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Headline vs. Core Inflation - India's Case

In our previous report (Which Measure of Inflation: Headline, Core or Trimmed? 27 April 2011) we looked at the dilemmas facing central banks in advanced economies. Should they be focusing on headline inflation or core inflation? If they start raising rates looking at headline, it could impede the recovery. If they maintain status quo looking at core inflation, they might keep missing their inflation targets leading to people questioning their roles. The report pointed how central bankers in these regions (except Euroarea) differ on whether headline should be preferred or core should be preferred.

This paper looks at the Indian perspective on the debate between headline and core inflation.

I. Measures of Inflation in India

Using the same classification used in earlier report, we can classify measures of inflation as two types:

1. **Based on population coverage:** Wholesale Price Index (WPI) is the main measure of the rate of inflation in India. The index is broadly divided into three sub-categories – Primary Articles, Fuel Products and Manufactured Products. This index does not cover non-commodity producing sectors viz. services and non-tradable commodities. The data is released by Economic Advisor to Commerce Ministry. Till Oct-2009, WPI was released weekly with a lag of fortnight and is now released in two phases. Primary articles and fuel group inflation continues to be released weekly for its sensitivity with a fortnightly lag. The monthly inflation with Manufactured Products inflation is released with a fortnight lag.

   The other important measure is the consumer price index inflation (CPI). In India, we have four CPI indices based on different population sets - CPI for industrial workers (CPI-IW), CPI for Agricultural Labourers (AL), CPI for Rural Labour (CPI-RL) and CPI for urban non-manual employees (UNME). Amidst all these measures, CPI-IW is seen as the best measure as its coverage is broader than the other indices of CPI. Labour Bureau releases CPI-IW, CPI-AL and CPI-RL with a one month lag. CPI-UNME has been discontinued and CSO has started releasing CPI-Rural and CPI-Urban inflation since Jan-2011.

   The most comprehensive measure is GDP deflator which is measured as ratio of GDP at current prices to GDP at constant prices. Since it encompasses the entire spectrum of economic activities including services, the scope and coverage of national income deflator is wider than any other measure. This data is released by the Central Statistical Organisation (CSO) but is not used as it comes quarterly and with a 2 month lag.

   CPI is the preferred measure worldwide but in India WPI remains the main measure. Dr. Y.V. Reddy, former RBI Governor in a speech (Inflation in India: Status and Issues, 1999) mentioned the benefits of WPI Inflation and why it is the preferred measure for inflation.

   - First it is available for all commodities' and for major groups, sub-groups and individual commodities.
   - Second, it is available at high frequency – WPI inflation at fortnightly lag vs CPI inflation at monthly lag. Then two components of WPI are released on a weekly basis giving weekly information on inflation trends.

However, major criticism of WPI is it does not include services which forms 60% of the Indian economy. Then final prices paid by consumers are likely to be different than the wholesale prices and it is the final prices that matter.

Despite these criticisms, WPI remains the focal point or inflation discussion in India. With CPI-Urban and CPI-Rural indices available may be over a period of time focus shifts to CPI inflation.

2. **Based on items coverage:** Here the above indices can be classified as headline and core. Headline includes all the items and core excludes volatile items like food and fuel.

   Unlike the advanced economies (in particular US), in India there is only headline inflation like seen in Euroarea. US also releases core inflation data separately which even other countries do not release.

   However in March 2010 when RBI raised policy rates, it suggested a new measure called WPI non-food manufacturing products. RBI said this measure of inflation has increased sharply in the last few months and became one of the factors for raising policy rates. Since then this measure has been mentioned by RBI officials in their speeches and monetary policy statements as an important measure to understand demand pressures. Now this WPI non-food manufacturing products measure has been taken as a core inflation measure for India. Unlike US where core inflation is separately released, in India we compute core inflation from headline inflation.

   Hence, in this analysis we will see how these two measures -WPI-headline and WPI-core have evolved over the years. We will also look at CPI-IW headline and CPI-IW core inflation as well just to draw parallels.

