The Concept and Measurement of Underlying Inflation

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For the conduct of monetary policy, it is important to grasp "underlying inflation" by excluding temporary factors that are expected to wane over time. However, because underlying inflation cannot be determined using developments in a single indicator alone, the Bank of Japan uses three sets of approaches to gauge it: (1) approaches that exclude highly volatile items, (2) approaches that capture medium- to long-term inflation expectations, and (3) approaches that estimate underlying inflation based on economic models. Looking ahead at price developments, while underlying inflation is approaching 2 percent, consumer prices are expected to become more volatile in the short term due to factors such as government measures to address rising prices as well as rising crude oil costs stemming from heightened tensions in the Middle East. In light of these factors, it has become even more important to accurately grasp underlying inflation and provide clear communication.

Introduction

The Bank of Japan has set the "price stability target" at 2 percent in terms of the year-on-year rate of change in the consumer price index (CPI) for all items and conducts monetary policy from the perspective of sustainable and stable achievement of the target. Monthly figures of the CPI, however, are subject to temporary influences, such as disturbances stemming from supply-side factors including adverse weather, as well as changes arising from institutional factors such as government subsidies (Chart 1). Moreover, the effects of monetary policy are transmitted to economic activity and prices only with a time lag. Therefore, frequently adjusting policy in response to temporary movements in the CPI would risk amplifying, rather than smoothing, fluctuations in economic activity and prices. For this reason, in conducting monetary policy, it is important to grasp "underlying inflation," by excluding temporary factors that are expected to wane over time, and to assess its future trajectory.

That said, it is not easy to determine which parts of monthly price movements are temporary and which reflect underlying inflation. More fundamentally, underlying inflation cannot be determined based on developments in a single indicator; rather, it must be judged comprehensively by examining a wide range of information on economic activity and prices from multiple perspectives.

[Chart 1] Overview of Underlying Inflation
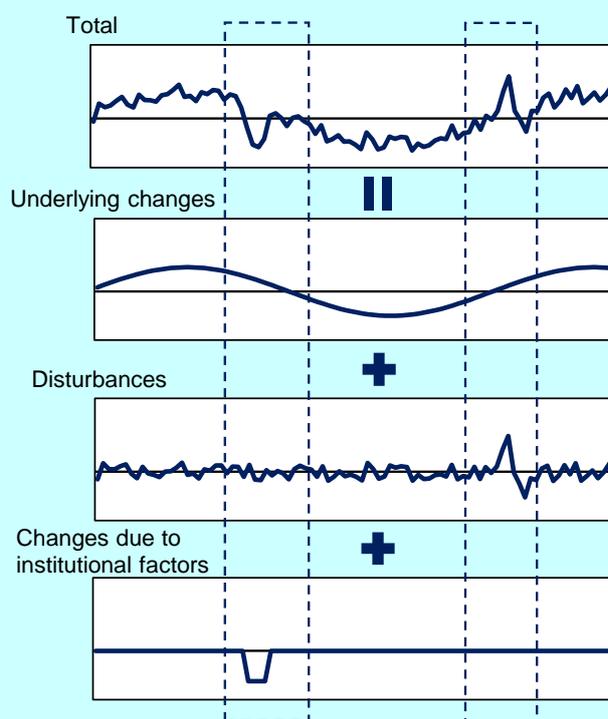
While the Bank has continued to communicate developments in underlying inflation through various channels including its *Outlook for Economic Activity and Prices* and speeches by Policy Board members, this paper first discusses the concept of underlying inflation, using the Phillips curve, with a view to summarizing the subject clearly. [1] It then presents the various

indicators used by the Bank to gauge underlying inflation and outlines their characteristics. Finally, the paper reviews recent developments in underlying inflation.

The Concept of Underlying Inflation

Relationship with the Phillips curve

Generally, prices are considered to fluctuate in response to the balance between the aggregate demand and supply of goods and services in the economy (the "output gap"). In economics, this relationship between the output gap and the inflation rate is known as the Phillips curve. For example, when the economy recovers, the output gap improves, and the prices of a wide range of goods and services gradually rise, this can be regarded as a movement along the Phillips curve (Chart 2).[2] In contrast, when temporary factors arise -- such as the rise in cost-push pressures triggered by the significant increase in import prices observed since 2021 -- the inflation rate deviates from the Phillips curve. Therefore, to gauge underlying inflation, it is necessary to remove such temporary factors.

