

# The Transmission of Monetary Policy *Within* Banks: Evidence from India

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# Qualifier

Views are personal.  
Not necessarily the official viewpoint of RBI

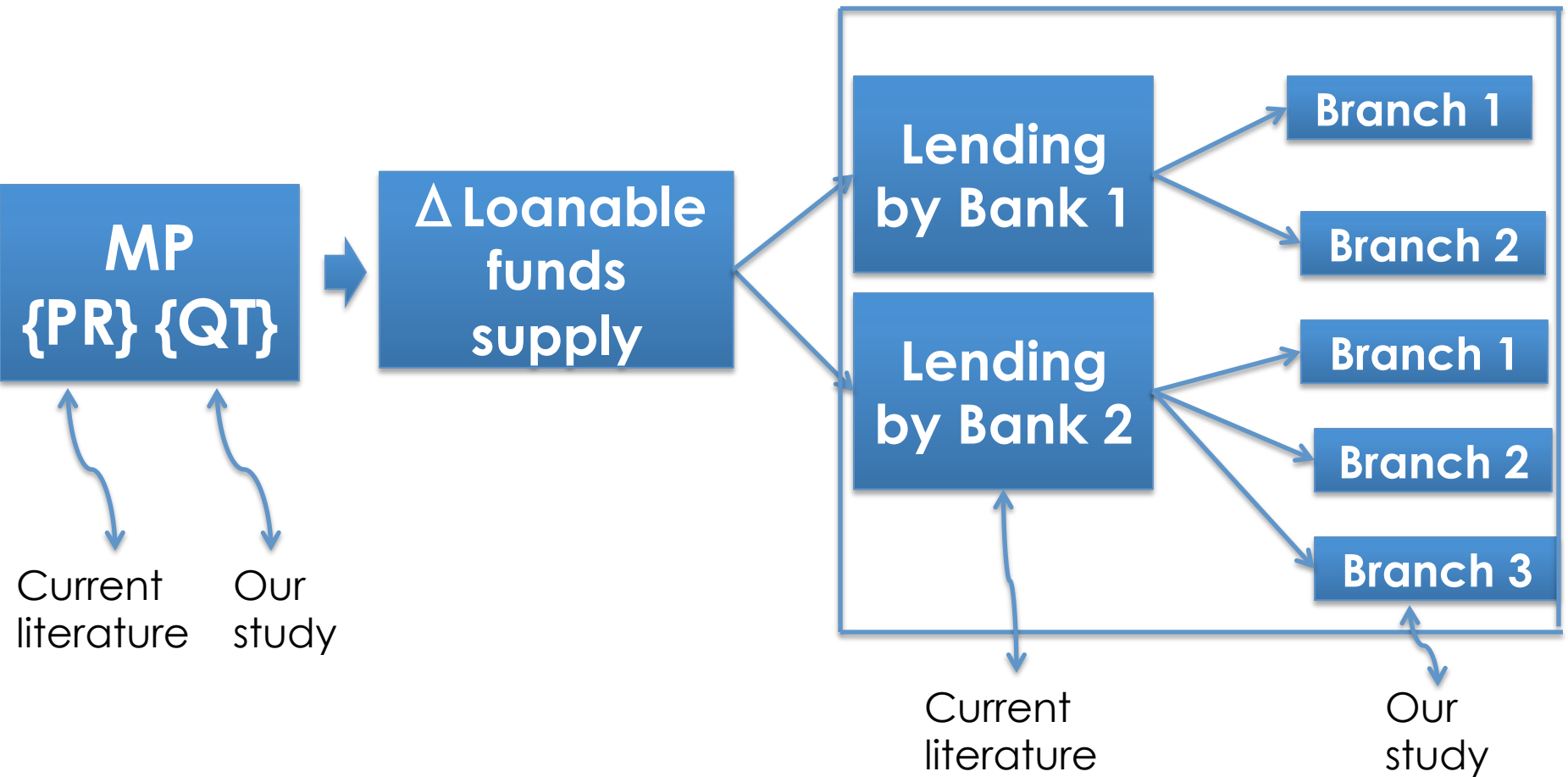
# Old Question

- Transmission of monetary policy

# Our Study

- How changes in MP moves banks?
- We look at lending response to MP *within* banks
  - Branch level analysis
  - Granular data @ bank-branch-year
- We look at quantitative tools of monetary policy
- We look at evidence from India, an EM.