II. WPI Headline vs. WPI Core

From August 2010 onwards, WPI inflation is being released on a new base-year 2004-05. This data is available from 2004-05 onwards. However, to get better understanding of the trends, we also look at inflation trends based on earlier base-year (1993-94).

Figure 1 and Figure 2 show that core inflation closely tracks headline inflation in both the base years. Infact the correlation between the two has increased from 2000s onwards. In 1995-99 the correlation is around 0.38 and in 2000-10 it is 0.68 based on 1993-94 base year. If we look at correlation between headline and core based on new base year it is around 0.69 in 2005-10 period.

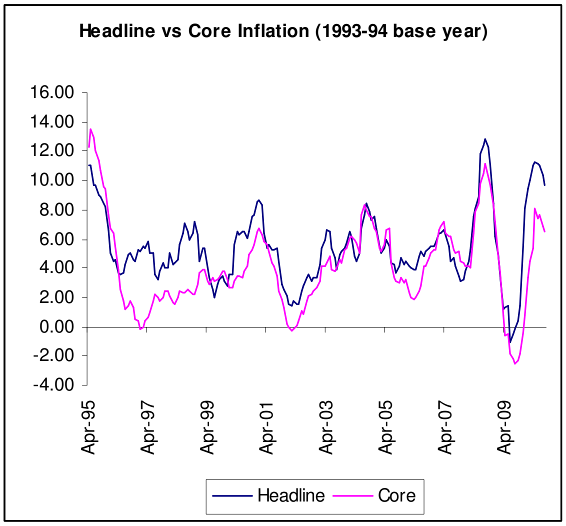
Table 1: Correlation between headline and core inflation

Base Year	Time Period	Correlation
2004-05	Apr-05 - Mar-11	0.69
1993-94	Apr-95 - Aug-10	0.60
	Apr-95 - Dec 99	0.38
	Jan-00 - Aug-10	0.68

Source: Commerce Ministry, STCI PD Research

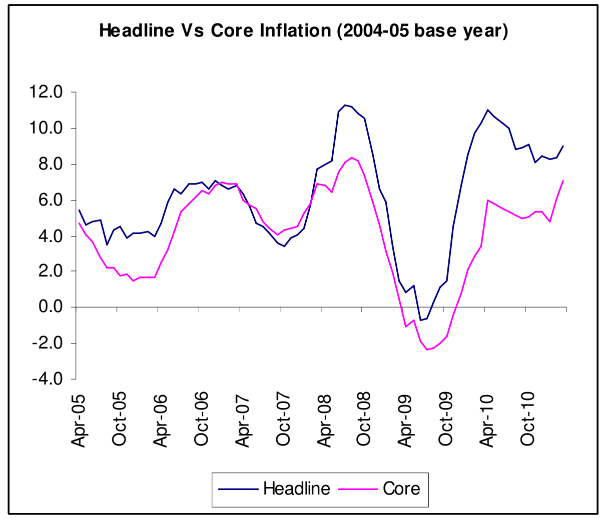
This indicates unlike advanced economies where rise in headline inflation may not lead to rise in core inflation, in India the relation is stronger. The graphs clearly show core inflation also starts to rise/fall as headline inflation rises/falls. There seems to be a lag of 2-3 months between changes in headline to lead to changes in core inflation. As prices of primary articles and fuel rises, companies pass on the prices to consumers via their manufactured products.

Figure 1



Source: Commerce Ministry, STCI PD Research

Figure 2



Source: Commerce Ministry, STCI PD Research

Another important idea is to understand the stickiness of the two measures. It is often said core inflation is stickier as it includes prices of manufactured products which do not change very often. This is unlike the headline inflation where prices of food and fuel are volatile leading to overall volatility in headline inflation. We do see this in Table 2 where volatility is higher in headline compared to core inflation. This also implies monetary policy needs to be highly vigilant to core inflation trends and in India's case, the first signal comes from a rise in headline inflation. If the headline inflation persists it would lead to rise in core inflation as well.