[Chart 2] Overview of the Phillips Curve
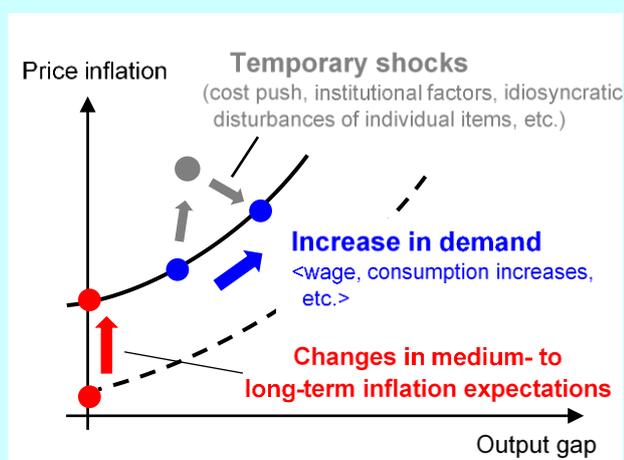
On the Phillips curve, the relationship between the output gap and the inflation rate changes not only through movement along the curve, but also through shifts in the intercept. For example, when the public's inflation expectations change -- whether through (1) adaptive expectations formation, which is influenced by actual inflation, or (2) forward-looking expectations formation, which reflects views on factors such as the central bank's price stability target -- this can be regarded as a shift in the intercept of the Phillips curve.[3,4] When such an upward shift occurs, the inflation rate will increase even if the output gap remains the same.

Meanwhile, even temporary supply-side factors, if the resulting price increases become protracted, may affect inflation expectations through the adaptive expectations mechanism and thereby influence the intercept of the Phillips curve. It is often noted that, in Japan, inflation expectations have not been anchored at 2 percent for a long time and that, consequently, adaptive expectations tend to play a considerable role in expectation formation. In addition, amid a shift away from the behavior and mindset based on the assumption that wages and prices will not increase easily, and against the backdrop of tightening labor market conditions and more active wage- and price-setting behavior by firms, it is possible that price fluctuations caused by temporary factors are now more likely than before to lead to shifts in the intercept of the Phillips curve. For example, while recent increases in food prices are regarded as largely due to temporary supply-side factors, if these price increases were to persist, they could, via changes in inflation expectations, exert a sustained upward impact on overall consumer prices.

The role of underlying inflation at central banks in Europe and the United States

The underlying rate of consumer price inflation is also an important concept for the conduct of monetary policy among central banks in Europe and the United States.

The European Central Bank (ECB) regards underlying inflation as providing useful signals for the medium-term outlook for inflation, and has made it clear that behavior in such inflation is one of the factors the ECB focuses on when making policy decisions.[5] The Federal Reserve has noted that underlying inflation helps identify price trends by removing the noise inherent in headline inflation.[6] In this context, since last spring it has highlighted the importance of determining whether the impact of tariff policies on prices will remain temporary and has been closely monitoring developments in underlying inflation. Similarly, the Bank of England (BOE) has noted in speeches by Monetary Policy Committee members that focusing on the persistent, underlying component of inflation allows monetary policy to be conducted in a forward-looking manner from a medium-term perspective.[7]

These central banks release many indicators related to underlying inflation through staff papers and on their websites.[8]

Measuring Underlying Inflation

While underlying inflation is an important concept for the conduct of monetary policy, there is no single indicator that captures it. The Bank therefore uses three sets of approaches in trying to gauge underlying inflation. The following explains the different approaches and outlines the characteristics of the associated indicators.

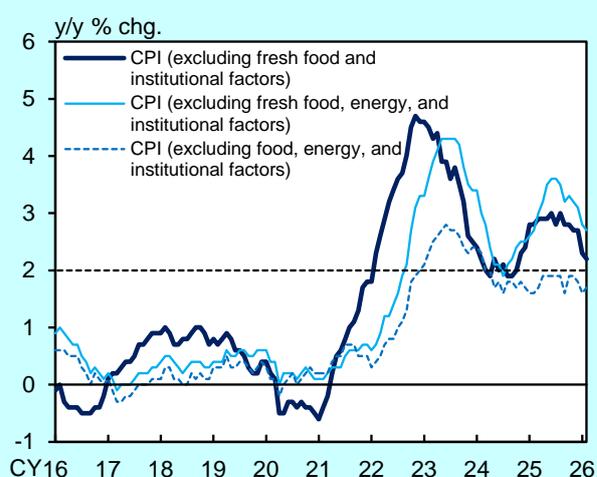### *Approaches excluding highly volatile items*

The first set of approaches consists of reprocessing released price statistics to remove factors such as items with large price fluctuations. This is intended to strip out temporary disturbances from observed prices and aimed primarily at capturing movements along the Phillips curve.

