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## Inflation and Monetary Policy: 2006-08 vs. 2009-11

RBI has increased Repo rate by 350 bps since it started increasing policy rates from Mar-10 onwards. As policy rates switched from Reverse Repo during crisis to Repo post crisis, the effective rate hike has been 450 bps since Mar-10. Barring its policy review in Dec-10, it has increased rates in each of the quarterly reviews and mid-term reviews making it six consecutive increases from Mar-10 to Nov-10 (150 bps) and another six consecutive rate hikes from Jan-11 to Sep-11 (200 bps). Despite such stiff rate hikes the inflation remains around 9.5% - 10% and there are some strains on growth. This has led to some interesting and fervent debate on the inflation –growth trade-off in India.

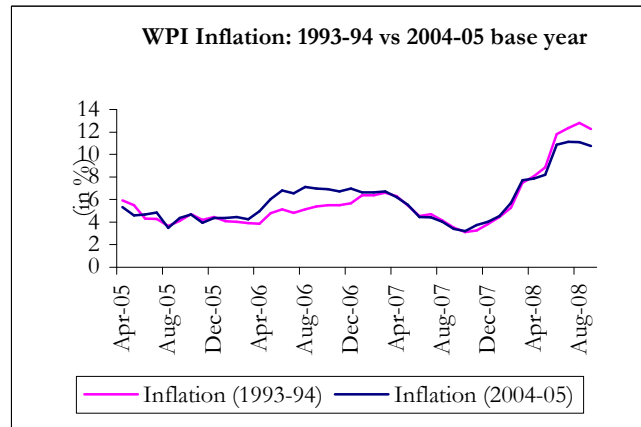
The current monetary policy management is often compared to the RBI policy management from Apr-06 to Sep-08 when inflation was rising steeply and RBI raised repo rate by 275 bps between Jan-06 and Jul-08. More importantly it raised policy rates by 125 bps in two months between Jun-08 and Jul-08 just like the rates were raised by 150 bps in 5 months between May-11 and Sep-11.

This paper reviews these two periods and compares the two periods in terms of monetary transmission and macroeconomic parameters.

### I. Background

In this phase, we had inflation with 1993-94 as base-year and we now have 2004-05 base-year inflation as well. If we compare inflation trends from Apr-05 onwards based on the two series, we see there are differences in 2006-07 and 2008-09 period. (Figure 1)

**Figure 1**



Source: Commerce Ministry



In 2006-07, inflation is higher based on 2004-05 time series and in 2008-09 inflation is higher based on 1993-94 time series. Hence if we had 2004-05 time series in the 2006-08 period as well, may be RBI would have raised rates higher in 2006-07 itself leading to lower inflation in subsequent years (including 2008-09). Similarly, inflation based on 2004-05 series would have indicated lesser inflationary pressures in 2008-09 than indicated in 1993-94 series.

<b>Table 1: Average inflation (in %)</b>		
	1993-94 base year	2004-05 base year
2005-06	4.43	4.44
2006-07	5.43	6.59
2007-08	4.67	4.74
2008-09	8.46	8.09
H1 2008-09	11.03	10.00
H2 2008-09	5.89	6.19

*Source: Commerce Ministry*

Ideally, we should be taking common base year to enable the comparisons between the two phases. But given the challenges of policy looking at existing data, we take 1993-94 base year for 2006-09 period and 2004-05 base year for 2009-11 period.

The other important difference between the two periods is that first phase was amidst global growth period where growth rates and inflation were rising in most of the economies. The second phase is in an opposite situation of continued global crisis where growth is seen in only a few emerging economies. Inflation has risen in most economies but only policymakers from emerging economies seem to be worried over it. The developed economies maintain that only headline inflation has risen tracking rise in prices of commodities and oil. They focus on core inflation which remains subdued due to persistent slack in the economy. Inflation was a global issue in first phase but in the second phase it is a concern only for emerging economies which have recovered faster from the crisis and are growing at pre-crisis levels.

