The Dangers of a Biased CPI Estimate Are Many!!!

Headline CPI for Dec’19 has jumped to 7.35% and we expect inflation for Jan’19 between 7.8%-8%, if the current trends in vegetable prices continues at mandi. Core inflation could rise further on the back of telecom price increase and a larger increase could push headline inflation closer to 8%. Specifically, we find evidence that retail food prices vis-à-vis wholesale food prices decline slowly when inflation is declining and rises at a much faster pace when inflation is rising indicating that inflationary expectations are always entrenched and takes time to die down. This does not portend well for CPI trajectory going ahead. We also find evidence of shift to protein items like pulses when vegetable prices jump, resulting in price increase of the latter. Interestingly, it is altogether a different matter that even after record pulses production, procurement of pulses by NAFED has only been 28% and the farmers benefitted could be less than 1%! A manifestation of sad irony of bulging production, poor procurement and rising prices at retail level.

Notwithstanding this increase in CPI inflation, we are now increasingly worried about how this CPI is measured by CSO. Currently, CSO measures CPI based on the Consumer Expenditure Survey (CES) of 2011-12, that has now been pushed to 2021. The CES survey shows a clear downward trend in expenditure on food but data is not available beyond FY12 and thus latest CPI data based on such CES survey may be misleading and overstated. It effectively means CSO needs to find suitable ways of rectifying the anomalies. It may be noted that CSO had revised the base year of the CPI to 2012 (from 2001=100) in Jan’2015, following the weighting pattern based on the CES of 2011-12. A number of methodological improvements have been undertaken by the CSO in the new series, though none of such can address the stark divergence between weightage of food at 46% based on CES in CPI and 30% in consumption expenditure published by National Account Statistics (NAS) that can bring down CPI by as much as 200 basis points applying 30% weightage. Why this divergence?

Firstly, 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 PPF as such NPISH serve food for free to households. They include for example churches, charities, etc.

Secondly, we cite specific cases to illustrate the dire need to make CPI based on CES and NAS data consistent.

- Thus, CES by definition shows estimates of fruit consumption are always on the lower side. It is thus possible that CPI fruit inflation based on CES survey could be subsumed under vegetables. In such a case, vegetable inflation may be currently overstated in CPI!

- For cereals the rice available in 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 CPI data. Our PDS data in headline inflation shows a declining trend and thus the NAS consumption expenditure of cereals will show a declining trend. However, we are currently witnessing a consistent increase in cereal inflation as per headline CPI that uses CES data.

- Milk products are not included in CES data in headline CPI, but they are included in NAS data. In headline CPI however the products made from milk are not captured and hence it doesn’t represent the current eating habits of the consumers. This might be one of reasons why prices under headline milk is increasing on a consistent basis that could be misleading.

We thus expect a quick resolution to such methodological biases for the sake of correct data interpretation from regulators.

CPI Inflation: Is Appropriately Measured?

In Dec’19, CPI inflation rose sharply to 64-month high to 7.35% solely on account of huge jump in vegetable prices. The food & beverages inflation rose to 12.16% in Dec’19 as compared to 8.73% in previous month. The prices of vegetables (including the onion) rose sharply to 60.5% in Dec’19.

Apart from vegetables, some of the protein products also showed acceleration in prices. Our causality results show that increase in vegetable inflation Granger causes increase in protein inflation with a lag of 2-months. One of the plausible reasons for such a result is that people shift from costly vegetables to pulses/egg/meat and subsequently it leads to further increase in prices.

We also analyzed the weighted contribution of eight items under vegetables and protein during winter months (November to February) and found that in the current year the weighted contribution is high compared to other years.

Meanwhile, yoy changes in Mandi prices as reflected in WPI prices is perfectly aligned with CPI inflation, the direction is quite opposite in the case of pulses. In Mandi, the yoy changes in pulses shows decelerating trend since Sep’19 but in CPI basket the same pulses are showing accelerating trends. It is altogether a different matter that even after record pulses production, procurement of pulses by NAFED has only been 28% and the farmers benefitted could be even less than 1%! A manifestation of sad irony! Clearly pulses are not reaching the intended beneficiaries.

Comparing CPI food inflation with WPI food inflation we find that the gap which was in the range of 400-600 bps during Feb-Aug’19, declined sharply to around 100 bps in Dec’19. One trend reflected from the data since Jan’18 is that when food inflation was declining is that WPI food was lower than the CPI food but when food inflation is rising as now CPI food rapidly catches up with WPI food and even surpasses it. The reason for such slow deceleration and rapid deceleration of retail prices compared to wholesale prices squarely lies in the inflation expectation. A rational agent takes time to adjust his/her expectation in both declining inflation / rising inflation. This might not be good news for inflation.
CPI FOOD VIS-À-VIS WPI FOOD : METHODOLOGICAL DIFFERENCE

- In CPI, higher weight for food items compared to WPI which creates a permanent source of wedge in inflation between CPI and WPI.
- WPI is constructed using a national level weighting diagram, while CPI-combined weights are based on consumer expenditure surveys (CES), which are conducted state-wise and there is no national consumption basket. WPI inflation is aggregated from items to item-groups to arrive at the headline inflation. While, CPI-combined aggregates items to item-groups at state level and then to headline state levels. Finally, arrives the all India level CPI inflation.
- Even though there is methodological difference between these two, the significant difference in magnitude and their lead-lag relationship, has drawn the attention to revisit CPI methodology in recent periods.