The Bank has used indicators that exclude highly volatile items, monitoring developments in such measures as the CPI for all items less fresh food, the CPI for all items less fresh food and energy, and the CPI for all items less food and energy. Recently, however, it has become difficult to gauge underlying inflation using only these indicators, for two reasons: (1) increased volatility in the CPI due to the effects of government measures to reduce the household burden of higher energy prices; and (2) the anticipated impact of future policies such as free education programs. Considering these points, the Bank in March 2026 began publishing indicators that exclude these institutional factors from the CPI (Chart 3). [9] Meanwhile, in the United States and elsewhere, it is common when assessing underlying inflation to focus on measures excluding food and energy. In Japan's case, however, it should be kept in mind that the weight of food in the CPI is relatively large, so that this measure may exclude too much of the price movements that correspond to supply and demand conditions in the economy. [10] In fact, one frequently cited reason for recent increases in food prices is higher labor and distribution costs stemming from tightening labor market conditions. Meanwhile, the Bank also focuses on indicators derived from the distribution of price changes for individual CPI items, and continues to release and monitor monthly developments in the trimmed mean, the weighted median, and the mode (Chart 4). [11]

Indicators that exclude highly volatile items have the advantage of being easy to compute, intuitively straightforward, and well suited to timely, month-by-month monitoring. On the other hand, as illustrated by the movements since 2021 in Charts 3 and 4, it is not easy to strip out such effects accurately when, for example, prices for a broad range of items rise sharply due to a steep increase in import prices. [12] It should also be noted that the decision to exclude highly volatile items or institutional factors involves a degree of arbitrariness. In addition, if, in an effort to capture underlying inflation, one keeps peeling away various items like the layers of an onion, the resulting measure will deviate from the overall basket of goods and services that households actually purchase, and may therefore eventually become detached from households' perceptions of inflation.


[Chart 3] CPI excluding Institutional Factors

y/y % chg.

- CPI (excluding fresh food and institutional factors)
- CPI (excluding fresh food, energy, and institutional factors)
- CPI (excluding food, energy, and institutional factors)

Note: Institutional factors = the effects of the consumption tax rate change and policies concerning the provision of free education + measures to reduce the energy cost burden (such as gasoline prices, electricity and gas charges) + the reduction in mobile phone charges in 2021 + travel subsidy programs. The figures are staff estimates.

Sources: Ministry of Internal Affairs and Communications, etc.

[Chart 4] CPI: Trimmed Mean, etc.

y/y % chg.

- Trimmed mean
- Weighted median
- Mode
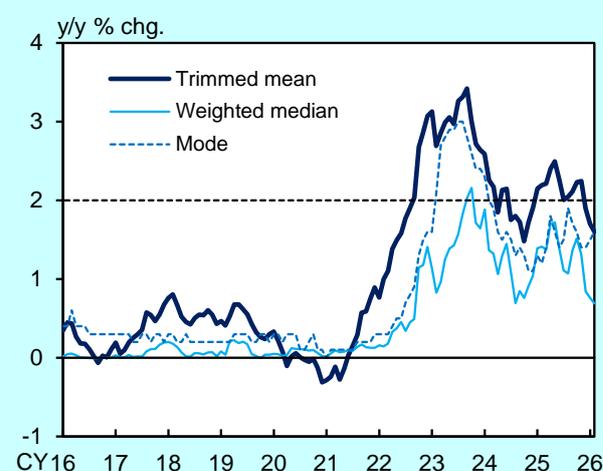
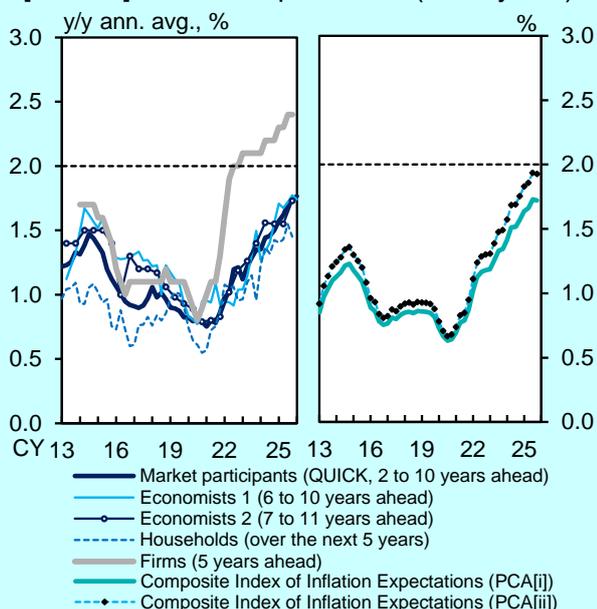Note: Figures are staff estimates.

