

Does microfinance contribute to economic development? Evidence from reinforcing regulation on microfinance institutions in India

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Motivation

“What we did is look at conventional banking and do it the opposite way.”

- Muhammad Yunus

Nobel Prize (2006) for Grameen Bank (1983)

Question	Finance	Microfinance
Who gives?	Traditional financing organizations like banks	Specialized organization called MFI
Who gets?	Creditworthy individuals/ businesses	Financially excluded sections especially the poor
How they get?	Need collateral	Doesn't need collateral. Usually works on joint liability.
How much they get?	Could run in millions	Less than 500 USD

Is microfinance related to economic development and if so,
what is the causal direction?

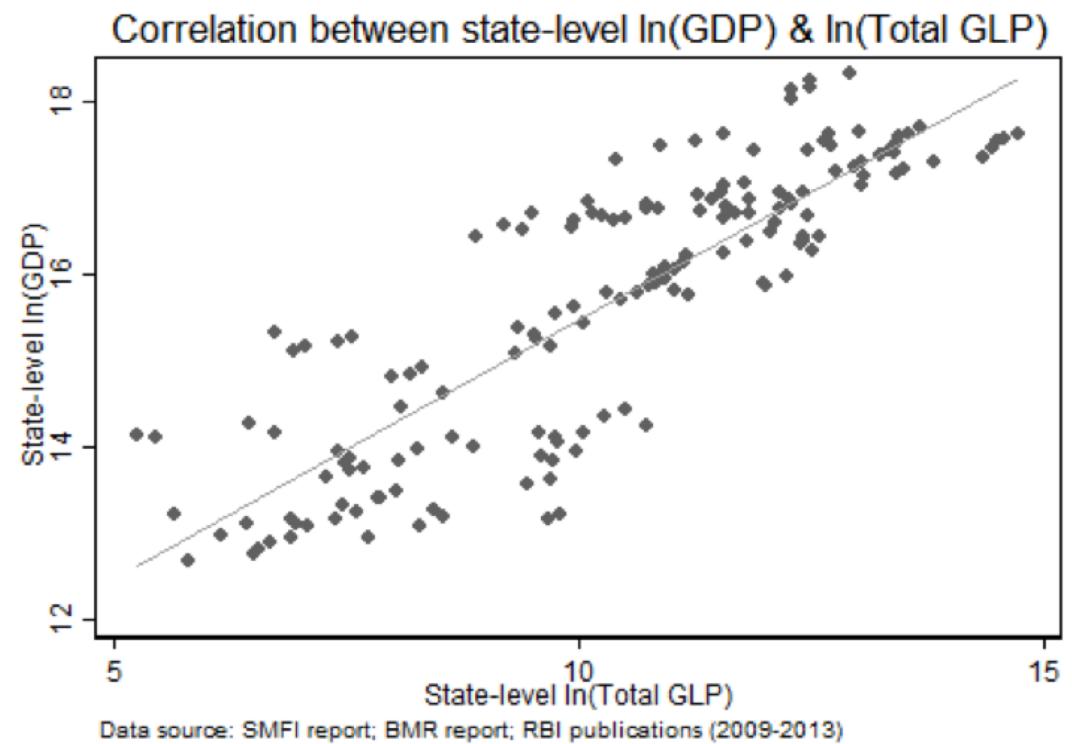
Objective

Positive Correlation

- Adonsou and Sylwester (2015) find a positive and significant effect of microfinance on economic growth and total factor productivity.
- Buera, Kaboski and Shin (2012) show that output, wages, total factor productivity have been significantly affected by microfinance.
- Ahlin and Jiang (2005) infer that microfinance helps in lowering the inequality and poverty in long run.

