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CRUDE PRICE DECLINE COULD BE EVEN SHARPER THAN THE RISE: INFLATION REMAINS A THREAT THOUGH CURRENT CPI DATA METHODOLOGY BASED ON FY12 CES SURVEY POSES RISK IN OVERSTATING INFLATION DURING PANDEMIC

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The ground action by Russia after long standing build up has began in Ukraine. The current escalation can be seen as the second phase of conflict after 2014 when Russia annexed the Crimean peninsula. The current escalation most likely will progress on similar template seen in Georgia and Crimea, a swift action to secure certain strategic objectives which in Russian viewpoint are non-negotiable. The chances of much larger escalation look less at this point in time.

Irrespective of the military objectives, the impact of the conflict will be felt across commodities and asset classes. Oil prices have already crossed $100 per barrel. Other commodities which will see inflation include precious metals gold, palladium and platinum. Ukraine being important exporter of agriculture products, there will be impact on prices of wheat and corn if navigation lines in Black Sea are disturbed. For India which has no strategic interest in this conflict the fall out will be mostly economic. Rise of commodity prices will impact CAD and domestic inflation. The export outlook of services towards Europe will be impacted negatively. Sanctions on Russia may impact regular trade (e.g. tea) between the India and Russia.

The trajectory of crude prices decipher interesting trends. **Historical trends (since 2018) indicate that it takes around 18 months for crude prices to crash by as much 67% from the highest level and 30% drop from highest level could even come in less than 3 months. Thus the decline in crude prices from the current high levels could come even faster going by the recent trends and it augurs positive for overall macro prognosis. Financial markets also recover faster after a geo-political induced decline as the experience of 3 decades reveal.**

Notwithstanding the trajectory of crude oil prices, the impact on inflation in the Indian context will be keenly watched. The average price of Indian basket of crude oil has risen to $84.67/bbl. in Jan'22 from $63.4/bbl. in Apr'21, 33.5% increase. If crude oil price rises to an average of $100/bbl. from the current average, inflation is likely to increase by 52-65 bps. Interestingly, petrol and diesel prices have not changed since Nov'21. Based on the existing VAT structure and taking Brent crude price of $100/bbl.-$110 bbl., diesel and petrol prices should have been higher by Rs 9-14 each as of now. If the Government however reduces the excise duty on petroleum products and prevent the prices of petrol and diesel from rising, then the Government will incur excise duty loss of Rs 8000 crore for a month. And if we assume that the reduced excise duty continues in the next fiscal and assuming petrol and diesel consumption grow around 8-10% in FY23, **then the revenue loss of the Government would be around Rs 95,000 crore to Rs 1 lakh crore for FY23**. In this context, the FY23 budget numbers that are pegged conservatively would act as a clear counter cyclical buffer for such revenue loss.

Meanwhile, there remains upside risks to inflation, even though it is high time that the methodology of computing CPI inflation by using the Consumption Expenditure Survey/ CES, last updated in FY12 may be updated. This is a major issue as using CES survey to compute inflation might be introducing an upward bias in CPI estimates as food has a weightage of 45.86% in headline CPI, that is misleading. For example, In Indian context PFCE data as released by National Account Statistics (NAS) for the year ended Mar'21 reveal that the share of food consumption was at 32.5% in FY21.The NAS and CES estimates have difference in coverage, estimation methods and databases, and, therefore, the inflation derived from weights under both the methodology, would be different. **However, some of the policy decisions taken by the Government during the pandemic should have resulted in much lower CPI, but that was not to be, given the methodology of computing CPI through CES survey.**

As the most glaring example, both the NAS and CES value estimates for the items in the rice and wheat groups represent the expenditure actually incurred on the items. The quantity available from the Public Distribution System (PDS) is evaluated at the administered price in the NAS, while the cost actually paid by the households for the quantity obtained from the PDS are recorded in the CES. **The Government had given free food under PDS throughout the pandemic, but that is not reflected in CPI cereal data, which shows an increasing trend and this problem could get compounded further because of the current military conflict.** Interestingly, during the pandemic, it is not clear why the service inflation has climbed up significantly, even as most services were closed. **If we estimate CPI by using the NAS weights, the headline CPI declines to 5.26% for the latest reading for February 2021 from 6%.**

