	Female			Male			Diff (female-male)	t-stat
	N	Mean	Median	N	Mean	Median		
Age	30017	41.39	41.07	123424	41.8	41.7	-0.42***	-7.55
Interest rate	30017	7.6	7.55	123424	7.59	7.55	0.01**	2.08
Loan tenure	30017	219.83	240	123424	219.85	240	-0.02	-0.07
Loan amount (lakh)	30017	14.01	11.5	123424	13.7	10.8	0.31***	4.62
Collateral value (lakh)	30017	28.07	21.15	123424	27.01	20.31	1.05***	5.75
EMI (000)	30017	11.99	9.7	123424	11.72	9.4	0.28***	4.81
Loan-to-Value ratio	29267	0.57	0.6	120613	0.57	0.6	0	-1.22
Panel B: Loans originated in 2014								
	Female			Male			Diff (female-male)	t-stat
	N	Mean	Median	N	Mean	Median		
Age	36822	41.32	40.95	120337	42.39	42.35	-1.07***	-20.22
Interest rate	36822	7.52	7.4	120337	7.58	7.45	-0.06***	-10.75
Loan tenure	36822	222.9	240	120337	219.12	240	3.78***	10.57
Loan amount (lakh)	36822	15.91	12.8	120337	14.25	11.5	1.66***	24.77
Collateral value (lakh)	36822	31.24	24	120337	28.43	21.87	2.81***	15.57
EMI (000)	36822	13.49	11.08	120337	12.21	9.96	1.28***	22.62
Loan-to-Value ratio	35965	0.58	0.61	117775	0.57	0.6	0.01***	8.88

Figure 3: summary statistics

## Change in credit risk of the loan portfolio

ex-ante evidence from income and loan-to-value ratio

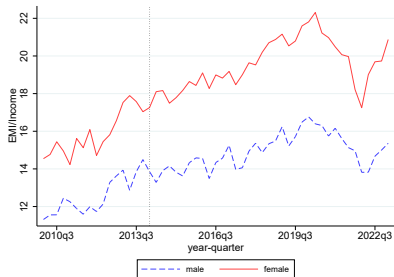


Figure 4: Average EMI/Income Ratio

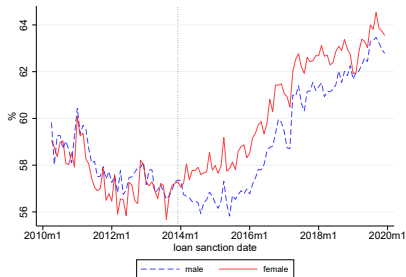


Figure 5: Average LTV ratio

- No immediate change in the gender gap in income was observed before and after the policy introduction.
- Female loans has larger LTV after the policy change.

## Change in gender gap in default

	(1) >3 months	(2) >6 months
Post × Female	0.0650 (0.136)	0.0762 (0.179)
Female	-0.387*** (0.0989)	-0.300** (0.117)
Age	0.0150*** (0.00507)	0.0135* (0.00689)
ln(Loan amount)	-0.730*** (0.124)	-0.792*** (0.156)
Loan tenure	6.66e-05** (2.66e-05)	8.56e-05** (3.59e-05)
ln(collateral)	0.109 (0.113)	0.0816 (0.138)
Loan to value ratio	-0.567 (0.752)	-0.845 (0.923)
Interest rate	0.473*** (0.0377)	0.519*** (0.0558)
EMI/Income	0.399*** (0.0990)	0.395*** (0.134)
Loan Sanction Quarter Fixed Effect	Y	Y
District Fixed effect	Y	Y
Constant	-1.542 (1.268)	-0.759 (1.571)
Observations	40,073	33,325
Pseudo R-squared	0.162	0.168

## COVID Repayment Behavior

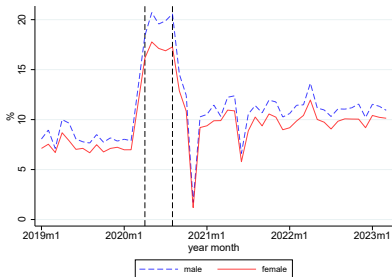


Figure 6: % of Loans with Missing Repayment

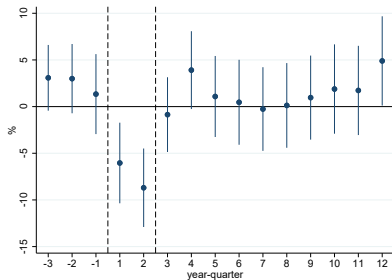


Figure 7: Change in Gender Gap in Missing Repayment

- Male and Female loans are matched in terms of borrower and loan characteristics. **matching outcome**
- Female borrowers less likely to defer repayment during the moratorium period.

