Daiwa's View

Downward bias in underlying inflation metrics

- Underlying inflation indicators exhibit price stickiness
- Exclusion of food/high weighting for imputed rents creates downward bias
- Time to also focus on headline CPI?

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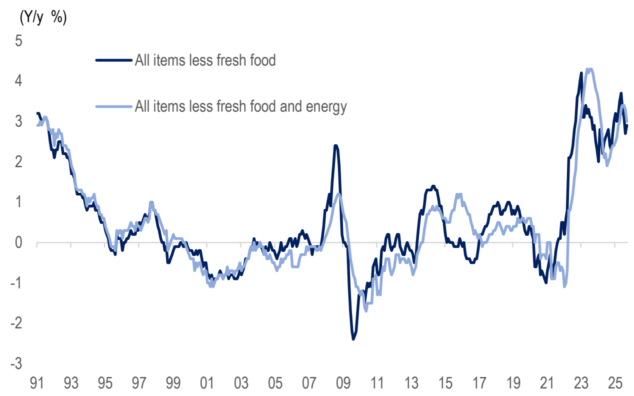
Defining underlying inflation; variety of indicators

The Bank of Japan's (BOJ) October *Outlook for Economic Activity and Prices (Outlook Report)* emphasized the importance of underlying inflation in its policy decisions, stating that "it is expected that underlying CPI inflation and the rate of increase in the CPI (all items less fresh food) will increase gradually and, in the second half of the projection period, be at a level that is generally consistent with the price stability target."

BOJ Governor Kazuo Ueda has also explained that underlying inflation excludes transitory factors and unsustainable items from the headline CPI. This concept is an important yardstick for the BOJ and other central banks in gauging sustained and stable inflation.

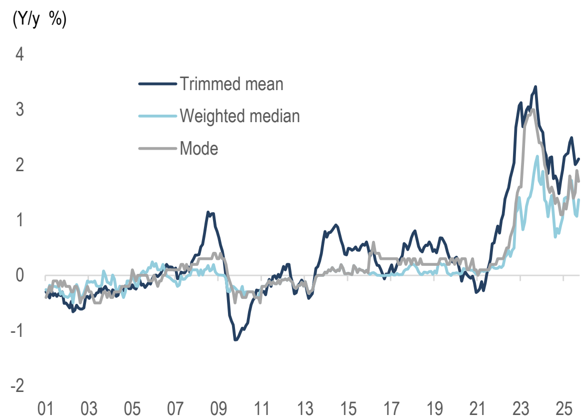
In order to exclude one-time inflationary factors, the BOJ publishes indicators such as the core CPI (headline excl. fresh food) and core-core CPI (headline excl. fresh food and energy), the trimmed mean (obtained by mechanically excluding the upper and lower 10% tails of the price change distribution for each CPI item), the weighted median (the weighted average of the inflation rates of the items at around the 50th percentile point of the distribution), and the mode (the inflation rate with the highest density in the distribution). It also defines expected inflation and the output gap as key determinants of underlying inflation.

Core CPI, Core-Core CPI



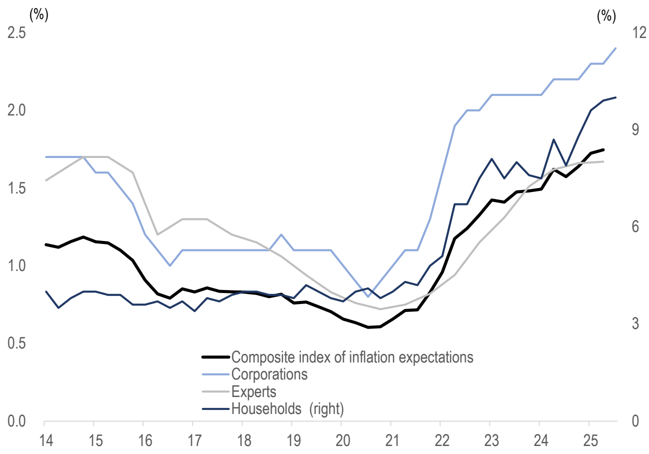
Source: Ministry of Internal Affairs and Communications (MIC); compiled by Daiwa.