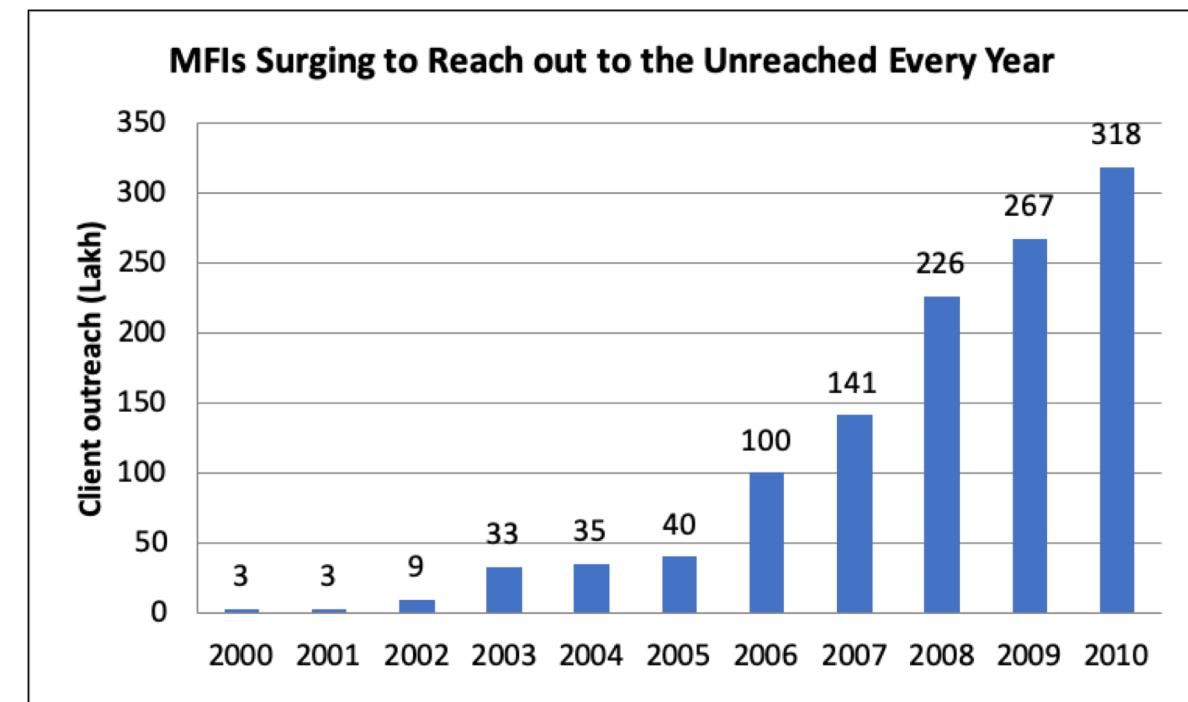
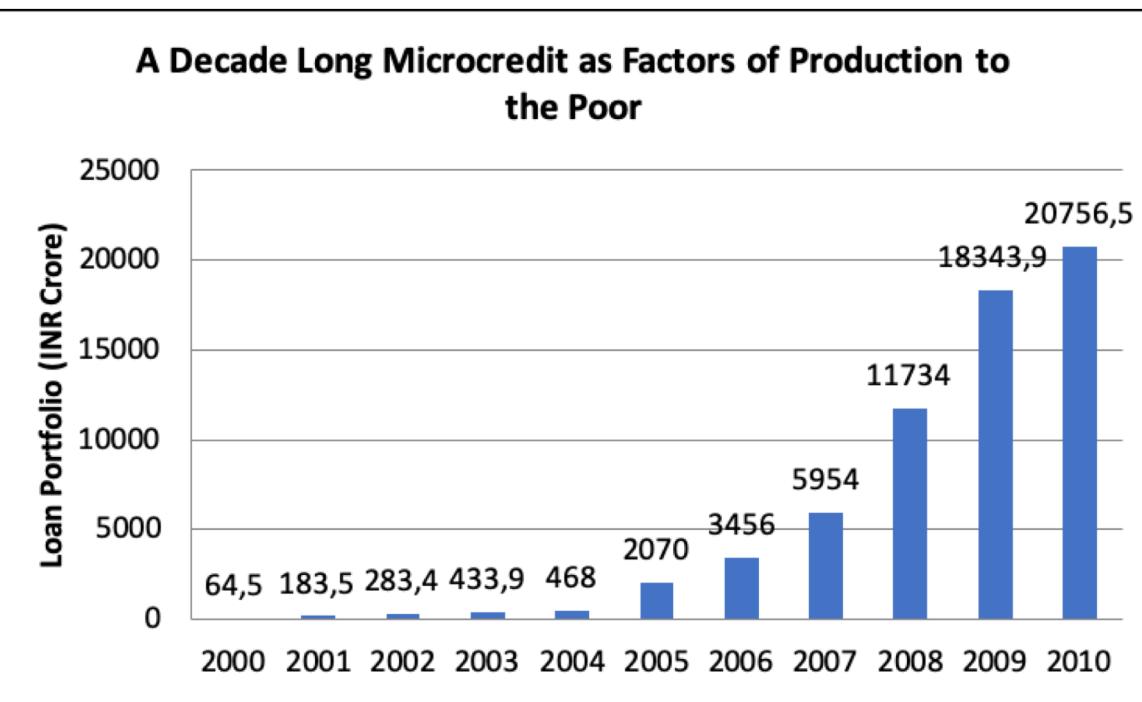
Use D-i-D with exogenous shock

- In the context of India using Regulation on MFI
- This regulation has not been used before to study the effect of microfinance on economic development.

