

Reserve Bank of India's Policy Dilemmas: Reconciling Policy Goals in Times of Turbulence

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Outline

- Motivation
- Assess RBI's performance across key policy challenges
- Draw lessons

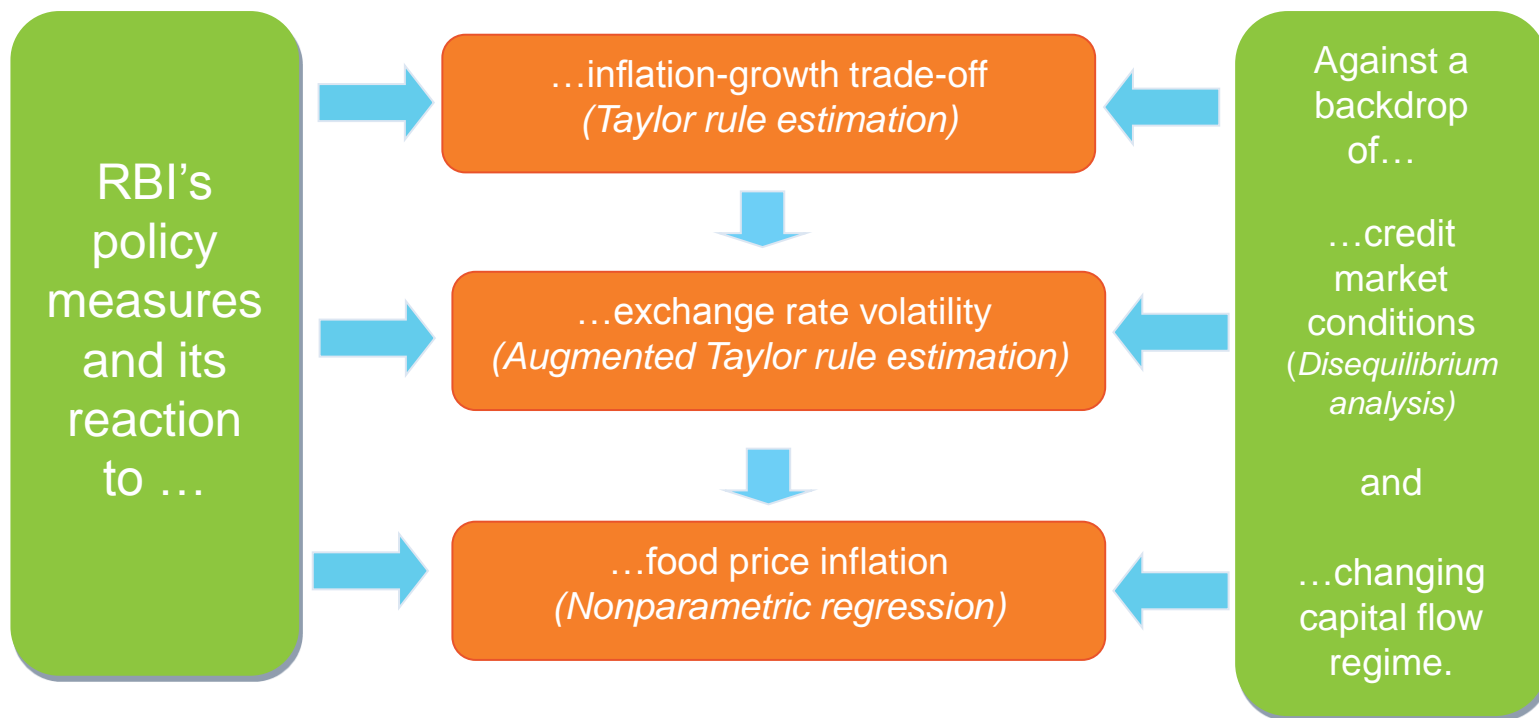
Motivation

- In a world of increasing and volatile capital flows, central banks face increasing pressures to balance inflation, output and in many EMEs exchange rate stability objectives.
- Paper is more broadly analyzing whether we are asking too much of monetary policy resulting in complex policy dilemmas (Orphanides, 2013).
- While policy objectives tend to be complementary (high π , high y , low k) there are cases when it can be conflicting and resulting in trading off one objective against another (high π , low y , large k).

