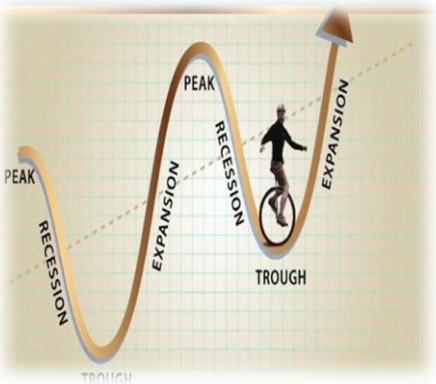
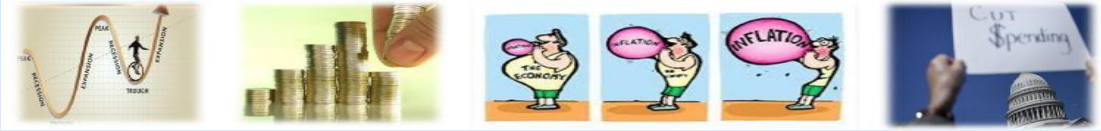
Quantifying the Cyclically Adjusted Fiscal Stance for India



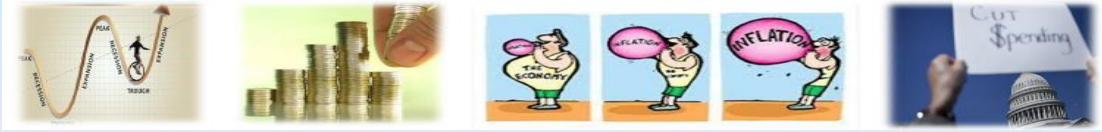
Saurabh Ghosh and Sangita Misra

Next Generation Fiscal Reform Frameworks, Dec 2014



Structure of the Paper

- The Concept
- Literature review;
- IMF methodology to compute the fiscal stance
- Estimates of the fiscal Stance and the impulse for India.
- Conclusions and policy implications



The Concept

- Fiscal policy could act as a stabilizing force for activity through two means:

  (1) the automatic channel (2) the discretionary channel
- Weakening of the budget balance can be masked by strong economic growth conversely, budget balance can be overstated on account of cyclical factors during recession.
- ***Cyclically adjusted balances (CAB)*** **-** fiscal balance corrected for the business cycle impact.
- ***Cyclically adjusted primary balances (CAPB)*** **-** Interest payments are neither autonomous nor discretionary in the current period, largely being a reflection of past debts.
- ***Structural Primary Balance*** **-** corrects for transitory factors besides the business cycle, such as terms-of-trade shocks or one-off factors



Literature…

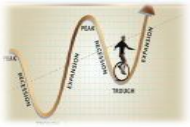
- **European Commission** - CAB has taken the central stage in the revised EU framework for fiscal surveillance (SGP). Fiscal Compact (2012) further reinforces the SGP framework by necessitation member countries to adopt structural BBR rule by 2014 (Mourre et al, 2013; Schaechter et al, 2012)

- **IMF** – publishes CAB in its periodic Fiscal Monitor and also provides technical guidance/notes to member countries to compute the CAB (IMF, 2013, Fedelino, 2009).

- **OECD** - OECD has undertaken extensive research in the area of estimating potential output, output gaps and structural budget balances (Girouard et al (2005); Girouard and Price (2004); Price and Thanh (2011).

- **Advanced countries** – United Kingdom, United States, Canada, New Zealand, Netherlands, Sweden, Switzerland etc use CAB.

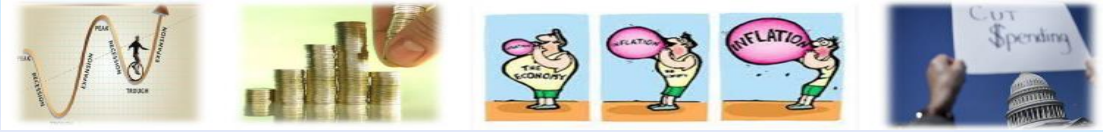
- **Fiscal rules** in terms of CAB and not general balances as targeting CAB tends to improve stabilising properties of the rule (Bova et al, 2013).