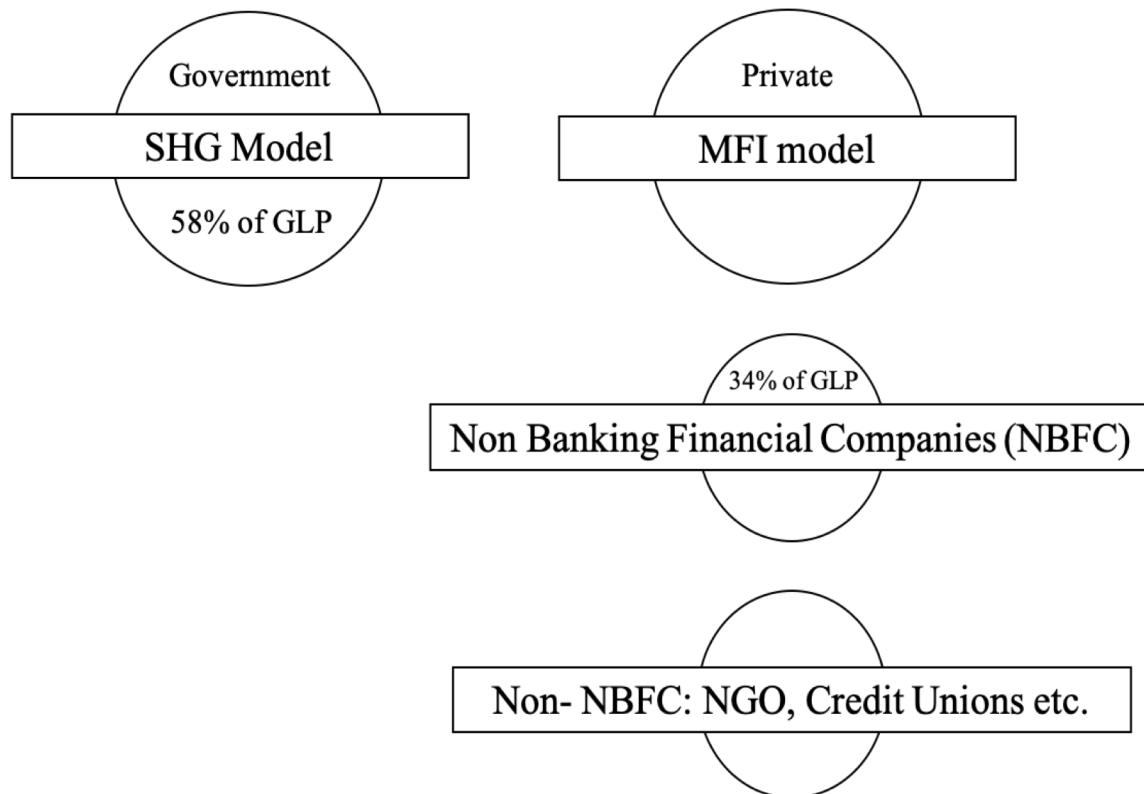


Microfinance in India

- Second most populous country in the world
- 22% of the population is under National Poverty Line (earning less than 0,5 € per day)
- 19% of the population is financially excluded
- Has the world's largest microfinance industry (2010)



Microfinance in India



≡ Q BUSINESS INSIDER

Hundreds Of Suicides In India Linked To Microfinance Organizations

THE WALL STREET JOURNAL.

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India's Major Crisis in Microlending

Loans Involving Tiny Amounts of Money Were a Good Idea, but the Explosion of Interest Backfires

South Asia

India's micro-finance suicide epidemic

By Soutik Biswas
BBC News, Medak, Andhra Pradesh

Regulation (2011)

Important measures:

- 12% cap on margin
- 26% cap on interest rate
- Longer repayment period
- More loans for income-generating activities
- Guidelines on fair lending practices
- Screening of clients to avoid over-borrowing

This regulation is taken for consumer protection and to safeguard the vulnerable poor from being exploited.

RESERVE BANK OF INDIA
DEPARTMENT OF NON-BANKING SUPERVISION
CENTRAL OFFICE
CENTRE I, WORLD TRADE CENTRE,
CUFFE PARADE, COLABA,
MUMBAI 400 005

Notification DNBS. PD.No.234 / CGM(US)-2011 dated December 02, 2011

The Reserve Bank of India having considered it necessary in the public interest and being satisfied that for the purpose of enabling the Bank to regulate the credit system to the advantage of the country, it is necessary to give the directions set out below, hereby, in exercise of the powers conferred by sections 45JA, 45K, 45L and 45M of the Reserve Bank of India Act, 1934 (2 of 1934), and of all the powers enabling it in this behalf, hereby gives the Directions hereinafter specified.

PART I PRELIMINARY

1. Short title and commencement of the Directions

- i. These Directions shall be known as the Non-Banking Financial Company -Micro Finance Institutions (Reserve Bank) Directions, 2011.
- ii. These Directions shall come into force with immediate effect.

2. Extent of the Directions

These Directions shall apply to every Non Banking Financial Company-Micro Finance Institution (NBFC-MFI) as defined in these Directions.

