



# A Call for Enterprise in Economic Data Generation and Information Analytics

19<sup>th</sup> May 2017

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Deputy Governor, Reserve Bank of India



Presentation at the 9<sup>th</sup> Indian Chamber  
of Commerce Banking Summit, Kolkata

# State of Economic Research on India

- **A vibrant network is slowly but steadily emerging**
  - University and business school professors
  - Analysts at banks, non-bank finance companies (NBFCs), rating agencies, among others
  - Researchers at policy institutions and think tanks
  - Probing inquiries and fact discovery by media
  - Seminars, conferences, forums, panels, deputations
  - Global interest in studying India is surging
- More undergraduate and post-graduate (MS, PhD) students interested in pursuing Economics and Finance!
- Miles to go before we sleep... on a good, firm trajectory



# How Do We Accelerate?

The situation seems ripe for

Enterprise in

Economic Data Generation and Information Analytics

# A HUGE opportunity!

- Alongside banks and other financial intermediaries, need **a parallel ecosystem of economic and financial data and information services** that
  - Collects, collates and generates new data points on the economy and financial markets
  - Disseminates publicly or sells the data
  - Analyzes, aggregates and researches data to provide information analytics
  - Creates information-based business opportunities
  - Aids analysis-driven policy-making and thinking
- Given our core human resource strength in computing and information systems, this is a low-hanging fruit that has not yet been plucked

# Examples

- **Real-time inflation and consumption metrics:**
  - E-commerce sites
  - What are the sustained temporal and geographic variations in prices and quantities?
- **Employment statistics:**
  - Payments data; bank and NBFC KYC data
  - Can Big Data help us compute quarterly unemployment rate?
- **Rural and informal economy:**
  - NBFC and Micro-finance institutions; FMCG companies
  - Do omissions of rural and informal economy in formal statistics mask economically relevant growth and inflation outcomes?
- **State finances:**
  - Implied credit rating/risk using RBI State Finances report
  - What is the implied subsidy in borrowing costs?

# Examples

## ➤ Hot money flows:

- Corporate bond, commercial paper, External commercial borrowings, Masala bonds – FPI investments (maturity/location)
- Which of the flows are “carry trades” and which are long-term?

## ➤ Governance and corporate finance of pyramids and group companies:

- Consolidate individual company/subsidiary filings
- Are internal transfers tunneling or internal capital markets in response to credit constraints?
- Are foreign transactions round-tripping / tax-arbitrage or genuine investments?

## ➤ Bank lending boom and bust cycles:

- Let me elaborate on this as a leading example with one of my ongoing research studies and how it could be done better

# The Anatomy of a Business Cycle

Presentation at The 2nd Moody's, ICRA and NYU Stern Conference:  
August 3<sup>rd</sup> , 2016

Viral Acharya  
New York University



Prachi Mishra  
RBI



N. R. Prabhala  
CAFRAL, Univ of Maryland



# Qualifier

Views are personal.

Not necessarily the official viewpoint of RBI.



# Context

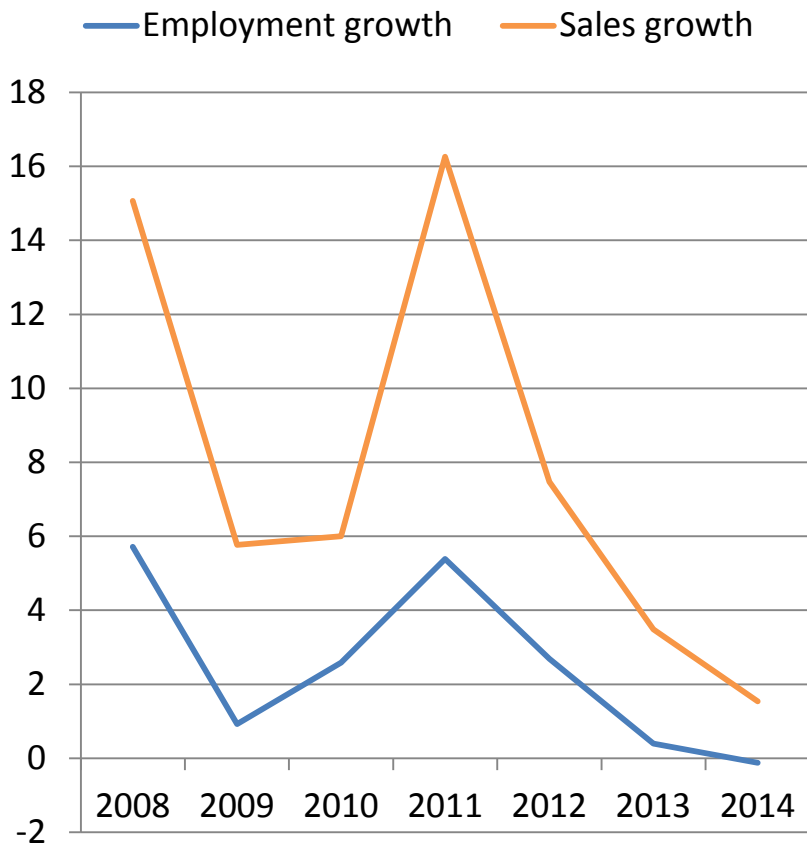
- We analyze the anatomy of India's economic and financial cycle since 2008
  - Cycle is big
  - Cycle is rather sharp
- Understanding and disentangling the channels
  - **Bank lending channel**
    - Supply of credit too low?
    - State-owned (distressed) banks
  - **Corporate distress channel**
    - Demand for credit too low?

