Disentangling the Impact of Financial Inclusion on Households and Firms

Nandini Gupta
Kelley School, IU

Ashish Sedai
UT-Arlington

NBER-ISB, Dec, 2023

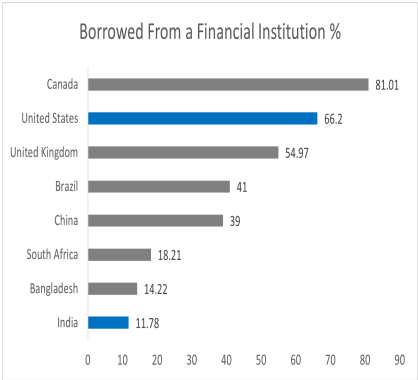
Bank Access and Household Well-Being

- Bank access increases household consumption, reduces poverty (Burgess and Pande, 2005, Bruhn and Love, 2014, Celérier and Matray, 2019, Cramer, 2020, Barboni et al., 2022).

- Households benefit from access to finance via increased borrowing in the U.S. (Mian and Sufi, 2018, Mian et al., 2019, Celérier and Matray, 2019).

- But in developing countries fewer than 10% of individuals borrow from financial institutions (The World Bank, 2021)

- How does bank access increase household well-being without increasing household borrowing?



Impact of bank access on household well-being

Financial market channel: ↑ Household borrowing, savings ⇒ consumption ↑

(Mian, Sufi, and Verner, 2020; Mian and Sufi, 2018; Burgess and Pande, 2005)

Labor market channel: ↑ Firm borrowing ⇒ employment, wages ↑ ⇒ consumption ↑

(Chodorow-Reich, 2014; Bai, Carvalho, and Phillips, 2018; Dehejia and Gupta, 2022

This Paper

Research Questions

1. Do banks increase household well-being?
2. What are the mechanisms?
3. Is there heterogeneity in the impact of banks?

Identification Strategy

- Following Young (2017) and Cramer (2020), we use a nationwide **branch expansion policy** of the Reserve Bank of India.
- Policy incentivizes banks to set up branches in **underbanked** districts.
- **Regression discontinuity design**.

Contribution

1. Use **exogenous variation** in bank presence to study causal impact of bank presence.
   - Increases household consumption, savings, investments, lowers interest payments
   - Similar positive impact on consumption and savings found by Cramer (2020)
     ...but total loans, consumption loans, aggregate debt decrease.
2. Disentangle financial and labor market channels by which banks affect household well-being
   - Firms increase borrowing, employment, wages.
   - Households earn higher wages, and household-owned enterprises earn higher revenues.
3. Find heterogenous impact of bank access across urban/rural, income, social status.
   - Effects larger for urban (not rural) households and firms, biggest impact on poorer, socially disadvantaged urban households, organized firms, and informal firms in urban areas.
   - Policy implications for effect of financial inclusion on inequality.

Bank Expansion Policy and Regression Discontinuity Design

Bank Expansion Policy and Fuzzy RDD

- In 2005 India's central bank incentivized banks to open branches in underbanked districts.
- To obtain license for favored locations had to open branches in underbanked districts.
- Definition of underbanked districts allows for a regression discontinuity design.
- Compare districts just above the cutoff to those just below the cutoff (Imbens, 2007).
- Population-to-branch ratio in 2006 is running variable in RDD.
- Fuzzy RDD with national ratio as cutoff.
- Districts just above and just below the cutoff are comparable, except for the treatment.
- Bank branches, licenses, credit and deposits increased in treated districts post-policy. Bank Branches

Bank Expansion

Bank branches, licenses, credit and deposits increased in treated districts post-policy.

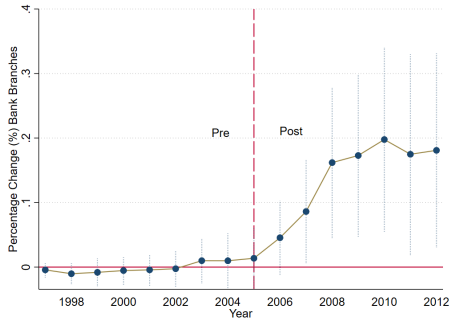


Figure: Bank Branches, Pre and Post Policy

Also found by Young (2017) and Cramer (2020)

Data

Data

- Follow Cramer (2020) in linking RBI MOF with Household and Firm Data

- Bank branch data from the Reserve Bank of India.
  - RBI's Master Office File (1997-2016)
  - RBI Basic Statistical Returns (2005-2015).