3. Definition of NBFC-MFI

An NBFC-MFI is defined as a non-deposit taking NBFC(other than a company licensed under Section 25 of the Indian Companies Act, 1956) that fulfils the following conditions:

Methodology

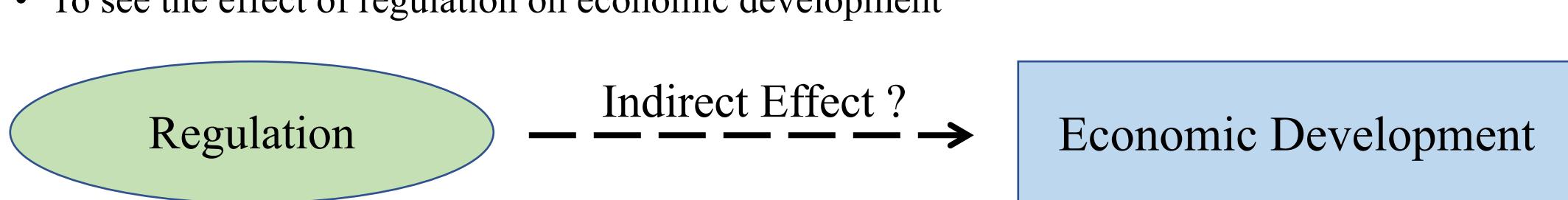
Step 1: Institution-level D-i-D analysis

- To see the effect of regulation on microfinance



Step 2: State-level D-i-D analysis

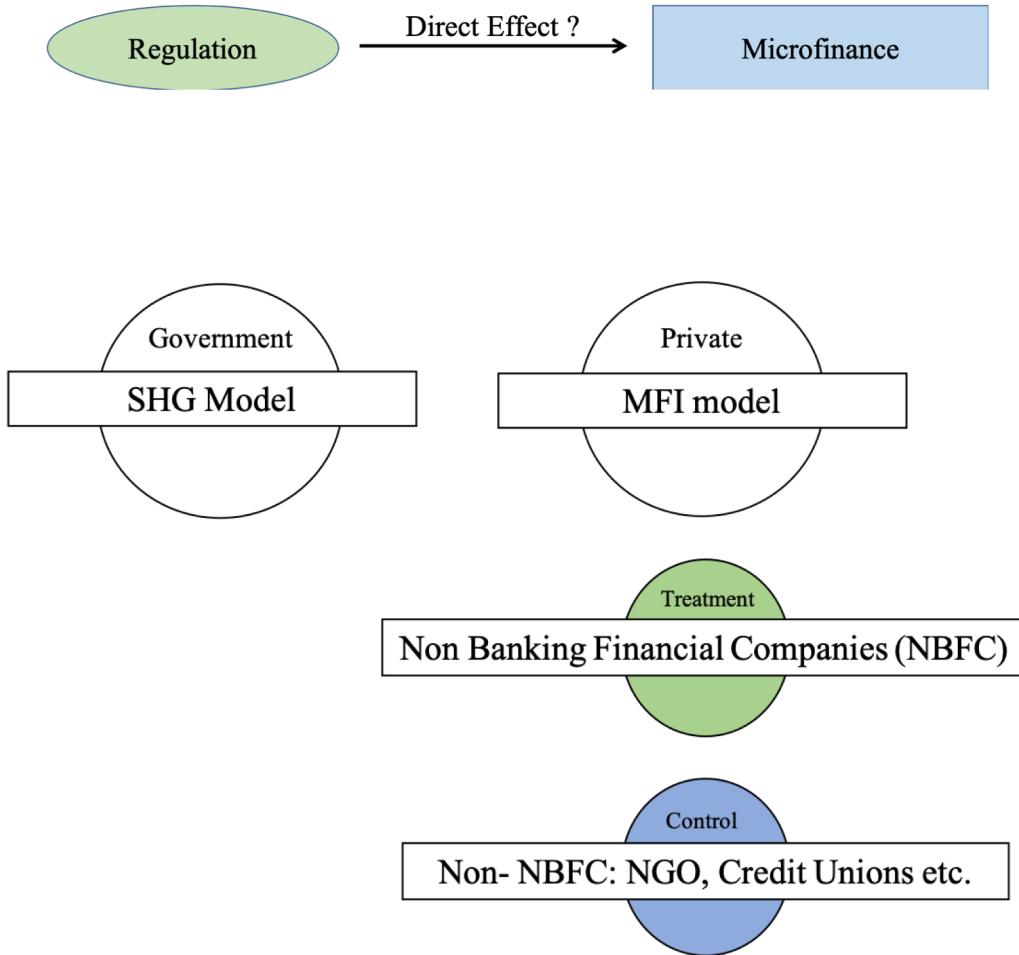
- To see the effect of regulation on economic development