Literature

- **Emerging economies** - CAB has remained more as an area of research.
- **BRIC nations** - Extensive research only for Brazil whereby budget balances have been adjusted for both cyclicality of GDP and oil revenues (Mello *et al* (2006), Rocha (2009), Gobetti *et al* (2009)).
- **India** - a lot of literature on assessing the cyclical of fiscal policy. Attempt has also been made in the past to estimate the extent of automatic stabilizers which, was found to be about 0.5 per cent of GDP for India in 2008-09 (RBI).

CAB based fiscal rules	Since when
Australia	1998
Austria	2011
Bulgaria	2012
Chile	2001
Columbia	2011
Denmark	1992
Estonia	2007
Finland	1999
Germany	2011
Italy	2012
Malta	2012
Netherlands	2012
Norway	2001
Panama	2002-03, 2009
Portugal	2011
Serbia	2011
Spain	2003
Sweden	2000
Switzerland	2003
United Kingdom	1997



Computing the Fiscal Stance - Methodology

- The paper essentially draws on the methodology prescribed in the IMF Technical Notes and Manual (Fedelino *et al* 2009).

$$PB = OB + INT$$

$$CAPB + CPB = OB + INT \quad \text{.....(1)}$$

$$CAPB^* = [\, R^* - G^* + INT \,] / Y^* \quad \text{……...(2)}$$

$$R = R^* (Y/Y^*)^{\varepsilon} \quad \text{…… …….……...(3)}$$

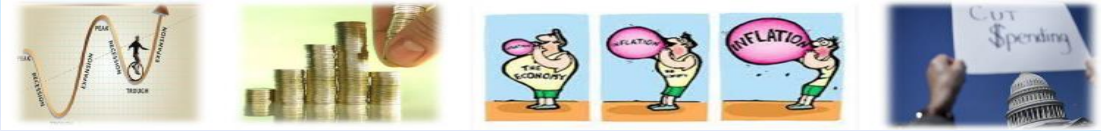
$$G = G^* (Y/Y^*)^{n} \text{……(4)}$$

where Y is potential output*

ε *indicates elasticity of revenue to output gap*

n *indicates elasticity of expenditure to output gap*

$$CAPB^* = [\, (\Sigma R_i (Y^*/Y)^{\varepsilon}) - G (Y^*/Y)^{n} + INT \,] / Y^* \quad \text{.....(5)}$$



Computing the Fiscal Stance - Methodology

- Two unknowns – potential output and elasticity parameters.

- For estimating the elasticity, two alternatives:

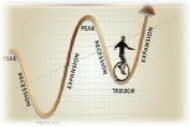
  (1) assuming some aggregate elasticity values based on literature (IMF way)

  or

  (2) estimating using econometrics component wise elasticity (OECD way).

- We have preferred to adopt the middle path i.e., using aggregate elasticity as done by IMF but estimating it using Indian data and econometric methods.

- Scaling Variable – Potential Output



Computing the Fiscal Stance - Methodology

- Fiscal Stance (FS) quantifies the aggregate demand management through fiscal policy.
- FS = *minus* CAPB .....(6)

  CAPB ≤ 0 implies FS ≥ 0 (expansionary)

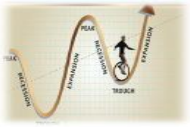
  CAPB ≥ 0 implies FS ≤ 0 (contractionary)

- Fiscal Impulse (FI)

  FI= ΔFS .....(7)

- Contractionary budget which becomes less contractionary and an expansionary budget which becomes more expansionary will both yield a positive fiscal impulse.

Data…



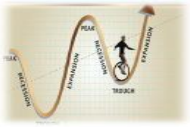
- Data on

  - GDP at factor cost at current and constant prices

  - central government revenue and expenditure and interest payments are in market prices
- Main data source ‘Handbook of Statistics of the Indian Economy’, published by the Reserve Bank of India.
- Estimations for a longer time series - the data covering the period from 1970-71 to 2013-14.
- Fiscal stance and fiscal impulse reported for the post-reform period from 1990-91 to 2013-14.