## What explains the gender differences in responses to the moratorium policy?

- Female borrowers could have lower default risk going into COVID **A.1**
- Female borrowers could have lower risk of cash flow reduction during COVID **A.2**
- Male borrowers prepaid more just before COVID or Female borrowers reduce repayment after COVID lock-downs **A.3**
- Income projections for female borrowers are more stable. **A.4**

The differences in credit risk and present or anticipated cash flows are ruled out as explanations. We interpret the gap as stemming from gender-based differences in financial decision-making.

## Intra-household Bargaining and Financial Decision Making

- Use CMIE data to assess regional gender gaps
  - household and family member identifiers
  - keep the survey results from the families in monogamous marriages
- Use survey as of 2014 to exclude reverse causality from loans to female rights/education
- State level presented and the results are robust to analysis at district level
- Relate gender differences in repayment at state level to gender differences from CMIE Survey Results



## Did men put their wives as the primary borrower?

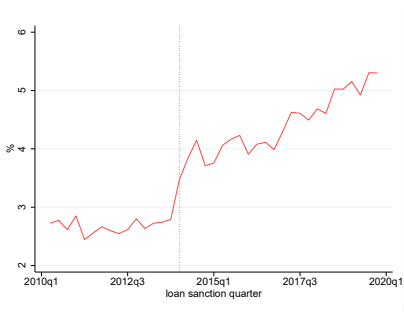


Figure 10: % of Housewives

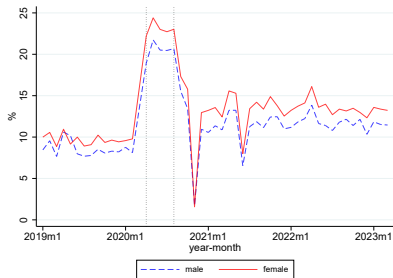


Figure 11: % of Loans with Missing Repayment

- % housewives increase from 2.9% to 4%.
- If the primary female borrower is a housewife, we do not observe they are more likely to repay during moratorium period.

## Nudge and Tokenism - 2013 vs 2014 cohort

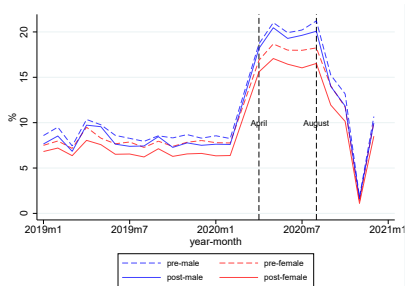


Figure 12: % of Loans with Missing Repayment

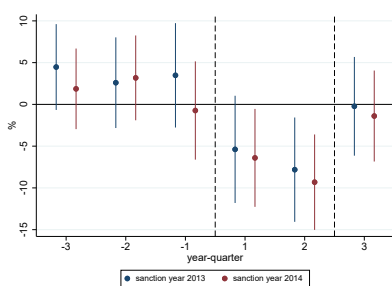


Figure 13: Change in Gender Gap in Missing Repayment

- Loan repayment gender disparities are similar for both 2013 and 2014 loans.
- Under tokenism, gender repayment gap narrowing from 1.5% to 1.14% (-0.36%). The estimated 95% CI for the gender gap change is to -0.37% to +0.3%.
- The evidence does not support the view that the nudge-induced increase in female loans was driven primarily by tokenistic participation.

## Discussion on Alternative Explanations

- Switching from other banks **A.5**
  - No evidence shows that SBI attracts more female loans in the regions with smaller market share.
- Male selection hypothesis **A.6**
  - The composition of male loans do not deteriorate following the introduction of 5 bps concession.
- Female borrowers tend to make repayment through auto debit. **A.7**
  - Minimal difference in repayment variations between male and female loans. Results remain robust when restricted to a subsample of loans exhibiting highly stable repayment in the pre-period.
- Women's income or wealth as additional source for loan repayment
- Single women constitute only a small share of mortgage borrowers.
  - The results hold after excluding major metropolitan areas.

