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I. Introduction

Bangladesh Bank prioritizes maintaining price stability as its primary goal. It is crucial for the development of monetary policy to observe and comprehend the root causes of fluctuations in consumer prices and wage levels. Bangladesh Bureau of Statistics (BBS) publishes multiple indices to reflect the price levels of the economy. This report tries to explore the driving forces of inflation and wages in Bangladesh's economy.

The Consumer Price Index (CPI), based on year-on-year (y-o-y) headline inflation during Q1:2024 (January–March 2024) remained elevated around 10 percent (Chart 1a), food and non-food y-o-y inflation also maintained higher trajectory. Month-on-month (m-o-m) food and non-food inflation fluctuated to a positive path during January-March 2024 (Chart 1b), as a result, m-o-m headline inflation also experienced upward pressure. Moreover, y-o-y headline inflation drifted to a corridor between nine to ten percent in last one year, which was comparatively higher than the desired level.



Chart 1: CPI Inflation

Source: Bangladesh Bureau of Statistics (BBS)

¹ At present, based on the Classification of Individual Consumption by Purpose (COICOP) of the United Nations Department of Economic and Social Affairs, BBS produces the Consumer Prices Index (CPI) of Bangladesh's economy, considering 2021-22 as base and weights are derived from the Household Income and Expenditure Survey (HIES) 2016-17 of BBS. Likewise, the Wage Rate Index (WRI) is prepared by BBS with the same base period as CPI and associated weights are obtained from the BBS Labour Force Survey (LFS) 2016–17. Except for the CPI and WRI, other price indices prepared by BBS are not discussed in this report.

II. Decomposition of Headline Inflation

During January-March 2024, the average headline inflation stood at 9.8 percent (y-o-y), where more than half of this growth came from core & energy CPIs, the remaining came from food items. In the previous quarter (October-December 2023), the y-o-y headline inflation was at an average of 9.6 percent where major portions contributed by elevated food CPI and, the remaining came from core and energy prices (Chart 2). The contribution of food prices to headline inflation stood at 45 percent in March 2024, while contribution of core and energy were 40 and 15 percent respectively. It is observed from the graph that when inflation was in lower territory say, around 6-7 percent, food inflation contributed mostly to headline inflation. On the other hand, when inflation up ticked to around 10 percent energy and nonfood inflation emerged as the major driving forces for headline inflation.



Chart 2: Decomposition of Headline Inflation (y-o-y)

Note: Figures in parenthesis represent weights in current and previous baskets, respectively; current weights started from April 2023.

Sources: BBS and EMFW estimates

II.I Decomposition of Food Inflation

Food CPI experienced an average of around 10 percent (y-o-y) inflation in 2023. In March 2024, food inflation was also around 10 percent, where more than half of this inflation was contributed by protein-based food prices (Chart 3). The contribution of protein prices accentuated from the beginning of 2023, while spices & culinary essentials started contributing prominently from August 2023. However in recent quarters, the decline in prices of cereals and edible oils contained food inflation from surging further.



Chart 3: Decomposition of Food Inflation

Notes: (1) Food inflation slightly differs from the published report of BBS because, following the new basket, tobacco items have been removed from the old basket's food items and treated as non-food items. (2) Figures in parenthesis represent weights in current and previous baskets, respectively. Current weights and base 2021-22=100 was started from April 2023, prior to that previous base 2005-06=100 has been rebased to 2021-22=100 based on previous weight. Sources: BBS and EMFW estimates

II.II Decomposition of Non-food Inflation

Since September 2023, non-food inflation (y-o-y) has been on a rising trajectory, and during 2023, it was at an average of 9 percent (Chart 4). About one-fourth of this growth was attributed to energy inflation, while restaurants, hotels, recreation prices, and health, personal care prices contributed each by approximately 10 percent. Non-food inflation was elevated in the first quarter of 2024 as well and reached 9.3 percent, mostly contributed by energy, restaurant prices and other items which consist of tobacco, jewellery, travel accessories and some service items. Meanwhile, during January-March 2024, contribution of furniture appliances, clothing and footwear prices remained broadly stable. Furthermore, surge in electricity prices in March 2024 resulted into change of energy contribution from 2.5 to 2.7 percentage point.



Chart 4: Decomposition of Non-Food Inflation

Notes: (1) Non-food inflation slightly differs from the published report of BBS because, following the new basket, tobacco items have been removed from the old basket's food items and treated as non-food items. (2) Figures in parenthesis represent weights in current and previous baskets, respectively. Current weights and base 2021-22=100 was started from April 2023, prior to that previous base 2005-06=100 has been rebased to 2021-22=100 based on previous weight.

Sources: BBS and EMFW estimates.