Setting aside such concerns, there appears to be an upside risk of 90-100 bps to RBI's inflation of 4.5% for FY23 if oil price averages to $90 / bbl. and 100-130 bps upside if oil price averages to $100/bbl. We are, however, hopeful of a significant course correction in oil prices going by trends.

Since October 2021, services and food CPI are converging. Most importantly, rural goods and urban goods are converging to rural and urban services. This indicates that services CPI that has been sticky downwards for a considerable period of time may have resulted in mild inflationary expectations pushing up goods prices in the process. Goods prices will also increase in future as pass through becomes more pronounced. Thus overall concerns to inflation remain.

CHANGED CONSUMPTION PATTERN DURING PANDEMIC TOWARDS MORE GOODS COULD HAVE DRIVEN DOWN CPI EVEN LOWER BUT FOR AN INCORRECT METHODOLOGY

- The COVID-19 pandemic is far more than a health crisis: it has unpredictably changed our whole way of life. Divergent sentiment is also reflected in spending intent across categories. In most countries, consumers have continued shifting their spending to essentials, while cutting back on most discretionary categories. In Indian context PFCE data as released by National Account Statistics (NAS) for the year ended Mar'21 **reveal that the share of food consumption that declined from 31.6% in FY14 to 28.9% in FY20, had increased sharply to 32.5% in FY21.**
- The combined share of consumption on essential categories like 'Food/ Housing, Water, Electricity, Gas/ Health' has increased by 4.8% to 52.0% in FY21 as compared to FY20, the share of Clothing/ Footwear/ Transport/ Restaurants/ Hotels' declined by 4.5% to 20.4% in the corresponding period.
- **Such change in consumption as per the NAS, however, is not commensurately reflected in the CPI data that works on the Consumption Expenditure Survey /CES) last revised in FY12 taking share of food at 45.86%.**
- The NAS and CES estimates have difference in coverage, estimation methods and databases, and, therefore, the inflation derived from weights under both the methodology, would be different. However, the present policy decisions are based on the headline CPI inflation where the weights matrix plays an important role that derived from the consumption pattern of ten years back data, so the level of true inflation in the economy during the pandemic remains a matter to investigate. More importantly, some of the policy decisions taken by the Government during the pandemic should have resulted in much lower CPI, but that was not the case.
- NSS is a directly observed stand-alone estimate relating to a given survey period (usually a year, as noted above) – while PFCE from NAS is an indirect, residual macro-level estimate of aggregate PFCE derived from GDP estimate. The residual nature of PFCE arises from its use of the commodity-flow method at the disaggregated level of a commodity or service. This method employs an ex post aggregate commodity-flow balance in which economy wide domestic production is equated to its various uses.

Share in Private Final Consumption Expenditure (at Current Prices)

By Purpose	FY14	FY20	FY21	Change: FY20 over FY14	Change: FY21 over FY20
Food and non-alcoholic beverages	31.6%	28.9%	32.5%	-2.8%	3.6%
Alcoholic beverages, tobacco and narcotics	2.4%	2.3%	2.2%	-0.1%	-0.1%
Clothing and footwear	7.1%	5.8%	4.8%	-1.3%	-1.0%
Housing, water, electricity, gas and other fuels	16.1%	13.5%	14.4%	-2.6%	0.9%
Furnishings, household equipment and routine household maintenance	3.2%	2.8%	2.6%	-0.3%	-0.3%
Health	3.8%	4.8%	5.1%	1.0%	0.3%
Transport	13.9%	17.0%	14.6%	3.1%	-2.4%
Communication	2.2%	2.4%	2.5%	0.2%	0.1%
Recreation and culture	0.9%	0.8%	0.8%	-0.1%	-0.1%
Education	3.7%	4.5%	4.6%	0.8%	0.1%
Restaurants and Hotels	2.1%	2.1%	1.0%	0.0%	-1.1%
Miscellaneous goods and services	12.9%	15.1%	15.0%	2.1%	0.0%
Total PFCE	100.0%	100%	100%	0.0%	0.0%