# Overview: India's economic and financial cycle

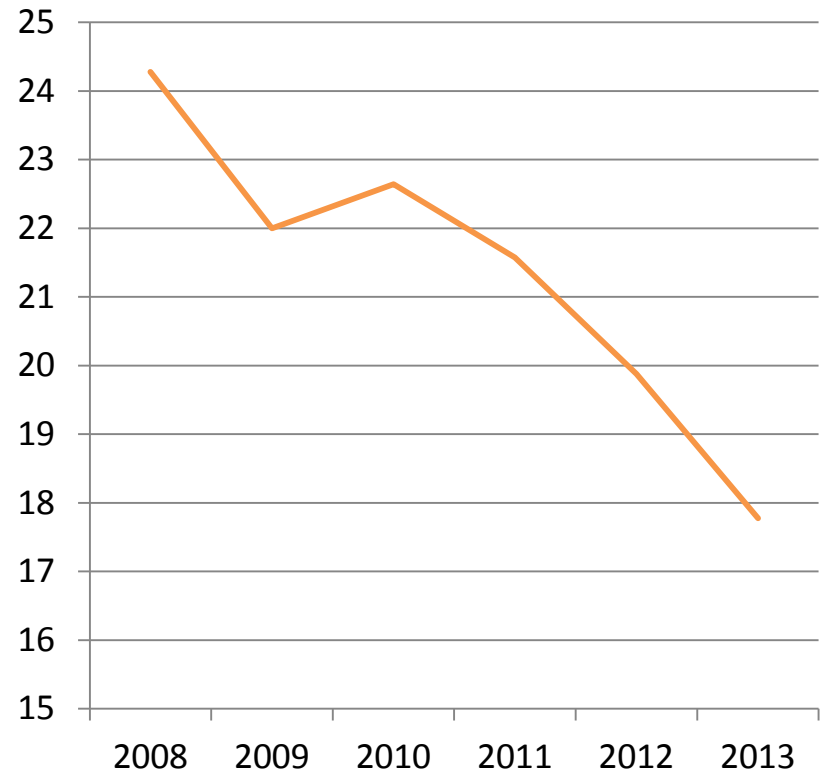
- Investment
  - Pick up in investment after GFC
  - Slowdown starting 2011-12
- Similar cycle for other real outcomes
- Similar cycle for bank credit
- **Credit and real cycles highly correlated**