Estimation : Potential Output

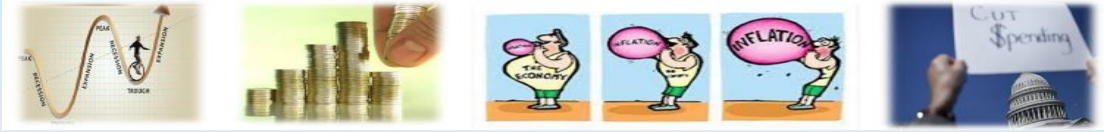
- Two estimates
  - Potential output for the Indian economy
  - Elasticity of central govt. revenue and expenditure with the cyclycal components
- Challenge
  - Unobserved Potential output
  - Several approaches producting quite different series for po
- Approaches:
  - HP filter and
  - RU (Ravn and Uhlig, 2002)
  - Christiano-Fitzgerald Band pass (2003)
  - Unobserved component

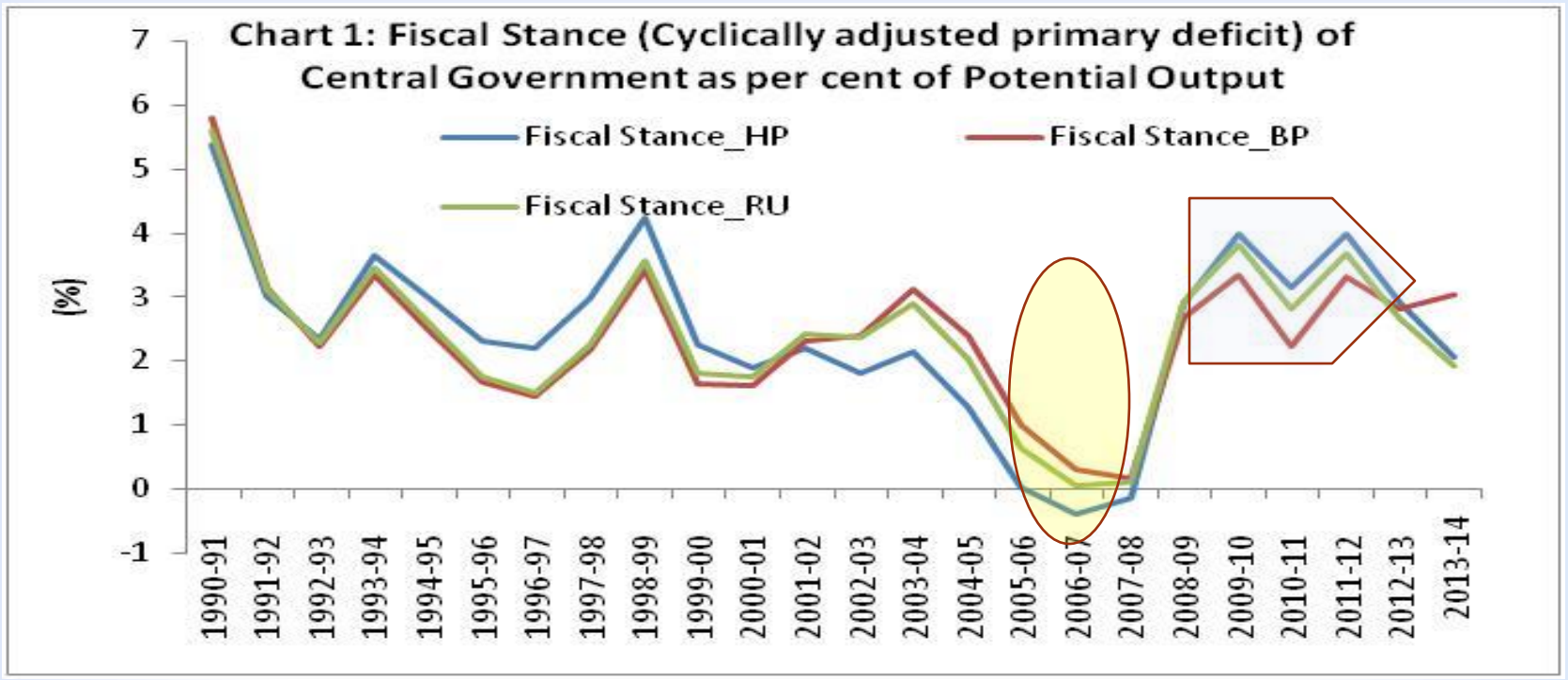


Elasticity Estimation

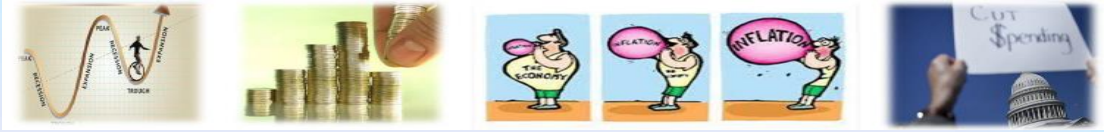
- Log-Log regression
- RHS each of revenue and expenditures scaled by potential output
- LHS cyclical component of output (Y/Y*).
- Revenue Elasticity – 1.5; Expenditure Elasticity – 0
- Are in line with the estimates computed for Brazil (Oreng, 2012)
- Robustness check
  - Estimation with Revenue and expenditure deflated by GDP deflator – real GDP at factor cost at constant prices
  - Estimation with Revenue and expenditure deflated by govt. final consumption expenditure deflator – real GDP at factor cost at constant prices
  - Result supported the estimates reported as under

	Nominal		Real	
	Ln(R/ Y^*)	**Ln(G/ Y^*)**	**Ln(R/ Y^*)**	**Ln(G/ Y^*)**
C	**-2.4**	**-1.4**	**-2.4**	**1.9**
Ln(Y/Y*)	**1.5****	**0.08**	**1.8***	**-0.4**
R^2	**0.27**	**0.01**	**0.25**	**0.01**