Measures of Underlying Inflation



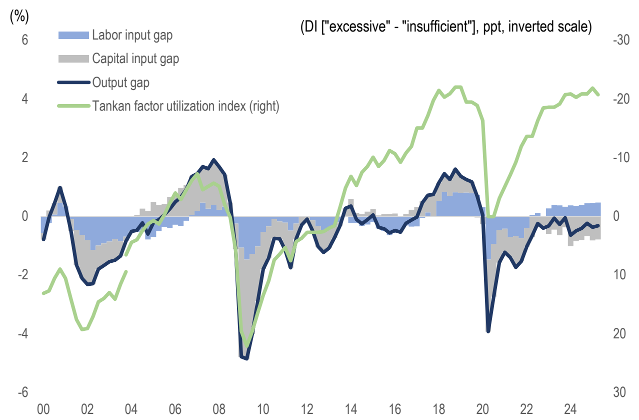
Source: BOJ; compiled by Daiwa.

Inflation Expectations by Economic Agent



Source: BOJ, Japan Center for Economic Research; compiled by Daiwa.
Note: Composite index of inflation expectations is an extract of the first principal component via the principal component analysis regarding household inflation expectations (mean of inflation expectations over the next five years in the Opinion Survey on the General Public's Views and Behavior), corporate inflation expectations (general price outlook for the next 5 years in BOJ Tankan), and experts' inflation expectations (CPI growth rates for the next 2 to 6 years in ESP Forecast survey)..

Output Gap



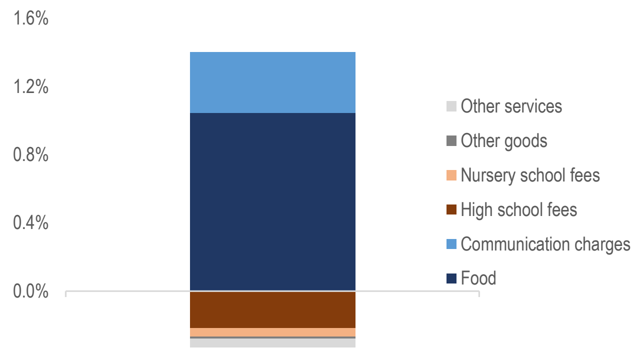
Source: BOJ; compiled by Daiwa.
Note: The Tankan factor utilization index is calculated as the weighted average of the production capacity DI and the employment conditions DI for all industries and enterprises. The capital and labor shares in the "National Accounts" are used as weights. There is a discontinuity in the data for December 2003 due to a change in the survey framework.

Issues with underlying inflation indicators

However, it is extremely difficult to interpret underlying inflation. There are structural issues with metrics such as the core CPI, core-core CPI, and trimmed mean that mechanically exclude some items. For instance, the September nationwide headline CPI was up 2.9% y/y, but the trimmed mean was just +2.1%. This mainly reflected the exclusion of the positive contribution from food.

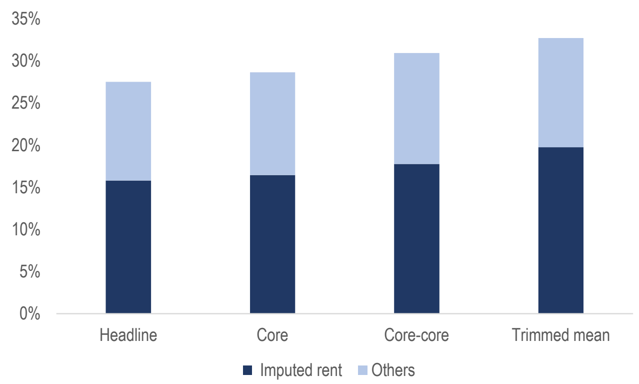
Excluding more items also increases the weighting of sticky-price items, resulting in a high weighting for imputed rents on owner-occupied housing. The weighting for sticky-price items where prices have remained largely limited since 2001 is 27.5% for the headline CPI, 28.6% for the core CPI, 30.9% for the core-core CPI, and 32.7% for the trimmed mean (excl. the upper/lower 10% tails); much of this is imputed rents for owner-occupied housing. In short, the more items are excluded from measures of underlying inflation, the more likely they are to become indicators of sticky prices.