# Real and Credit outcomes

## Firm Sales and Employment Growth (Annual average, in %)



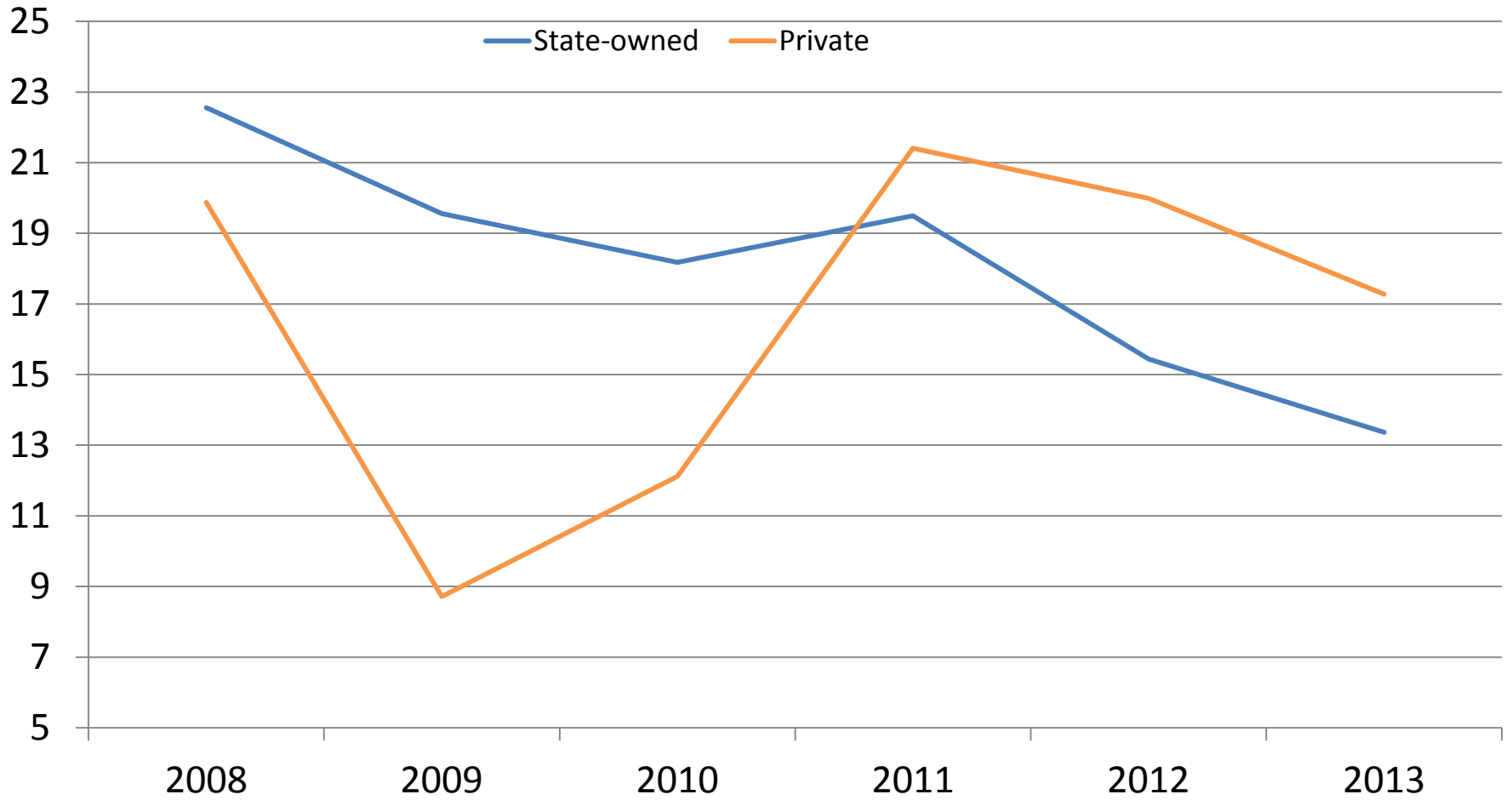
## Capital Expenditures (Firm-level, average, in %)



Notes. Capital expenditures (t) = (Net fixed assets (t+1) – Net fixed assets (t) + Depreciation)/Net fixed assets