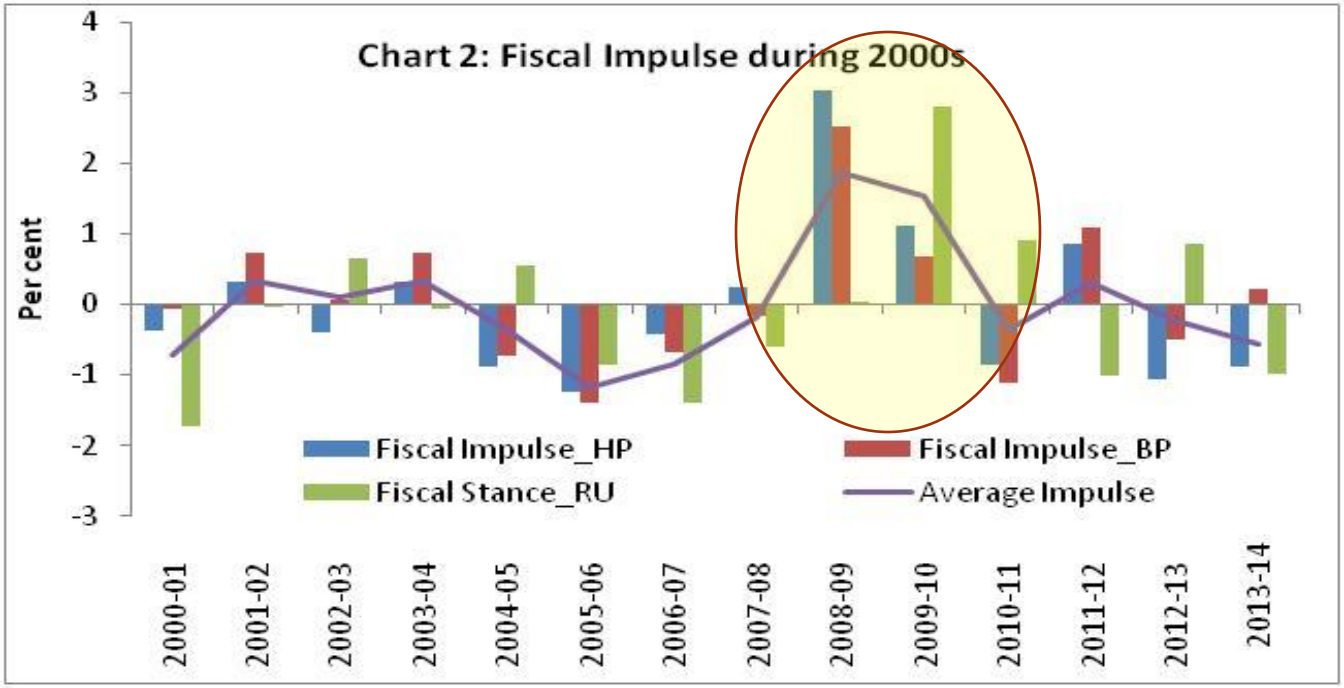




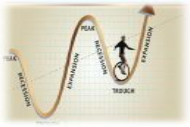
- Expansionary fiscal stance till FRBM
- Fiscal stance was neutral during 2006-07 and 2007-08
- Fiscal stance changed gears in 2008-09.
- Size of the discretionary fiscal stimulus varied in the range of 2.7-4.0 % of the potential GDP during 2008-10.
- Stimulus was still above Rs 2 trillion, close to about 2.4-3.3 per cent of potential GDP during 2010-12.