Some Stylized Facts

- RBI appeared to target inflation and growth over the medium term.
- RBI is not fully autonomous. Credibility is an issue.
- Policy instrument is repo rate and targets call rate occasionally supplemented by adjustments in CRR.
- Food contributes approximately 50% of CPI basket.
- There have been recent periods of (i) large capital inflows (2007) and subsequent outflows, and (ii) large exchange rate depreciation (2013) followed by some appreciation.
- Managed float exchange rate.
- Source of loanable funds in India is primarily deposit based.

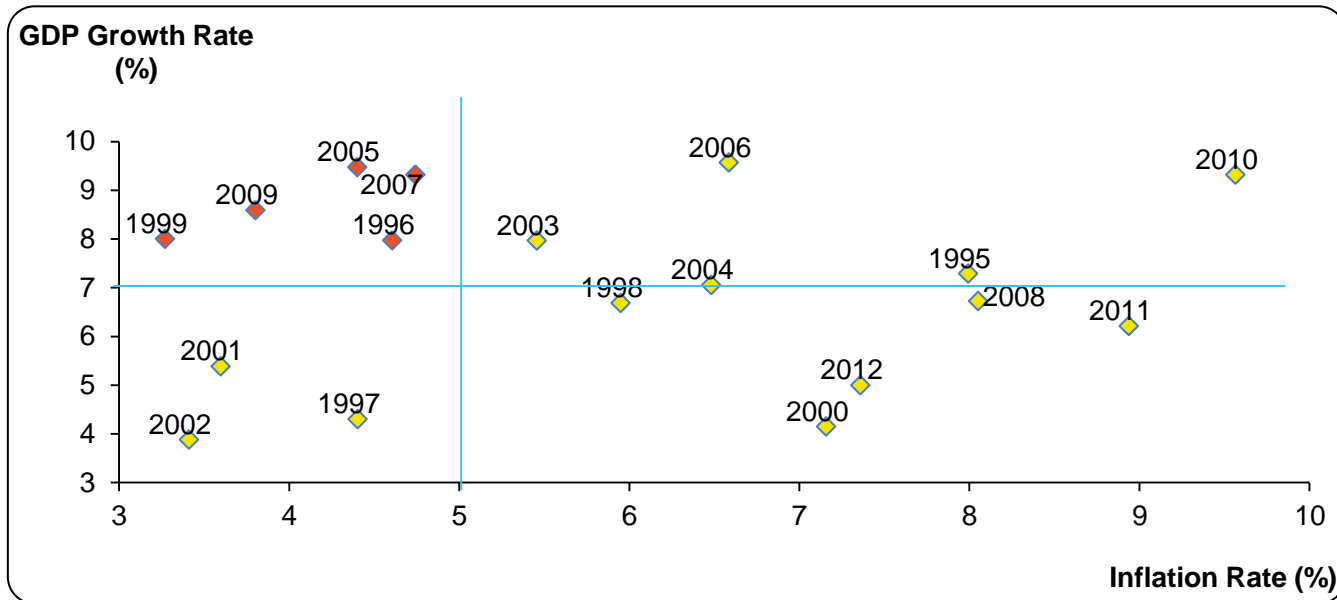
Goal of Paper – Focus on RBI’s recent experience to assess performance of policy effectiveness



RBI = Reserve Bank of India.
Source: Authors' illustration.

RBI's Performance

Scatter Plot of GDP Growth on Inflation in India, 1995–2012



GDP = gross domestic product.

Source: Staff estimates based on data from Ministry of Statistics and Programme Implementation (MOSPI)

- Over 1995-2012, strike ratio is 28%.