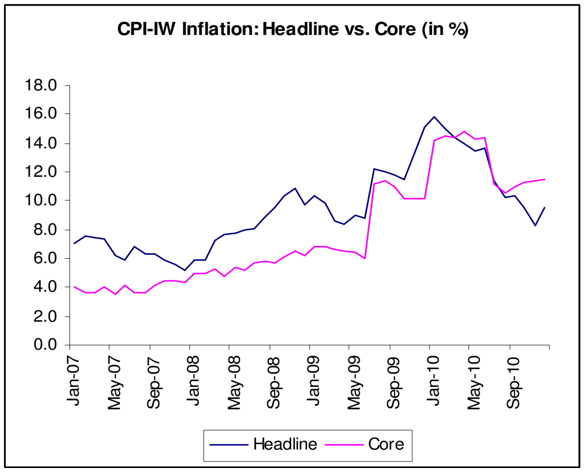
Table 2: Volatility in Inflation measures

		Headline	Core
2004-05	Apr-05-Mar-11	0.73	0.62
1993-94	Apr-95 -Aug-10	0.66	0.58
	Apr-95 - Dec 99	0.58	0.46
	Jan-00 - Aug-10	0.70	0.63

Source: Commerce Ministry, STCI PD Research

Figure 3 looks at the relation between CPI-IW headline and core inflation. Sector-wise data is available only till Dec-10. We see the same relation as seen in case of WPI inflation as well. The core inflation follows headline inflation. In last few months core inflation has been higher than headline as housing prices have increased significantly in the period leading to higher core inflation.

Figure 3



Source: Labour Bureau, STCI PD Research

What are the reasons for this strong transmission from headline to core inflation in India? There could be following reasons:

- Energy intensity: Energy intensity is a measure of energy efficiency of an economy. It is calculated as units of energy per unit of GDP. The intensity is usually higher for developing economies as they have inefficient technologies which use more energy. Hence, cost of production for companies increases if the price of these commodities rise and have to pass the rise to the final consumer.
- Competition: In developed countries there are number of firms and intense competition. Hence, companies do not pass on the price rises to the consumer fearing decline of market share. They usually try and maintain lower margins and only when situation become really adverse pass on the prices to consumers. In India, this kind of inter-firm competition has increased since 1991 reforms but is still limited compared to developed economies. Hence firms find it easier to pass on the prices to consumers. In other words they have the pricing power and are price makers in the market.
- Rise in incomes: Indian economy has grown significantly since 2000s leading to higher per capita incomes. This has also made companies confident that price rises will not really lead to lower sales and profits. Hence, we also see the stronger linkage between headline and core inflation in 2000s compared to 1990s.

RBI Policy in light of above

In a recent speech (Sustainability of Economic Growth and Controlling Inflation: The Way Forward, Apr-11) RBI Deputy Governor Dr Subir Gokarn looked at drivers of WPI inflation lately. He makes following points:

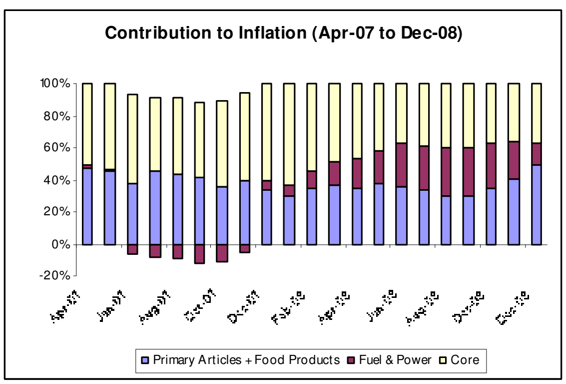
- Contribution of food prices to overall inflation has been rising over the years. This is due to both supply side constraints and rising incomes leading to higher demand for food in particular protein based items. Without a strong supply response, increasing demand will inevitably lead to higher prices.