Computing the Fiscal Stance and Impulse for India



- Fiscal impulse given to the economy remained close to zero or negative during most of 2000.
- It increased, reached its peak, and it remained strong during 2008-10 .
- It shows some toning down in the recent period, providing some comfort.

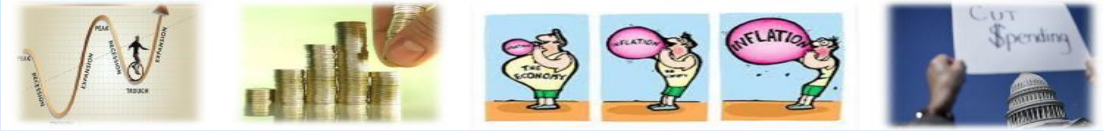


Comparability with official estimate

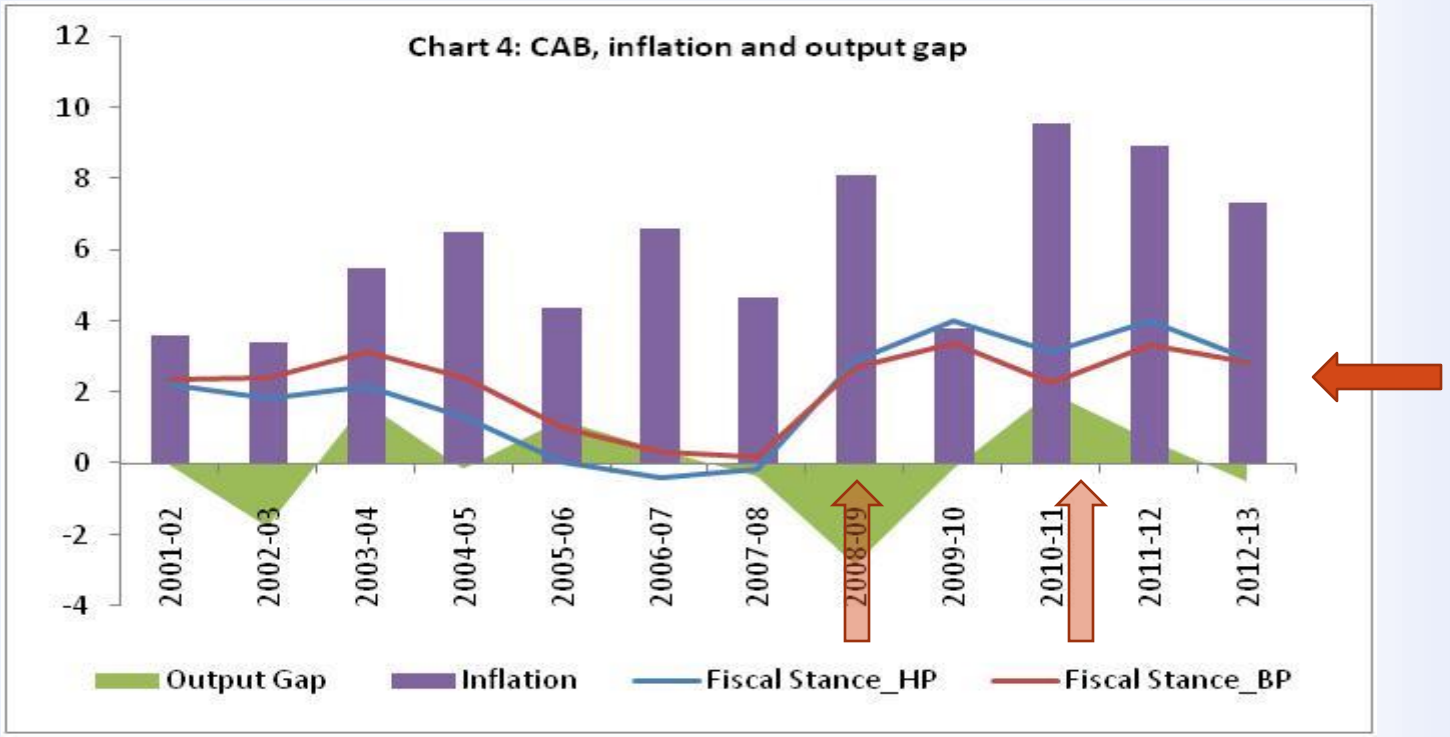
Primary Deficit Indicators: Official vs Cyclically Adjusted