## II. 2006-08 Inflation

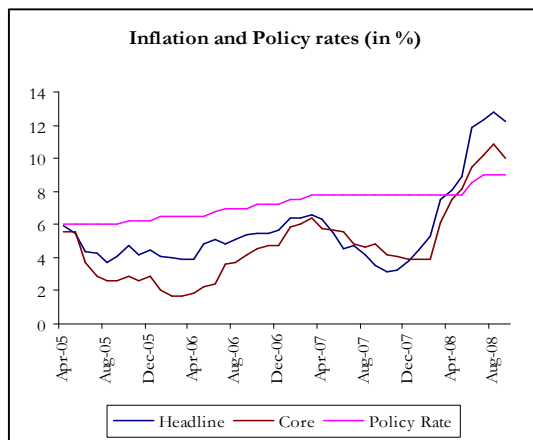
This phase can be further divided into three sub-phases:

- Apr-06 to Mar 07 (rise in inflation):** It is interesting to note how inflation was well anticipated in this period. In Apr-05 inflation was around 5.91% almost equal to policy rates at 6%. RBI raised policy rates by 25 bps on 24-Oct-05 when inflation was around 4.7% which is around RBI's preferred range of 4.5-5.5%. RBI expected inflation to rise as Indian economy was growing rapidly at 9% plus levels. As RBI expected, inflation does start to rise around Aug-06 where it moves from 5.12% to touch 6.61% till Mar-07. RBI raised policy rates by further five times in 2006-07 taking the repo rate to 7.75% by Mar-07. As a result, policy rates always remained above the final inflation number resulting in positive real rates. (Figure 2). Apart from headline inflation, RBI has recently been focusing on core inflation as well. Core inflation was subdued till Mar-06 at 1.7% and then starts to rise to touch 6.4% in Mar-07. So clearly, RBI's rate increases during this period was also because of rising core inflation.



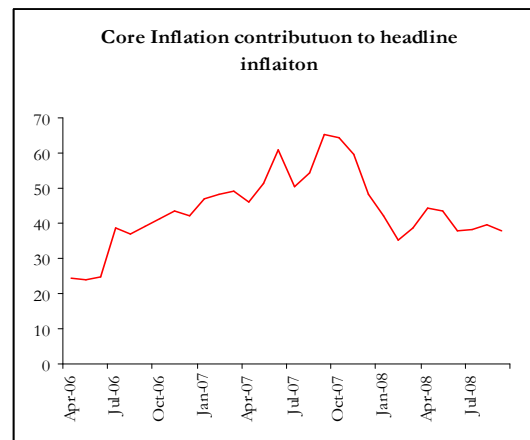
- **Apr-07 to Oct-07 (inflation moderates):** Inflation declines from Apr-07 onwards tracking sharp RBI rate hikes and declines to touch 3.11% levels by Oct-07. Core inflation is higher than headline in the period May-07 to Nov-07.
- **Oct 07 to Sep-08 (inflation rises again):** Inflation again starts to rise post Oct-07 and touches 7.48% by Mar-08, much higher than RBI's comfort zone. RBI responded to rising inflation in Jun-08 when inflation touched double digits at 11.8%. It raised policy rates twice in Jun-08 taking the policy rate to 8.5% and further by another 50 bps in Jul-08 when inflation rose further to touch 12.36%. RBI did not increase policy rates any further as inflation started to decline sharply post global crisis. RBI started to cut policy rates from Oct-08 onwards lowering Repo rate to 4.75% and Reverse Repo rate to 3.25% by Apr-09.