- India Human Development Survey (IHDS)
  - Panel data on 40,000 households.
  - Observe consumption expenditures, schooling, use of financial products, employment.
  - Pre Policy–2005, Post Policy–2012.

- Economic Census (EC)
  - Universe of enterprises; observe employment, loans. Pre Policy–2005, Post Policy–2013

Impact of Bank Access on Household Well-Being

Bank presence increases household well-being

Comparing households in treatment versus control group districts, bank presence

- increases per capita consumption expenditures by 13%. Consumption
- increases food expenditures by 9%. Food
- increases likelihood of owning a motor vehicle by 9%. Motor
- has no impact on poverty.

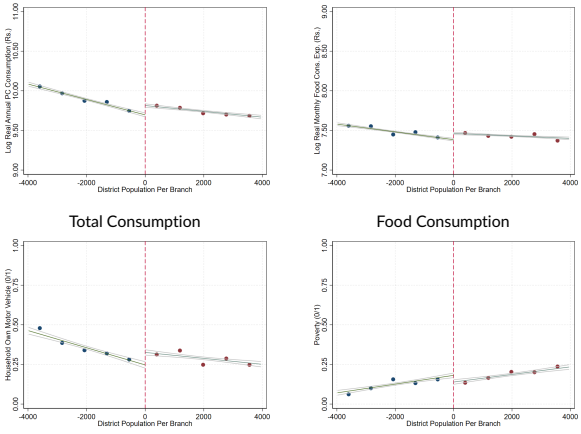


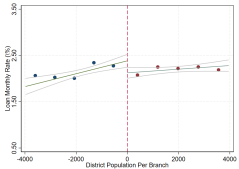
Figure: Post policy discontinuity

Financial Market Mechanisms

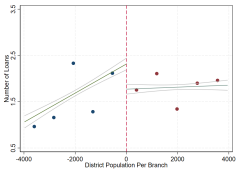
Bank presence increases household savings and investments, but not borrowing

Comparing households in treatment versus control group districts, bank presence

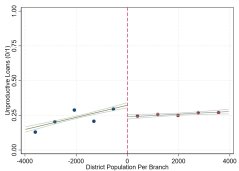
- Decreases interest paid by households on loans by 23%.
- Decreases number of loans taken out by households by 33%.
- Decreases consumption loans by 8%.
- Increases household savings by 21% and long term deposits by 10%.
- Negative, but insignificant impact on household debt.



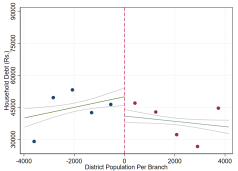
Interest Rate



Number of Loans



Number of Consumption Loans



Household Debt

Labor Market Mechanisms

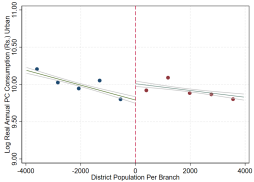
Labor Market Mechanisms

Comparing households and firms in treatment versus control group districts, bank presence

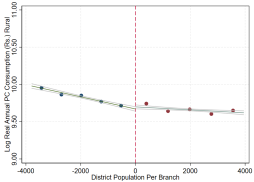
- Increases household wage income by 16%.
- Increases business earnings of household enterprises by 61%.
- Firms increase borrowing from financial institutions by 57%.
- Increases total employment in firms by 25%.