Sources: Ministry of Internal Affairs and Communications, etc.

Approaches capturing medium- to long-term inflation expectations

The second set of approaches focuses on indicators related to medium- to long-term inflation expectations, which represent people's perceptions of price developments, and seeks to capture shifts in the intercept of the Phillips curve.

The Bank, using data from various surveys, monitors medium- to long-term inflation expectations of households (*Opinion Survey on the General Public's Views and Behavior*), firms (*Tankan* [Short-Term Economic Survey of Enterprises in Japan]), and experts (Chart 5). However, these indicators differ in their statistical characteristics and biases, partly reflecting differences in respondent attributes. The Bank therefore also constructs composite indexes of inflation expectations that statistically aggregate the information contained in each measure using econometric techniques.[13] In addition, for the inflation expectations of market participants, the Bank, like central banks in Europe and the United States, monitors the break-even inflation rate (BEI) derived from inflation-indexed government bonds (Chart 6).
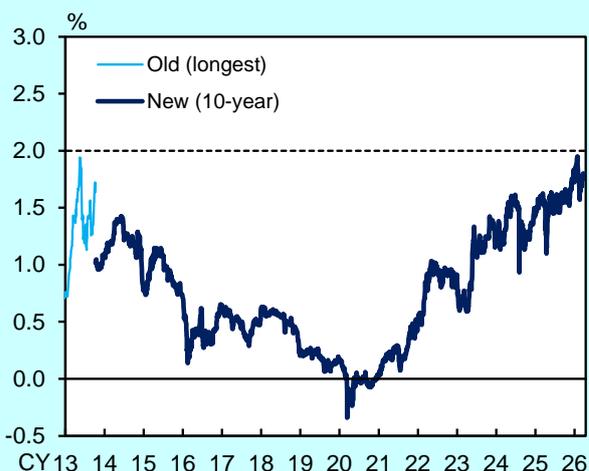
[Chart 6] Inflation Expectations (BEI)

Note: The BEI (break-even inflation) rate is the yield spread between fixed-rate coupon-bearing JGBs and inflation-indexed JGBs. Inflation-indexed JGBs issued since October 2013 are designated as "new," while the rest are designated as "old." Figures for "old (longest)" are calculated using yield data for issue No. 16 of inflation-indexed JGBs, which matured in June 2018.
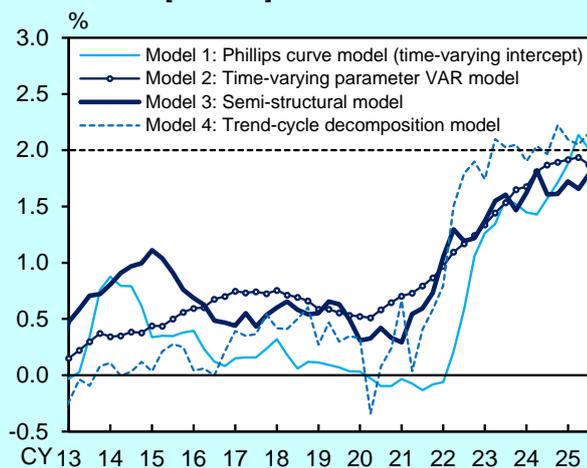
Source: Bloomberg.

Indicators related to medium- to long-term inflation expectations have the advantage of being less affected by short-term noise and of being forward-looking, literally. However, it should be noted that (1) there is considerable dispersion in the levels of these measures, reflecting heterogeneity across households, firms, and experts, and (2) in the case of the BEI in Japan, the low liquidity of inflation-indexed government bonds makes it particularly susceptible to influences other than inflation expectations (such as a liquidity risk premium).

