The anatomy of the Indian credit boom of 2004-2008

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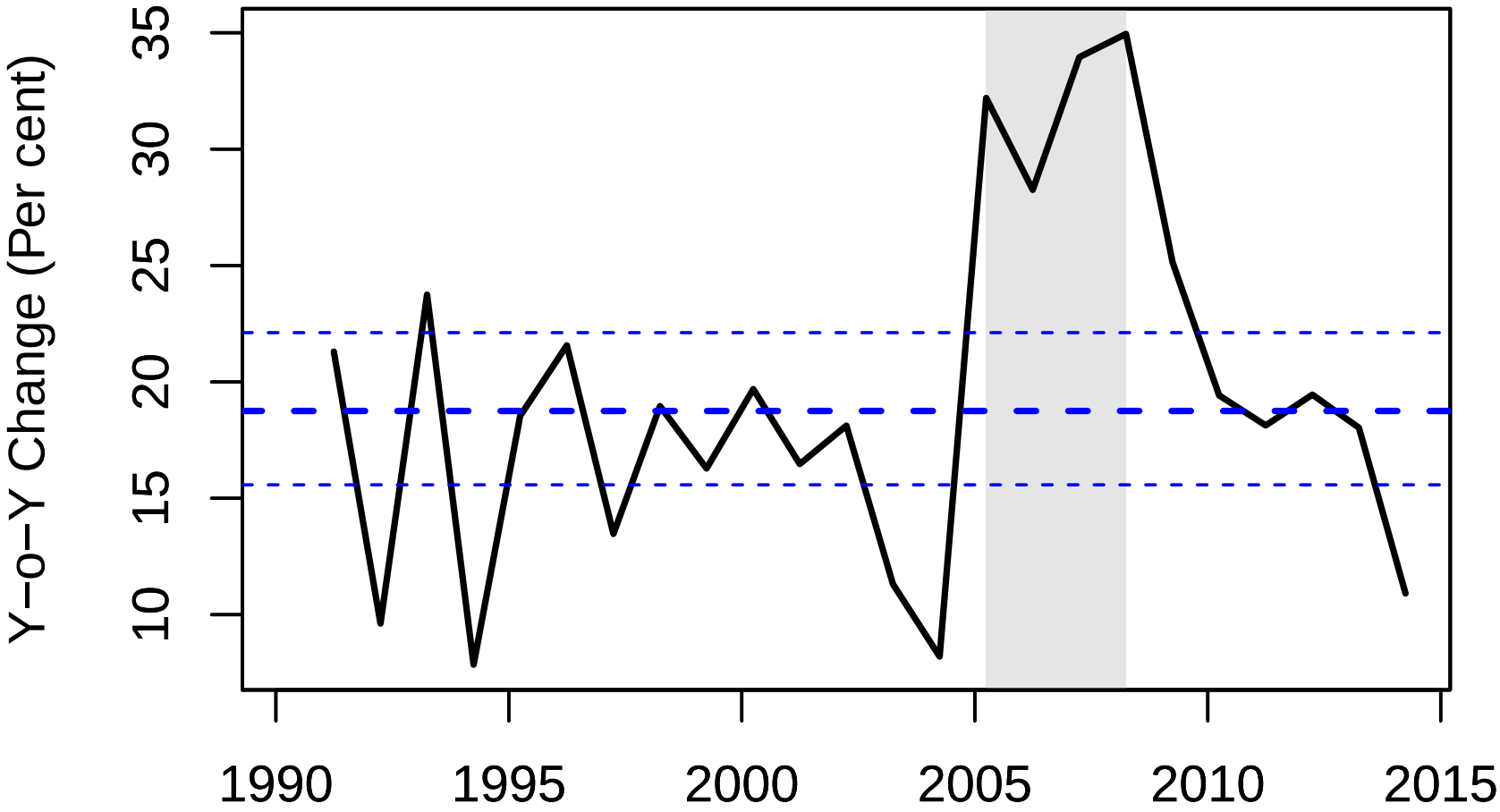
The phenomenon of credit booms

- In recent years, an increasing focus on credit booms
- Not all credit booms are bad, but many (most?) financial crises are preceded by credit booms
- At the extreme: an environment of euphoria where banks, borrowers and supervisors get delusional
- Most of the existing literature has dealt with two perspectives: macro and bank.