Heterogeneity in Impact of Banks

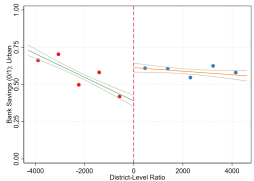
Urban households consume, earn, save, and invest more than rural households



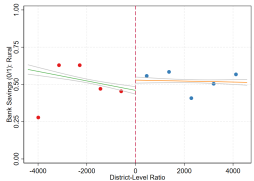
Urban Household Consumption



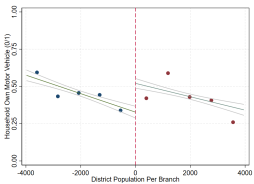
Rural Household Consumption



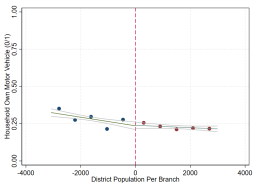
Urban Household Savings



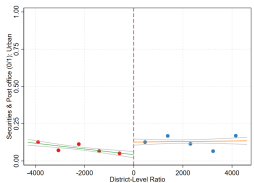
Rural Household Savings



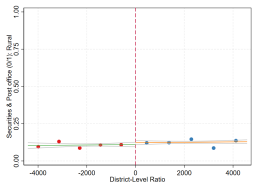
Urban Motor Vehicle Ownership



Rural Motor Vehicle Ownership

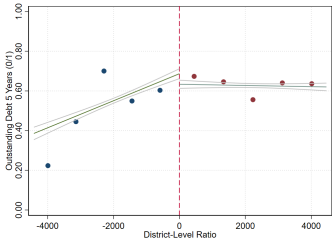


Urban Financial Securities

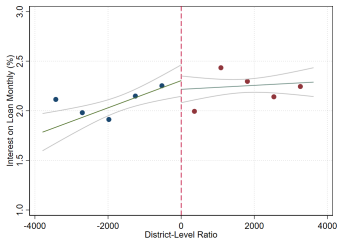


Rural Financial Securities

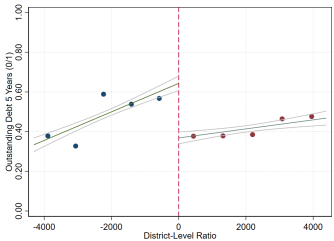
Borrowing and Debt in Rural and Urban Areas



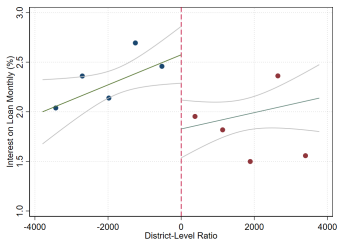
A: Rural Outstanding HH Debt



B: Rural Monthly Rate on Loan(%)



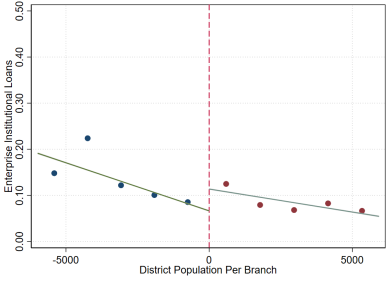
C: Urban Outstanding HH Debt



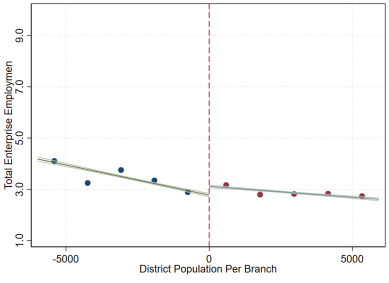
D: Urban Monthly Rate on Loan(%)

Urban firms borrow, earn, pay and hire more than rural firms

- Urban firms borrow more, hire more workers, pay more wages; no impact on rural firms.
- Increase in employment in urban firms by 40%. No impact on rural firms.
- Increase in business revenues by 40% for urban, 55% for rural.
- Wage earnings by 23% for urban, 11% for rural households.

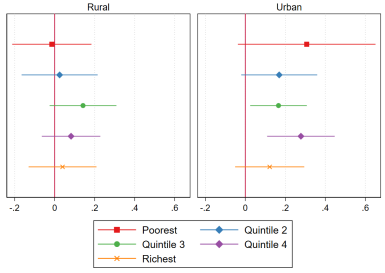


Enterprise Institutional Loan 2013

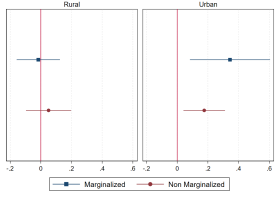


Total Enterprise Employment 2013

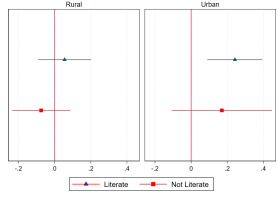
Heterogeneous Impact: Urban Poor, Literate and Marginalized Benefit the Most



A: *Treatment Effect by Income Quintiles*



B: *Treatment Effect by Marginalization*



C: *Treatment Effects by Education*

Table: Impact of Bank Expansion on Enterprise Borrowing by Sector

Standard errors in parentheses clustered at the district level. $*p < 0.1$, $**p < 0.05$,$***p < 0.01$.