Source: NSO; SBI Research

Change in PFCE vis-à-vis CPI Inflation

By Purpose	Change (FY21 over FY20): PFCE in %	Change (FY21 over FY20): CPI in bps
Food and non-alcoholic beverages	3.6%	83
Alcoholic beverages, tobacco and narcotics	-0.1%	549
Clothing and footwear	-1.0%	150
Housing, water, electricity, gas and other fuels	0.9%	-110
Furnishings, household equipment and routine household maintenance	-0.3%	-
Health	0.3%	-77
Transport & Communication	-2.3%	693
Recreation and culture	-0.1%	6
Education	0.1%	-266
Restaurants and Hotels	-1.1%	-
Miscellaneous goods and services	0.0%	-18

Source: SBI Research

- Both the NAS and CES value estimates for the items in the rice and wheat groups represent the expenditure actually incurred on the items. The quantity available from the Public Distribution System (PDS) is evaluated at the administered price in the NAS, while the cost actually paid by the households for the quantity obtained from the PDS are recorded in the CES. **The Government had given free food under PDS throughout the pandemic, but that is not reflected in CPI cereal data.**
- A large quantity of milk and milk products is used by the commercial establishments for making sweets, tea, coffee, etc., which is included in the NAS estimates of private consumption of milk but is excluded from the CES estimates. **It is thus perplexing that milk and milk product prices increased during pandemic, even as shops were closed during lockdown and subsequent months of tighter restrictions.**

- It is also true because of classification fruits are subsumed under vegetables based on CES survey. **In such a case, vegetable inflation may be currently overstated in CPI !**
- Consumption expenditure in NAS include consumption by non profit institutions serving households (NPISH) not captured by CES. Growth of same in recent years imply there would be a significant divergence between NSSO and NAS data in PFCE as such NPISH serve food for free to households. They include for example charities, etc. that had increased manifold during the pandemic.
- Interestingly, during the pandemic, it is not clear why the service inflation has climbed significantly, even as most services were closed. Further, there have been studies by Diewart and Fox (NBER, May 2020) and Cavallo (NBER, June 2020) that clearly enunciates how lockdown of economic activity implies there is a massive **disappearing products problem** of services and hence logically it remains a mystery of how the prices of such activity were computed by NSO during pandemic and in fact prices of some of services in fact increased!
- **If we estimate CPI by using the NAS weights, the headline CPI declines to 5.26% for the latest reading for February 2021 from 6%.** However, to be fair most countries in the world use Paasche's Index to construct prices, whereas in India we use Laspayeres Index that assumes fixed weight. **Clearly, it is pertinent that we move over to a Paasche's index to construct prices. If we do that, the estimated CPI is higher than actual headline CPI. This is elaborated in next section.**

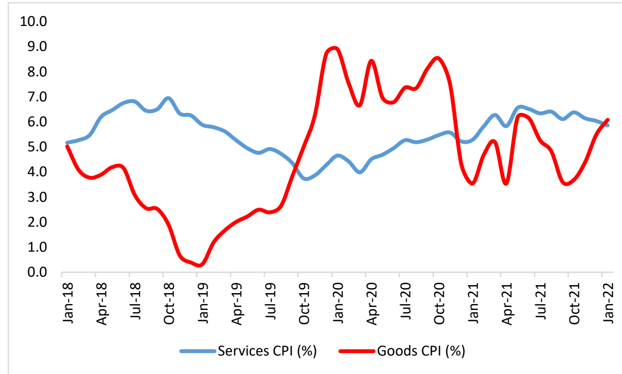
GOODS AND SERVICES CPI CONVERGING

- Since October 2021, services and food CPI are converging. Most importantly, rural goods and urban goods are converging to rural and urban services. This indicates that services CPI that has been sticky downwards for a considerable period of time may have resulted in mild inflationary expectations pushing up goods prices in the process. Goods prices will also increase in future as pass through becomes more pronounced.