Contribution to Headline CPI from Items Excluded in Trimmed-Mean Calculation



Source: MIC; compiled by Daiwa.
Note: Based on Sep 2025 nationwide CPI data.

Weight of Sticky Price Items in Total



Source: MIC; compiled by Daiwa.
Note: "Sticky price items" are defined as items whose rate of price change remained within a range of -2% to +2% for 90% or more of the period from Jan 2001 to Sep 2025, based on nationwide CPI data.

We acknowledge that a narrower focus on sticky price movements is the correct approach to gauging trend inflation. This is because sustained and stable inflation is important to central banks, which need to focus more on whether sticky-price indicators are nearing their inflation targets than on items where prices are more volatile.

However, using current trimmed mean values to assess underlying inflation requires the assumption that the rise in food prices is transitory, and also requires the judgement that imputed rents for owner-occupied housing will have a major impact on consumer price trends. Examining the specific items that are excluded therefore reveals issues with measures of underlying inflation.

Should food be excluded?

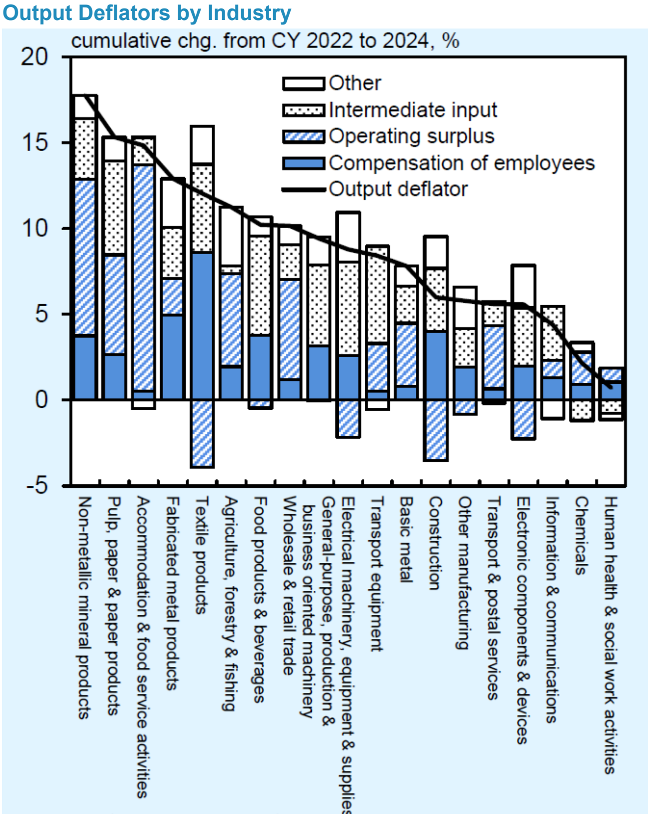
In a 2 September speech, BOJ Deputy Governor Ryozo Himino used inflation excluding food and energy to explain underlying trends in view of rising gasoline prices and temporary fluctuations in the price of rice and some other items. However, as noted by Ichikawa and Yamamoto (2025), the recent rise in food prices includes increases in logistics and labor costs, and cannot be described as a straightforward supply shock.

The BOJ's analysis in its October *Outlook Report* indicates that rising labor costs are a key driver of price increases, contributing 30-40% of the rise in food manufacturers' output prices between 2022 and 2024.

The *Outlook Report* also argues that the uptrend in imported food prices was due to (1) the structural factor of food demand caused by global population growth, and (2) intermittent supply shocks caused by extreme weather and other global factors. It therefore positions the uptrend in food prices as an increasingly global rather than Japan-specific phenomenon.