## Growth in Credit: By Bank Ownership (Annual, in %)



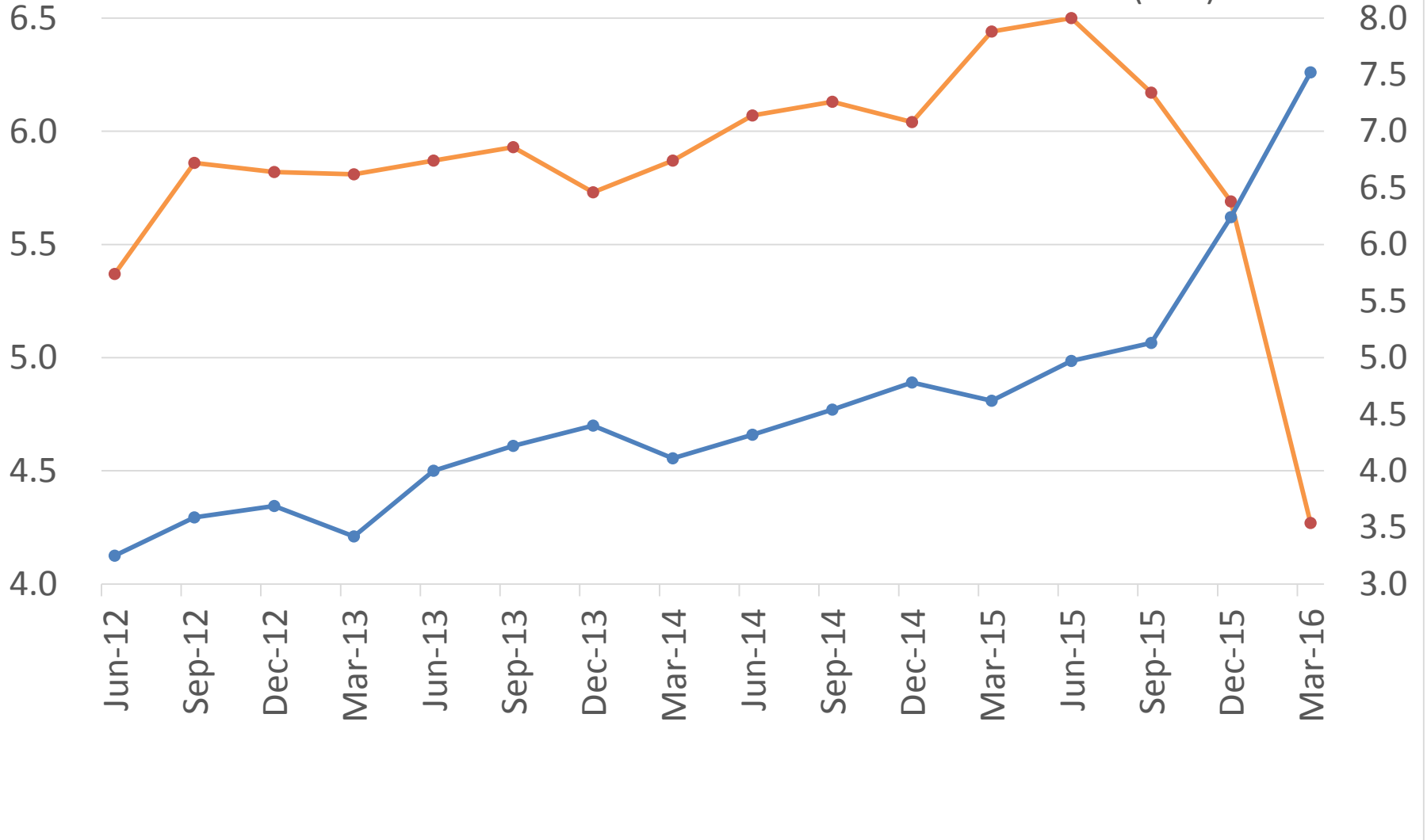


# Stressed Assets of Banks

% of Gross Advances

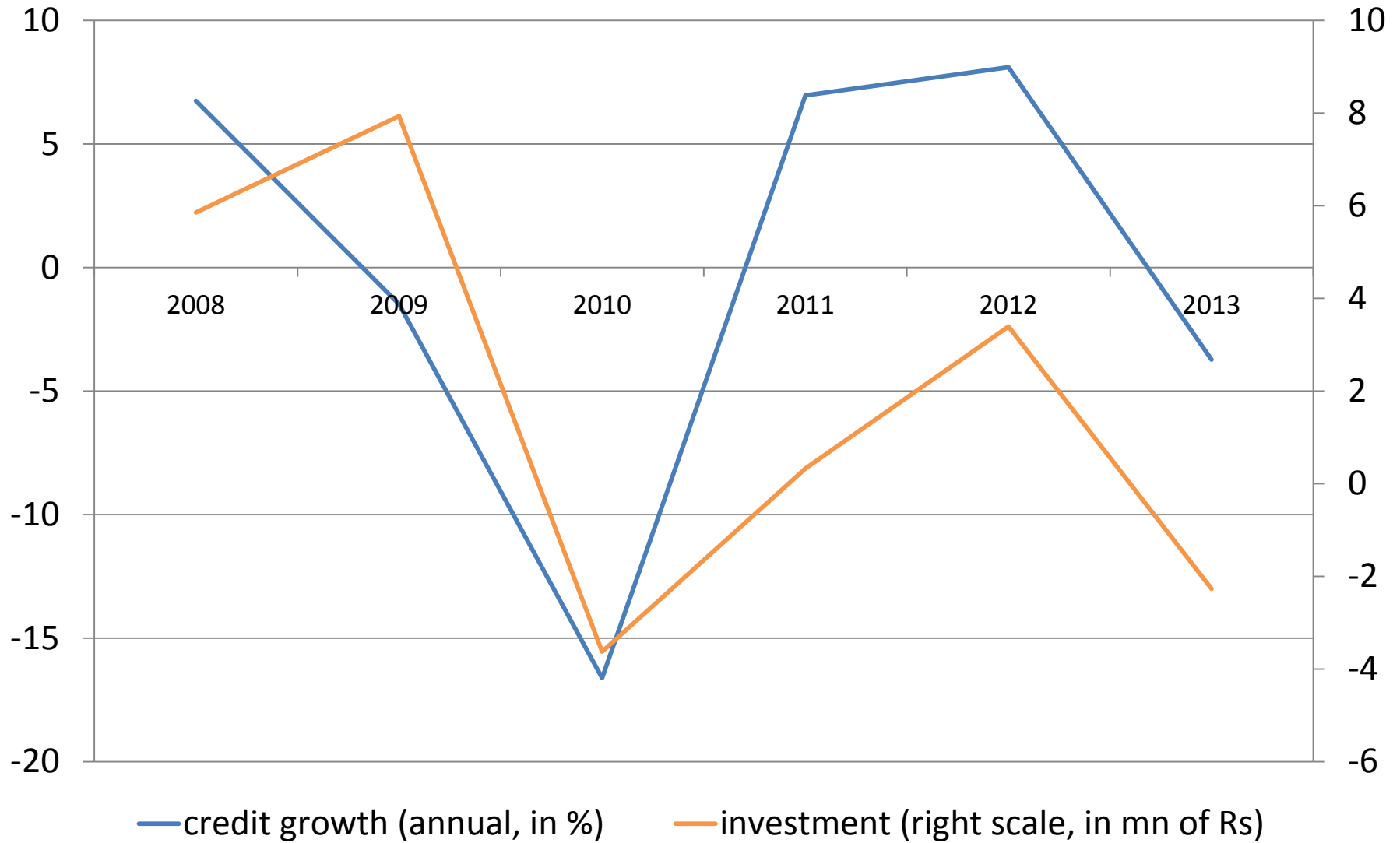
Restructured Assets %

Gross NPA % (RHS)





# Credit and Investment Cycle



Can we disentangle  
the bank lending (supply) channel  
from  
the corporate demand (demand) channel?