RE-ESTIMATING CPI USING PAASCHE'S INDEX

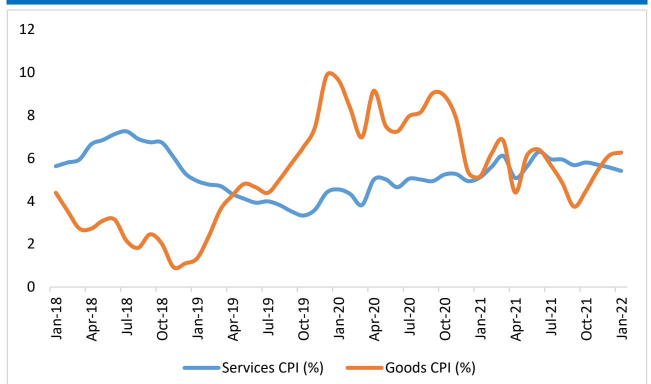
- As discussed in the earlier section, since the beginning of pandemic, the world has seen significant behavioural changes at all levels of Governments, Regulators, Individuals, etc. India was also not an exception and had witnessed many behavioural changes of economic agents with initial lockdown and subsequent reopening of the economy in phases.

Goods Inflation vis-à-vis Services Inflation

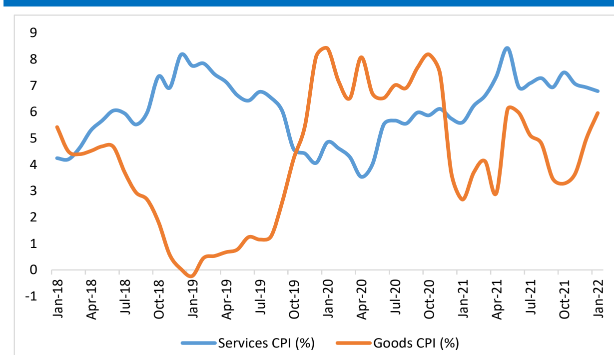


Source: SBI Research

Urban Goods Inflation vis-à-vis Services Inflation



Rural Goods Inflation vis-à-vis Services Inflation



Source: SBI Research

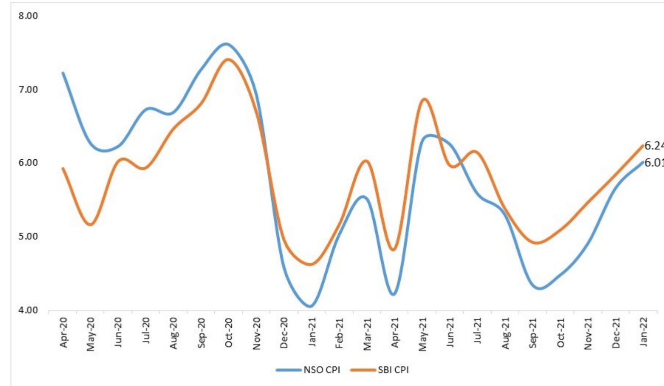
- Against this backdrop, we re-estimated the CPI inflation since Apr'20 by using monthly credit card spends of SBI credit cards of a sufficiently large sample of customers on a recurring basis across all age groups gender-wise and spending that we assiduously bifurcated into non-discretionary and discretionary spends. We used changing weights for all the months starting from April.