III. Contribution of Goods and Services to Headline Inflation

During January-March 2024, the contribution of services and non-perishable goods to headline inflation was increasing, while the contribution of perishable goods to headline inflation was slightly decreasing (Chart 5). In March 2024, the contribution of services and non-perishable goods to headline inflation was 10 percent and 67 percent respectively, which was 7 percent and 68 percent in December 2023 respectively. Meanwhile, the contribution of perishable goods to headline inflation was 32 percent in January 2024, which was 33 per cent in December 2023.



Chart 5: Contribution of Goods and Services

Notes: Perishable goods are those that begin to spoil without refrigeration or freezing within 7 days. Figures in parenthesis represent weights in current and previous baskets, respectively; current weights started from April 2023. Sources: BBS and EMFW estimates

IV. Contribution of Import-concentrated Items to Headline Inflation

The contribution of import-concentrated items to inflation started to increase in August 2022 (Chart 6), mainly due to the rise in international prices. Here, fully or partially imported items are classified as import-concentrated. Moreover, items requiring imported input materials are also considered import-concentrated. During July 2023-March 2024, import-concentrated items contributed, on average, one-third of the headline inflation. In January 2024, the contribution of import-concentrated items to inflation decreased to 27.5 per cent from 32.3 per cent in December 2023, due to the fall in inflation of food import-concentrated items. Meanwhile, the contribution of domestic items to inflation increased to 72.5 per cent from 67.7 per cent in December 2023, due to the increase in inflation of both domestic food and non-food CPI.



Chart 6: Contribution of Import-Concentrated Items

Note: Figures in parenthesis represent weights in the current and previous baskets, respectively; current weights started from April 2023.

Sources: BBS and EMFW estimates

V. Base and Momentum Effects

In 2023, large price momentum dominated over the base effect which exhibited rising inflation rate in Bangladesh (Chart-7). Base and momentum effects are defined in Box 1. However, during June-October 2023, base effect offset price momentum, helping to restrict the rising pressure in headline inflation. In November and December, the signs of the base effect and momentum effect reversed, resulting in a small fall in inflation. In the first three months (Jan-Mar) of 2024, the base effect offset price momentum, resulting in a minor change in inflation. Based on the base effect calculated for the twelve months ahead, base effects are negative and may offset the price momentum which might result in smaller changes in headline inflation in Jan-Mar 2025. A similar situation of headline inflation is observed in food inflation with high volatility. However, core and energy inflation will experience a negative base effect for all months of 2024.

Box 1: Base and Momentum Effect

If the price level is denoted as I_t, the y-o-y inflation rates in two consecutive months π_t and π_{t-1} can be expressed as,

 $\pi_t = [(I_t - I_{t-12})/I_{t-12}] * 100$ (i); $\pi_{t-1} = [(I_{t-1} - I_{t-13})/I_{t-13}] * 100$ (ii)

Now, the difference between π_t and π_{t-1} can be approximated as,

$$\pi_t \approx \pi_{t-1} + \left[(I_t - I_{t-1})/I_{t-1} \right] * 100 + \left[I_{t-13} - I_{t-12} \right] * 100$$
(iii)

The $[I_t - I_{t-1})/I_{t-1}] * 100$ part of eq (iii) is the m-o-m inflation at the current period termed as the momentum effect, and $[I_{t-13} - I_{t-12})/I_{t-13}] * 100$ is the m-o-m inflation 12 periods ahead termed as the base effect. Economic factors arising from the price movement of different commodities of the CPI basket can be ascribed as momentum. On the other hand, the statistical factors stem from the price swing twelve months earlier, which can be attributed to a base effect. The base impact on inflation can be positive or negative with different magnitudes. If the change between the price indices of the two consecutive months of the base period is negative, thencurrent inflation will be suppressed, offsetting the price momentum. The opposite will happen when the price change is positive, uplifting the present measured inflation. See ECB (2005) for details. 'Base Effects and their Impact on HICP Inflation in early 2005', European Central Bank, Monthly Bulletin, January 2005.



Chart 7: CPI Inflation – Momentum and Base Effects²

Sources: BBS and EMFW estimates

Current month's y-o-y inflation = y-o-y inflation of the previous month + base effect (m-o-m inflation twelve months ago) + momentum effect (m-o-m inflation in the current month).

 $^{^{2}}$ The difference between the annual inflation rates in two consecutive months is approximately equal to the difference between the m-o-m inflation in the current month and the m-o-m inflation twelve months ago, which can be expressed as:

VI. Diffusion Indices

Diffusion indices (a metric that measures the dispersion of price fluctuations) for headline and non-food picked up at the end of March 2024 resulting in increased m-o-m headline and non-food inflation (Chart 8). Even though, the diffusion index for food items slightly dropped in the mentioned period, the food inflation (m-o-m) was high which indicates that the number of items which has seen price rise holds significant weight in the food CPI basket. It may be mentioned that, in August 2023, the higher weights of price-increased items compared to price-decreased items caused opposite moves in DIs and inflation.