Should policy resolve bank stress or  
corporate stress or both?



# Empirical strategy: Diff-in-diff

- Do weak firms, and firms connected to weak banks, respond differently from healthier firms, connected to the same banks, when the cycle turned?
  - Weak and strong firms
  - Firms connected to weak or strong banks
  - Use variation pre and post 2012 when cycle turned to distinguish bank lending channel from corporate channel

# Data

## Firm-level real and financial outcomes

- CMIE Prowess
- 3,000 listed companies

## Real outcomes

- Sales, employment, capx

## Financial outcomes

- ICR, assets, leverage

## Bank-level data

- BSR 2, Reserve Bank of India

# Data (contd.)

## ➤ Weak firm

- Interest Coverage Ratio (ICR)  $< 2$

## ➤ Weak bank

- Public sector banks
- High Exposure to weak sector
- Higher ex-post NPA

## ➤ Firms connected to a weak bank

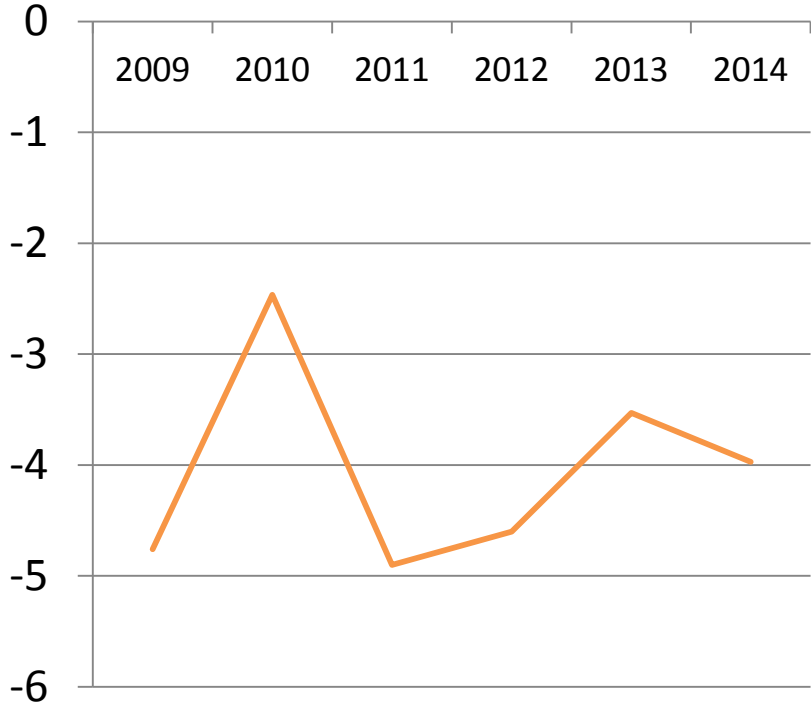
- At least one bank is a PSB
- At least one bank has exposure to weak sector
- (Max) non-performing assets: Above and below median

# Overview: channels

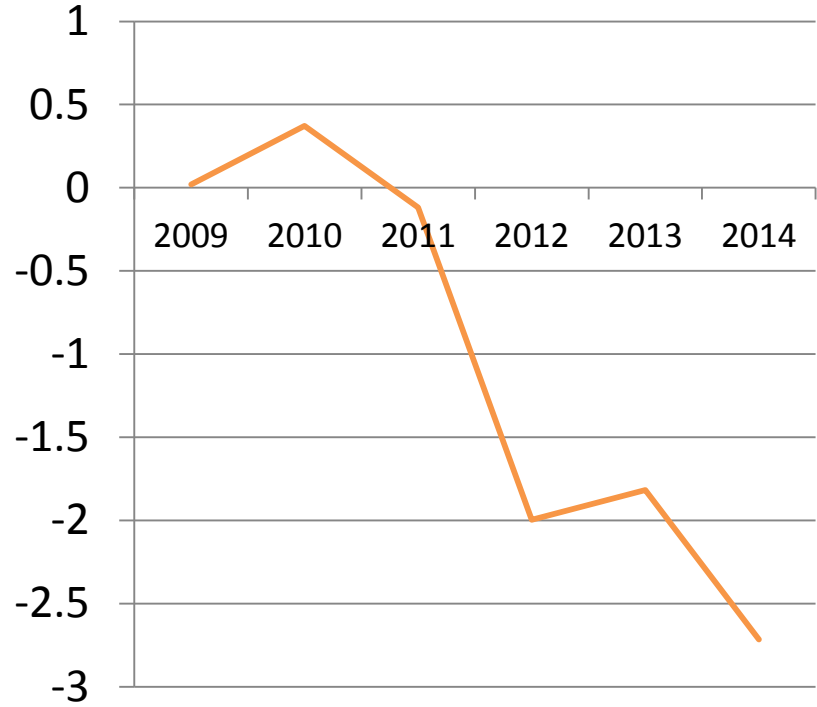
## Bank lending channel helps understand the cycle