Approaches estimating underlying inflation based on economic models

The third set of approaches relies on constructing economic models and, using statistical methods, estimating trend inflation -- that is, the long-run value to which the inflation rate converges in the absence of additional shocks to the economy. Like the above approaches based on inflation expectations, the third set of approaches also aims to capture shifts in the intercept of the Phillips curve.

The Bank currently estimates the trend inflation rate mainly using four models. Specifically, it employs (1) a time-varying parameter model to estimate the inflation rate when the output gap is zero (the intercept of the Phillips curve) (Model 1), (2) a time-varying parameter vector autoregression (TVP-VAR) model to estimate the long-run convergence value of inflation (Model 2), (3) a semi-structural model to measure the long-run convergence value of inflation (Model 3), and (4) statistical techniques to decompose inflation into trend and cyclical components (Model 4) (Chart 7).[14]

[Chart 5] Inflation Expectations (Survey etc.)

Market participants (QUICK, 2 to 10 years ahead)
Economists 1 (6 to 10 years ahead)
Economists 2 (7 to 11 years ahead)
Households (over the next 5 years)
Firms (5 years ahead)
Composite Index of Inflation Expectations (PCA[i])
Composite Index of Inflation Expectations (PCA[ii])

Notes: 1. The figure of market participants for 2026/Q1 is the January-February average.
2. "Economists 1" shows the forecasts of economists in the *Consensus Forecasts*. "Economists 2" shows the forecasts of forecasters surveyed for the *ESP Forecast*. Figures for households are from the *Opinion Survey on the General Public's Views and Behavior*, estimated using the modified Carlson-Parkin method for a 5-choice question. Figures for firms show the inflation outlook of enterprises for general prices (all industries and enterprises, average) in the *Tankan*.
3. Composite indexes of inflation expectations are for 10-year-ahead expectations. They are calculated using principal component analysis (PCA). For the calculation method of the indexes, see the footnote 13.

Sources: Bank of Japan; QUICK, "QUICK Monthly Market Survey <Bonds>"; JCER, "ESP Forecast"; Consensus Economics Inc., "Consensus Forecasts"; Bloomberg.

[Chart 7] Trend Inflation

%

Model 1: Phillips curve model (time-varying intercept)
Model 2: Time-varying parameter VAR model
Model 3: Semi-structural model
Model 4: Trend-cycle decomposition model

Sources: Bank of Japan; Ministry of Health, Labour and Welfare;
Ministry of Internal Affairs and Communications; Cabinet
Office; Google Trends; QUICK, "QUICK Monthly Market
Survey <Bonds>"; Consensus Economics Inc., "Consensus
Forecasts"; Bloomberg.

[Chart 8] CPI

y/y % chg.

CPI (less fresh food)
CPI (less fresh food and energy)
CPI (less food and energy)
Energy
Goods
Services

Source: Ministry of Internal Affairs and Communications.

The trend inflation rate is estimated on the basis of economic theory and has the advantage that its drivers can be interpreted consistent with theory. On the other hand, it should be noted that (1) the estimates can vary substantially depending on the choice of model specification and parameter settings, (2) the estimates are susceptible to being influenced by the most recent data, and (3) there is the so-called "real-time problem," in which past estimates are subject to substantial revisions whenever the data used for the estimation are updated.

Importance of a comprehensive judgment

As explained, each approach to gauging underlying inflation has advantages and disadvantages. Therefore, when assessing underlying inflation, it is necessary not to rely on a single indicator but, focusing on the array of indicators presented in this paper, to examine a broad range of relevant data. Furthermore, it is important to make a comprehensive judgment only after carefully examining a wide range of information on economic activity and prices -- such as the output gap, labor market conditions, and wage growth -- that underlie price developments.