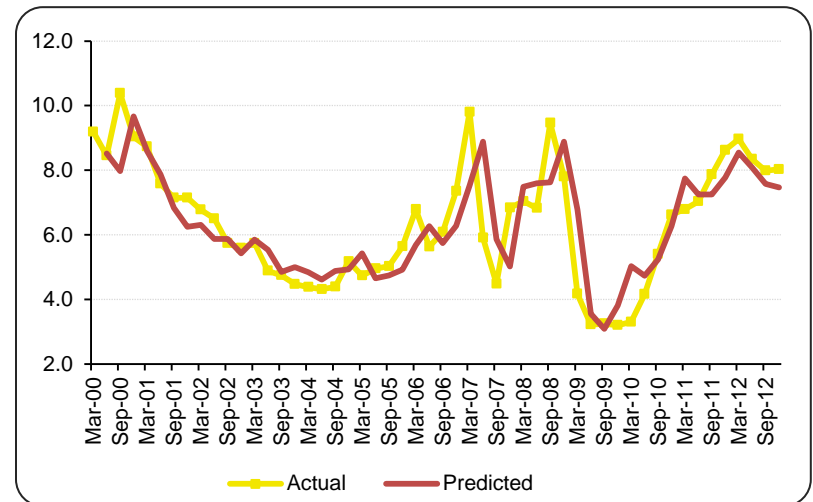
What does the Taylor Rule Reveal?

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Taylor Rule Estimation for India (See also Singh, 2010)

Dependent Variable: Interest Rate Method: Ordinary Least Squares (OLS)		
VARIABLES	Coefficients	
	Model 1	Model 2
<i>Output Gap</i>	0.0527* (1.984)	0.0538** (2.034)
<i>Interest Rate</i> _(t-1)	0.668*** (7.533)	0.652*** (7.312)
<i>Inflation (All Commodities)</i>	0.133** (2.033)	
<i>Exchange Rate (Change over the quarters)</i>	0.130 (1.125)	0.157 (1.406)
<i>Inflation (Non-Food Manufacturing)</i>		0.138* (2.012)
<i>Constant</i>	1.257* (1.813)	1.545** (2.467)
Observations	51	51
R-squared	0.705	0.705

Actual and Predicted Interest Rate



Source: Staff estimates based on data from CEIC Data Ltd. and RBI

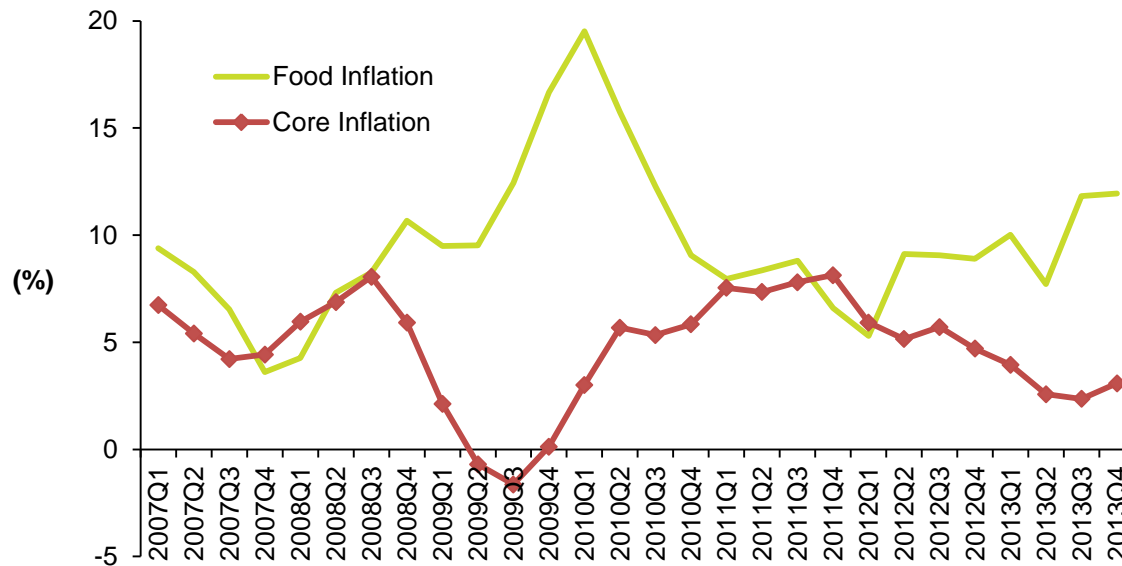
Notes: Interest rate is proxied by the call money rate while output gap is derived from Manufacturing Index of Industrial Production (IIP). We used two measures of inflation, inflation rate using all commodities and using only non-food manufactured products.