Figure 2



Source: Commerce Ministry, RBI

Figure 3

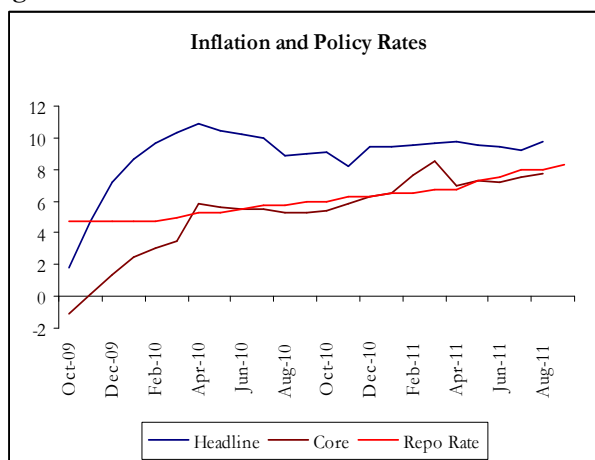


Source: Commerce Ministry

Contribution of Core Inflation: Core inflation starts to rise sharply during this period and moves from a low of 3.8% in Feb-08 to 10.8% in Aug-08. Unlike the previous period of Apr-06 to Mar-07, the core inflation rises much sharply this time. The contribution of core inflation to headline was around 24% in Apr-06 and rises to 65% by Oct-07 and declines to 38.9% in Mar-08 and is around 37.9% in Sep-08. Hence, the contribution of core to headline inflation was near similar at 38-40% in both the high phases of inflation during 2006 to Sep-08 period.

### III. 2009-11 Inflation

Inflation in this phase started to rise from Nov-09 onwards. The headline inflation touched around 5.5% levels by Jan-09 tracking decline in commodity and oil prices and even turned negative in Jun-09 and Jul-09. It remained subdued till Oct-09 at around 1.5-1.7% and then suddenly started rising post Nov-09. The quick spurt in inflation can be gauged from the fact that it was 1.8% in Oct-09 and in five months was 10.36% by Mar-10.


**Figure 4**


Source: Commerce Ministry, RBI

However, as explained above the background of the two high inflation phases was different. In the first phase, RBI increased interest rates as most central banks were doing the same as there was growth on a global level. In 2009-11 phase, central banks in emerging economies were looking to exit from easy policies whereas central banks in developed economies looking to stimulate their economies. Hence, RBI started exiting from its easy monetary policy in three steps:

- In Oct-09 policy but it did away with various liquidity facilities started during the crisis. Inflation was subdued then though RBI raised its inflation projection to 6.5% (with upward bias) from 5% in Jul-09 policy.
- In Jan-10 policy, it drained liquidity surplus by raising CRR by 75 bps in two steps. It raised inflation projections for Mar-10 to 8.5% but still did not raise the policy rates given the global uncertainty.
- In Mar-10, RBI raised policy rates in a sudden move as RBI did not have mid-quarter policy reviews which were started only post July 2010-11 monetary policy. In Mar-10, RBI pointed that apart from rising headline inflation, the core inflation had also started to rise indicating demand pressures. It said inflation could cross double digits in Mar-10 which became a reality as final print for Mar-10 was 10.36%.

Deepak Mohanty, ED of RBI in a speech (Monetary Policy Response to Recent Inflation in India, Sep 2011) divides this high inflation phase into four sub-phases (Table 3).

	Inflation Movement	Core Inflation movement	Repo rate hike	Factors
I. Oct 09 to March 10	1.79 to 10.36	- 1.1 to 3.5	25	Base Effect, Food Prices due to drought
II. April 10 to July 10	10.88 to 9.98	5.9 to 5.5	75	Food Mainly Protein, Fuel Prices (deregulation of Petrol and rise in other fuel products)
III. August 10 to Nov 10	8.87 to 8.20	5.3 to 5.9	50	Non-Food articles like cotton and minerals
IV. Dec 10 to Sep 11	9.45 to 9.22	6.2 to 7.5	200	Food (dues to unseasonal rains), Core inflation rises as inflation generalised

Source: Mohanty (2011)



#### IV. 2006-08 vs. 2009-11 inflation

Having seen the broad inflation and policy trends in the two phases, let us now focus on the differences in the two phases:

- Sources of inflation:** In the first phase, as we see inflation decline sharply in 2007-08 the sources of inflation change in 2007-08. However, in the periods when inflation rises, we see manufactured/core form a higher % of inflation in Apr-08 to Sep-08 period compared to 2006-07 period. Primary articles contribute a smaller % in Apr 08-Sep 08 compared to 2006-07 despite a higher rise in commodity prices in Apr-08 to Sep-08 period.