IS CPI CORRECTLY MEASURED BY CSO?

- CSO had revised the base year of the CPI to 2012 (from 2010=100) in Jan’2015, following the weighting pattern based on the CES of 2011-12. A number of methodological improvements have been undertaken by the CSO in the new series, which include, weighting diagrams use the modified mixed reference period data of CES 2011-12 as against a uniform reference period (URP) of 30 days used in the earlier series.
- If we look at the weight matrix, there is a significant difference between the share of food and beverages (30%) in the Private Final Consumption Expenditure (PFCE), published by the National Account Statistics (NAS), and the weights derived from the CES (45.86%) used in CPI. Subsequently, the episodic spikes in CPI inflation, which is largely contributed by rise in food and vegetable prices (as in the current situation), makes the RBI decision difficult. Interestingly, if we reduce the weightage of food in CPI to 30%, the headline CPI declines to 5.46% from 7.35% in Dec’19.
- 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 eight years back data, so the level of true inflation in the economy remains a matter to investigate.

In NAS, the share of food expenditure shows a clear definitive declining trend which shows the most recent trend in consumption pattern. In contrast, the CES survey also shows a clear downward trend in expenditure on food but data is not available beyond FY12 and latest CPI data based on such CES survey may be misleading and overstated.
CES 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.

Taking into account the structural changes, which takes place in the economy and to depict a true picture of the economy through macro aggregates, there is a need to change the base year periodically with a revised methodology and basket of commodities. So, there is an urgent need to rationalize the weights of CPI to have clear view of the current economic situation, which can be used for the policy making decisions, say RBI monetary policy. If we approximate the CPI with the NAS food weights, the headline CPI drops by 200 basis points.

### Some Examples of difference in CES and NAS

<table>
<thead>
<tr>
<th>Items</th>
<th>Difference in CES &amp; NAS</th>
<th>Our Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits &amp; Vegetables</td>
<td>It is generally contended that the CES is not able to capture all expenditure on fruits, and that their estimates of fruit consumption are on the low side: nevertheless, there are certain major classification differences between the two sources which would affect the comparability of the two sets of estimates. For instance, a large portion of the mango crop is used as amchur (dried mango slices) which is reported under spices in the CES classification. The CSO, on the other hand, shows the entire mango crop under the fruits and vegetables group. This might also be true for many other items such as dry chillies, ginger, etc.</td>
<td>The CPI inflation of fruits is consistently puzzling when we compare this with Mandi prices. For example, in Mandi the yoy changes in fruits prices in Oct-Nov’19 were in negative territory but in CPI based on CES it revealed positive inflation. It is thus possible that CPI fruit inflation based on CES survey could be underestimated or subsumed under vegetables. In such a case, vegetable inflation may be currently overstated in CPI!</td>
</tr>
<tr>
<td>Cereals and cereal products</td>
<td>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.</td>
<td>Our PDS data in headline inflation shows a declining trend and thus the NAS consumption expenditure of cereals will show a declining trend. However, we are currently witnessing a consistent increase in cereal inflation as per headline CPI that uses CES data.</td>
</tr>
<tr>
<td>Milk and Milk Products</td>
<td>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.</td>
<td>In CES, the weightage of milk &amp; milk products in urban areas (that excludes preparation of sweets from milk) has declined from 9.3% to 7.8% as per CES data available till FY12. It is possible it might have declined further as people have become more food conscious. This data is not available. In headline CPI however the products made from milk are not captured and hence it don’t represent the current eating habits of the consumers. This might be one of reasons why prices under headline milk is increasing on a consistent basis.</td>
</tr>
</tbody>
</table>

### Disclaimer:
The Ecowrap is not a priced publication of the Bank. The content is expressed is of Research Team and not necessarily reflect those of the Bank or its subsidiaries. The contents can be reproduced with proper acknowledgement. The write-up on Economic & Financial Developments is based on information & data procured from various sources and no responsibility is accepted for the accuracy of facts and figures. The Bank or the Research Team assumes no liability if any person or entity relies on views, opinion or facts & figures finding in Ecowrap.

### Procurement of Moong under PSS during Kharif 19 Season

<table>
<thead>
<tr>
<th>States</th>
<th>Qty Sanctioned (MT)</th>
<th>Qty procured by NAFED (In MT)</th>
<th>Number of farmers benefitted</th>
<th>Total Number of farmers (in lakh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil Nadu</td>
<td>3,000</td>
<td>69</td>
<td>115</td>
<td>79.3</td>
</tr>
<tr>
<td>Telangana</td>
<td>10,378</td>
<td>5875</td>
<td>6476</td>
<td>59.4</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>30,000</td>
<td>4272</td>
<td>7384</td>
<td>152.8</td>
</tr>
<tr>
<td>Karnataka</td>
<td>12,226</td>
<td>5874</td>
<td>14696</td>
<td>86.6</td>
</tr>
</tbody>
</table>

Source: NAFED, SBI Research, Figures as on 16-01-2020

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