Recent Developments in Underlying Inflation

Looking at recent developments in underlying inflation, indicators that exclude highly volatile items show that the year-on-year rate of increase in the CPI for all items less fresh food and energy is above 2 percent, reflecting the remaining impact of higher food prices (Chart 8).
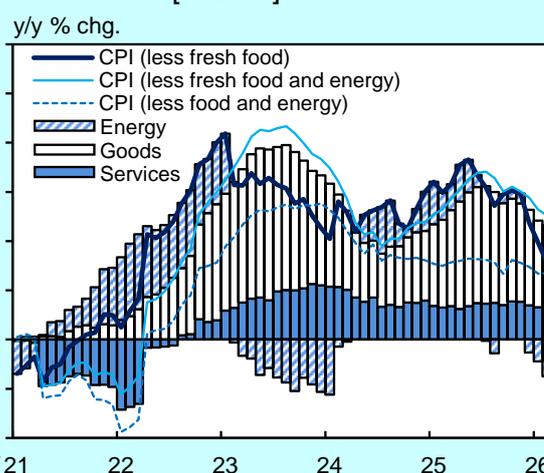
On the other hand, because government measures to reduce the household burden of higher energy prices have pushed down energy prices, the year-on-year rate of increase for the CPI for all items less fresh food has declined and is currently below 2 percent. Meanwhile, the year-on-year rate of increase for the CPI for all items less food and energy has been hovering around 1.5 percent.

As noted, recent developments in the CPI have been affected by the impact of government measures to reduce the burden of energy costs and other factors. Looking at indicators that exclude such institutional factors, the year-on-year rates of increase for the CPI for all items less fresh food and for all items less fresh food and energy both continue to remain above 2 percent, while the year-on-year rate of increase for the CPI for all items less food and energy is hovering between 1.5 and 2 percent (Chart 3). Meanwhile, the rate of increase of the trimmed mean has declined to around 1.5 percent, and the rate of increase of the weighted median has also declined (Chart 4). The rate of increase of the mode, while fluctuating, is currently around 1.5 percent.

Next, looking at medium- to long-term inflation expectations, composite indicators show a gradual increase toward 2 percent (Chart 5). Medium- to long-term inflation expectations of firms continue to trend upward and are above 2 percent. Although medium- to long-term inflation expectations of households and experts remain below 2 percent, they are also rising moderately overall. The BEI, derived from inflation-indexed government bonds, is likewise increasing gradually toward 2 percent, albeit with some fluctuations (Chart 6).

Turning to trend inflation estimated from economic models, all of the models show a moderate uptrend,

with the latest estimates hovering in a range from 1.5 to around 2 percent (Chart 7). That said, in light of the estimation issues noted earlier, these results need to be interpreted with some latitude.

Finally, looking at factors underlying price developments, the output gap has been on an improving trend, albeit with some fluctuations. Labor market conditions remain extremely tight, and wages are rising moderately. Against this backdrop, firms continue to pass higher wages on to selling prices, and the mechanism in which wages and prices rise moderately in interaction with each other has been taking hold.[15]

Taking these points into account, it could be judged that the underlying inflation rate is rising moderately toward 2 percent. Going forward, from the perspective of sustainable and stable achievement of the price stability target, it will also be necessary to monitor whether underlying inflation becomes firmly anchored at around the 2 percent level.

Conclusion

As highlighted in this paper, since consumer prices fluctuate under the impact of temporary factors, it is important for the conduct of monetary policy to focus on underlying inflation, which strips out such factors.

Looking ahead at price developments, while underlying inflation is approaching 2 percent, consumer prices are expected to become more volatile in the short term due to factors such as government measures to address rising prices as well as rising crude oil costs stemming from heightened tensions in the Middle East. Moreover, in addition to the rise in food prices in the past few years, the recent rise in crude oil prices and the depreciation of the yen could affect underlying inflation through changes in medium- to long-term inflation expectations.

In this context, increases in crude oil prices can affect underlying inflation in both upward and downward directions. Specifically, if such increases exert downward pressure on economic activity and worsen the output gap, they can act as a factor pushing down underlying inflation. On the other hand, if higher crude oil prices lead to an increase in people's inflation expectations, this would exert upward pressure on underlying inflation. Attention is warranted to the possibility that upward pressures on prices through this channel may have strengthened compared with the past, as firms have become more proactive in their wage- and price-setting behavior. Moreover, given changes in firms' behavior and the upward trend in the import penetration ratio, prices may now be more susceptible to the depreciation of the yen, and such developments could influence underlying inflation through changes in inflation expectations.[16]

Given these considerations, accurately gauging underlying inflation is becoming more important than ever. The Bank therefore intends to carefully examine a wide range of indicators, keeping in mind the advantages and disadvantages of the various measures of underlying inflation presented in this paper. In addition, it is important to make a comprehensive judgement after carefully examining a range of information on economic activity and prices that underlie price developments, including the output gap, labor market conditions, and wage developments, while also drawing on anecdotal information. In doing so, the Bank will also strive to communicate carefully with the public regarding developments in underlying inflation.