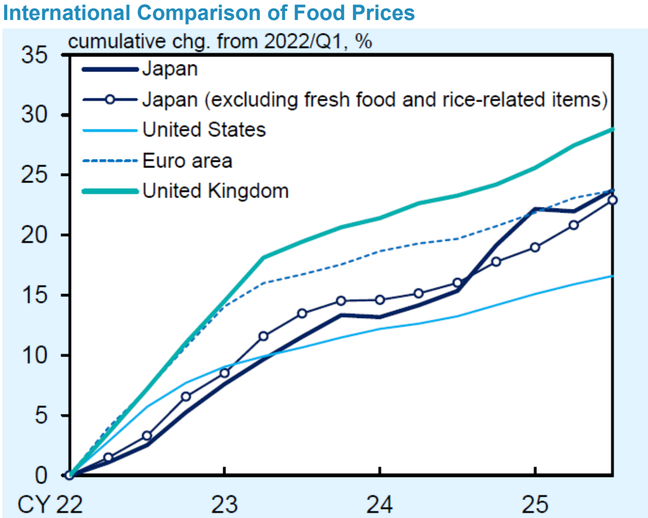
Based on this analysis, we think the BOJ itself may be of the view that rising food prices reflect a substantial impact from sustained trends rather than being temporary. Focusing on measures that mechanically exclude food, such as the trimmed mean or headline inflation excluding food and energy, risks understating current trend inflation.

Output Deflators by Industry



Source: Reprinted from BOJ materials.

International Comparison of Food Prices



Source: Reprinted from BOJ materials.

Are imputed rents an indicator of underlying inflation?

Firstly, we would note that imputed rents for owner-occupied housing are calculated on the assumption that they involve the provision of a similar service to typical rented properties. Their hallmark is that unlike other CPI items, they do not involve actual rent payments (expenditure).

One reason why imputed rents are nevertheless a key focus in economic data such as GDP and the CPI is the need to ensure accurate international comparisons. If imputed rents are excluded, GDP will be heavily affected by the size of the rental market (i.e., differences in the percentage of owner-occupied housing), causing it to be overstated for countries with large rental markets and understated for those with small markets. While the prevailing view is that GDP should include only market transactions, imputed rents are tolerated as an exception for the purposes of international comparisons.

However, there are issues with imputed rents from a monetary policy perspective. In Japan, imputed rents are currently calculated using the "equivalent rent method," which estimates market rents based on factors such as location, structure, age of building, and floor space, with the time series updated using private rent data from the CPI. Private-sector rents are based on passing rents under existing lease contracts, and imputed rents are therefore readily affected by passing rents.

We think it takes time for private-sector rents (and imputed rents) based on passing rents to reflect actual rent increases. Lease contracts in the US and other overseas economies are typically renewed every year, and changes in asking rents therefore feed into passing rents and the CPI at a roughly one-year lag.

However, Japan's Act on Land and Building Leases provides considerable protection for tenants' rights, and rent revisions frequently require agreement between both parties; we therefore expect rents to change only gradually as tenants move out. According to the Japan Property Management Association's Tankan, most Tokyo metropolitan area renters stay in a property for around four years and five months on average, suggesting that an increase in asking rents will likely take considerable time to show up in the CPI. We see this as a key issue for the BOJ's monetary policy conduct given the need to make forward-looking decisions.

The current method for estimating imputed rents also makes it difficult to accurately reflect the impact of housing bubbles in the CPI. These bubbles mainly reflect expectations for future capital gains rather than rising rents, and it is difficult to gauge this impact using the current approach of compiling passing rents. Internationally, the proposed alternative to imputed rents is the user cost method, which adjusts for capital gains as well as depreciation, maintenance costs, tax, and interest payments; estimates based on this approach imply that rents are much higher than current imputed rents.

To sum up, we think the y/y uptrend in imputed rents is affected by the downward bias caused by both the approach used to estimate them and Japan-specific factors (the difficulty of increasing passing rents under the Act on Land and Building Leases). Also, as noted by Ichikawa and Yamamoto (2025), imputed rents do not involve actual payments and they likely have a minimal impact on households' perceived inflation. The above suggests that excluding CPI items in the interests of gauging underlying inflation risks increasing the downward bias by boosting the relative weighting of imputed rents.