# Our Study



# Why India #1

- Banks matter
  - Bank lending 40% of assets
    - 20% for US and 60% for Germany
- State owned and private banks, both significant
  - New literature (Morck, Yavuz, Yeung, 2014)
- Branches matter
  - See next slide

# Branches

- Economically important
  - Actual lending @ branches
  - Decision making delegated to branches

- Quantitatively important

	# banks	# branches
• India	150	126,873
• USA	6,600	94,000

- Our study focuses on India but the issues are relevant to other markets too.

# Why India #2

- Quantitative tools have been extensively used
- Cash Reserve Ratio (CRR)
- Advantages
  - **Direct.** Frees up or freezes *internal* funds directly
  - **Quick.**
  - **Potent.** CRR earns zero interest rates
  - **Frequent.**
  - **Identical.** across banks



# Preview of Findings

- MP through quantity tools affects lending “within” banks
  - The effect of changes in CRR on branch-lending depends on branch characteristics

# Outline

- Related work and Contribution
- Data
- Empirical framework
- Empirical results
- Conclusions

# Related Work

- Current literature focuses on across-bank variation
  - Kashyap and Stein (2000)
    - Liquidity, size, capital
  - Morck, Yavuz, and Yeung (2014)
    - State-owned banks

# Contributions of this Study

- **Internal frictions matter for monetary transmission**
  - Granular data on internal organization of banks
- **Reserve requirement offer unique experiment**
  - Release of bank's own funds
    - Direct, quick, potent, frequent, both directions, independent of bank characteristics

# Contributions of this Study (contd.)

- **State-owned vs private**
  - Transmission sluggish for state-owned banks
  - Micro picture of risk taking channel of MT
- **Progress on Identification**
  - More granular controls for heterogeneity
    - Interactive bank-year and district-year FEs rule out more sources of heterogeneity