- Though, international Crude oil prices have risen steadily, contribution of energy prices to inflation was variable. This was because of combination of differential rates of annual increases and restrictions on pass-through to domestic consumers.
- Non-food manufacturing inflation or core inflation contribution has been steady but increased whenever headline inflation increased like in 2007-08 (when core inflation actually rose higher than headline) and now in 2011-11. Again, capacity constraints are helping convert supply-side pressures into generalized inflation. If higher inflation leads to higher interest rates and lower investment, the supply constraints could be even more binding, further aggravating inflationary pressures.

Hence, the speech continues to indicate that inflation has become more generalised with a higher contribution from core inflation. Figure 4 looks at previous high episode of inflation (2007-08) and compares it with 2010-11 inflation experience. In 2007-08, The core inflation starts to gradually rise and become a major component of overall inflation with each passing month. This is the trend we see in 2010-11 as well. RBI explained in the annual monetary policy that inflation in 2010-11 can be divided in three phases:

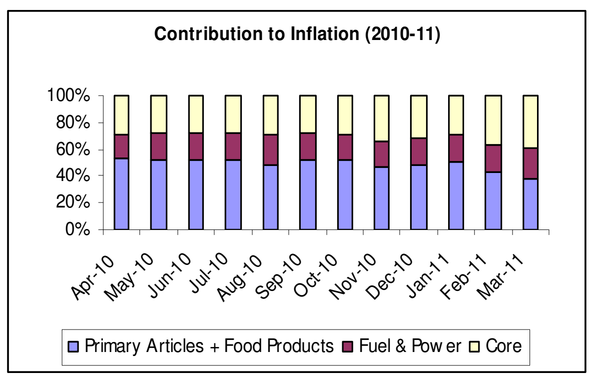
- In the first period from April to July 2010, WPI increased by 3.5 per cent, and this was driven largely by food items.
- During the second period from August to November 2010, WPI increase decelerated to 1.8 per cent, with the major driver being non-food primary articles.
- In the third period, from December 2010 to March 2011, WPI increased sharply by 3.4 per cent, driven primarily by non-food manufactured products.
- Inflation pressures, which initially emanated from food, clearly became generalised as the year progressed.

Figure 4



Source: Commerce Ministry, STCI PD Research

Figure 5



Source: Commerce Ministry, STCI PD Research

Another aspect is inflation expectations. A central bank is more worried over the inflation expectations as they are responsible for inflation in future. If people expect higher inflation in future, it leads to revising prices and wages now leading to higher inflation both in current future.

RBI's inflationary expectations survey of households shows people are raising their inflation expectations in each subsequent survey (Table 3). 98.6% of respondents expect prices to increase in the next 3 months, which is the highest percentage of respondents since Mar-09. Moreover, 74.3% of respondents feel prices will rise higher than the current rate in next 3 months, just lower than the Dec-09 figure of 74.6%. As monetary policy works with a lag we might be more interested in expectations one-year ahead. In one-year ahead analysis figures are even worse. In next year, 98.9% expecting prices to rise and 77.4% expecting prices to rise higher than the current rate.

Table 3: Inflation Expectations of Households								
	3-month ahead (percentage of respondents)							
Options	Mar-09	Jun-09	Sep-09	Dec-09	Mar-10	Jun-10	Sep-10	Dec-10
Prices will increase	92.0	93.1	95.8	97.4	95.7	95.3	96.5	98.6
Price increase more than current rate	54.9	63.5	72.2	74.6	66.9	72.7	72.2	74.3
Price increase similar to current rate	22.4	20.7	18.4	16.6	20.0	20.0	21.0	22.0
Price increase less than current rate	14.8	8.9	5.1	6.2	8.8	2.6	3.3	2.3
No change in prices	6.9	6.1	3.7	2.4	3.4	4.2	2.9	1.1
Decline in price	1.1	0.9	0.6	0.3	0.9	0.5	0.6	0.4
Options	1-year ahead (percentage of respondents)							
Prices will increase	90.6	95.6	93.7	96.3	96.3	96.5	95.2	98.9
Price increase more than current rate	59.7	64.7	62.8	69.5	68.2	62.8	70.8	77.4
Price increase similar to current rate	18.0	15.9	18.5	17.3	15.2	19.8	18.7	17.9
Price increase less than current rate	12.9	15.0	12.4	9.5	12.9	13.9	5.7	3.6
No change in prices	3.1	3.3	5.3	3.1	3.1	2.6	3.8	0.9
Decline in price	6.3	1.1	0.9	0.7	0.6	0.9	1.1	0.3
Source: RBI								

