A Call for Enterprise in

Economic Data Generation and Information Analytics

19th May 2017

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Presentation at the 9th 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

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

- **<u>Real-time inflation and consumption metrics</u>**:
  - E-commerce sites
  - What are the sustained temporal and geographic variations in prices and quantities?
- **<u>Employment statistics</u>**:
  - Payments data; bank and NBFC KYC data
  - Can Big Data help us compute quarterly unemployment rate?
- **<u>Rural and informal economy</u>**:
  - NBFC and Micro-finance institutions; FMCG companies
  - Do omissions of rural and informal economy in formal statistics mask economically relevant growth and inflation outcomes?
- **<u>State finances</u>**:
  - 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 3rd , 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.

➢ 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?

➢ 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 %)

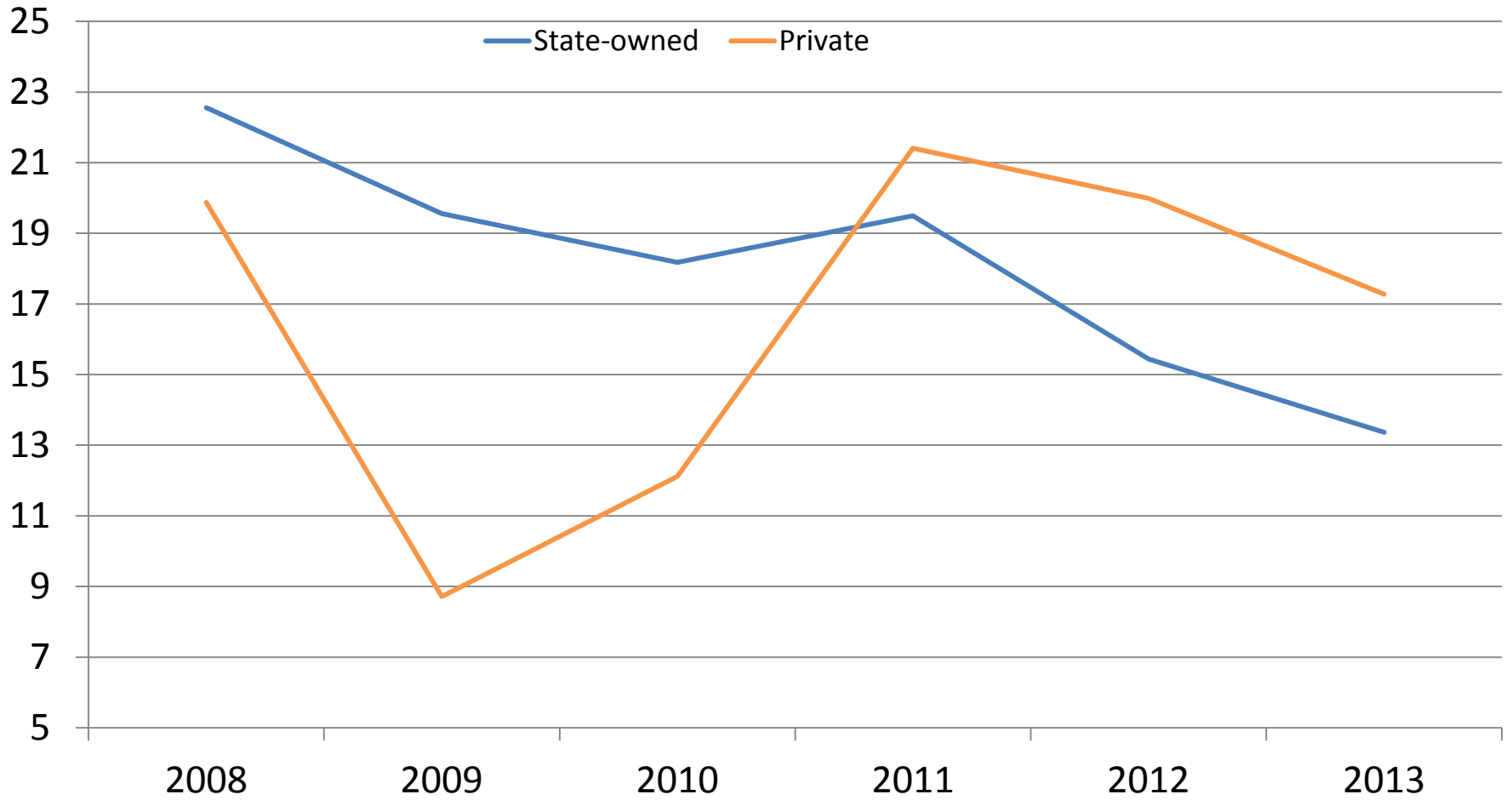— Employment growth — Sales growth