Data

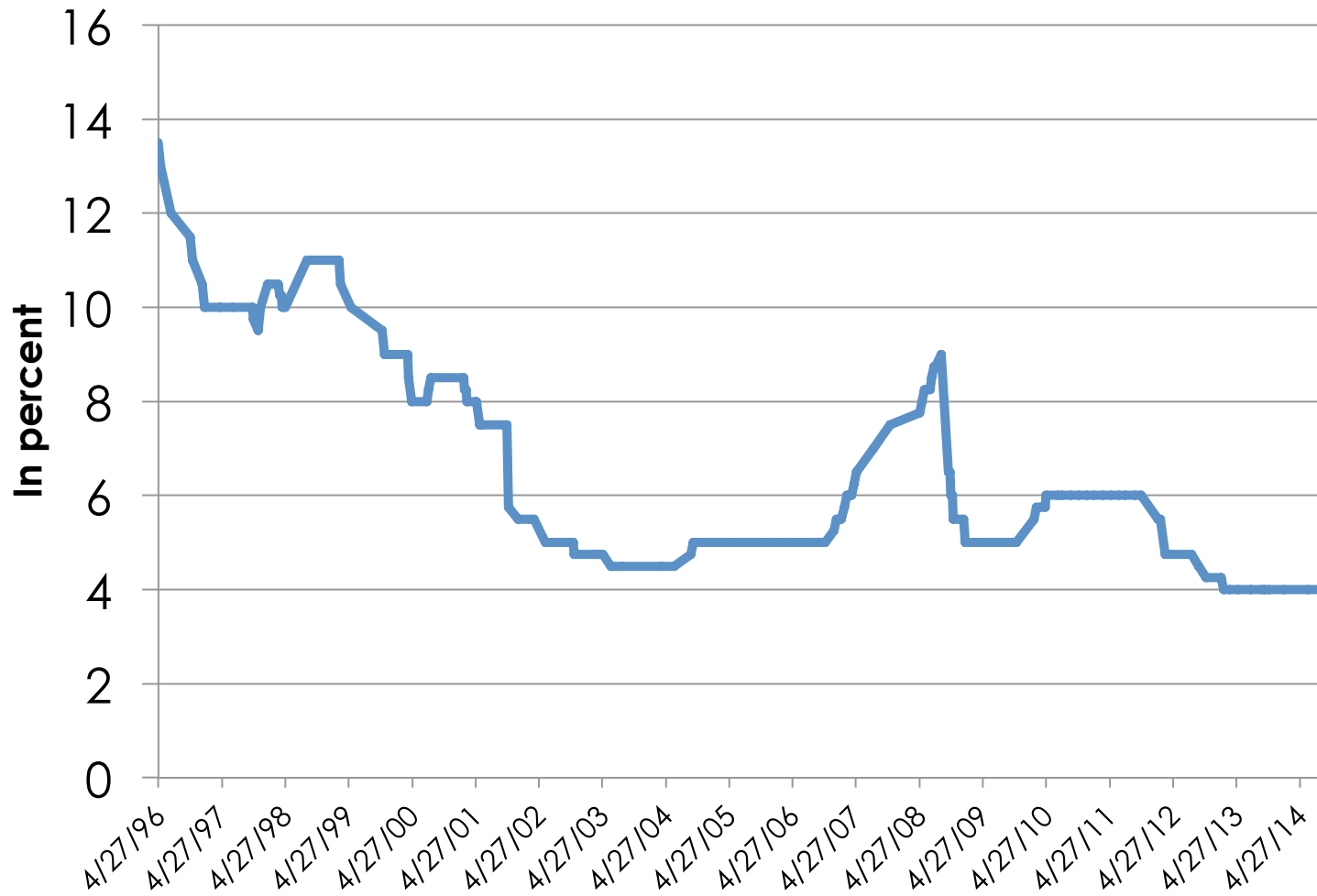
# Decomposition of Variation in Log(lending)

One-way Analysis of Variance				
In %	1996	2005	2009	2013
Between banks	27	24	18	10
<b>Within Banks</b>	<b>73</b>	<b>76</b>	<b>82</b>	<b>90</b>





# CRR



# Summary of Branch Variables

## I. Branch organization variables

<b>Idea</b>	<b>Measure</b>	<b>Transmission</b>
Complicated decision making	High ticket size of loans; long-term loans; low credit to deposit ratio	1. Weak
Better expertise	Large branches; more officers	2. Strong
More bureaucracy	High clerks/officers	3. Weak

## II. Local funds

<b>Idea</b>	<b>Measure</b>	<b>Transmission</b>
Poor local funding	Branch deposits	1. Strong if need based 2. Weak if incentive story

# Summary of Branch Variables (contd.)

## III. Branch location

Idea/ Measure	Transmission
Rural	<ol style="list-style-type: none"><li>1. Weak if distance to lending</li><li>2. Strong if credit constraint</li></ol>

## IV. Profits and Risk

Idea	Measure	Transmission
More risky branches	Branch NPA	<ol style="list-style-type: none"><li>1. Strong if risk-taking</li><li>2. Weak</li></ol>
High credit spread	Interest rate spread	<ol style="list-style-type: none"><li>1. Weak/strong if indicate risk</li><li>2. Strong if indicate profits</li></ol>

# Branch-level Heterogeneity: An example

State Bank of India, 2013			
Variable	Coefficient of variation	5 <sup>th</sup> percentile	95 <sup>th</sup> percentile
Credit/deposit ratio	0.8	0.08	2.83
Officers	2.1	1	11
Clerks/officers	0.5	0.75	3.5
Credit spreads	1.4	-2.7	0.97
<b><i>Within Mumbai district</i></b>			
Credit/deposit ratio	0.09	0.02	2.4
Officers	2.5	2	83
Clerks/officers	0.4	0.5	2.6
Credit spreads	0.8	-4.4	0.69