[1] For further discussions of underlying inflation, see, for example:

Bank of Japan (2024), Box 4, "Approaches to Examining Underlying Inflation," in the April 2024 *Outlook for Economic Activity and Prices*.

Bank of Japan (2024), Appendix 4, "Underlying Inflation and the Behavior and Mindset Based on the Assumption that Wages and Prices Will Not Increase Easily," in the Review of Monetary Policy from a Broad Perspective.

[2] For comprehensive discussions of the Phillips curve, see Ueda (2023) and Hara *et al.* (2020). Examples of earlier research include Quah and Vahey (1995), who explain the importance of capturing inflationary pressures from the demand side, and Eckstein (1981), who discusses the importance of capturing long-run equilibrium conditions.

Ueda, Kazuo (2023), "Basic Thinking on Monetary Policy and the Outlook for Economic Activity and Prices," speech at a meeting held by the Naigai Josei Chosa Kai (Research Institute of Japan).

Hara, Naoko, Ryoji Koike, and Toshitaka Sekine (2020), "The Phillips Curve and the Bank of Japan," Bank of Japan Review Series, No.2020-J-3 (in Japanese).

Quah, Danny and Shaun P. Vahey (1995), "Measuring Core Inflation," *The Economic Journal*, Vol.105(432), pp.1130-1144.

Eckstein, Otto (1981), *Core Inflation*, Prentice-Hall, Englewood Cliffs, N.J.

[3] For ease of exposition, developments in underlying inflation in this paper are explained in terms of movements along the Phillips curve and shifts in its intercept. In this regard, the recent shift in firms' behavior toward raising wages and prices may also be consistent with a steepening of the slope of the Phillips curve. For a discussion of the slope of the Phillips curve, see Ikeda *et al.* (2022).

Ikeda, Shuichiro, Haruhiko Inatsugu, Yui Kishaba, Takuji Kondo, Kenichi Sakura, Kosuke Takatomi, Takashi Nakazawa, and Kotone Yamada (2022), "Inflation in Japan: Changes during the Pandemic and Issues for the Future," Bank of Japan Working Paper Series, No.22-E-18.

[4] For a detailed discussion of adaptive expectations formation in Japan, see Nishino *et al.* (2016) and the Bank of Japan (2016).

Nishino, Kousuke, Hiroki Yamamoto, Jun Kitahara, and Takashi Nagahata (2016), "Developments in Inflation Expectations over the Three Years since the Introduction of Quantitative and Qualitative Monetary Easing (QQE)," Bank of Japan Review Series, No.2016-E-13.

Bank of Japan (2016), "Comprehensive Assessment: Developments in Economic Activity and Prices as well as Policy Effects since the Introduction of Quantitative and Qualitative Monetary Easing (QQE)."

[5] The ECB explains developments in underlying inflation in its statements following Governing Council meetings. See, for example:

ECB (2024), "Monetary Policy Decisions (June 2024)."

[6] The Federal Reserve has published reports that set out the importance of underlying inflation and how it is calculated (see, for example, Amstad et al. (2017)). For the effects of tariffs on prices, see the speeches by Chair Powell and New York Fed President Williams below.

Amstad, Marlene, Simon M. Potter, and Robert W. Rich (2017), "The New York Fed Staff Underlying Inflation Gauge (UIG)," Economic Policy Review, Federal Reserve Bank of New York, No.23-2, pp.1-32.

Powell, Jerome H. (2025), "Economic Outlook," speech at the Greater Providence Chamber of Commerce 2025 Economic Outlook Luncheon, Warwick, Rhode Island.

Williams, John C. (2026), "Two Sides of a Coin," speech at the America's Credit Unions Governmental Affairs Conference 2026, Washington, DC.

[7] For speeches by senior BOE officials, see for example:

Taylor, Alan (2026), "Getting the Right Directions," speech at the Monetary Policy Mandate Conference at Norges Bank, Oslo.

[8] The ECB, for example, features ten indicators related to underlying inflation in its Economic Bulletin, a report, released eight times a year, that provides analysis on economic activity and prices.

[9] See the "Research Data" page under "Research and Studies" on the Bank of Japan's website.

[10] Hogen et al. (2015) estimate the relationship between core CPI indicators and the output gap. Looking at average patterns since 1990, they find that the linkage between the CPI excluding food and energy and the output gap is weak, and suggest that this may reflect that this index excludes food items, which are sensitive to the business cycle.