The great Indian credit boom

2004-05 to 2007-08



Definition

We define ‘industrial credit’ as bank credit to:

1. Industry
2. Transport operators
3. Professional and other services
4. Trade

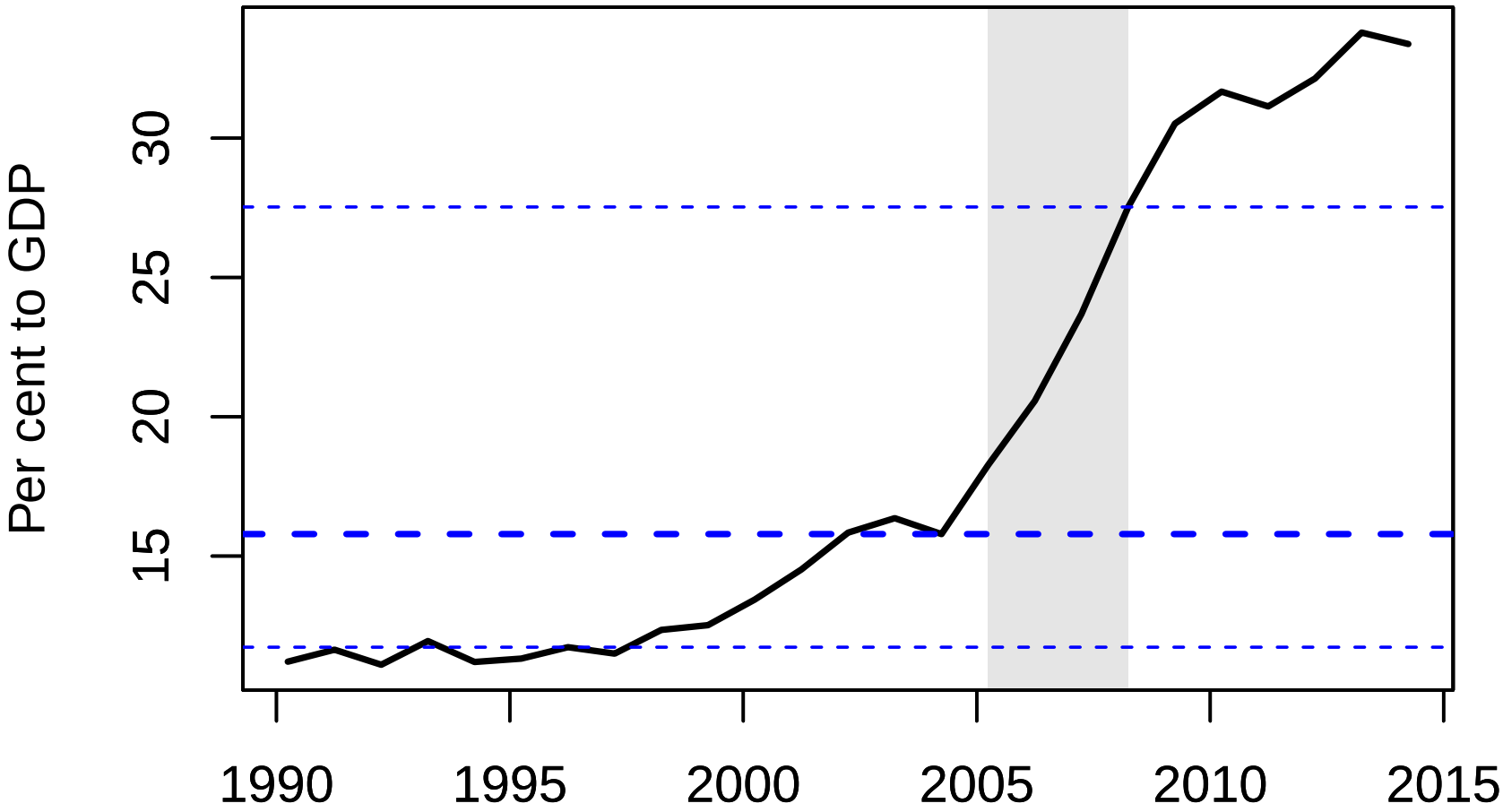
This excludes bank credit to:

1. Individuals
2. Agriculture
3. Food Corporation of India.

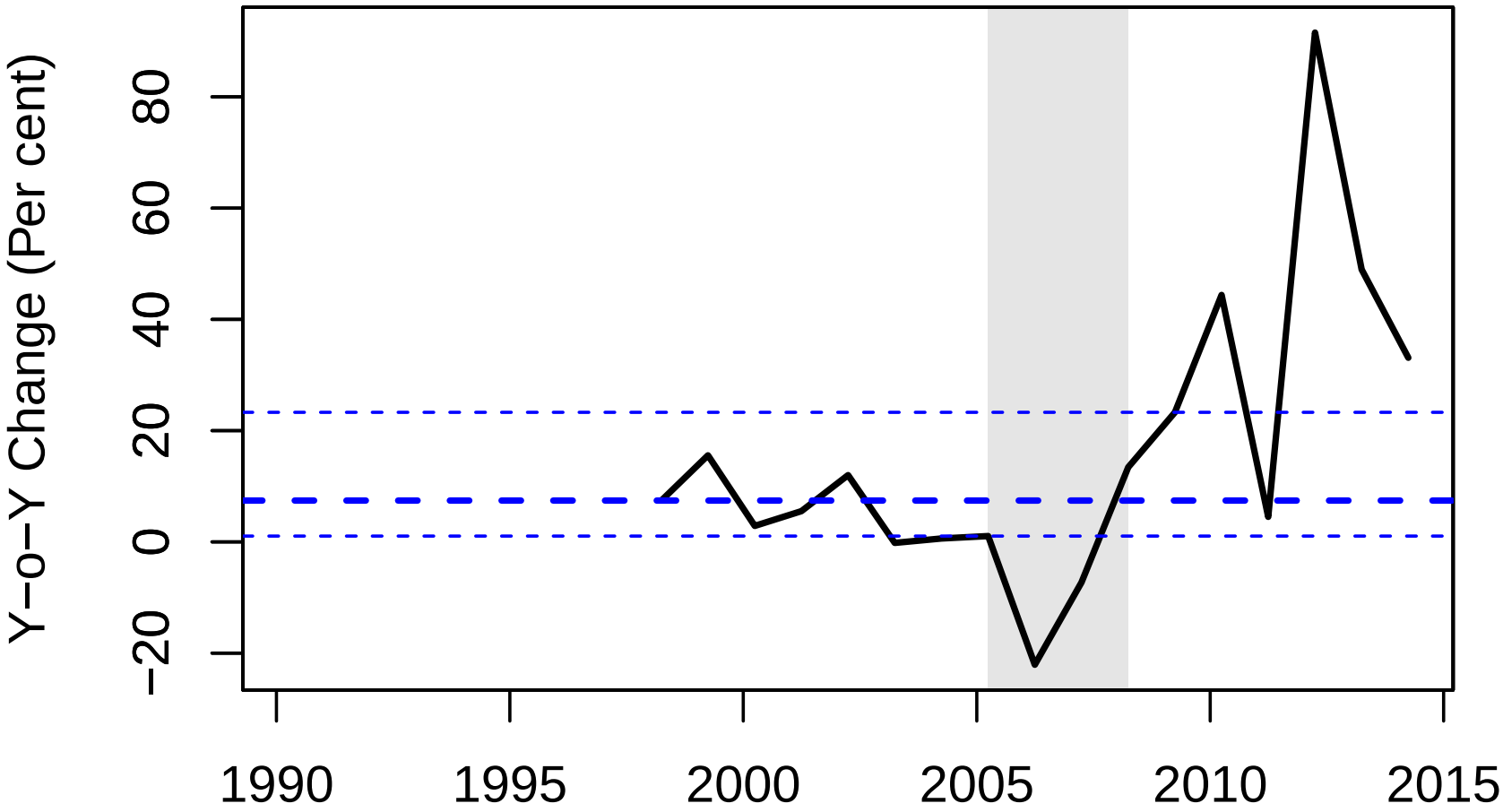
The macroeconomic context of the credit boom