Data spanning 2000Q1–2012Q4. t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Staff estimates based on data from CEIC Data Ltd. and RBI.

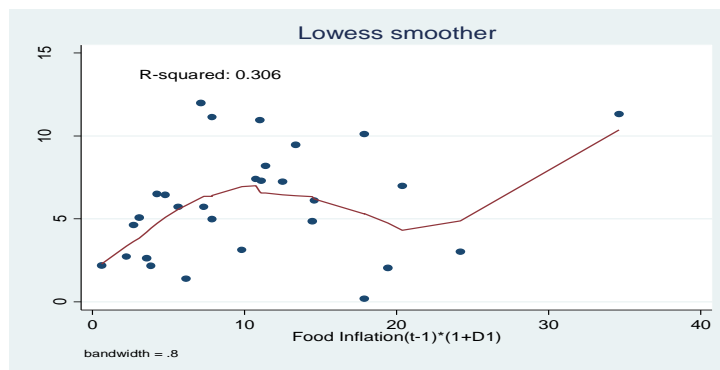
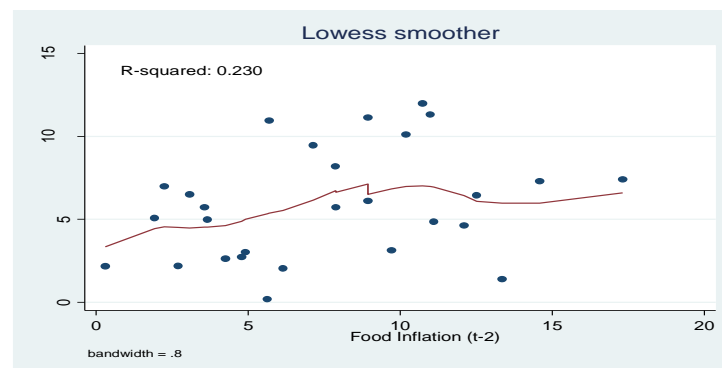
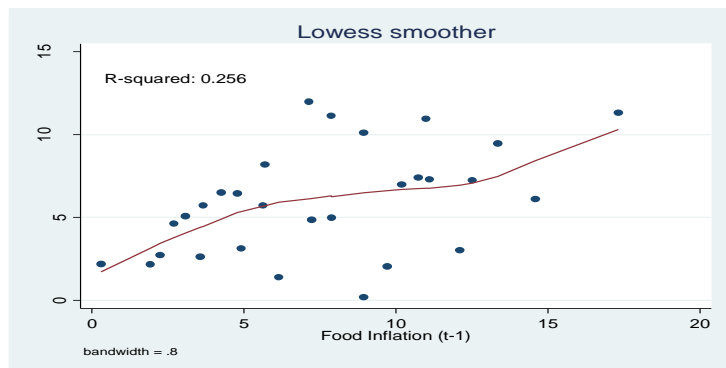
- Inflation coefficient is approximately 3X output gap coefficient
- RBI does not directly react to changes in the value of the rupee

To React or Not to React? The Link Between Food Price Inflation and Core Inflation



- At first sight not clear what is the relationship, however generally food inflation is leading core inflation

To React or Not to React? The Link Between Food Price Inflation and Core Inflation: Non-parametric Estimation