Hogen, Yoshihiko, Takuji Kawamoto, and Moe Nakahama (2015), "Core Inflation and the Business Cycle," Bank of Japan Review Series, No.2015-E-6.

[11] The trimmed mean is obtained by excluding the upper and lower tails (here, the 10 percent tails) of the price change distribution adjusted for item's weight in the CPI. The weighted median is the weighted average of the inflation rates of the items at around the 50th percentile point of the distribution. The mode is the inflation rate with the highest density in the distribution. For further details on these indicators, see Hogen et al. (2015) and Shiratsuka (2015).

Shiratsuka, Shigenori (2015), "Performance of Core Indicators of Japan's Consumer Price Index," Bank of Japan Review Series, No.2015-E-7.

[12] Given that measures such as the trimmed mean have fluctuated substantially during the phase of increasing prices since 2021, Ozaki et al. (2024) classify CPI items according to the magnitude of their price changes and extract low-volatility items that are less affected by temporary factors. While the year-on-year rate of increase in this indicator tends to be lower by construction, it serves as a tool for checking whether price increases are spreading across a wide range of items.

Ozaki, Tatsuya, Masahiro Jimbo, Tomoyuki Yagi, and Akihito Yoshii (2024), "Recent Developments in the Linkage between Wages and Prices," Bank of Japan Review Series, No.2024-E-2.

[13] The composite indexes of inflation expectations are obtained by extracting the common component, using principal component analysis, from firms' inflation expectations (*Tankan*), households' expectations (*Opinion Survey on the General Public's Views and Behavior*; qualitative and quantitative questions), and experts' expectations (QUICK Survey, Consensus Forecasts, and inflation swap rates). For firms, estimates based on Nakajima (2023a) are used for values up to 2013. In this paper, to check the robustness of the composite inflation expectations indicator, two alternative specifications are used for the long-run mean and variance of the common component: (1) one that draws only on experts' inflation expectations, which are regarded as having relatively little bias, and (2) one that uses the average across the three groups -- households, firms, and experts. For details of the calculation method, see Osada and Nakazawa (2024) and Nishino et al. (2016).

Nakajima, Jouchi (2023a), "Estimation of Firms' Inflation Expectations Using the Survey DI," IER Discussion Paper Series A.749, Hitotsubashi University.

Osada, Mitsuhiro, and Takashi Nakazawa (2024), "Assessing Measures of Inflation Expectations: A Term Structure and Forecasting Power Perspective," Bank of Japan Review Series, No.2024-E-4.

[14] For details on each model, see Nakajima (2023b) for Model 1, Rudd (2020) for Model 2, Nakamura et al. (2024) for Model 3, and Hirano et al. (2026) for Model 4.

Nakajima, Jouchi (2023b), "Estimating Trend Inflation in a Regime-switching Phillips Curve," IER Discussion Paper Series A.750, Hitotsubashi University.

Rudd, Jeremy B. (2020), "Underlying Inflation: Its Measurement and Significance," FEDS Notes, September 18.

Nakamura, Koji, Shogo Nakano, Mitsuhiro Osada, and Hiroki Yamamoto (2024), "What Caused the Pandemic-Era Inflation?: Application of the Bernanke-Blanchard Model to Japan," Bank of Japan Working Paper Series, No.24-E-1.

Hirano, Ryuichiro, Yutaro Takano, and Kosuke Takatomi (2026), "What Drives Trend Inflation in Japan?: A Trend-Cycle BVAR Decomposition Approach," Bank of Japan Working Paper Series, No.26-E-1.

[15] For more details on the interaction between wages and prices, see also Ozaki et al. (2024) and Ueno (2024). Ueno (2024) extracts the trend component of service price inflation.

Ueno, Yoichi (2024), "Linkage between Wage and Price Inflation in Japan," Bank of Japan Working Paper Series, No.24-E-7.

[16] For a discussion of the pass-through of higher import prices to domestic prices, see:

Bank of Japan (2026), Box 3, "Pass-Through of Import Price Increases to Domestic Prices," in the January 2026 *Outlook for Economic Activity and Prices*.

Yagi, Tomoyuki, Yoshiyuki Kurachi, Masato Takahashi, Kotone Yamada, and Hiroshi Kawata (2025), "Pass-through of Cost-push Pressures to Consumer Prices," *The Japanese Economic Review*, in press.