- **In principle, we followed the methodology by constructing a Covid-19 consumption basket for India and estimate CPI inflation again using Paasche price index.**
- The most definitive conclusion when we re-estimated CPI headline by using Paasche's Index, since Dec'20, our CPI computed inflation is higher than CSO estimate (except June'21). This has happened as spend on oil has crowded out the spending on other discretionary items, like health, grocery and utility services that was the trend in earlier months which is worrisome.
- However, the good thing is that in fact, the share of non discretionary spend has stabilised at around 60% in last few months. The share of discretionary spend has stabilised around 40%. Also the gap between SBI computed CPI and NSO CPI has now narrowed down to around 20 basis points indicating the crowding out of spend on essentials is declining as oil prices were readjusted in November 2021 because of duty cuts.

UPSIDE RISKS TO CPI INFLATION

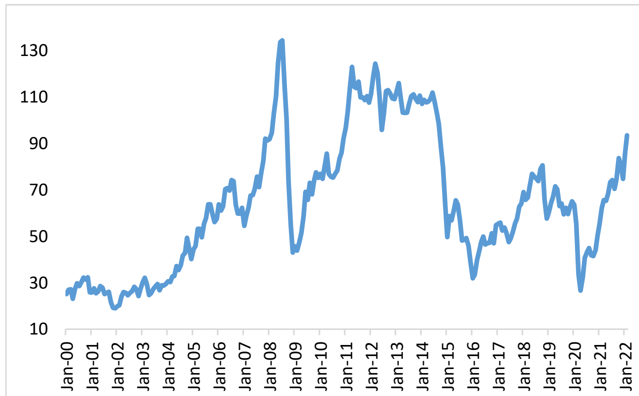
- ***Crude Oil:*** CPI inflation has moved up again to 6.01% in Jan'22. RBI expects inflation to come around 4.7% in Mar'22. For FY23 RBI expects CPI inflation to be around 4.5%. However, we believe there is upside risks to inflation owing to multiplicity of factors including soaring oil crude oil prices.
- Brent crude oil prices hit $100 per barrel for the first time since 2014 as Russian President had approved a special military operation in Ukraine's Donbass region in the early hours of Thursday morning. We believe that Brent will go further higher.
- Now the question arises how much time crude oil will take to cool down. Historical trends (since 2018) indicate that it takes around 18 months for crude prices to crash by as much 67% from the highest level and 30% drop from highest level could even come in 3 months.
- Meanwhile, the average price of Indian basket of crude oil has risen to $84.67/bbl in Jan'22 from $63.4/bbl in Apr'21, 33.5% increase.
- According to our calculations, every $10/ bbl increase in Brent crude price will lead to increase in inflation by 20-25 bps. Thus if crude oil price rises to an average of $100/bbl (or $90/bbl) from the current average of $74/ bbl inflation is likely to increase by 52-65 bps (32-40 bps).
- Interestingly, petrol and diesel prices have not changed since Nov'21. Based on the existing VAT structure and taking Brent crude price of $95/bbl.-$110 bbl., diesel and petrol prices should have been higher by Rs 7-14

NSO vis-à-vis SBI CPI Inflation (%)



Source: SBI Research

Brent Crude Price Trend ($/BBL) - Monthly Average



Source: SBI Research

Distribution of Decline of Brent Crude ($/BBL)							
Mar'12 to Feb'16				Oct'18 to Apr'20			
Highest (Mar'12)	Crude Price 125	Months Taken-Cumulative	Months Taken-Incremental	Highest (Oct'18)	Crude Price 81	Months Taken-Cumulative	Months Taken-Incremental
10% Drop	110	3	3	10% Drop	73	1	1
20% Drop	100	4	1	20% Drop	64	3	2
30% Drop	80	33	29	30% Drop	56	3	0
40% Drop	75	34	1	40% Drop	48	17	14
50% Drop	63	34	0	67% Drop	32	18	1
60% Drop	50	42	8	-			
73% Drop	34	47	5				