Data

	Institution-level analysis	State-level analysis
Data Type	Panel data	Panel data
Built by	Mr. Rehbein	Us
Source	MIX market	BMR report, SMFI report, RBI publication
Observations	Indian institutions in the MFI model (NBFC, NGO, rural bank, cooperative, etc.)	Indian states
Variables	Information about balance sheets and financial statements	Information about microfinance sector and economic outcomes
Time periods	2010, 2011, 2012	2010, 2011, 2012 (not for all)`

Institution-level identification



$$y_{it} = \alpha_0 + \alpha_i + \alpha_t + \alpha_1(Post_t * Dir_affected_i) + \epsilon_{it}$$

y_{it} : Institution-level outcome variable for institution i in year t

α_i : Institution-level fixed effects

α_t : Time fixed effects

α_1 : Average treatment effect

$Post_t$: Dummy variable for period. 0 for 2010 and 1 for 2011 & 2012

$Dir_affected_i$: Dummy variable for group. 0 for non-NBFC and 1 for NBFC

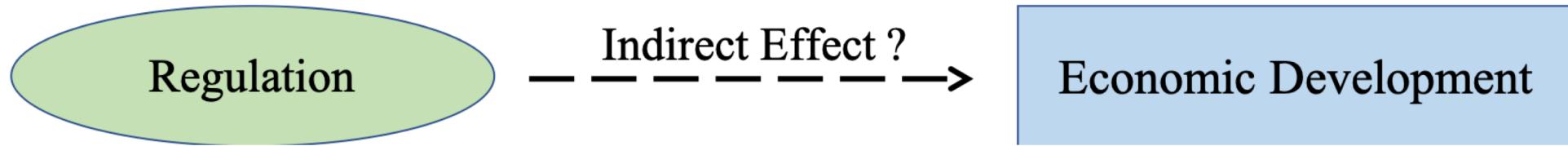
Outcome variables: Gross Loan Portfolio, No. of borrowers, No. of loans, No. of branches, No. of staff, Portfolio at Risk, Return on Assets

Results

- Estimation to see the effect of regulation on the MFI
- Outcome variables with respect to size of the business, quality of portfolio and profitability

Outcome Variable	N	$\text{Post}_t * \text{Dir_affected}_i$	p-value	Mean value before regulation (2010)	% change
GLP (Million USD)	311	-18.9	0.140	46.8	-40
No. of loans	297	-124138.6**	0.034	330139.2	-37
No. of borrowers	299	-93999.37*	0.063	299728.4	-31
No. of branches	246	-44.95*	0.073	165.8	-27
No. of staff	301	-499.92**	0.02	1030.8	-48
PAR 30	236	-0.066	0.637	0.096	-69
PAR 90	236	-0.018	0.863	0.075	-24
ROA	271	-0.039**	0.035	0.015	-260