	Primary	Protein	Fuel	Manufactured	Core
<b>Apr-06 to Sep-08</b>					
2006-07	30.8	10.3	24.8	44.3	38.2
2007-08	36.7	9.9	2.7	60.7	51.4
Apr 08-Sep 08	22.1	4.0	25.8	52.0	40.3
<b>Oct-09 to Sep-11</b>					
Oct 09 to March 10	66.5	31.8	-1.5	35.6	5.0
April 10 to July 10	44.9	20.4	19.8	35.3	28.1
August 10 to Nov 10	45.4	17.3	19.4	35.2	31.4
Dec 10 to Sep 11	37.0	7.2	20.0	43.1	38.0
<i>Source: Commerce Ministry</i>					

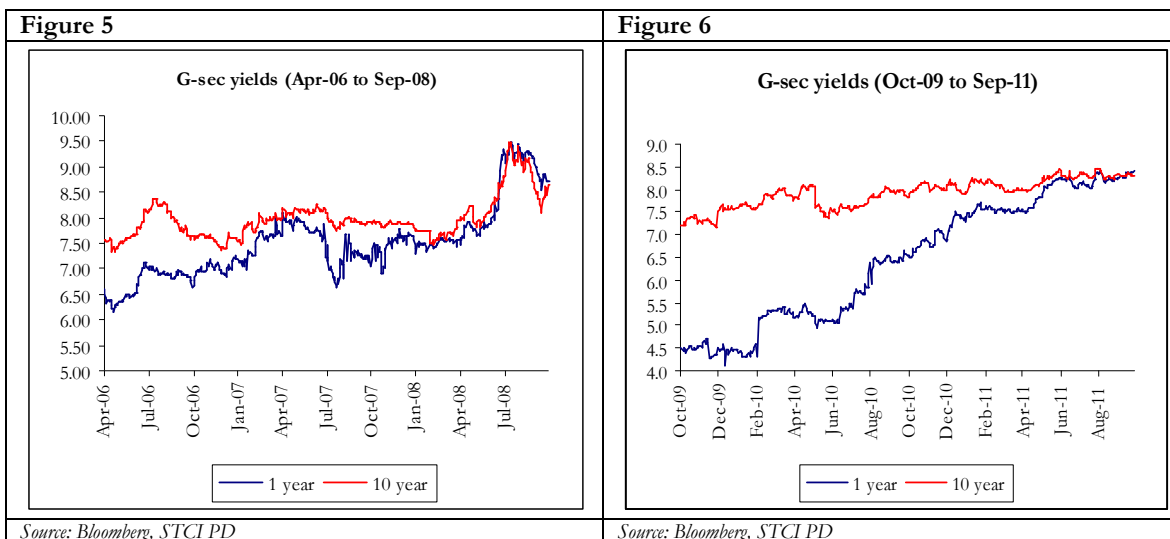
In the second phase, we see primary articles forming majority of the inflation in Oct-09 to Mar-09 and then share of both fuel and core inflation rising gradually. However, despite share of primary declining in each sub-phase it is much higher than seen during 2006-08 phase. This indicates that pressure from food articles continues to remain high mainly because of the protein price inflation in this phase. Hence in this phase apart from demand pressures that have resulted in core inflation, we also see persistent pressure from food inflation.

Food inflation is coming from protein items (as analysed in our report 'Tracking India's Protein Price Inflation, 5-Sep-11). As we can see in the table there was some protein inflation seen in 2006-07 but it then declines in both the subsequent periods. However, in the Oct-09 – Sep-11 phase we see nearly 50% of primary inflation being driven by protein item inflation. It has declined in the Dec-10 to Sep-11 phase but that is mainly because of base-effect. This persistent rise in protein items is a because of both demand factors (as rising incomes has led to shift in consumption pattern) and supply factors (supplies have not increased commensurately particularly in pulses). Therefore, this time the sources of inflation are somewhat different from the 2006-08 inflation phase. It also partly explains why policy rate hikes have not had the desired effect as supply side factors have become more central this time around.

- Impact on interest rates:** The monetary transmission of policy rates is critical to understanding the impact of monetary policy. Figure 5 and 6 look at the movement in G-sec yields in the two phases. In 2006-09, we see yields mimic the monetary policy stance by RBI. The yields hardened tracking the tight 2006-07 policy and then declines tracking status quo by RBI policy. In 2008-09 as inflation surges in first half, we see rise in G-sec yields as they immediately track the hike in policy rates. As inflation declines in H2 and RBI cuts policy rates, rates follow that path as well. H2 2008-09 was also a phase where central government reported higher than projected deficits



and raised its borrowing program substantially tracking global crisis. The state governments also raised a much higher borrowing from the markets than previous year.