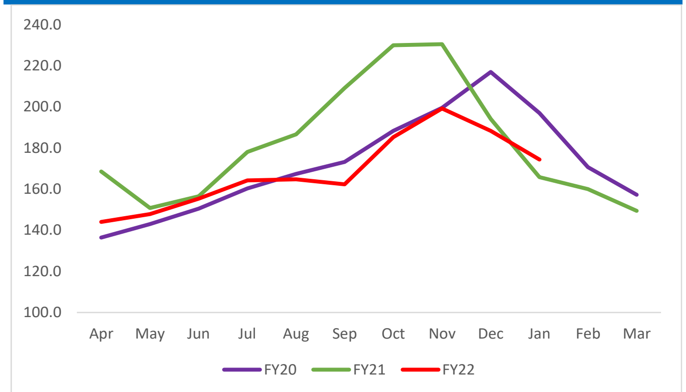
Source: SBI Research

Distribution of Increase of Brent Crude ($/BBL)							
Dec'08 to Mar'12				Feb'16 to Oct'18			
Lowest (Dec'08)	Crude Price 43	Months Taken-Cumulative	Months Taken-Incremental	Lowest (Feb'16)	Crude Price 34	Months Taken-Cumulative	Months Taken-Incremental
10% Hike	47	4	4	10% Hike	40	1	1
20% Hike	51	5	1	20% Hike	43	2	1
40% Hike	60	8	3	40% Hike	48	3	1
60% Hike	70	11	3	60% Hike	55	10	7
80% Hike	78	16	5	80% Hike	60	21	11
100% Hike	86	18	2	100% Hike	68	23	2
130% Hike	99	27	9	120% Hike	75	27	4
140% Hike	104	28	1	140% Hike	81	31	4
190% Hike	125	40	12	-			

Source: SBI Research

- If the Government however reduces the excise duty on petroleum products further by Rs 7 per litre in March after elections and prevent the prices of petrol and diesel from rising, then the Government will incur excise duty loss of Rs 8000 crore for a month. And if we assume that the reduced excise duty continues in the next fiscal and assuming petrol and diesel consumption grow around 8-10% in FY23, then the revenue loss of the Government would be around Rs 95,000 crore to Rs 1 lakh crore for FY23.
- ***Food CPI:*** In addition, when we look at the gap between WPI and CPI food inflation there has been incomplete pass-through with WPI food much higher than the CPI food since Nov'21. The gap between the two has increased to 4.7% in Jan'22. Vegetables have the highest gap between WPI and CPI, followed by eggs and fruits.
- Within CPI food, oils and fats have highest weighted contribution and the Government has reduced import duties on edible oils in February.
- Also the cereal production as per the 2nd advanced estimate for FY22 is higher than the target set earlier (289.1 million tonnes from 282.3 million tonnes). Thus it is likely to provide relief to the cereal inflation going forward. Moreover, the record increase in domestic production of pulses would help in softening their prices. As per the second advanced estimate total pulses production is increased to 26.96 million tonnes from 25.46 million tonnes target set for FY22 earlier. The estimate is higher by 3.14 million tonnes than the last five years' average production of 23.82 million tonnes.
- For vegetables the CPI index has increased though the peak has been lower than that in previous fiscal years. Also, the vegetable price follows seasonality with price generally rising in the first half of the fiscal, peaking around Nov-Dec and then falls again.
- Thus, the upside risk to food inflation and thus headline inflation is from eggs and fruits. Weighted contribution of eggs is currently negligible in CPI, it could increase to 10 bps. For fruits current weighted contribution in CPI is 6 bps and the convergence of WPI and CPI fruits could give an upward push to inflation by another 20 bps. Thus, we believe there could be 30 bps upside risk to CPI inflation in coming months owing to food CPI increase.