	Official Primary Deficit#	Fiscal Stance_BP*	Fiscal Stance_HP*	Fiscal Stance_RU*
2006-07	-0.2	0.1	-0.6	-0.1
2007-08	-0.9	-0.8	-1.2	-0.9
2008-09	2.6	2.1	2.3	2.3
2009-10	3.2	2.8	3.4	3.2
2010-11	1.8	1.5	2.4	2.0
2011-12	2.7	2.5	3.2	2.9
2012-13	2.0	2.4	2.5	2.3
2013-14	1.5	2.1	1.0	0.9

- Adjusting for the growth slow down in 2008-09, deterioration in primary balances was lower. Automatic stabilizer is found to be about 0.3-0.5 in 2008-09.
- Gradually the positive gap between cyclically adjusted and actual primary balance is getting reduced and at times it is higher than actual. The withdrawal of stimulus since 2008-09 could be lower than what is observed till about 2012-13.
- By all estimates and the official data, stimulus withdrawal is quite high as per budget estimates 2013-14.



Fiscal Stance, Output Gap and Inflation



During 2008-09 to 2012-13:

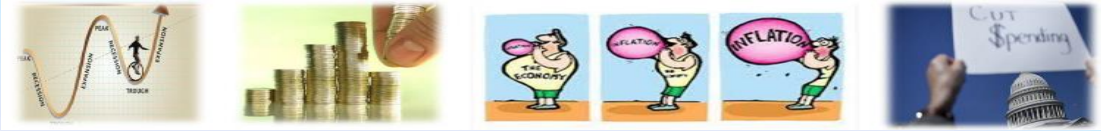
- CAPB clearly indicates an expansionary fiscal policy
- Growth after rebounding for two years 2009-10 and 2010-11 has moderated.
- Negative output gap has reduced though fiscal stance continues to be expansionary, with very limited withdrawal of stimulus, albeit with a reduction in the impulse.
- Inflation has been high and persistent inflation during 2010-12.

Fiscal Stance, Output Gap and Inflation

- Relationship between Fiscal Stance and WPI index - the Engle-Granger z-statistics indicate series are cointegrated, and a positive long term coefficient.

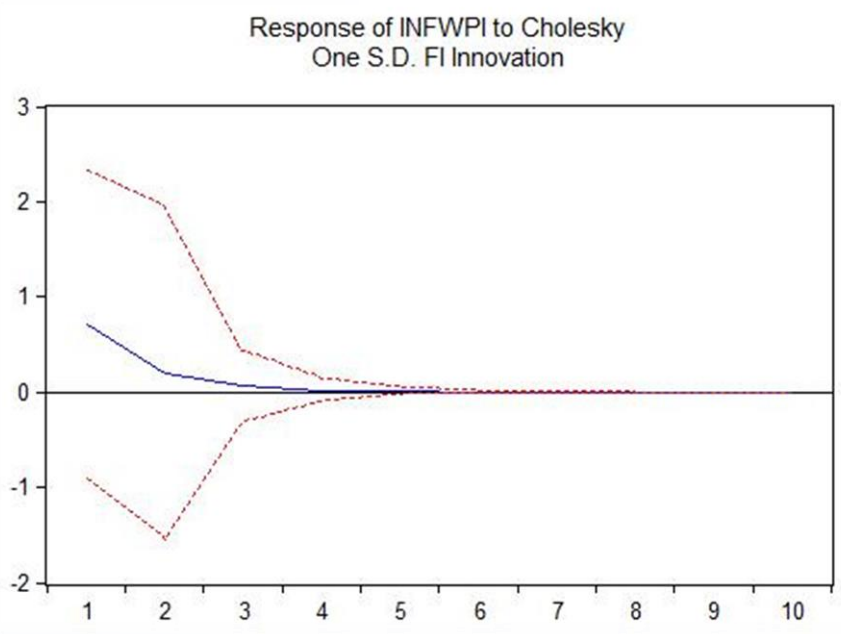
Cointegration Test - Engle-Granger, Specification: WPI CYADPBAL Constant