However, in Oct-09 to Sep-11 phase we see short-term yields rising much more than long term yields. Table 7 shows that where the impact of monetary policy is seen on long term yields in the first phase of Apr-06 to Sep-08. But we do not see similar impact on long-term yields in Oct-09 to Sep-11 phase. Monetary transmission works by first impacting short-term rates which are impacted immediately post policy and then is transmitted to longer term interest rates leading to an overall impact on economy. Despite, RBI raising policy rates by 350 bps since Mar-10 we see short-term rates rise by 433 bps but long term yields rise by only 31 bps.

<b>Table 4: Change in Yields (bps)</b>				
	1 year	5 year	10 year	30 year
<b>Apr-06 to Sep-08</b>				
Apr-06 to Mar 07	1.04	0.62	0.42	0.51
Apr-07 to Mar 08	-0.08	-0.16	-0.02	0.09
Apr-08 to Aug-08	1.62	1.06	0.75	1.27
Apr-08 to Sep-08	1.17	0.87	0.68	0.82
<b>Oct-09 to Sep-11</b>				
Oct 09 to Mar-0	0.65	0.41	0.62	0.16
April 10 to Jul-0	1.22	0.09	-0.02	0.01
Aug-10 to Nov-0	0.96	0.22	0.20	0.04
Dec-10 to Sep-11	1.50	0.38	0.21	0.11
<b>Total</b>	<b>4.33</b>	<b>1.10</b>	<b>1.01</b>	<b>0.31</b>

*Source: Bloomberg, STCI PD*

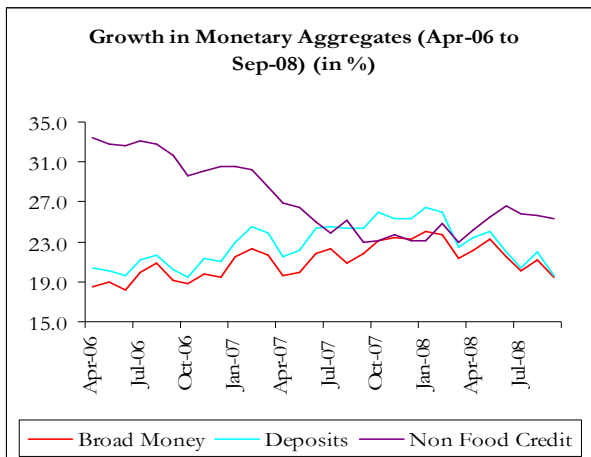
Table 8 analyses the impact on deposit and lending rates during both the phases. We do see rates going up during monetary contraction phases but the relationship is not as direct as seen in case of G-sec yields due to the contractual nature of these products. Overall, we see banks' deposit rates are lower than seen during 2008-09 inflation phase. As the regime has shifted from Benchmark Prime Lending Rate to Base rate, we cannot really compare the two regimes on this basis. An analysis of actual lending rates shows the credit rates are higher till Jun-11 than seen in 2006-08 phase.



Table 5: Lending and Deposit Rates (in %)				
	BPLR	Base Rate	Deposit Rate	Call Rate
<b>2006-08</b>				
Mar-06	10.25-10.75	--	6.00-7.00	4.73
Mar-07	12.25-12.50	--	7.50-9.00	6
Sep-08	13.75-14.00	--	8.75-10.00	10.8
Mar-08	12.25-12.75	--	8.25-9.00	7
<b>Oct-09 to Sep-11</b>				
Oct-09	11.00-12.00	--	6.50-7.75	3.23
Jul-10	11.00-12.00	7.50-8.00	6.00-7.50	4.25
Sep-10		7.50-8.50	6.75-7.75	5.2
Mar-11		8.25/9.50	7.75/9.50	7.58
Sep-11		10.00-10.75	8.50-9.25	8.27
<i>Note: Base rates started from Jul-10 onwards</i>				
<i>Source: RBI</i>				