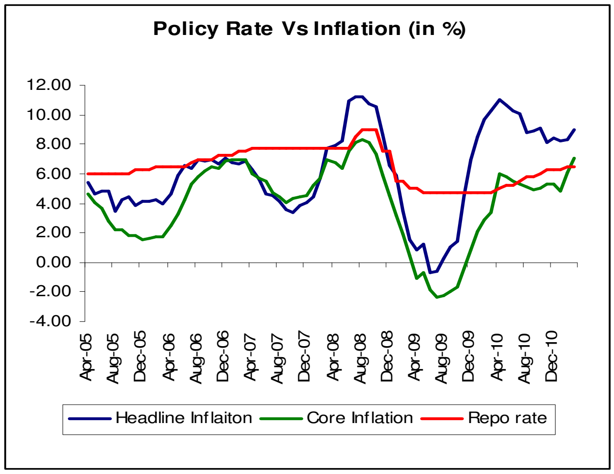
The expectations continue to be revised upwards despite RBI keeping a very tight stance on monetary policy. The inflation expectations survey also asks public of the Reserve Bank's action on inflation control. 36% of say they are aware of RBI measures and 70% believe the actions are having an impact on inflation. An evaluation of respondents profile reveals of both the Reserve Bank's action on inflation control as well as its impact was the highest amidst financial sector employees and least in case of Daily Workers and Housewives. Hence, clearly the common man is neither aware of RBI policies nor feeling any impact on inflation control.

Given this analysis of inflation and inflation expectations, it is clearly a case of inflation still high and unanchored. Till, Apr-11 policy, RBI's policy rate i.e. Repo rate was lower than core inflation leading to persistent negative real rates. In its Annual Monetary Policy review on May 3, 2011, RBI raised its repo rate by 50 bps to 7.25%, leading policy rate to be higher than Mar-11 number of 7.08%. We will have to wait and see how core inflation trends evolve from hereon.

If we compare the previous high inflation episode of 2007-08, we see Repo rate was higher than core inflation. The repo rate was raised from 7.75% in Jun-08 to 9% in Aug-08, as core inflation rose from 6% in May-08 to 8.3% in Aug-08.

However, this time around despite policy rates increasing rising by 200 bps, both core and headline inflation has remained higher. This is also because in 2007 period, policy rates were much higher whereas in 2010 they have risen from lows reached in the global crisis.

Figure 6



Source: RBI, Commerce Ministry, STCI PD Research

RBI Policy Ahead and Some Questions

Unless there is another global shock which leads to lower oil and commodity prices, these prices are expected to remain elevated. Alongwith emerging, advanced economies especially US is expected to grow and put pressure on the prices of these natural resources. There is an urgent need to improve supplies and productivity in agriculture and oil globally which will take time. Increasing supplies can still be done for food commodities but is even more limited for crude oil. Then fast growing emerging economies are highly populated leading to more per capita pressure on availability of these commodities. The heightened geopolitical uncertainty is expected to further intensify these pressures. Monsoons will play a critical role in keeping food inflation lower. It has been seen that good monsoons (like we saw in 2010-11) may not lower food prices but poor monsoon definitely leads to higher food prices.

Given this background, we get two ideas. One, the prices of food and oil are likely to remain elevated. We may see some correction but not like the way we saw in wake of the global crisis. Two, going by Indian experience the rise in these prices is likely to translate into core inflation leading to overall and generalised inflation.

There is a continued debate in India over the trade-off between growth and inflation. Some people say one has to tolerate high inflation for the high growth. So, if we try and lower inflation it will lead to lower growth.