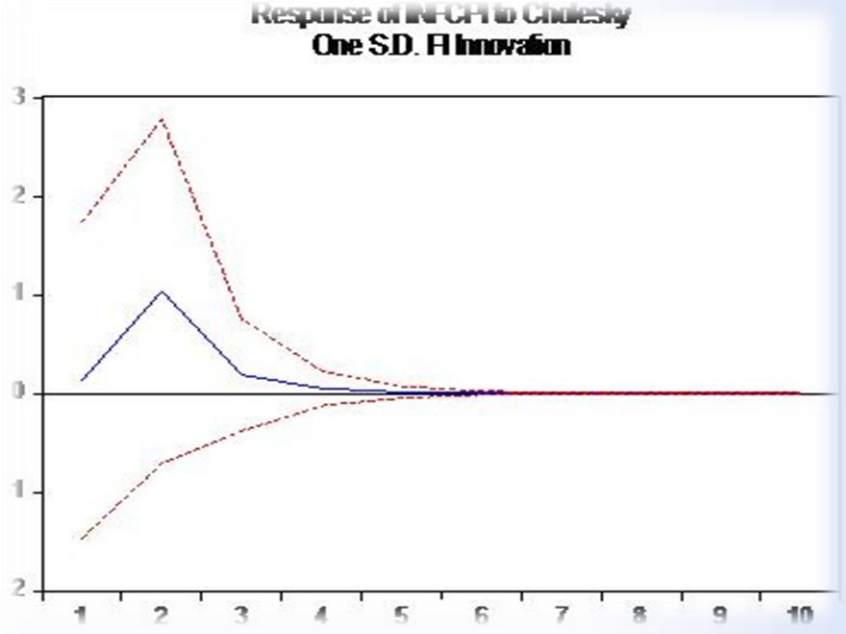
Variable	Coefficient	t-Statistic	Prob.
CYADPBAL	0.046	4.393	0.0001
C	34.50	3.686	0.0007
R-squared	0.533		
Engle-Granger z-statistic		-258.95	0.0000

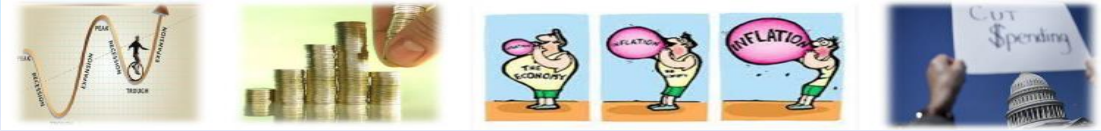


Fiscal Stance, Output Gap and Inflation

- Unrestricted-VAR of Fiscal Impulses (FI= ΔFS) separately with WPI inflation and CPI-IW inflation - one SD shock triggers WPI inflation followed by CPI inflation that however tapper of over time.







Conclusions and Policy Inferences

- Fiscal Stance as reflected in the CAPB rose significantly in 2008-09. Quantifying the fiscal stance for India, one observes that it increased from zero in 2006-07 to about 3-4 per cent in 2008-10.
- Subsequent years have seen only part of this stimulus being withdrawn.
- The fiscal impulse is toning down in recent years which is a positive development given that inflation remains high.
- Improving the quality of expenditures and speeding up the tax reforms are the way out to achieve fiscal consolidation in the current low growth phase.
- An expansionary fiscal stance continuously for about 5 years reduces the space for a revival in private spending, without quickly rekindling inflationary pressures.
- An enduring reduction in fiscal deficit can reduce fiscal dominance and enable monetary policy to play a better role.