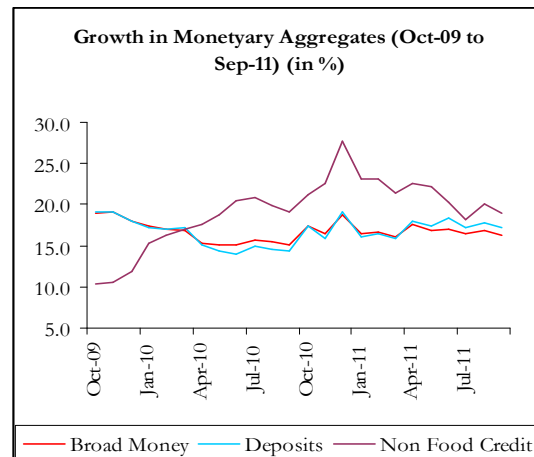
- Impact on monetary indicators:** The impact of the rising rates was seen on monetary indicators as well. Credit growth in Apr-06 was around 33% plus which then declined gradually to touch 23% by Sep-07. It remains around that level before rising to touch 25-26% levels by Jun-08. The credit growth rate then declines tracking the global crisis to touch 10% levels by Dec-09. Growth rate in deposits picks up in 2006-07 tracking rising bank deposit rates and remains at around 25% for most of the remaining period.

Figure 7



Source: RBI

Figure 8



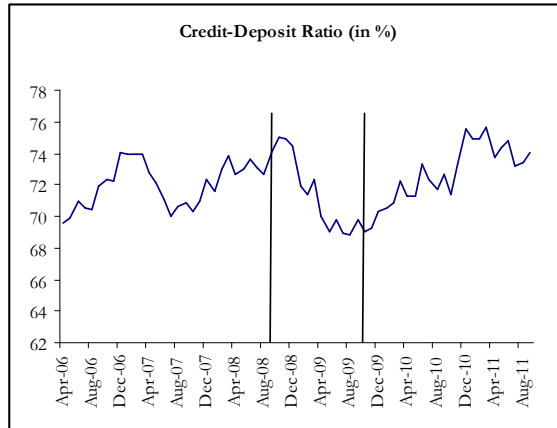
Source: RBI

In the Oct-09 onwards phase, we see growth rate in money and demand deposits has declined from Oct-09 levels. Credit growth picks up in 2010-11 tracking low base in 2009-10 to touch 27% in Dec-10. Since then it has declined to touch 18.9% in Sep-10 possibly due to higher interest rates. Growth in deposits has also picked up from 16% levels in Jan-11 to 17-18% levels by Sep-11 due to higher deposit rates and shift of funds from small savings schemes to bank deposits.

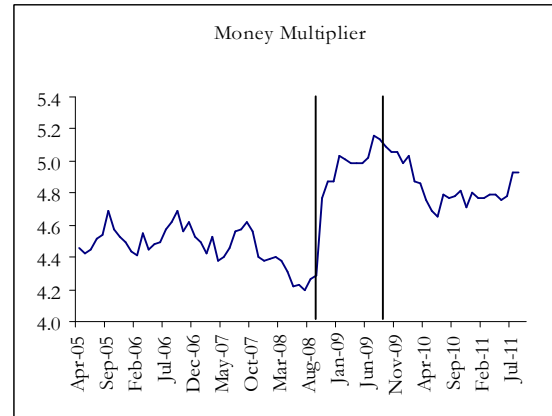
The credit-deposit (CD) ratio is another useful metric to see the pressure on the monetary system. In Apr-05, CD ratio was around 63.6 which rises to touch 69.6 by Apr-06 indicating large credit off-take during the period. The ratio rises to touch 74 by Dec-06 and then starts to decline as RBI starts to increase rates, and these impact credit flows. It touches around 70 by Jun-07 and then increases to



touch 74 levels by Mar-08. The ratio declines post crisis to 68.8 in Aug-09 as credit growth rates declined during this period. Post Oct-09 it again starts to rise to touch 75.7 by Mar-11. It has since then lowered slightly to touch 74 by Sep-11. Despite much steeper rate increases than Apr-06 to Sep-08 period, credit deposit ratios remain high showing demand for credit remains high even at higher interest rates.