Chart 8: Diffusion Indices



Note: The CPI diffusion index is a metric that measures the dispersion of price fluctuations, which classifies goods in the CPI basket based on whether their prices have increased, stayed the same, or decreased compared to the preceding month. Here, a value above 50 indicates a broader expansion or generalization of price increases, whereas a reading below 50 indicates a broader drop in prices across items. Sources: BBS and EMFW estimates.

VII. Kernel Density Estimates

A Kernel Density Function³ (KDF) shows the distribution of data, indicating where the data is concentrated (steep parts) and how far it spreads out (tail length), longer tails show spread or high variation in the data.

 $^{^{3}}$ A KDF shows the distribution of data, indicating where the data is concentrated (steep parts) and how far it spreads out (tail length). Steeper parts indicate higher density and mean value, and longer tails show spread or variation of the data. Kernel density estimation is a useful statistical tool for creating a smooth curve given a set of data. This can be useful for visualizing just the shape of some data as a kind of continuous replacement for the discrete histogram.

The KDF indicated that average CPI headline inflation increased in 2023 but with less volatility compared to 2022 as shown by the shape of the distribution (Chart 9). The mean value of CPI inflation has increased to 9.57 percent in 2023 from 7.67 percent in 2022. The CPI headline inflation had the largest standard deviation in 2022, as shown by the longer tail in the Kernel density distribution. The shape of the Kernel density function had shifted in 2024, with a larger mean value and a smaller standard deviation compared to 2023, indicating that the CPI inflation is concentrated at 9.50 percent with a minor change every month.



Chart 9: Kernel Density Estimates

Sources: BBS and EMFW estimates

VIII. Retail and Wholesale Prices

The retail and wholesale prices, along with the margin (the difference between retail and wholesale prices) for various essential items, are shown in Chart 10. While the margins for rice (medium) and eggs (farm) experienced a decline in January 2024 compared to the preceding month, but subsequent months witnessed a rise in margins. Conversely, the average margins of potato, onion and green chili elevated during the third quarter of FY24 compared to the previous quarter. Notably, in March 2024, lentils demonstrated a significant increase in margin after experiencing a stable retail and wholesale price difference, reaching a peak within the observed timeframe. Soybean oil and meat-sonali, however, maintained relatively consistent margins throughout the quarter. Therefore, the rise of margin of the aforementioned necessary items signals the need of proper market intervention and implementation.



Chart 10: Retail and Wholesale Prices of Selected Commodities

Notes: Margin= Retail Price-Wholesale Price. Figures in parentheses denote the corresponding weight in the current basket. Source: Department of Agricultural Marketing (DAM), Ministry of Agriculture

IX. Wage Dynamics

Since April 2022, inflation has remained on a higher trajectory compared to wage rate growth (Chart 11. a), implying lower purchasing power for consumers and a subsequent fall in real income. The momentum effect of Wage Rate Index (WRI) was offset by base effect causing slower wage growth since August 2023 (Chart 11. b). The projected base effects up to March 2025 are showing larger negative magnitudes except April-August, implying negative impacts of base effects on wage growth.







Sources: Bangladesh Bureau of Statistics (BBS) and EMFW estimates

Among the overall wage growth rates of seven divisions in Bangladesh (Chart 11. c), Rangpur stands out with the highest wage growth rate since October 2023 may be due to uneven development activities, migration, natural calamities, and geographical challenges. However, there are signs that this growth is similar to other divisions following different government initiatives, including establishing the Export Processing Zone (EPZ). In January 2024, wage growth in all the divisions was almost similar, whereas Sylhet experienced the slowest growth.

X. Conclusion

Inflation has remained elevated at around 10 percent during January-March 2024 with almost similar contribution of food and non-food items. While food inflation is mostly driven by the protein based food items, spices and other culinary essentials, non-food inflation is induced by energy inflation. The contribution of perishable items to inflation emerged significantly in 2023 and remained steady during first 3 months of 2024. Though there is slight drop in the contribution of import-concentrated items at March 2024, the ongoing depreciation pressure may change this movement in coming months.

The analysis of wage trends indicates a potential decline in real income for consumers, as inflation has outpaced wage rate growth since April 2022 and stayed on the negative territory at the end March 2024. While certain regions, notably Rangpur, exhibit positive wage growth, concerns arise over the slowing momentum.

Currently, higher inflation is a challenge for the Bangladesh economy. Monetary and fiscal policies have prioritized the containment of inflationary pressure. In addition to continuous increases in the monetary policy rate (repo rate) to reduce inflationary pressure, BB has stopped lending to the Government by increasing reserve money. Furthermore, the Government has implemented a variety of austerity measures to ensure effective fiscal management. Looking ahead all of the policy initiatives implemented by the Bangladesh Bank and the Government aim to anchor inflation expectations. They are expected to have a positive impact on inflation outcomes in the coming months.