Dr Subir Gokarn in the same speech mentioned above shows there is no trade-off between growth and inflation. There are episodes of countries which have managed higher growth amidst lower inflation like China. Infact, lower inflation was one strong factor for sustaining higher growth. High growth can push higher inflation but if inflation remains persistent it is likely to lead to lower growth. High inflation leads to higher interest rates leading to lower consumption and lower investments and lower growth.

Dr Gokarn adds that there is a threshold for inflation and if inflation crosses that threshold level, it will lead to worse growth outcomes. In India's case a 2000-01 RBI study estimated the threshold level at 5% (Growth, Inflation and the Conduct of Monetary Policy", Report on Currency and

Finance 2000-01). This should not have changed much since 2000-01 and might actually be lower given the developments in economy. The current inflation levels at around 9-10% are almost double this threshold and if persistent will lead to lower growth outcomes.

Governor, Dr Subbarao in his monetary policy statement explained:

> Before I close, I want to reiterate what I said earlier, by making a brief comment on the growth-inflation trade off, an issue that has been widely debated in the run up to this policy. High and persistent inflation undermines growth by creating uncertainty for investors, and driving up inflation expectations. An environment of price stability is a pre-condition for sustaining growth in the medium-term. Reining in inflation should therefore take precedence even if there are some short-term costs by way of lower growth".

Based on this, RBI in its annual monetary policy statement said that bringing inflation lower even at the cost of some growth in the short-run, should take precedence.

Economists have joined this sentiment and are questioning the potential growth rate for India. India grew by 9% in 2003-08 and this seems to have become the potential growth for the Indian economy. However, in that period average inflation was around 5.3% (core was 5%) in line with India's threshold level. The economists further state that recent evidence shows the potential growth rate is lower and RBI needs to hike rates to dampen that growth sentiment. They add for India to increase by 9% plus growth rates, it needs to undertake some urgent reforms.

Given the above analysis, RBI will have to maintain tight monetary policy this year as well. In its annual monetary policy, RBI projected inflation at around 9% till Sep-11 and then ease to 6% by Mar-12. The outlook is based on following factors:

- The first factor is, when administered fuel and power group prices might be revised and by how much.
- Second, the outlook for crude oil prices in the near future is uncertain given the geopolitical situation in the Middle East and North Africa. In any case, the likelihood of oil prices moderating significantly is low.
- The third factor that will shape the inflation outlook is the sharp increase in the prices of several important industrial raw materials such as minerals, fibres, rubber, coal and crude oil. In addition, there is also upward pressure on wages. To the extent the increase in input prices translates to output prices, it will have an influence on the inflation path.
- Finally, the behaviour of the monsoon will be a critical factor in shaping inflation expectations on the way forward.

As shown, the outlook is uncertain and has an upward bias to it. Given this, the markets expect RBI to be increasing rates further by alteast 50-75 bps in FY 2011-12 depending on the inflation trajectory.

Conclusion

The above analysis looks at the linkages between core and headline inflation in India. The findings are that core inflation moves along with headline inflation and the linkage has become stronger in 2000s. The prices of food and fuel are expected to remain elevated leading to higher inflation. The current inflation is much higher than the threshold level of inflation and is likely to hamper growth growing ahead. The paper mainly mentions monetary policy and is silent on the role of fiscal policy.

However, as we have seen fiscal policy has major impact on inflation via different channels one needs to keep a close watch on the government's fiscal targets as well. In a research paper, RBI economists Jeevan Kumar Khundrakpam and Sitikantha Pattanaik (Global Crisis, Fiscal Response and Medium-term Risks to Inflation in India) suggest that one percentage point increase in the level of the fiscal deficit could cause about a quarter of a percentage point increase in the Wholesale Price Index (WPI).

In its Annual Monetary Policy 2011-12, RBI highlights that fiscal targets set in the budget could be challenged by the higher subsidy burden stemming from higher international crude oil prices. This could put further pressure on the inflation outlook. Overall, inflation continues to remain a major risk for Indian economy.

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