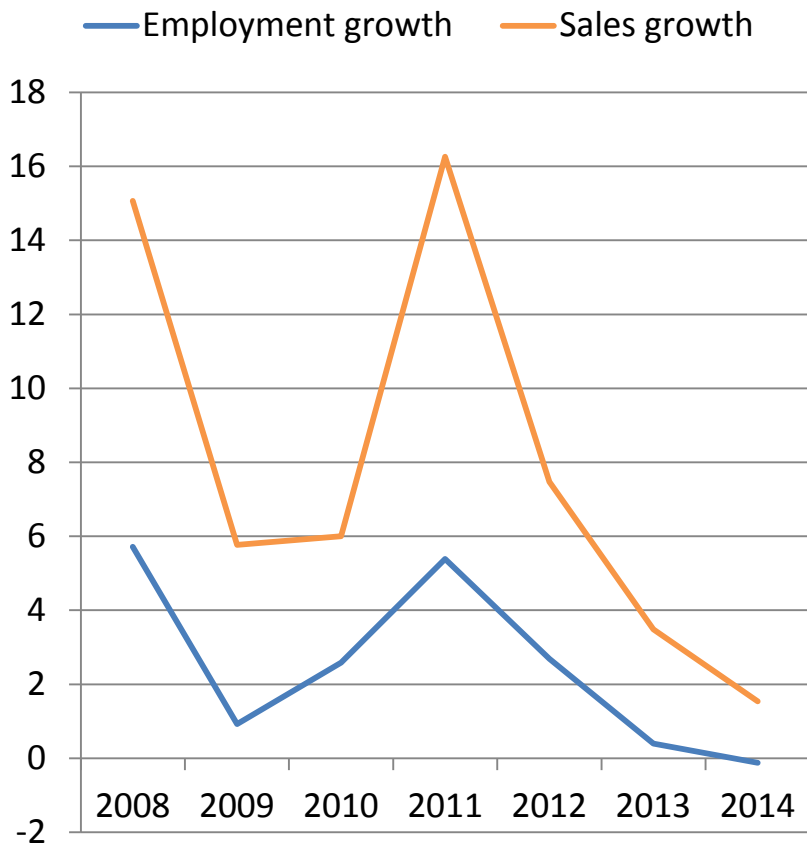
Capital Expenditures (Firm-level, average, in %)
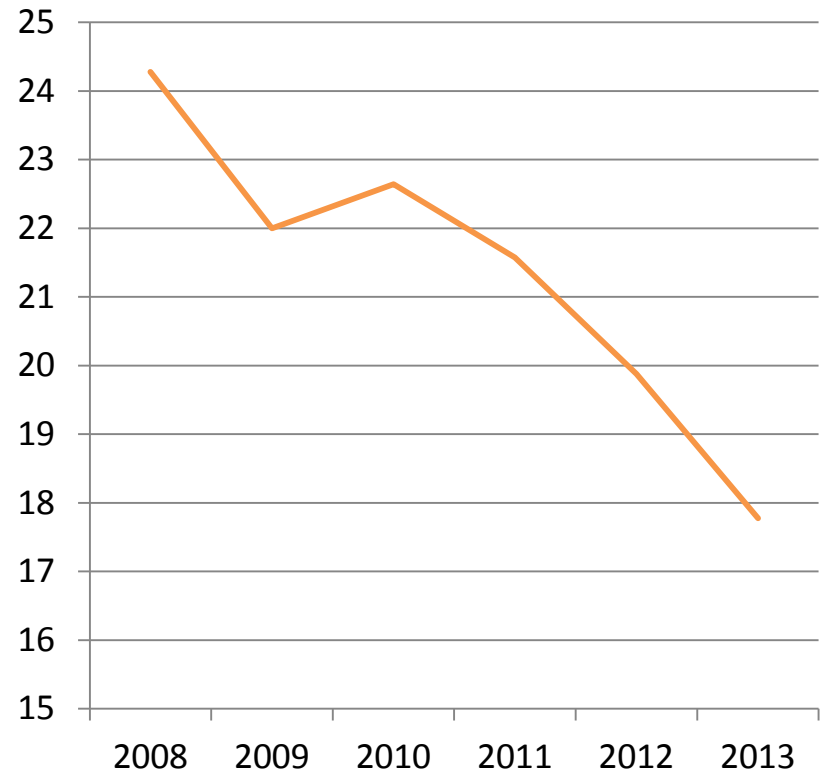
Notes. Capital expenditures (t) = (Net fixed assets (t+1) −Net fixed assets (t) + Depreciation)/Net fixed assets
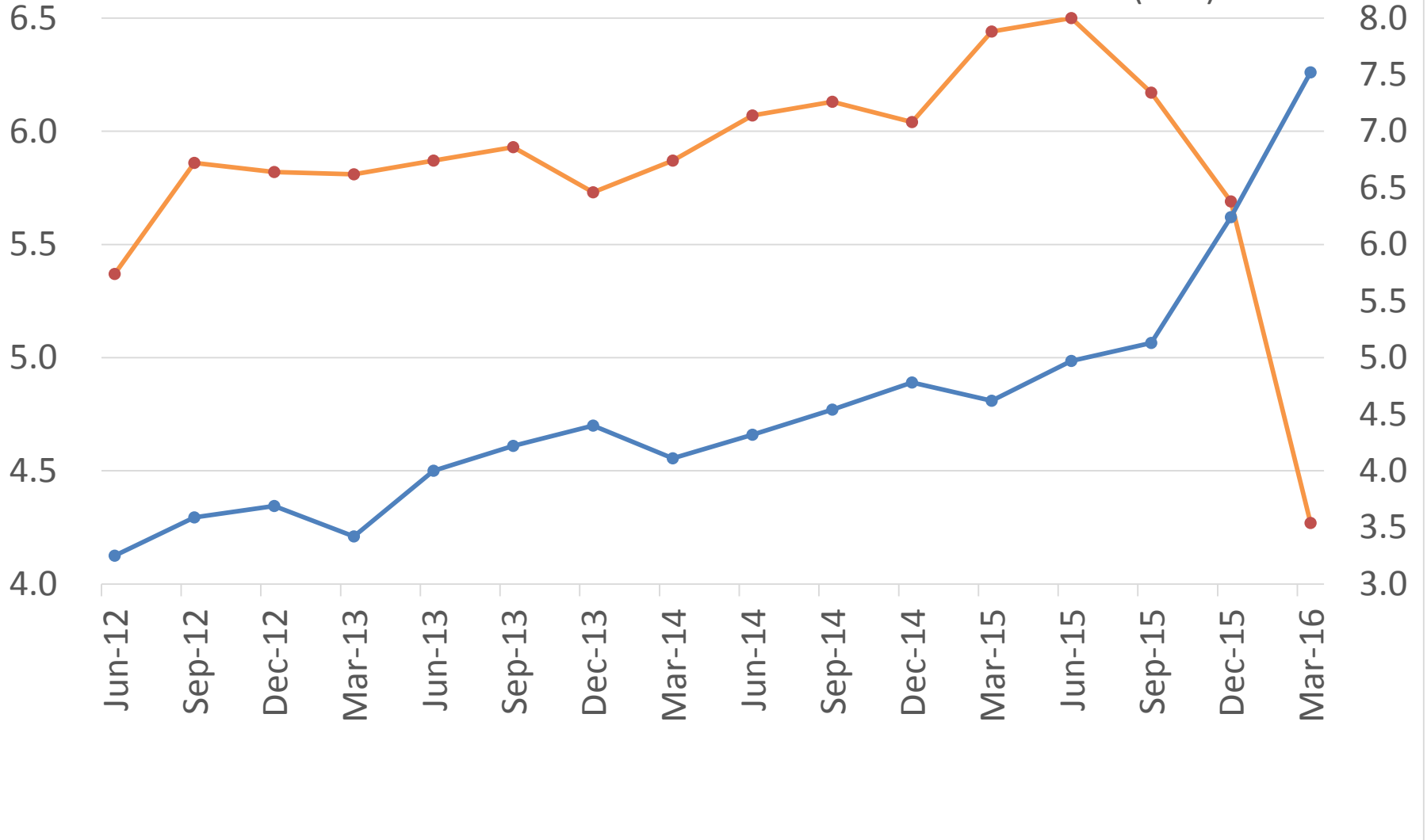
Growth in Credit: By Bank Ownership
(Annual, in %)
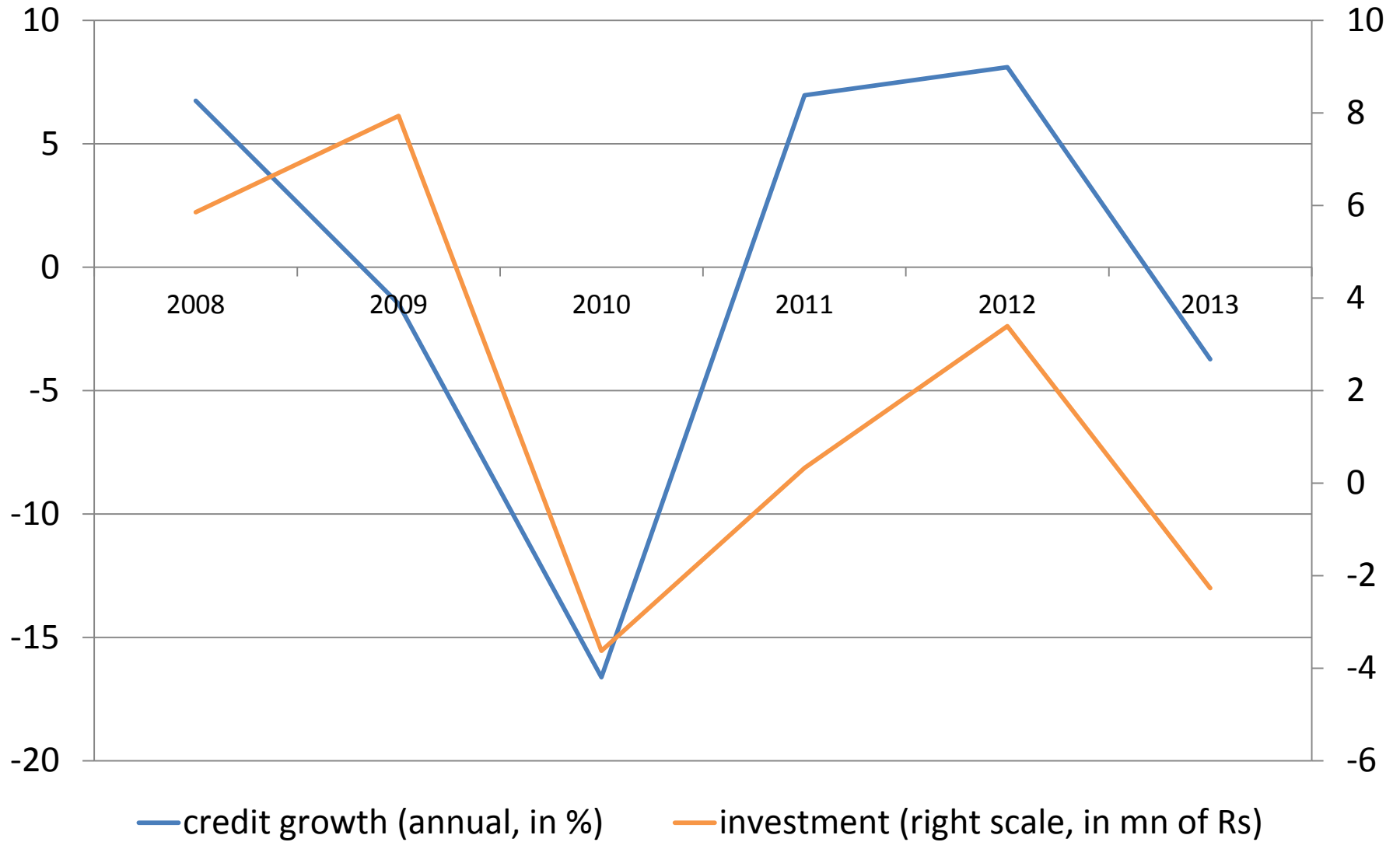
Stressed Assets of Banks