# Empirical Framework

$$\ln L_{ijt} = \alpha + \beta B_{ijt-1} + \delta M_t * B_{ijt-1} + s_i * \pi_t + s_d * \pi_t + \varepsilon_{ijt}$$

$L_{ijt}$  Value of lending at bank-branch-year level

$B_{ij}$  Bank-branch characteristic

$M_t$  Monetary policy instrument

$s_i$  Bank fixed effects

$s_d$  District fixed effects

$\pi_t$  Year fixed effects

Standard errors clustered at bank-branch level

# Results

## Transmission of Monetary Policy to Branch Lending and Branch Characteristics. Multivariate Regression

Dependent variable: Log lending at bank x branch x year

### Intra bank organization

CRR x High Ticket Size	0.039***
CRR x High Credit to Deposit	-0.033***
CRR x High Share of Long-Term Loans	0.027***
CRR x High Number of Officers	-0.099***

### Local Funds

CRR x Low Deposits	0.011***
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### Branch Location

CRR x Rural	-0.006**
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### Risk and Branch credit spread

CRR x High Share of NPAs	0.026***
CRR x High Interest Rate Spreads	0.047***

Observations	300,329
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## Transmission of Monetary Policy to Branch Lending and Branch Characteristics. Overall Effect

Dependent variable: Log lending at bank x branch x year

CRR	-0.210***
CRR x High Ticket Size	0.052***
CRR x High Credit to Deposit	-0.047***
CRR x High Share of Long-Term Loans	0.037***
CRR x High Number of Officers	-0.035***
CRR x Low Deposits	0.014***
CRR x Rural	-0.016***
CRR x High Share of NPAs	0.025***
CRR x High Interest Rate Spreads	0.050***
Observations	300,329



# So far..

- MP changes affects lending *within* banks
  - Effect on branch lending depends on branch characteristics

## *I. Intra bank organization*

- Weaker transmission when decision making more complicated
- Stronger transmission when better expertise and less bureaucracy

## *II. Local funds*

- Weaker transmission where low deposit mobilization

## *III. Geographical location*

- Stronger transmission where households credit constrained

## *IV. Profits and risk.*

- Weaker transmission where greater risk
- Weaker transmission where higher credit spreads

# Interaction Effects

- Type of bank
  - State owned and private banks

## State Owned vs Private Banks

Dependent variable: Log lending at bank x branch x year

	State-owned	Private
<u><i>Intra bank organization</i></u>		
CRR x High Ticket Size	0.023***	0.152***
CRR x High Credit to Deposit	-0.024***	-0.080***
CRR x High Share of Long-Term Loans	0.023***	0.086***
CRR x High Number of Officers	-0.090***	-0.155***
<u><i>Local Funds</i></u>		
CRR x Low Deposits	0.010***	0.010
<u><i>Branch Location</i></u>		
CRR x Rural	-0.028***	0.111***
<u><i>Risk and Branch credit spread</i></u>		
CRR x High Share of NPAs	0.003	0.208***
CRR x High Interest Rate Spreads	0.042***	0.074***
Observations	271,629	28,700

# Summary

- By ownership
  - lending by state-owned banks more sticky
  - state-owned banks lend more to rural areas
  - private banks more conscious of risk

# Other Robustness

- Different samples
  - Include RRBs; exclude SBI
- Different specification
  - Lagged monetary policy
- Omitted variables
  - Election
  - Horse race with other macro variables e.g. inflation, other monetary policy tools

# Conclusions

- We look at lending response to *MP within* banks
  - Branch level analysis
  - Quantitative tools
  - India

# Conclusions (contd.)

- Internal frictions matter
  - Literature (e.g. Bernanke and Gertler and others) ask what frictions explain transmission
  - Current literature focuses on *external* constraints that banks face
  - We focus on *internal* frictions
  - Understanding Internal frictions give new insights

Thank you!

Questions?