	(1)	(2)	(3)	(4)	(5)	(6)
	Organized			Unorganized		
	All	Rural	Urban	All	Rural	Urban
A: Enterprise Institutional Loans						
Treated	0.0414**	0.0540**	0.0400**	0.00878	0.010	0.014**
	(0.018)	(0.025)	(0.019)	(0.007)	(0.006)	(0.006)
Control Mean	0.08	0.09	0.09	0.024	0.024	0.024
First Stage	0.88	0.89	0.87	0.84	0.85	0.83
Bandwidth	4,839	4,401	4,156	3,382	4,906	5,004
Observations	722,363	329,975	392,388	54,282,267	33,131,949	21,150,318
	Rural			Urban		
	Primary	Secondary	Services	Primary	Secondary	Services
B: Enterprise Institutional Loans						
Treated	0.0133	0.006	0.015*	0.008*	0.019**	0.013*
	(0.008)	(0.010)	(0.008)	(0.004)	(0.007)	(0.007)
First Stage	0.85	0.65	0.86	0.89	0.79	0.84
Control Mean	0.012	0.027	0.037	0.010	0.022	0.027
Bandwidth	3,059	1,700	5,130	5,121	4,536	5,264
Efficient Obs.	3,058,026	1,190,442	9,434,932	661,780	2,852,271	9,549,695
Observations	11,623,782	5,821,063	16,017,079	1,022,318	4,998,381	15,522,007

Conclusion

- Exploit regression discontinuity design to study causal impact of bank presence on households and firms.
- Show impact on households is via spillover effects through the labor market.
- Heterogenous impact on urban/rural, high/low income households has policy implications for impact of financial inclusion on inequality.

Can Banks Increase Household Reslience to Natural Disasters?

Impact of Natural Disasters on Household Well-Being



Natural Disaster



Banks

Loss of life, health, crops, homes

Loss of business, assets



Decrease in Consumption



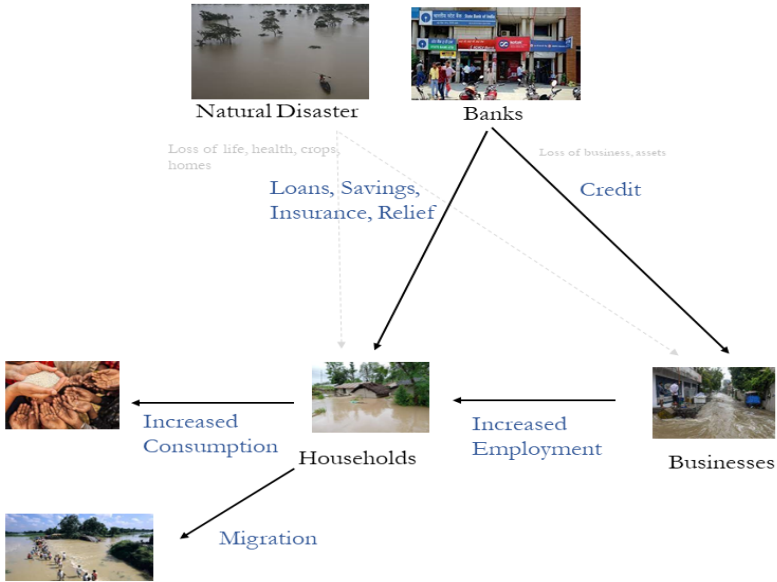
Households

Decrease in Employment



Firms

Can banks increase household resilience?



This Paper

Research Questions

1. Does bank presence increase household resilience in natural disasters?
2. What are the mechanisms?

Identification Strategy

- Nationwide **branch expansion policy** of the Reserve Bank of India.
- Policy incentivizes banks to set up branches in **underbanked** districts.
- **Regression discontinuity design**.