% of Gross Advances

Restructured Assets % ● Gross NPA % (RHS)

Credit and Investment Cycle

— credit growth (annual, in %)   — investment (right scale, in mn of Rs)

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

Should policy resolve bank stress or
corporate stress or both?

- **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

<u>Firm-level real and financial outcomes</u>
- CMIE Prowess
- 3,000 listed companies

<u>Real outcomes</u>
- Sales, employment, capx

<u>Financial outcomes</u>
- ICR, assets, leverage

<u>Bank-level data</u>
- BSR 2, Reserve Bank of India

➢ **<u>Weak firm</u>**
- – Interest Coverage Ratio (ICR) < 2

➢ **<u>Weak bank</u>**
- – Public sector banks
- – High Exposure to weak sector
- – Higher ex-post NPA

➢ **<u>Firms connected to a weak bank</u>**
- – At least one bank is a PSB
- – Al least one bank has exposure to weak sector
- – (Max) non-performing assets: Above and below median

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
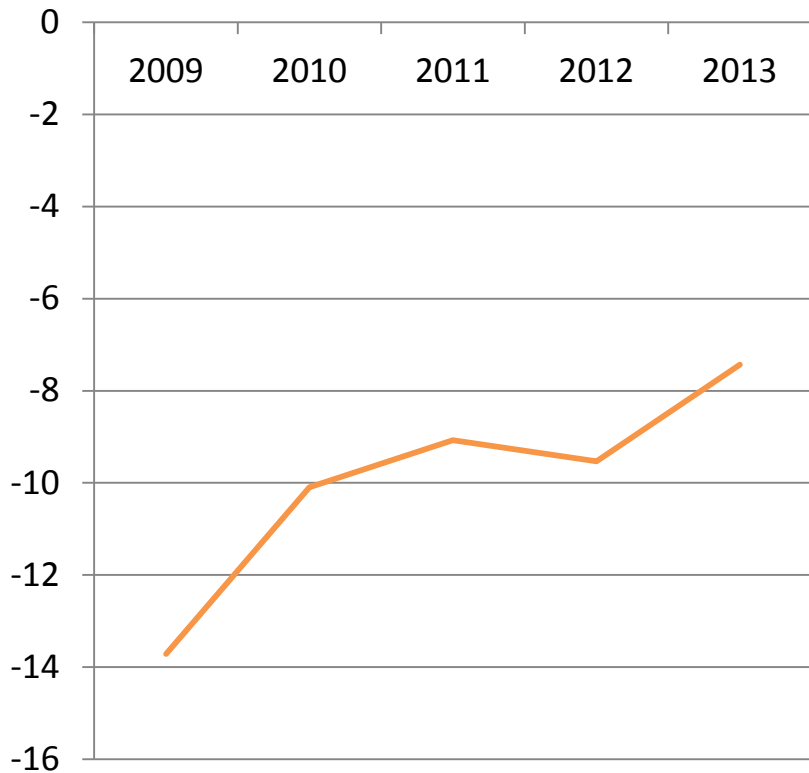
Employment growth by firm stress
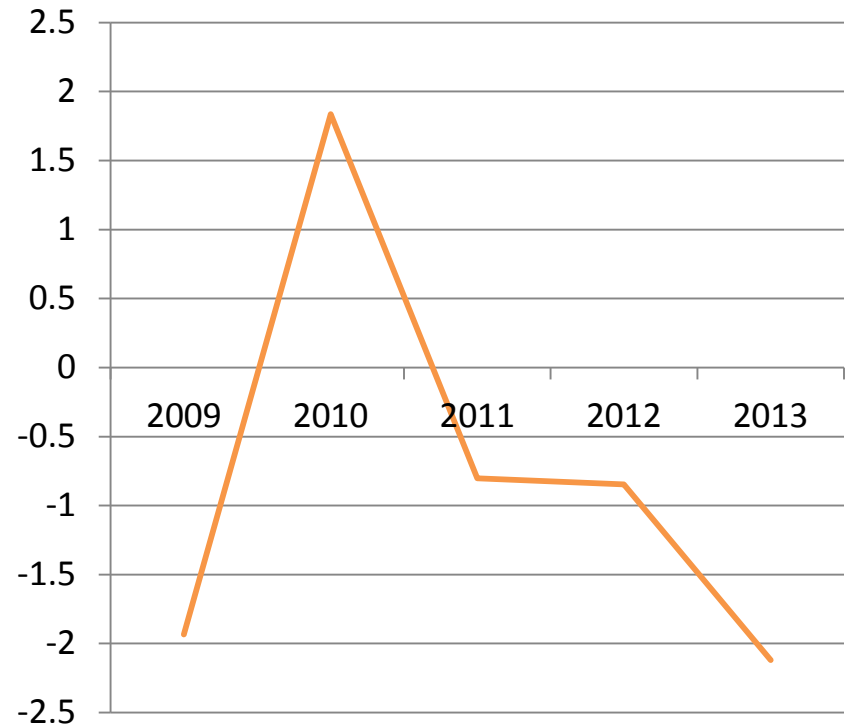### (weak-strong, in pp)
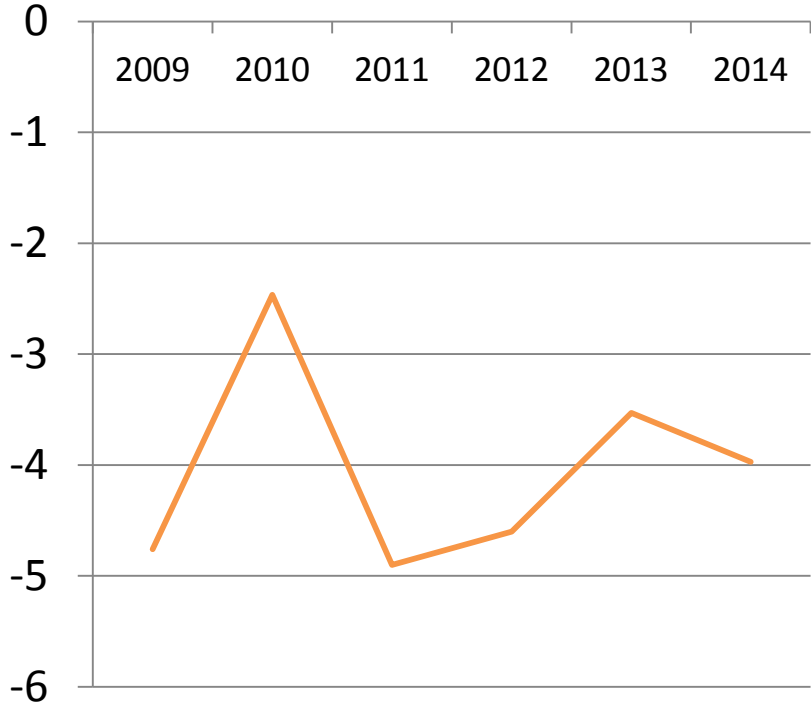
Employment growth by bank stress
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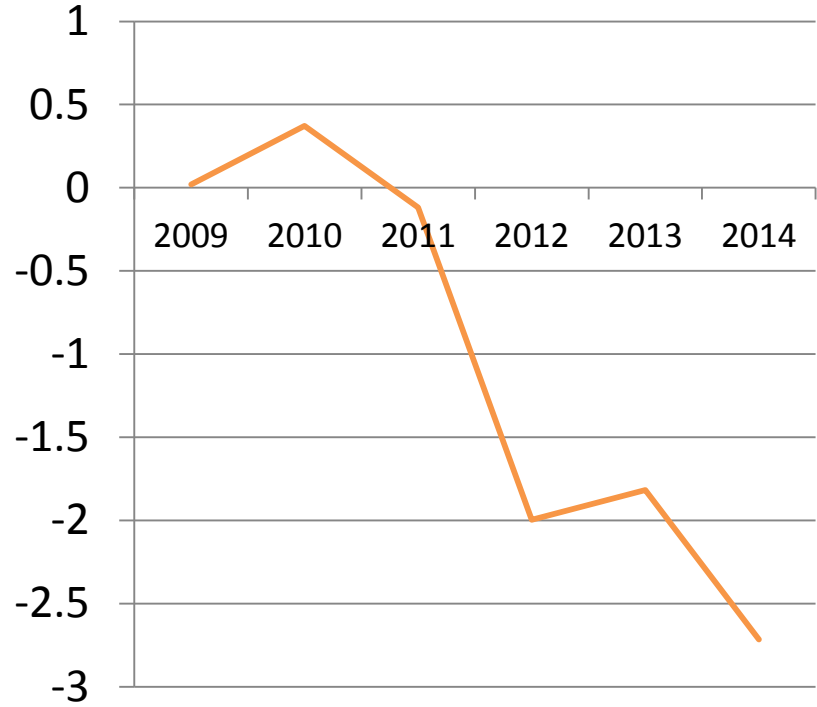
Capx by firm stress (weak-strong, in pp)
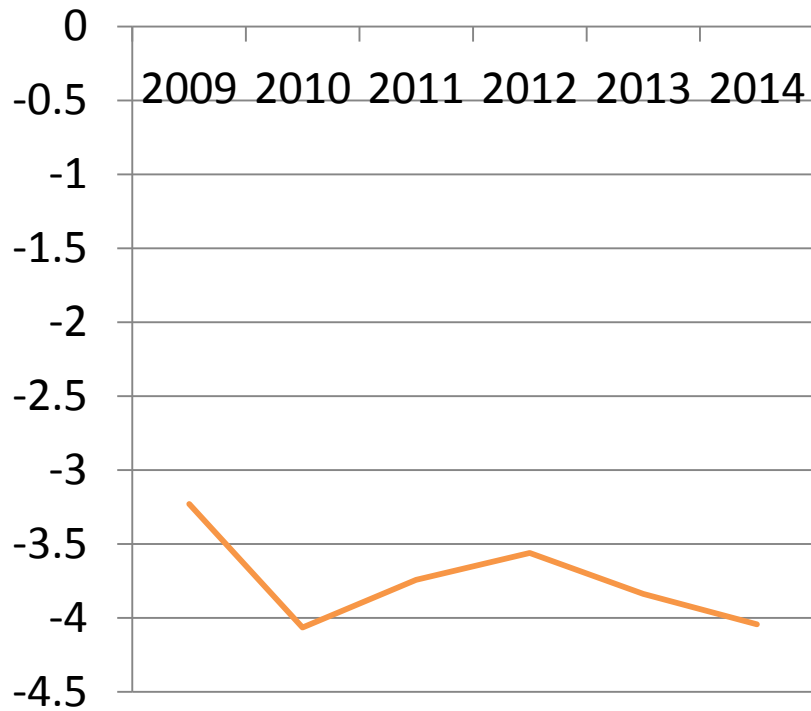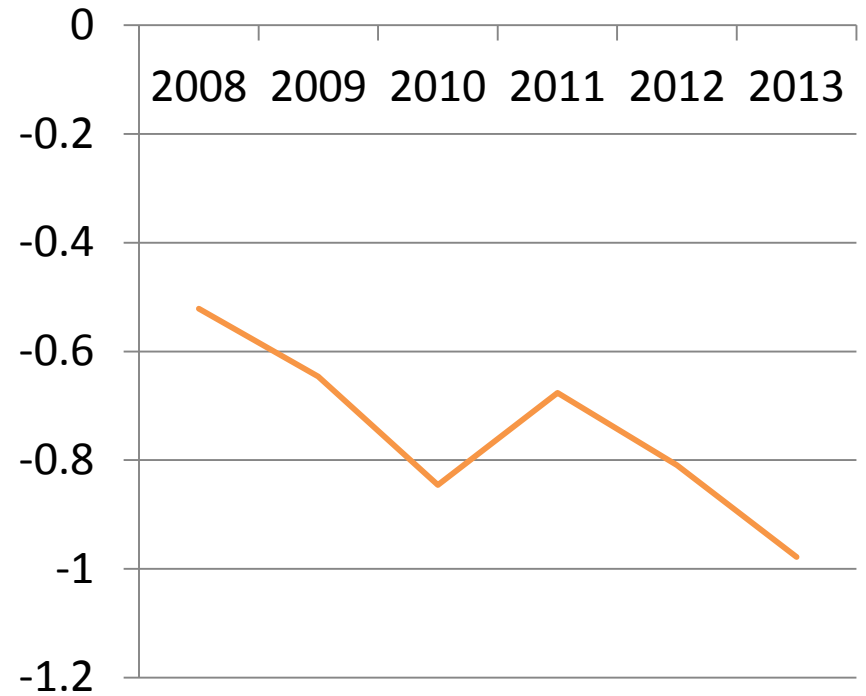
Capx by bank stress (weak-strong, in pp)

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)

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |

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

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |

$$Y_{i,s,t} = \beta Bankhealth_{i,t-1} + \gamma Firmhealth_{i,t-1}$$

$$+\beta' Bankhealth_{i,t-1} * D_{post-2012} + \gamma' Firmhealth_{i,t-1} * D_{post-2012} + D_{post-2012}$$

$$+\alpha_s + \epsilon_{i,t}$$

$Y_{i,s,t}$ = 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)**

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

(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

- **<u>Bank lending channel important in explaining the cycle</u>**

  - 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

- **<u>Results provide strong case for clean-up of stressed bank balance-sheets by resolving heavily indebted firms</u>**

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?

1. **<u>Bank-firm loan-level matched data</u>** 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. **<u>Bank-firm loan-level ratings data</u>**
   - Internal / external ratings and their evolution
   - Market-based measures of firm and sector credit risks
3. **<u>Bank-firm loan-level restructuring data w/ details</u>**
   - Augmented CRLIC
4. **<u>Platform for secondary loan sales and price discovery</u>**
5. **<u>Firm-debt level Default and Recovery (LGD) data</u>**
   - 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

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, …

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

"**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!!!