Vegetable CPI (Index)



Source: SBI Research

- ***Services Inflation:*** Regarding services inflation, health CPI is on the higher side but is lower than during the second wave's peak level. It will continue to remain around this level unless India is hit by another wave. Recreation and amusement CPI has remained close to 7%, or above 7% since Sep'22. With further reduction in cases and increase in booster doses recreation and amusement CPI is likely to increase owing to greater demand. Cinema new release (weight 0.13% in overall CPI), hotel lodging charges (weight 0.01% in overall CPI) and other entertainment (weight 0.11% in CPI) are likely to see some upside in demand in coming months.
- Furthermore, in case of education, tuition and other fees (weight 2.9% in CPI) has seen an increase in recent months, while private tutor/coaching centre (weight 0.58%) has declined. Overall the weighted contribution of these two in CPI has remained the same. Meanwhile, stationary and photocopying charges (weight 0.39%) has also seen an uptick. With more people choosing to send their children to schools, this is likely to provide an upside risk to CPI inflation.
- Overall service CPI, excluding housing could increase by 10-12 bps on account of complete opening of the economy.

Impact of various components on CPI inflation in FY23 (bps)

	Scenario 1 (average price of $90/bbl.)	Scenario 2 (average price of $100/bbl.)
Oil	32-40	52-65
Food	30	30
Services	10-12	10-12
Housing	15-20	15-20
Total upside risk	87-100	107-127

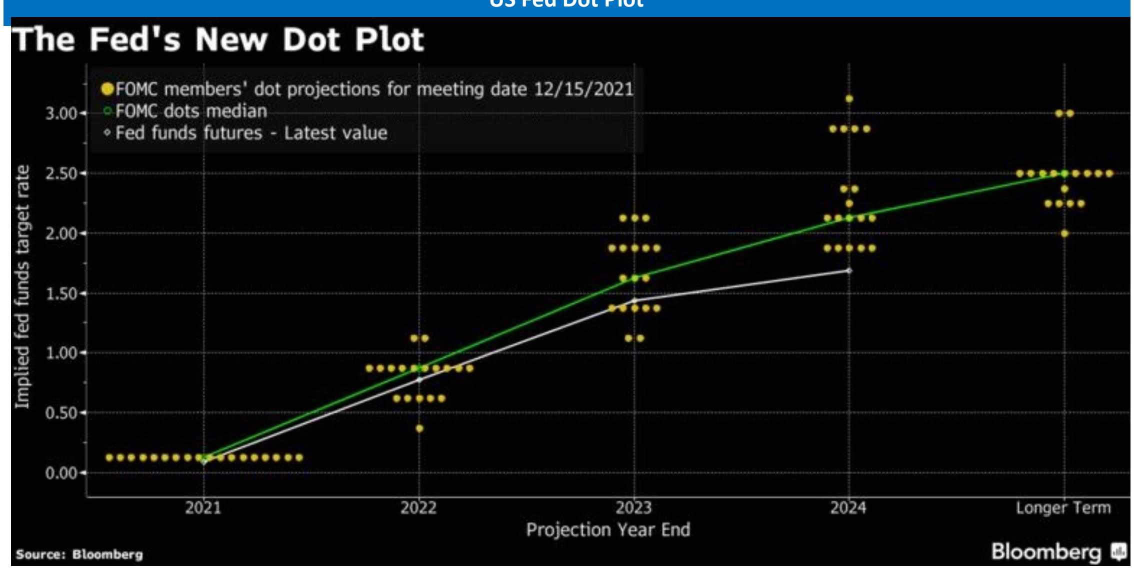
Source: SBI Research

- ***Housing Inflation:*** Another component which could see increase in inflation on account of increase in demand post the complete opening of the economy is housing. Once all the offices start resuming office and abolish work from home, there will be an increase in demand for rental accommodations which in turn would lead to increase in CPI as house rent, garage rent has huge weight 9.51% in overall CPI. Given its weighted contribution of around 0.5% in CPI in the pre-pandemic year, there seems to be an upside of around 15-20 bps in Housing inflation owing to complete resumption of offices.
- Combining all these factors, there appears to be an upside risk of 87-100 bps to RBI's inflation of 4.5% for FY23 if oil price averages to $90/bbl. and 107-127 bps upside if oil price averages to $100/bbl.