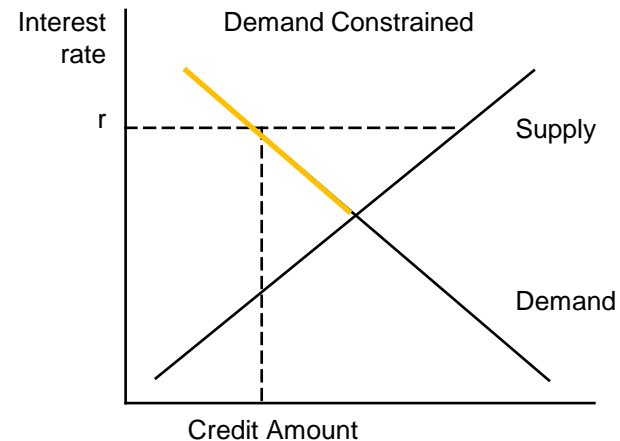
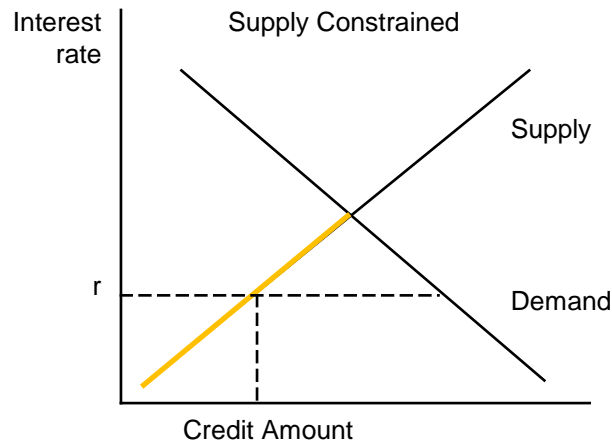


Staff estimates based on data from MOSPI

- Result 1: RBI was right to react to food price inflation.
- Result 2: Credibility matters: strong inflation mandates dampens second round effects.

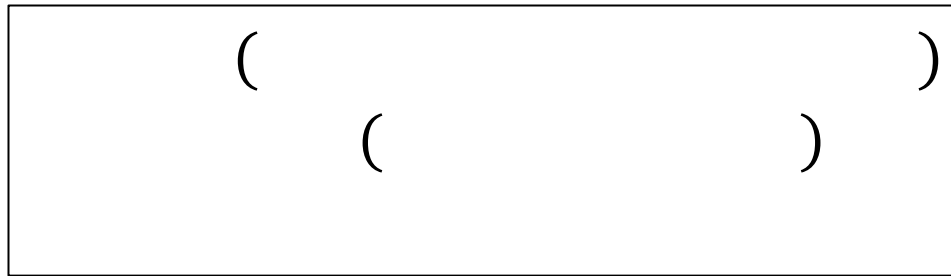
However the story is not complete!

- Assuming RBI intervenes, will it impact aggregate demand?
→ We need to analyze the credit market dynamics



- We adopt a sticky price credit disequilibrium model and assume that markets do not adjust instantaneously.

Proposed Disequilibrium Framework



- Use ML techniques to derive the unconditional probabilities of demand constrained regimes (Maddala and Nelson, 1974 and Ghosh and Ghosh, 1999).