- Firms connected to “weak” banks over-invested and had better real outcomes in up-cycle, but with much weaker outcomes during down-cycle
- Firms with weak corporate balance sheets had worse outcomes throughout the sample
- Results provide a strong case for the asset quality review and clean-up of banks underway in India

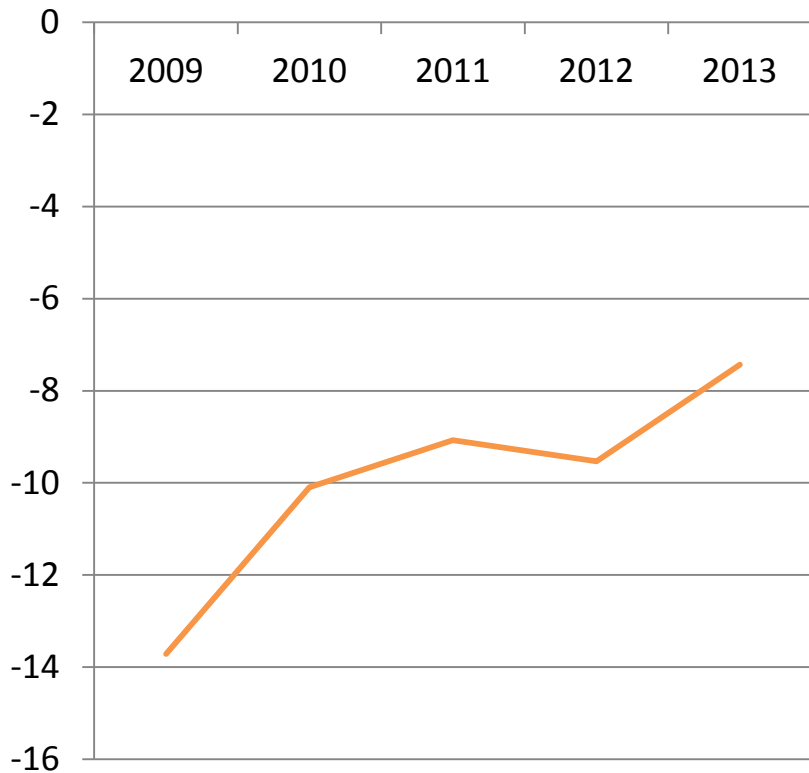
**Employment growth by firm stress  
(weak-strong, in pp)**



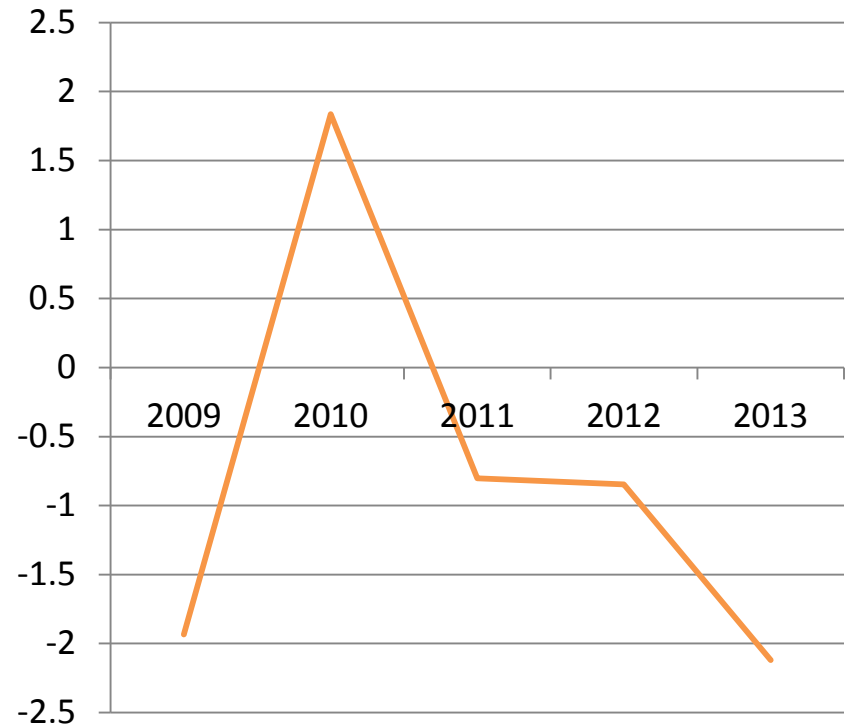
**Employment growth by bank stress  
(weak-strong, in pp)**