## Why does it work?

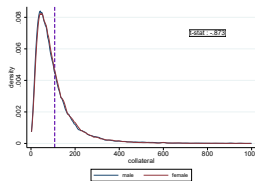
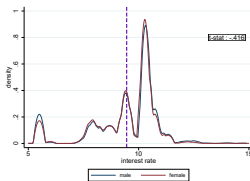
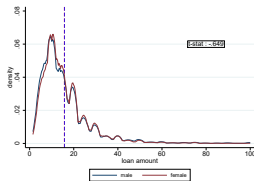
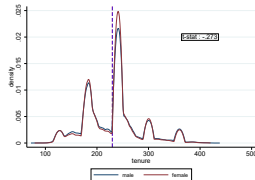
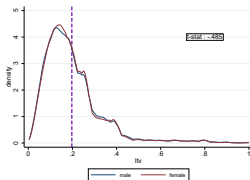
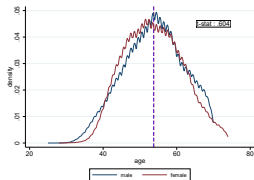
- The primary borrower is required to sign numerous documents, and repayments are typically made from her account. Banks also communicate directly with her. Awareness ↑ and Salience ↑.
- Spillover Effect : Districts with a greater increase in female loans also experienced a significant rise in term deposits held by women.

VARIABLES	SBI: Female Accounts		SBI: Male Accounts		Other Banks: Female Accounts	
	(1) ln(Saving)	(2) ln(Term Deposit)	(3) ln(Saving)	(4) ln(Term Deposit)	(5) ln(Saving)	(6) ln(Term Deposit)
FY2013 $\times$ <i>Treat</i>	-0.0153 (0.00954)	0.0192 (0.0132)	-0.0129 (0.0100)	0.00902 (0.0133)	0.0218 (0.0180)	0.00498 (0.0179)
FY2014 $\times$ <i>Treat</i>	-0.0156 (0.0103)	0.0481*** (0.0148)	-0.0152 (0.0107)	0.0270* (0.0146)	0.0141 (0.0187)	0.0272 (0.0194)
District FE	Y	Y	Y	Y	Y	Y
Branch FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Constant	11.75*** (0.00225)	10.36*** (0.00317)	11.51*** (0.00236)	11.42*** (0.00325)	11.53*** (0.00412)	10.16*** (0.00421)
Observations	29,235	29,235	29,235	29,235	32,781	32,781
R-squared	0.985	0.976	0.985	0.975	0.897	0.924

## Conclusion

- Small financial incentives significantly increased women's participation in mortgage borrowing without adversely affecting the credit quality of the loan pool.
- Studied financial decision-making by women in a real-world setting (COVID moratorium policy).
- Female borrowers tend to maintain repayment during financial difficult time.
- Nudge induced female loans demonstrates bargaining power rather than tokenistic inclusion only.
- Property ownership and access to mortgages can have spillover effects on women's empowerment.
- Small financial incentives (nudges) can help accelerate the breakdown of gender-based social norms, offering insights for other sectors and countries facing similar challenges.

## Matching Outcome

[back](#)

## Default Risk

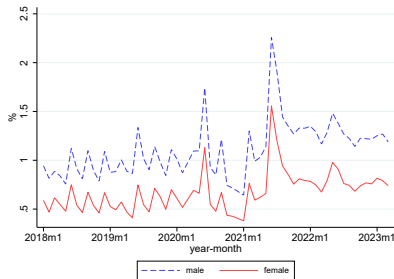


Figure 14: % of Loans Default

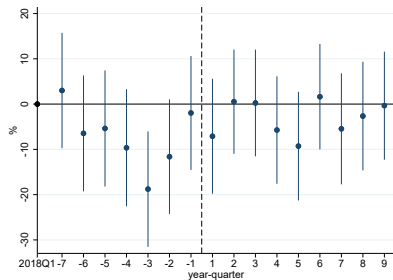


Figure 15: Change in Gender Gap in Default Likelihood

- Gender gap in default likelihood does not change significantly over time both pre-COVID and post-COVID. [back](#)

## Differential Cash Flow Prospects

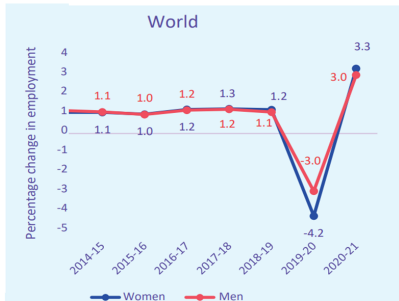


Figure 16: Source : ILO Estimates

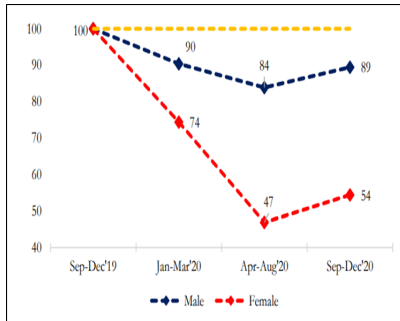


Figure 17: Source: working paper (Abhishek Anand)

- Evidence shows that female income reduced more than male during COVID crisis in India. [back](#)