US FED DOT PLOT

- In 2012, the US economy was recovering from the 2008 Global Financial Crisis, and interest rates were near zero. At the time, the US Federal Reserve wanted to provide the public with an advance look at what policies the Fed officials were considering over the short and longer-term time horizon.
- The dot plot is the expected trajectory of interest rate hikes proposed by US Fed members in graphical form. The US Federal Reserve's Federal Open Market Committee (FOMC) releases its dot plot along with its projections on other major economic indicators like GDP, inflation, etc.
- Eighteen members that include the Federal Reserve Governors and Presidents of the regional banks participate in this. Every member of the committee offers their prediction on where the policy rate should be over the next three years. Each member's interest rate forecast is then plotted on a graph in the form of a dot plot.
- It is published quarterly and watched closely by investors and economists for indications on the future trajectory of the federal funds rate. Although the FOMC dot plot is commonly viewed by investors and economics for gauging potential changes in monetary policy [an indication of the direction (hawkish or dovish) of monetary policy], Fed officials have indicated to not place great emphasis on the FOMC dot plot. This is because the Federal Reserve is data-dependent, meaning their monetary policy depends heavily on economic trends, inflation, and global events.
- In the case of India, the formation of dot plot is not possible as the individual projections of MPC members regarding inflation or GDP is not available. The only long-term projections available with us regarding inflation or GDP is RBI's fan chart and it indicates that CPI inflation for FY23 is pegged at 4.5% with 4.9% in Q1, 5.0% in Q2, 4.0% in Q3 and 4.2% in Q4.

US Fed Dot Plot



Source: Bloomberg; SBI Research

RUSSIA-UKRAINE CONFLICT

- The ground action by Russia after long standing build up has began in Ukraine. The current escalation can be seen as the second phase of conflict after 2014 when Russia annexed the Crimean peninsula.
- The current escalation most likely will progress on similar template seen in Georgia and Crimea, a swift action to secure certain strategic objectives which in Russian viewpoint are non-negotiable. The chances of much larger escalation look less at this point in time.
- Irrespective of the military objectives, the impact of the conflict will be felt across commodities and asset classes. The oil prices have crossed $100 per barrel.
- Other commodities which will see inflation include precious metals gold, palladium and platinum. Ukraine being important exporter of agriculture products, there will be impact on prices of wheat and corn if navigation lines in Black Sea are disturbed.
- For India which has no strategic interest in this conflict the fall out will be mostly economic. Rise of commodity prices will impact CAD and domestic inflation. The export outlook of services towards Europe will be impacted negatively. Sanctions on Russia may impact regular trade (e.g. tea) between the India and Russia.

WILL RBI FOLLOW THE HERD?

- Central banks across swaths of the globe are continuing to raise interest rates in an efforts to tame inflation, largely dismissing the threat to economic growth for now . The growing concern is that inflation won't come down as quickly as they hoped as it is mostly due to global factors like behaviors of oil cartels, chip shortage, geopolitical crisis etc. So, the policy makers should think the rise in inflation as an aberration which is not only due to the pandemic led stimulus but also due to the global issues.
- If we look at India's inflation data, some interesting facts arises: (i) WPI inflation is at 10.6% (avg) during Apr-Jan, which is mostly contributed by the imported items like fossil fuel and average imported WPI inflation is stood at 8.56%; (ii) The volatility in WPI during Apr-Jan stands at 1.3% & CPI is 0.8%, while the fuel & power prices volatility in WPI is 6.6%, volatility in WPI Crude Petroleum & natural gas is 17.8%. Similarly, volatility is observed in CPI inflation too.

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Contact Details:
Dr. Soumya Kanti Ghosh
Group Chief Economic Adviser
State Bank of India, Corporate Centre
M C Road, Nariman Point, Mumbai - 400021
Email: soumya.ghosh@sbi.co.in, gcea.erd@sbi.co.in
Phone:022-22742440
: kantisoumya