Effectiveness and the State of the Credit Market

Constraints Faced by Credit Market

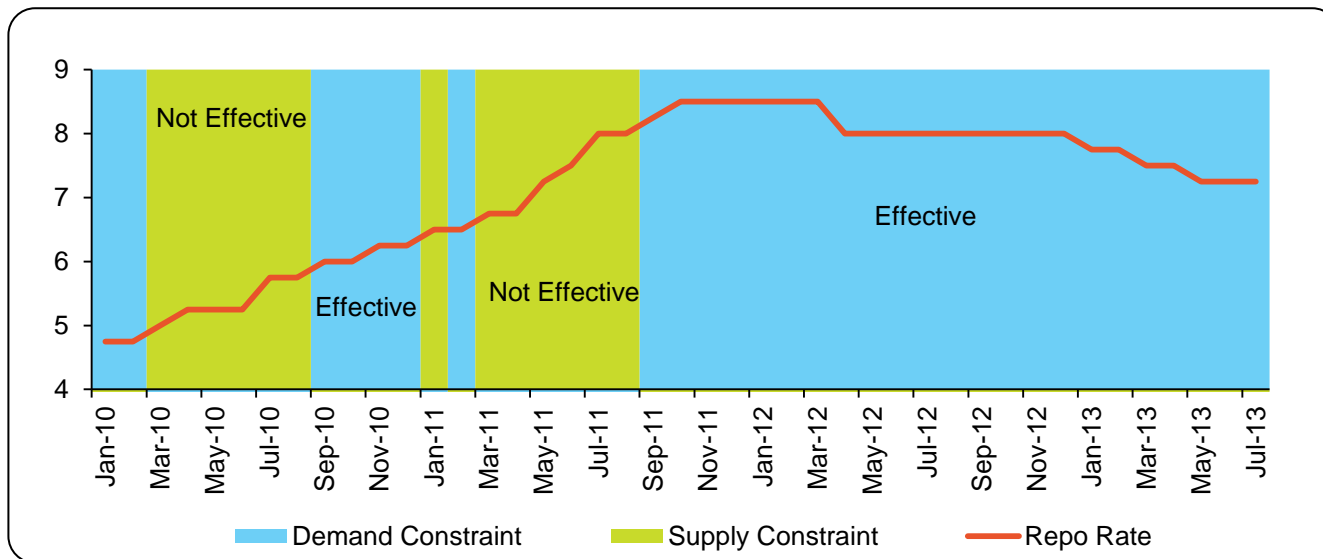
Months	Constrained	Months	Constrained	Months	Constrained	Months	Constrained
Jan-2008	Supply	Jan-2009	Demand	Jan-2010	Demand	Jan-2011	Supply
Feb-2008	Supply	Feb-2009	Demand	Feb-2010	Demand	Feb-2011	Demand
Mar-2008	Supply	Mar-2009	Demand	Mar-2010	Supply	Mar-2011	Supply
Apr-2008	Supply	Apr-2009	Demand	Apr-2010	Supply	Apr-2011	Supply
May-2008	Supply	May-2009	Demand	May-2010	Supply	May-2011	Supply
Jun-2008	Supply	Jun-2009	Demand	Jun-2010	Supply	Jun-2011	Supply
Jul-2008	Supply	Jul-2009	Demand	Jul-2010	Supply	Jul-2011	Supply
Aug-2008	Supply	Aug-2009	Demand	Aug-2010	Supply	Aug-2011	Supply
Sep-2008	Demand	Sep-2009	Demand	Sep-2010	Demand	Sep-2011	Demand
Oct-2008	Demand	Oct-2009	Demand	Oct-2010	Demand	Oct-2011	Demand
Nov-2008	Demand	Nov-2009	Demand	Nov-2010	Demand	Nov-2011	Demand
Dec-2008	Demand	Dec-2009	Demand	Dec-2010	Demand	Dec-2011	Demand

Months	Constrained	Months	Constrained
Jan-2012	Demand	Jan-2013	Demand
Feb-2012	Demand	Feb-2013	Demand
Mar-2012	Demand	Mar-2013	Demand
Apr-2012	Demand	Apr-2013	Demand
May-2012	Demand	May-2013	Demand
Jun-2012	Demand	Jun-2013	Demand
Jul-2012	Demand	Jul-2013	Demand
Aug-2012	Demand		
Sep-2012	Demand		
Oct-2012	Demand		
Nov-2012	Demand		
Dec-2012	Demand		



