

## **Instability of Japanese Household Inflation Expectations During the Current Inflationary Phase**

This study analyzed Japanese household inflation expectations during the current inflationary phase and concluded that they are relatively unstable compared with those of European and U.S. households. Japanese household inflation expectations show certain unique features. First, they consistently move above the Consumer Price Index (CPI) and closely follow the movement of CPI, especially in the case of one-year-ahead expectations. Second, during the current inflationary phase, inflation expectations suddenly became unstable, since they rose to +10 percent for one-year-ahead expectations and +5 percent for five-years-ahead expectations. Both expectations exceeded the actual CPI at the time. Third, although the peak level of CPI was lower in Japan than in the U.S. and European countries, Japanese inflation expectations were significantly higher than other countries during the current inflationary phase. The contrast is especially remarkable in the case of five-years-ahead expectations, where those of the U.S. and European countries were barely affected by the rises in CPI. Further analysis on the stability of Japanese inflation expectations in different economic circumstances is required, such as an examination of the mechanisms behind household inflation perceptions, since these are closely related to inflation expectations.

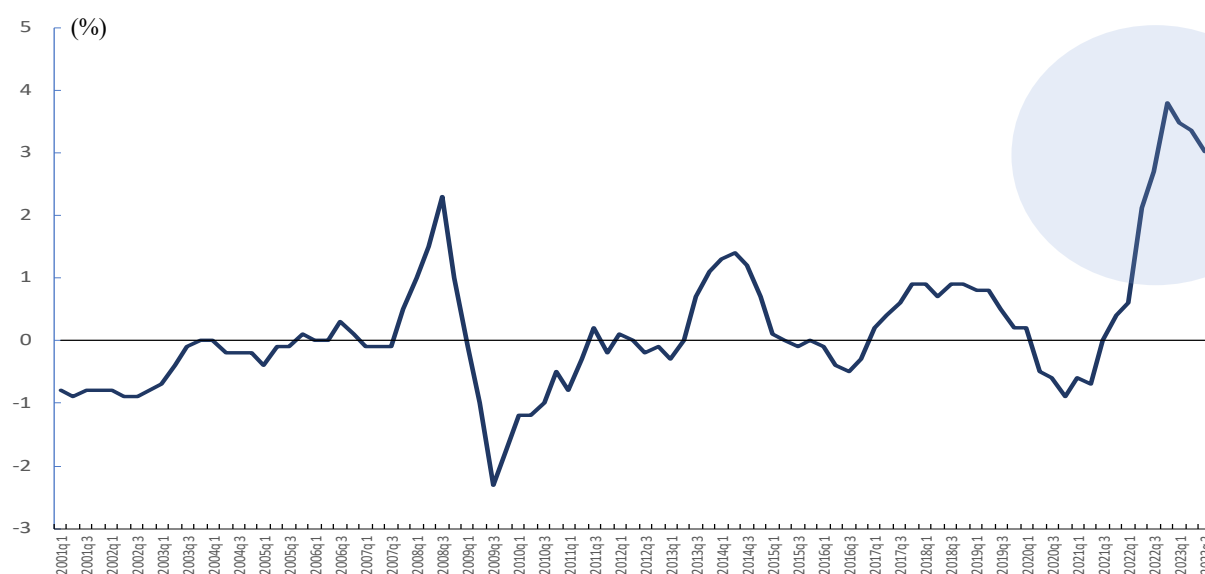
\*.....infotain.reseach@gmail.com.

## 1. Introduction

The Japanese economy has experienced a period of long-term low inflation. During this period, the Consumer Price Index (CPI), excluding perishables and the effects of increases in consumption tax, has hovered around the minus 2 to plus 2 percent range. This low-inflation phase abruptly ended at the beginning of 2021 as the corporate sector started to pass on the jump in import goods prices to the prices of their own products. In January 2023, CPI peaked at +4.1 percent on a year-on-year basis and remained high at +2.8 percent as of October 2023 (Figure 1).

The CPI is projected to remain above +2 percent on a year-on-year basis, reflecting the rise in the corporate sector's cost-push price rises and surges in crude oil prices. The Bank of Japan projects CPI to remain at a relatively high rate of +2.8 percent in both the fiscal years 2023 and 2024.<sup>1</sup>

(Figure 1) CPI (excluding perishables and the increase in consumption rate)



(Source) Statistics Bureau of Japan

Such increases in the inflation rate have caused various economic problems in Japan, while providing a unique opportunity to analyze household inflation expectations. This study analyzed Japanese household inflation expectations and compared them with those of European and U.S. households during the current inflationary phase.