State-level identification

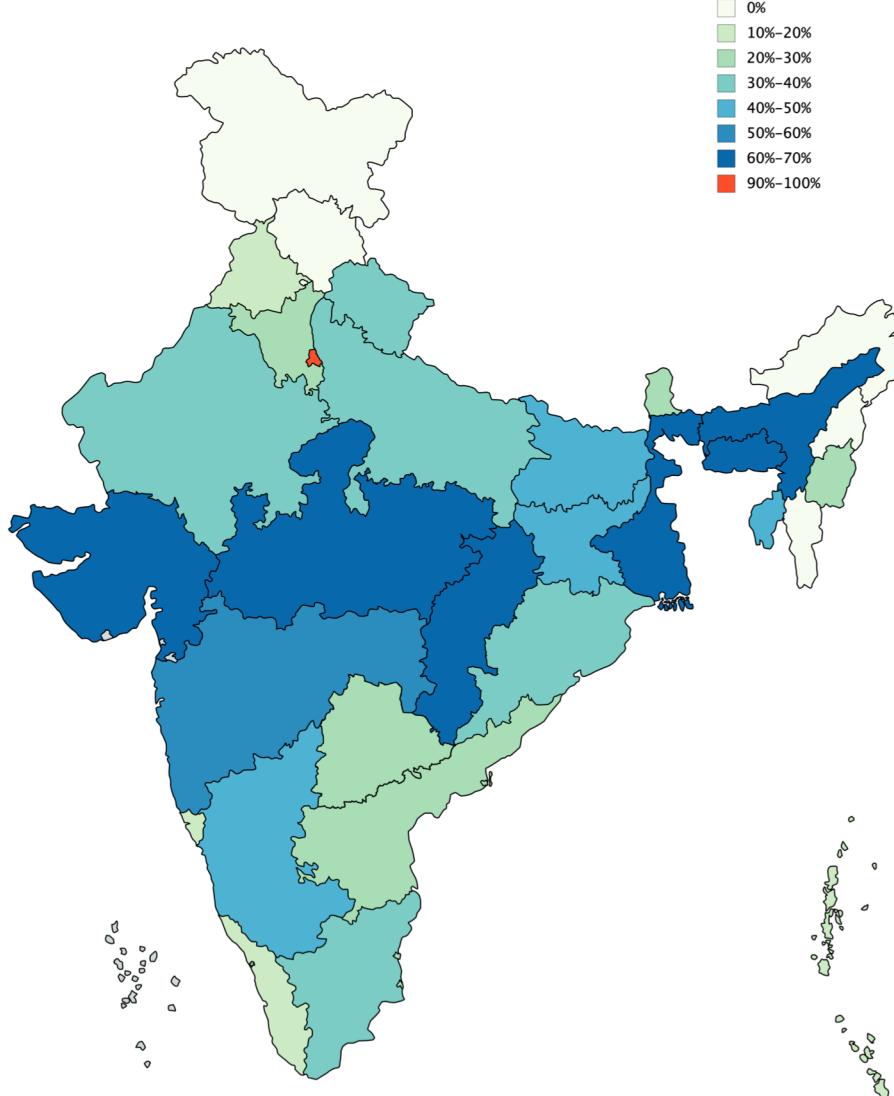


- Can we use standard binary D-i-D ?
No. All the states implement this regulation. So all the states would be in the treatment group.
- What can be done?
We use Continuous D-i-D in this scenario.
- What is the exposure to regulation for each state?
Direct data about it is not available. So we use the following formula to compute the treatment exposure of each state.

$$Indir_affected_j = Exposure_j = \frac{MFI\ GLP\ 2010_j}{MFI\ GLP\ 2010_j + SHG\ GLP\ 2010_j}$$

- Assumption: regulation has an identical effect on each unit of GLP

State-level identification



$$y_{jt} = \beta_0 + \beta_j + \beta_t + \beta_1(Post_t * Indir_affected_j) + \epsilon_{jt}$$

y_{jt} : State-level outcome variable for state j in year t

β_j : State-level fixed effects

β_t : Time fixed effects

β_1 : Average treatment effect

$Post_t$: Dummy variable for period. 0 for 2010 and 1 for 2011 & 2012

$Indir_affected_j$: Treatment exposure of state j

Outcome variables: Gross State Domestic Product (in logs), Dropout rate, Unemployment rate in Rural areas, Poverty rate

Results

- Estimation to see the effect of regulation on the economic development
- Outcome variables with respect to economic growth, education, employment and poverty

Outcome Variable	N	$\text{Post}_t * \text{Indir_affected}_j$	p-value
In(GSDP)	96	0.02	0.42
Dropout rate (%)	72	-2.69	0.301
Unemployment Rate in rural areas (per 1000)	62	14.10	0.481
Poverty Rate (%)	64	-9.89**	0.013

Conclusion

- We find that:

Regulation has significant negative effect on microfinance

- We do not find that:

Regulation has significant effect on the economic development

- Hence we do not find evidence to show that:

Microfinance contributes to economic development

Further research possibility

Three possible reasons why we cannot get significant result in the state-level analysis:

- Our identification strategy might not be precise enough
- The effect on economic development might show up in the long run
- Our regression model without any control variables is not accurate