**Figure 9**


Note: First Line indicates start of the recession. Second line indicates the start of inflation post Oct-09  
 Source: RBI

**Figure 10**


Note: First Line indicates start of the recession. Second line indicates the start of inflation post Oct-09  
 Source: RBI

Money multiplier (Figure 10) remains around 4.4 to 4.5 for most of Apr-06 to Mar-08 and then declines to touch 4.2 levels tracking RBI's moves to increase CRR during the period. It rises to touch 5.1 levels as RBI cut CRR post Lehman crisis. Currently it is at around 4.9 levels which is higher than the levels seen during 2006-08 inflation phase. Higher multiplier could be a factor in inflation persistence in this period.

## V. Final Thoughts

The above paper compares the two recent phases of high inflation in India. The first phase started from Apr-06 onwards and coincided with the global crisis. As RBI quickly reversed its stance in Oct-09 from tight to ultra loose policy, one cannot determine the impact of policy on inflation. The inflation pressures were much higher post Apr-08 and global crisis softened inflationary pressures. In many ways, the crisis was just a stopover point and once the crisis subsided, India is back to facing the inflation problem.

The current phase started from Nov-09 onwards and has some key issues associated with it:

- First, India has not had such runaway inflation in past. Dr. Kaushik Basu in a paper Understanding Inflation and Controlling It, (2011) points out that independent India's highest inflation occurred in September 1974, when inflation reached 33.3%. The worst inflationary episode was from November 1973 to December 1974, when inflation never dropped below 20% and was above 30% for four consecutive months starting June 1974. This runaway inflation was for thirteen months. The current inflationary trends are much lower but we have had 9% plus inflation for almost twenty three months now (started in Nov-09) and likely to extend till 30 or more months.
- Second, cross country studies also do not provide any much guidance as structure of Indian



economy is different and India has had a more sober inflation in the range of 10% compared to hyper-inflations or much higher inflations of other countries.

- Third, this inflation is even different from 2006-08 inflation as it is a combination of supply and demand shocks and changes in Indian economy.
- Fourth, the role of fiscal policy has again come to the centre post the crisis. The fiscal deficit had declined post-FRBM which also helped in the early years of high growth in 2003-08. The fiscal deficit again spiraled in the crisis year and has remained elevated since then. The Thirteenth Finance Commission has proposed a path of fiscal consolidation but the government is finding it difficult to cut down on its subsidies and other non-plan expenditures.

RBI economists Janak Raj, J. K. Khundrakpam & Dipika Das show despite FRBM fiscal policy continues to substantially influence the conduct of monetary policy (An Empirical Analysis of Monetary and Fiscal Policy Interaction in India, 2011). While monetary policy reacts in a counter-cyclical manner, fiscal policy reaction is primarily pro-cyclical in nature. The positive impact of expansionary fiscal policy on output is highly short-lived, while there is a significant negative impact in the medium to long-term. In another RBI research paper, economists show that with fiscal deficits higher by 1%, the impact on inflation is an additional 0.25%. Both these papers point to the importance of fiscal consolidation for monetary policy to be effective in managing inflation.

More importantly, policymakers need to assess this inflation-growth nexus carefully. In a couple of research papers, RBI economists have pointed that threshold level of inflation for Indian economy is around 5.5% - 6%. Till inflation is below 5.5%, it has a favorable impact on growth and after 5.5% it starts to negatively impact growth. The central banks should target inflation lower than threshold given lags in monetary policy transmission. Based on this, RBI's comfort zone for inflation should be around 4.5% - 5%.

However each time the growth rates cross 8% and above, inflation crosses the threshold levels and remains persistent. It seems there is a threshold level of growth as well beyond which there is only acceleration in inflation. Just like we have targeted inflation being lower than threshold inflation similarly target growth is likely to be lower than threshold or potential growth. Hence, if India needs to push its growth around its potential without creating inflationary pressures, it will require enormous investments in supply to match the rising demand. The past few years make it clear that either India needs to grow slower to lower inflation or needs to undertake some urgent policy reforms to push growth without allowing inflation to accelerate.



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