**Capx by firm stress  
(weak-strong, in pp)**

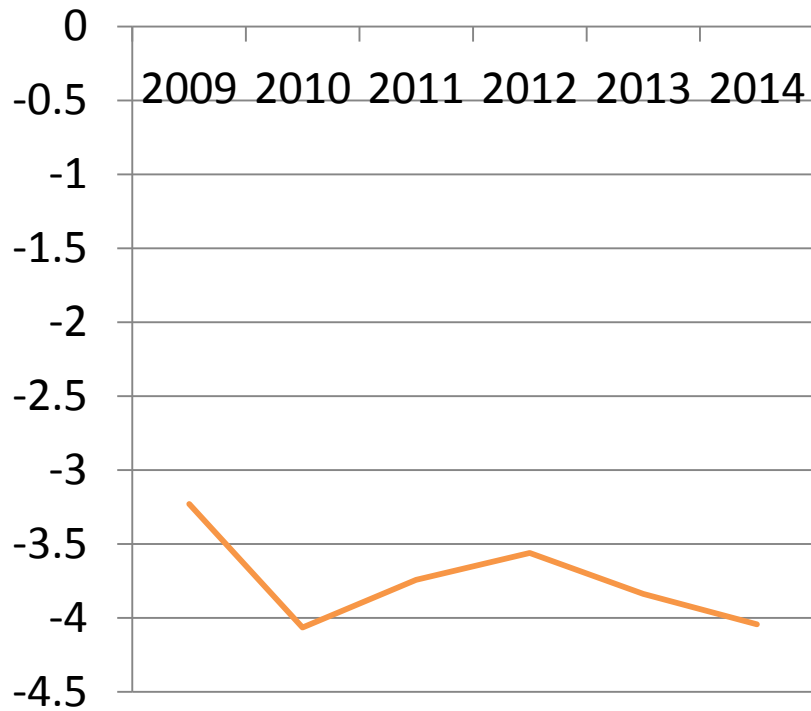


**Capx by bank stress  
(weak-strong, in pp)**

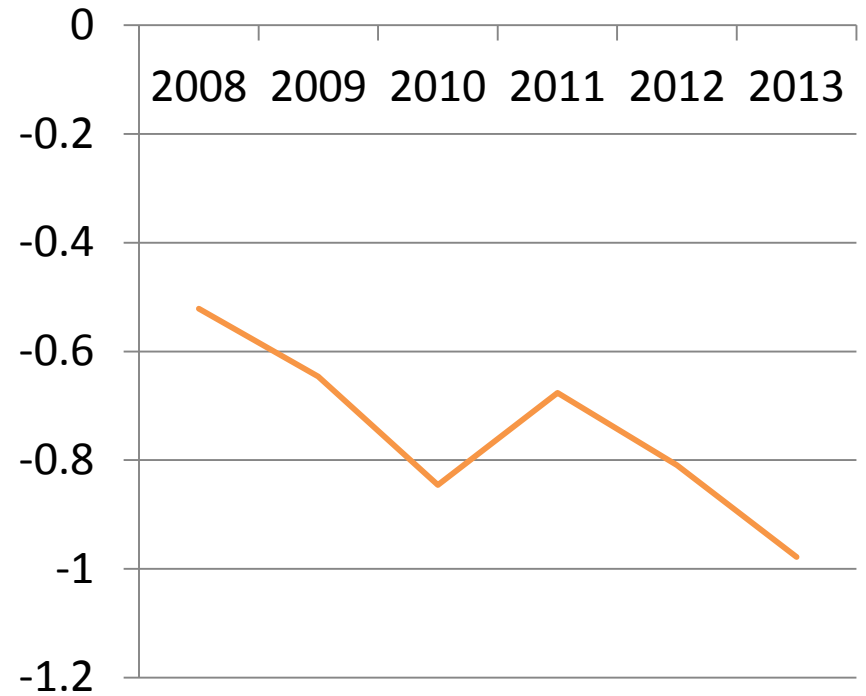


Notes. Capital expenditures (t) = (Net fixed assets (t+1) – Net fixed assets (t) + Depreciation)/Net fixed assets

**Interest coverage ratios by firm stress**  
(weak-strong, in pp)



**Interest coverage ratios by bank stress**  
(weak-strong, in pp)



# Empirical specification

$$Y_{i,s,t} = \beta \text{Bankhealth}_{i,t-1} + \gamma \text{Firmhealth}_{i,t-1} \\ + \beta' \text{Bankhealth}_{i,t-1} * D_{\text{post-2012}} + \gamma' \text{Firmhealth}_{i,t-1} * D_{\text{post-2012}} + D_{\text{post-2012}} \\ + \alpha_s + \epsilon_{i,t}$$