- Frankel-Wei regression $R^2 = 0.97$ from 28/8/1998 till 19/3/2004, followed by $R^2 = 0.85$ till 16/3/2007.
- In that period, exchange rate policy gave low interest rates.
- Business cycle expansion from Q1 2003 to Q2 2007.
- Low real rates in the biggest ever business cycle expansion.

Credit/GDP



With a lag, non performing loans showed up



Industries with the strongest credit boom

	2004	2008	B
	(Billion rupees)		(Times)
Infrastructure + Construction	573	2333	4.07
All other areas	2717	6250	2.30
Total industrial credit	3290	8583	2.61

Understanding the credit boom using firm data

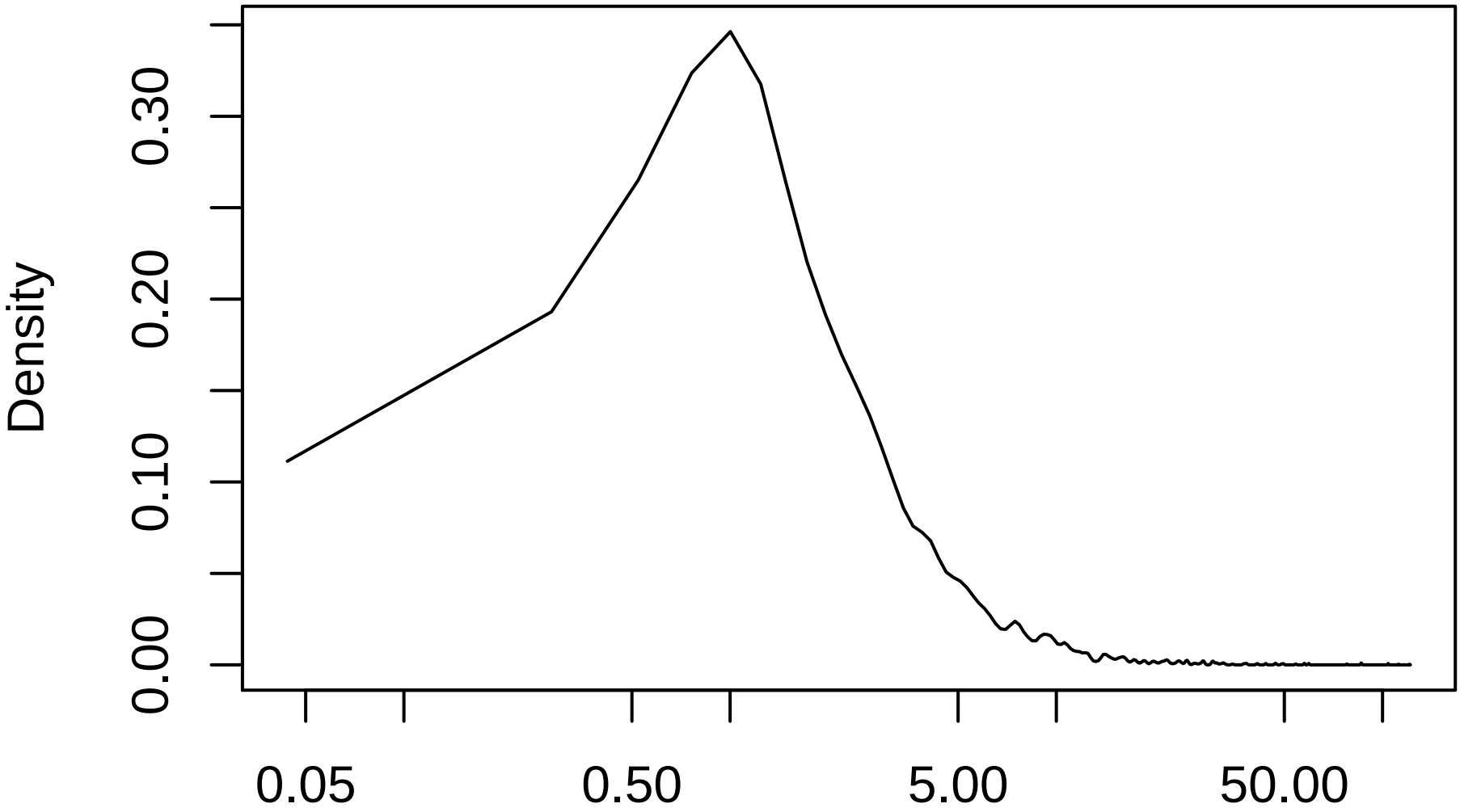
Can we look at a credit boom from the viewpoint of the borrowing firm?