Backup

Model with and without fixed effects

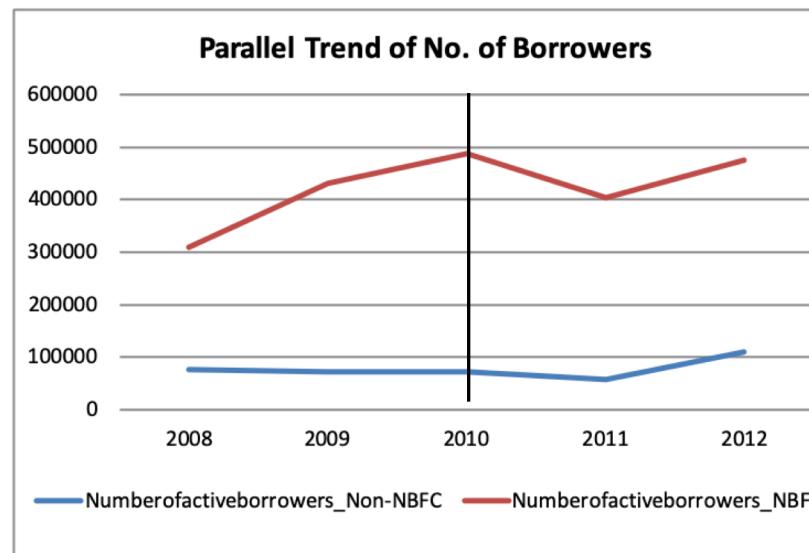
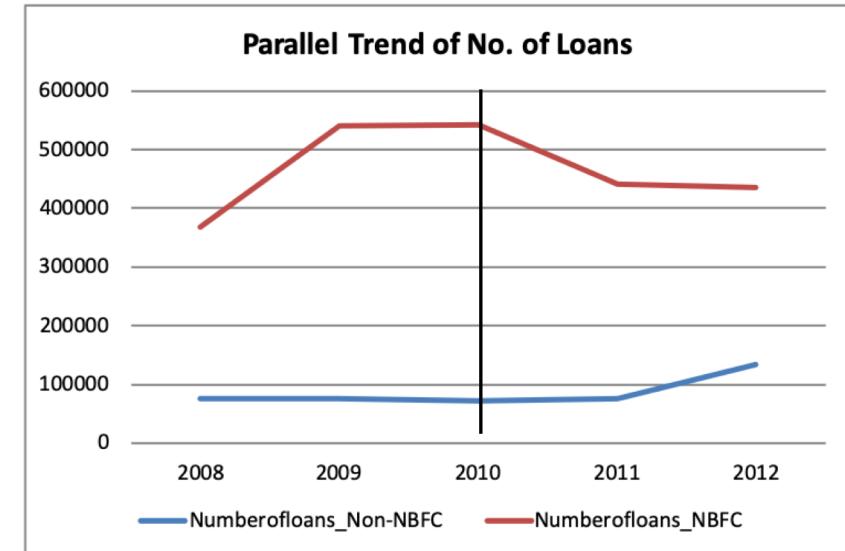
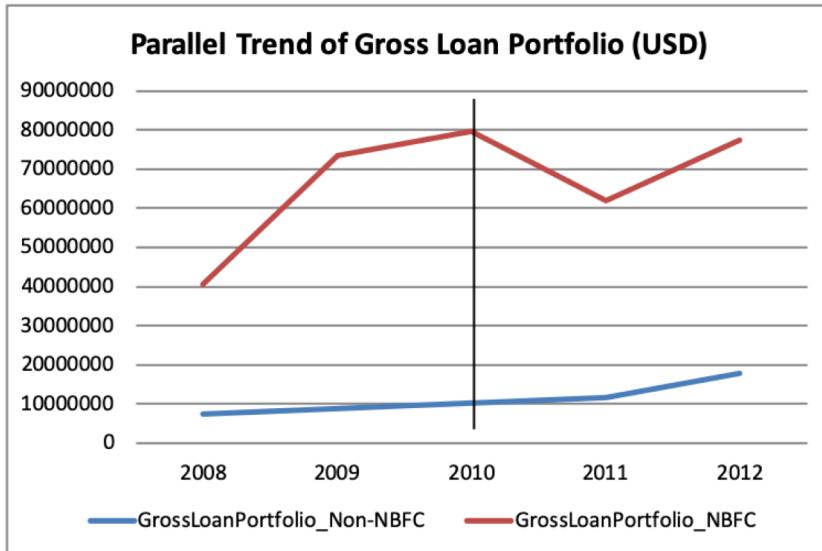
- Model with fixed effects

$$y_{it} = \alpha_0 + \alpha_i + \alpha_t + \alpha_1(Post_t * Dir_affected_i) + \epsilon_{it}$$