THE ECONOMY
INFLATION
INFLATION

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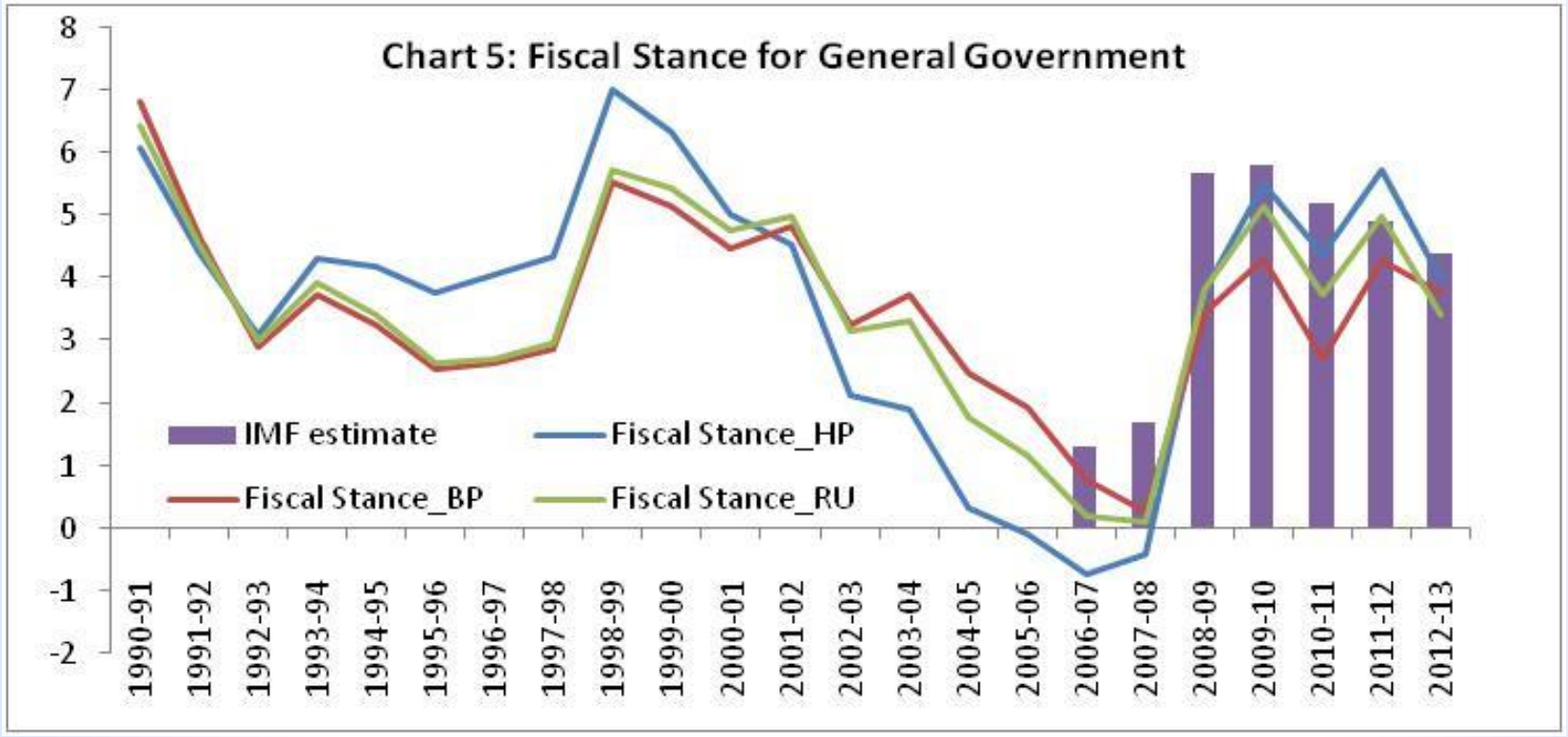
Thank you!

Robustness Check: Comparability with IMF data



- IMF – CAPB for general government using common elasticity estimates.
- CAPB is found to be expansionary for general government to the tune of 4-5 per cent of potential output during post crisis period, broadly in line with IMF estimates