- Was the credit boom a tulip mania, with a broad-based euphoria in borrowers, banks and supervisors?
- In what kinds of firms did bank credit surge?
- Did banks surge credit for a different kind of firms during the boom when compared with firms where bank credit surged in normal times?
- What happened, afterwards, to the firms where bank credit surged?

Attack this using firm data

- Study this using the CMIE firm data
- Define B as bank credit 2008 / bank credit 2004.
- Focus on non-financial firms with above-median credit in 2004 (Rs.46 million).
- We observe 2,519 firms.

Kernel density of *B*



OLS regression explaining B based on 2004 firm characteristics

B was bigger for firms with

- higher return on capital employed
- lower debt / total assets
- higher liquidity.

This seems sensible.

Were lending standards worse in the boom?

- OLS explaining *B* from 2004 to 2008, using firm characteristics in 2004
- vs. OLS explaining *B* from 2000 to 2004, using firm characteristics in 2000.
- The credit boom period results are *more* in line with orthodox credit risk analysis by banks.

How did the high *B* firms fare, in following years?

- After 2008, all firms are likely to have experienced difficulties
- Many difficultures in conventional regression of firm performance on l.h.s., *B* on r.h.s., with controls.
- We have to compare high *B* firms against a suitable counterfactual
- Research strategy:
  1. Define top quartile firms as 'treatment'
  2. Use below-median firms as a control pool
  3. Use matching techniques to find matched partners
  4. Do difference-in-difference regressions to measure differences in firm performance.
- Selection bias: Both control and treatment firms have to have existed from 2004 onwards and survived till 2013.

Multiple research designs

1. Treatment : top quartile by B. Control pool: Below median B. Matching: Propensity score matching within industry.
2. Instead of quartiles, break into tertiles, and use top and bottom.
3. Instead of PSM, use Mahalanobis distance matching.
4. Do not constrain matching within industry.
5. Two changes at once.

The matched dataset

- Strong match balance! It's like a twins study.
- BUT: max size is just Rs.10.85 billion. The biggest firm in the data is 100$\times$ bigger.
- Very limited representation of infrastructure and construction.

How did the high *B* firms fare?

- During and immediately after the boom years: more asset growth, more revenue growth.
- From 2011 onwards, these differences petered away.
- Operating profit margin and return on capital employed: somewhat adverse effects, but not statistically significant.
- Not a picture of extreme trouble for the firms who grew bank borrowing dramatically.

Conclusion

- Examined the biggest ever bank credit boom in India's recent quarter-century.
- Novel strategy of looking at the borrowing firms.
- The quasi-experimental design has validity for: old firms that survived, which were below size Rs.10.85 billion in 2004, in industries other than infrastructure or construction.
- In that zone, the machinery of Indian banking seems to have delivered reasonably good outcomes even in a credit boom.
- This research does not illuminate : young firms, the firms that did not survive, large companies in 2004, and infrastructure / construction lending.

Thank you.