$Y_{i,s,t}$  = Employment growth, sales growth, capx

Key Hypotheses: 1. Firms connected to weak banks had poorer real outcomes once the cycle turned

$$\beta \geq 0 \text{ and } \beta' < 0$$

Key Hypotheses: 2. Weaker firms had poorer real outcomes through the cycle

$$\gamma < 0 \text{ and } \gamma' \geq < 0$$



# Economic significance

Counterfactual exercise:

Losses from a firm's association with a weak bank  
= How much higher would economic outcomes be if firms were NOT associated with weak banks

(1) Overall change 2011-14  
(% of 2011)

$$\frac{\sum_i (Y_{i,2014} - Y_{i,2011})}{\sum_i Y_{i,2011}}$$

(2) Weak bank induced contraction  
(% of 2011)

$$\frac{\sum_i \sum_{\text{weak-banks}} (-\beta^* Y_{i,2011} * 3)}{\sum_i Y_{i,2011}}$$

(3) Real loss = (2)/[(1)+(2)] (in %)

# Results

# Economic significance

Counterfactual exercise:  
Losses from a firm's association with a weak bank

Employment		
(1) Overall change 2011-14 (% of 2011)	(2) Weak bank induced contraction (% of 2011)	(3) Real loss = (2)/[(1)+(2)] (in %)
6.3	5.5	46.3
Sales		
38.1	7.5	16.4
Capx		
34.8	7.8	18.4

# Conclusions from the Study

- **Bank lending channel important in explaining the cycle**
  - Real outcomes stronger for firms connected to weak banks in the up-cycle; but decline during down-cycle
  - Firms connected to weak banks have weak balance sheets throughout the sample
    - lower ICR, higher leverage, are larger in size
- Firms with weak corporate balance sheets had worse outcomes throughout the sample
- **Results provide strong case for clean-up of stressed bank balance-sheets by resolving heavily indebted firms**

# Corroborating Evidence

- RBI Monetary Policy Report (MPR, April 2017) finds supporting evidence using only bank-level data
- **Banks with greater stressed assets** and worse capital ratios / provision cover:
  - **Lend at higher rates** earning greater net interest margins, but as a result
  - **Show weaker credit growth**
- Bank-level analysis, however, makes it hard to rule out a demand-based explanation that the bank became stressed due to risky borrowers, which in turn are facing higher rates and are not demanding credit any more

# Questions Left Unanswered

Did healthier banks in a consortium lend more to healthier firms compared to weaker banks?

Did stressed banks that responded with recapitalization and provisioning lend healthily?

Did under-capitalized and under-provisioned banks evergreen their bad loans lending to stressed borrowers at over-subsidized rates to roll over debt?

# Questions Left Unanswered

Did banks and firms that did restructure experience better outcomes?

Did stressed banks have poor transmission of accommodative monetary policy during 2015-16?

What did stressed banks do with excess liquidity during demonetization compared to healthier banks?

# Could we have done this better? YES!

1. **Bank-firm loan-level matched data** w/ loan terms at time of origination and corporate finance data
  - Should this be a public credit registry? Public good?
  - All creditors, e.g., trade creditors also?
  - E.g.: RBI BSR-RBI CRLIC-CMIE Prowess integration
2. **Bank-firm loan-level ratings data**
  - Internal / external ratings and their evolution
  - Market-based measures of firm and sector credit risks
3. **Bank-firm loan-level restructuring data w/ details**
  - Augmented CRLIC
4. **Platform for secondary loan sales and price discovery**
5. **Firm-debt level Default and Recovery (LGD) data**
  - Rating agencies should track and provide this

Such data could also help “lean against the wind” of a lending cycle, e.g., with risk- and sector-based provisioning





# Such datasets exist in many other countries

UNITED STATES, for example:

1. Deal Scan: syndicated loan origination
2. Shared National Credit Program: originations and draw downs
3. Capital IQ: draw downs
4. FDIC Call Reports: bank statistics
5. SNL Financial: bank statistics
6. Dealogic: mergers and acquisitions
7. LSTA: secondary loan sales
8. Prowess/Losscalc: default and recovery rates

HMDA (mortgages), Survey of Small Business Finance, ...

# Key Players

1. **Large banks** in commercial and mortgage lending, and **large NBFCs and micro-finance institutions** in rural and MSME lending can **set data standards**
2. **RBI can play an aggregating role** to collate data at source from all financial firms and disseminate with appropriate lags, if any
3. **Data vendors and information analytics firms**, potentially housed as arms of large banks and rating agencies, can distribute data and analysis
4. **Vibrant research community** I referred to at the outset can be its consumer
5. **Private financial firms** can use analytics to undertake analysis-aided enterprise and financial transactions

# Summing Up

"**Not** everything that **counts** can be **counted**; and not everything that can be **counted counts**."

- Albert Einstein

It is a sobering thought for economists!

It should induce **innovations to count better what really counts!!**

Time ripe for taking giant strides in  
**Economic Data Generation and Information Analytics!!!**