Policy Effectiveness and the State of the Credit Market

Credit Regimes and the Repo Rates



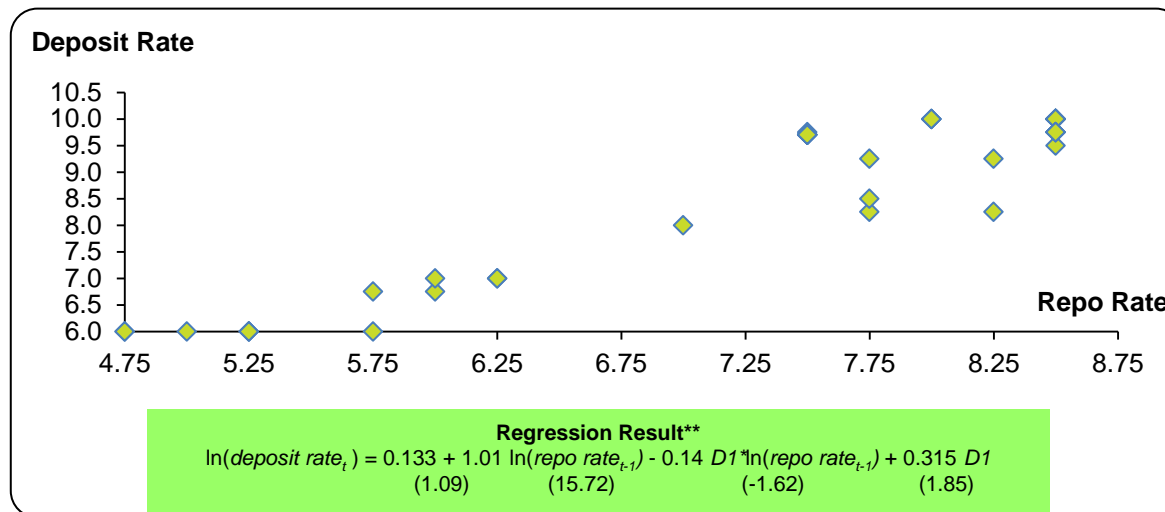
Source: Staff estimates based on data from RBI

- Despite the supply constrained regime, authorities raised policy rate to contain inflation – may not be effective.
- However, we need to drill deeper to justify our assertion.

Final Missing Link

- Two critical assumptions
 - Bank lending is driven by deposit mobilization (in India credit to deposit ratio is close to 100%)
 - Bank deposits are sensitive to interest rate movements

Relationship between Deposit Rate (1-Year Term Deposit) and Repo Rate (Jan–2010—Jul–2013)



Notes: D1 is a dummy variable equal to one if the observation/month is demand constrained and equal to zero otherwise. Numbers in parentheses are t-values.

Source: Staff estimates based on data from CEIC Data Ltd. and RBI

- Bank's act sequentially and raise deposit rates to mobilize additional lending – in a supply constrained regime.

Did RBI get it right?

(Selective Episodes)

When	Regime	Credit Market	Action Taken	Stance	Effective?	Why?
Sep 2012– Jan 2013	<ul style="list-style-type: none"> • High inflation • Low output • Strong capital flows 	Demand constrained	Cut policy rates	Dovish	Yes , expected to stimulate aggregate demand through interest channel	Credit transacted increased and appreciation pressure eased
May 2011– Aug 2011	<ul style="list-style-type: none"> • High inflation • Low output • Weak capital flows 	Supply constrained	Hike in policy rates	Hawkish	No , not expected to be effective in containing inflation	Credit transacted increased however perversely supported output growth – through the credit channel – and depreciation expectations eased.

Conclusion

- Taylor rule estimates suggest pursuit of strong inflation fighting stance by RBI in 2000-2012.
- Non-parametric estimates support RBI's decision to react to observed increases in food price inflation.
- Disequilibrium analysis provides useful framework to assess effectiveness of policy decisions across various regimes.
- Main messages is that while we can identify episodes of hawkish and dovish stance, there is no simple policy solution to consistently apply in different circumstances.

Thank you!

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