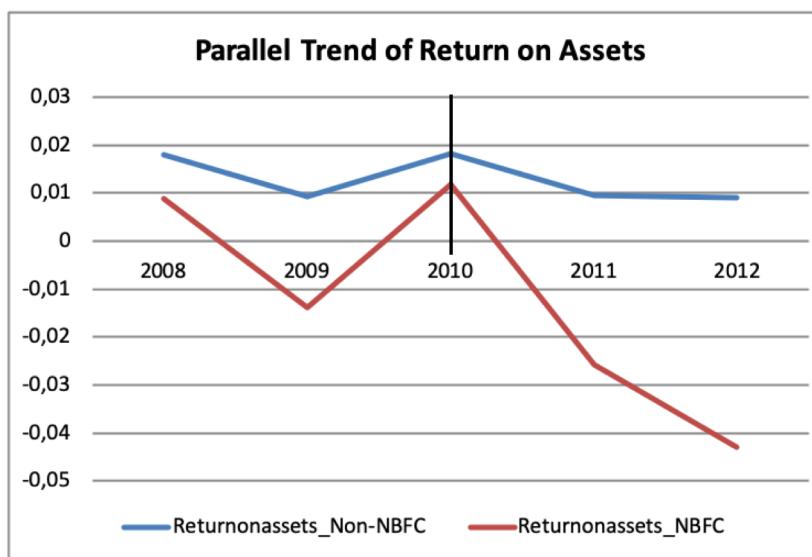
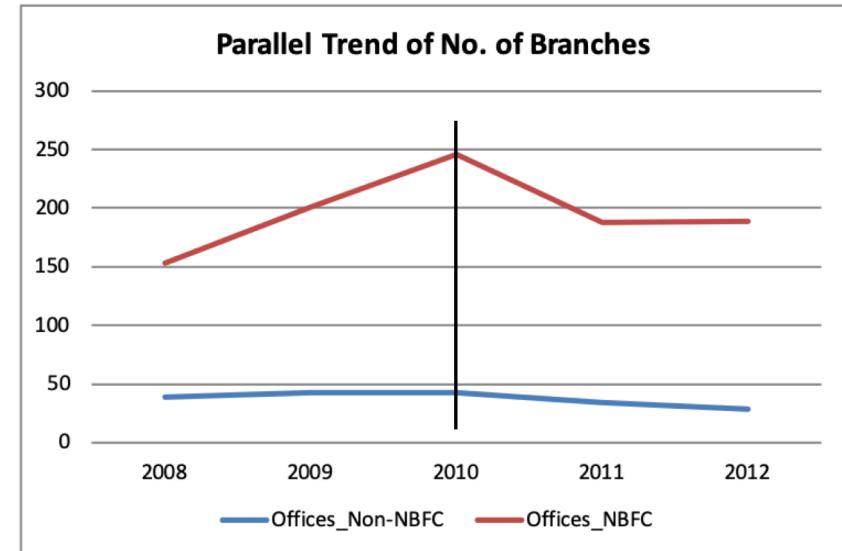
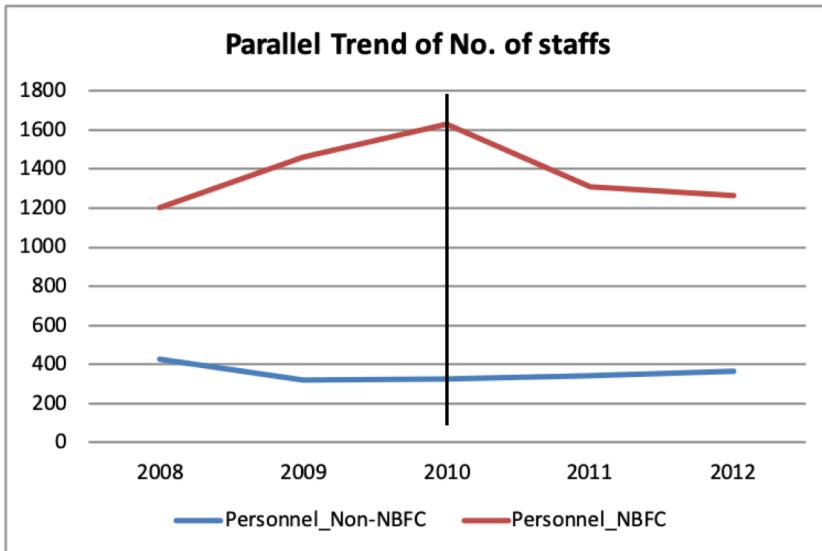
- Model with out fixed effects

$$y_{it} = \alpha_0 + \alpha_1(Post_t * Dir_affected_i) + \alpha_2 Dir_affected_i + \alpha_3 Post_t + \epsilon_{it}$$

Parallel Trends



Parallel Trends



Identification at State-level for MFI

- Estimation to test our identification with state-level data about microfinance sector
- Note: 1 Lakh = 100000, e.g. -5.78 lakh = -0.578 million

$$y_{jt} = \beta_0 + \beta_j + \beta_t + \beta_1(Post_t * Indir_affected_j) + \epsilon_{jt}$$

Outcome Variable	Post _t *Indir_affected _j	Placebo test
In(MFI GLP)	-0.57	0.79
In(Total GLP)	-0.49	0.27
No. of MFI clients (Lakh)	-5.78*	8.48**

Placebo test for Institution-level

Outcome Variable	Post _t *Dir_affected _i	Placebo test
GLP (Million USD)	-18.9	10.2*
No. of loans	-124138.6**	81629.9***
No. of borrowers	-93999.37*	95686.28***
No. of branches	-44.95*	63.58***
No. of staff	-499.92**	321.88***
PAR 30	-0.066	0.006
PAR 90	-0.018	-0.006
ROA	-0.039**	0.014

Placebo test for State-level

Outcome Variable	$\text{Post}_t * \text{Indir_affected}_j$	Placebo test
In(GSDP)	0.02	0.014
Dropout rate (%)	-2.69	-0.87
Unemployment Rate in rural areas (per 1000)	14.10	/
Poverty Rate (%)	-9.89**	/

Relative change after the regulation: Institution-level

Outcome Variable	N	$\text{Post}_t * \text{Dir_affected}_i$	Mean value of NBFC before regulation (2010)	% change
GLP (Million USD)	311	-18.9	79.7	-24
No. of loans	297	-124138.6**	543143.1	-23
No. of borrowers	299	-93999.37*	488469.8	-19
No. of branches	246	-44.95*	246.1	-18
No. of staff	301	-499.92**	1628.8	-31
PAR 30	236	-0.066	0.092	-72
PAR 90	236	-0.018	0.067	-27
ROA	271	-0.039**	0.012	-325