## Prepayments around Covid

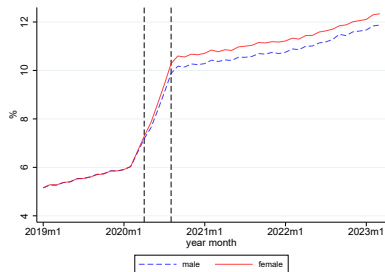


Figure 18: Average Prepayment as % of Loan Amount

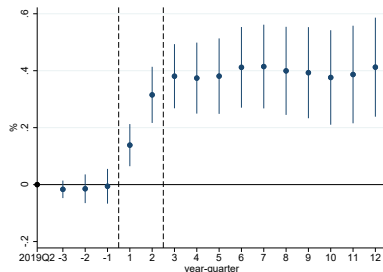


Figure 19: Change in Gender Gap in Prepayment as % of Loan Amount

- In pre-COVID period, men did not increase prepayment
- In the post-COVID period, women did not reduce prepayment.

[back](#)

## Precautionary Saving Motive

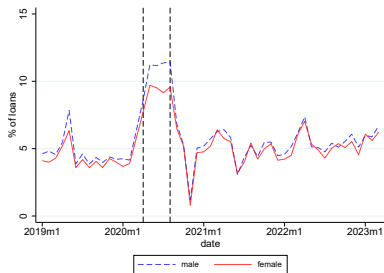


Figure 20: % of Loans with Missing Repayment

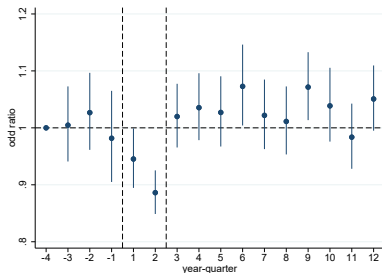


Figure 21: Change in Gender Gap in Missing Repayment

- The gender gap in missed repayments during COVID-19 persists even among individuals employed in government jobs. [back](#)

## Switching from Other Banks?

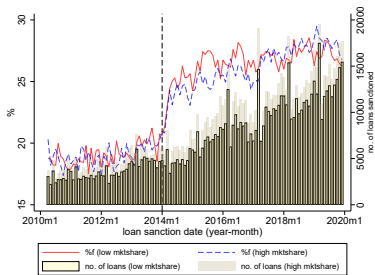


Figure 22: SBI Market Share and % of Female Borrower

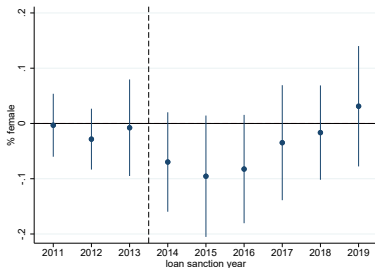


Figure 23: SBI Market Share and Change of % of Female Borrowers

- Through comparing the districts with high and low SBI branches market share, we have found no significant difference either in the change of quantity of loans or in the change of the proportion of female primary borrowers. [back](#)

## Male Selection

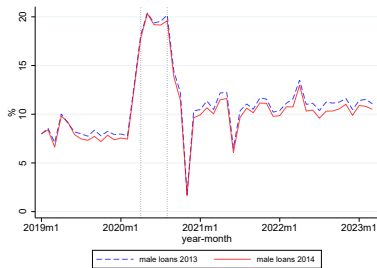


Figure 24: % of loans with Missing Repayment

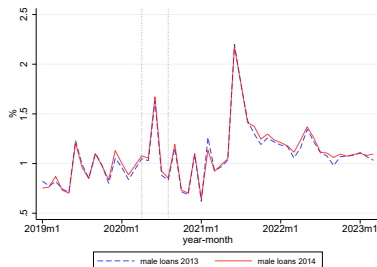
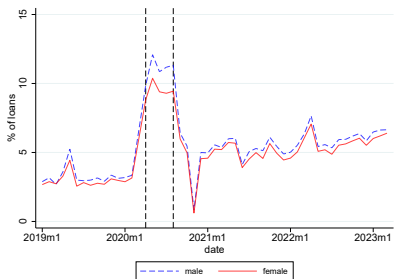


Figure 25: % of Loans Default

- By comparing the male loans (matched & unmatched) between 2013 and 2014, we did not find any differences in their subsequent repayment or default behavior. This finding does not support the hypotheses regarding male selection. [back](#)

## Repayment Method



- The variation in repayment amounts between male and female loans in the pre-period is minimal.
- After restricting the sample to loans with highly stable repayment amounts in the pre-period, the main results remain.
- [back](#)

**Figure 26:** Subsample of Loans with Constant Repayment Amounts in the Pre-Policy Period