Judging underlying inflation

Approaches such as the core CPI, core-core CPI, and trimmed mean are important in gauging underlying inflation. However, we would caution that these metrics likely have a downward bias given the nature of the items that are currently deducted and the items that remain.

These metrics feature a disproportionately higher impact particularly from imputed rents given the latter's unusual nature and high CPI weighting. Simple median inflation that ignores weightings for individual items has indeed remained above 2% since February, while the weighted median that does reflect these weightings has stayed at just over 1%.

The BOJ's original reference point for price stability is the headline CPI. While it is meaningful to create metrics that exclude one-time factors to gauge underlying inflation, we would caution that excluding more items increases the downward bias and the risk of understating actual inflation.

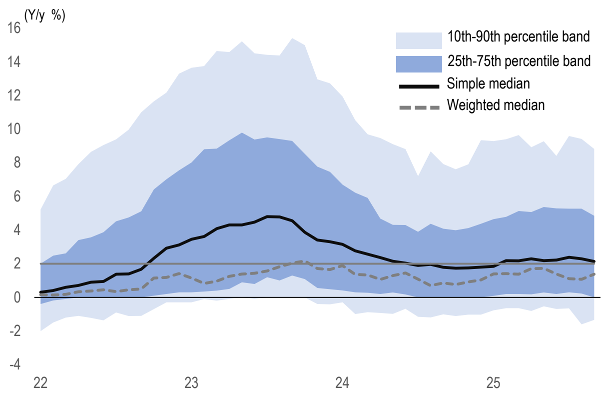
Meanwhile, the Summary of Opinions from the BOJ's October Monetary Policy Meeting (MPM) included the view that "with the changing norm in Japan, straightforward communication that emphasizes developments in headline inflation is now desirable". While the BOJ has previously focused its explanations on underlying price trends, the difficulty of the concept has led to a shift toward emphasizing actual inflation.

◆ Summary of Opinions at Oct MPM (10 Nov 2025)

- With a shrinking equilibrium mindset remaining in place, it was necessary for the Bank to discuss headline inflation separately from underlying inflation. However, with the changing norm in Japan, straightforward communication that emphasizes developments in headline inflation is now desirable.

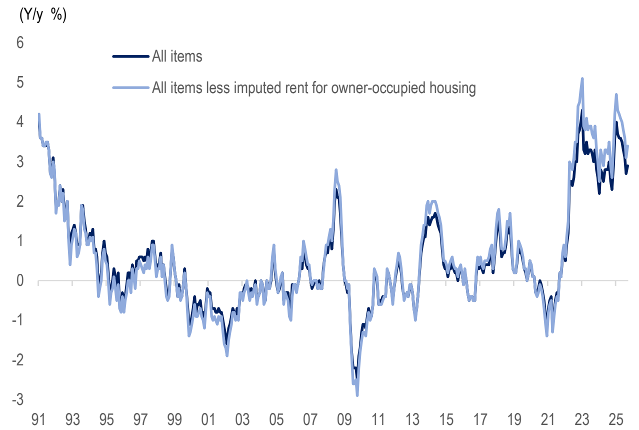
With transitory inflationary pressure from items such as rice now easing, we think inflation should be judged based on headline measures that as far as possible avoid excluding any items. While it may be necessary to exclude some items to focus on underlying inflation, we would caution that imputed rents for owner-occupied housing tend to create a downward bias due to the method for estimating them and the laws that govern rents in Japan. We therefore see a need to also look at inflation indicators that exclude imputed rents.

Nationwide CPI: Simple Median and Weighted Median



Source: MIC; compiled by Daiwa.

CPI: All Items, All Items Less Imputed Rent for Owner-occupied Housing



Source: MIC; compiled by Daiwa.
Note: Figures up to 2020 are adjusted for consumption tax.

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