The results of our analysis show that Japanese household expectations of inflation are unstable. This conclusion is supported by the following observations:

---

<sup>1</sup> Bank of Japan (2023a).

First, before the current inflationary phase, they moved around the +2 to +3 percent range, which was higher but more stable than CPI. In addition, the five-years-ahead expectations were more stable than the one-year-ahead expectations. Second, during the current inflationary phase, inflation expectations suddenly became unstable as they rose to +10 percent for one-year-ahead expectations and +5 percent for five-years-ahead expectations, much higher than the actual CPI at that time. Third, compared with the U.S. and European countries, Japanese expectations became much more unstable than their expectations, especially for the five-years-ahead inflation expectations. This contrast is astonishing, considering that the peak levels of the U.S. and European CPI (+8 to 10 percent) were much higher than those of Japan.

The remainder of this paper is organized as follows: Section 2 focuses on inflation expectations, which have consistently moved above CPI and suddenly became unstable during the current inflationary phase. Section 3 demonstrates that inflation expectations in Japan are more unstable than in the U.S. and European areas. Section 4 tests statistically whether household inflation expectations contain forward-looking information. Section 5 concludes the paper.

## **2. Household Inflation Perceptions**

The Bank of Japan conducts the “Opinion Survey” on a quarterly basis, and it includes household inflation perceptions and expectations.<sup>2</sup> The survey asks about household perceptions of inflation in two ways. One is by choosing from five categories. The other asks for direct changes in the price level compared to the previous year. For example, from the September 2023 survey, 68.4 percent of households responded that “present price levels have gone up significantly” and the median value<sup>3</sup> of “changes in price levels compared with one year ago” was +10 percent. This value is significantly higher than the actual CPI at the time, which was +2.8 percent.

Figure 2 shows the time-series relationship between changes in CPI and inflation perceptions. It exhibits several distinctive characteristics. First, inflation perceptions have been consistently higher than changes in CPI. Second, inflation perceptions closely follow CPI movements. Third, the gap between the two variables widens when CPI increases, including during the current inflationary phase. Fourth, inflation perceptions remain at zero or above, even when CPI falls into negative territories.

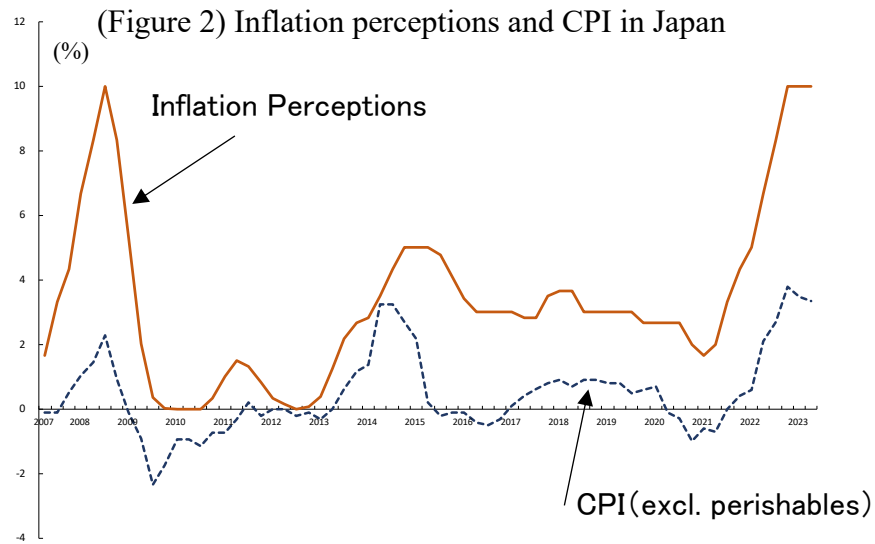
The first feature of inflation perceptions mentioned above, that is, inflation perceptions have

---

<sup>2</sup> Bank of Japan(2023b).

<sup>3</sup> Median is the middle value of a series of observation arranged in order of magnitude.

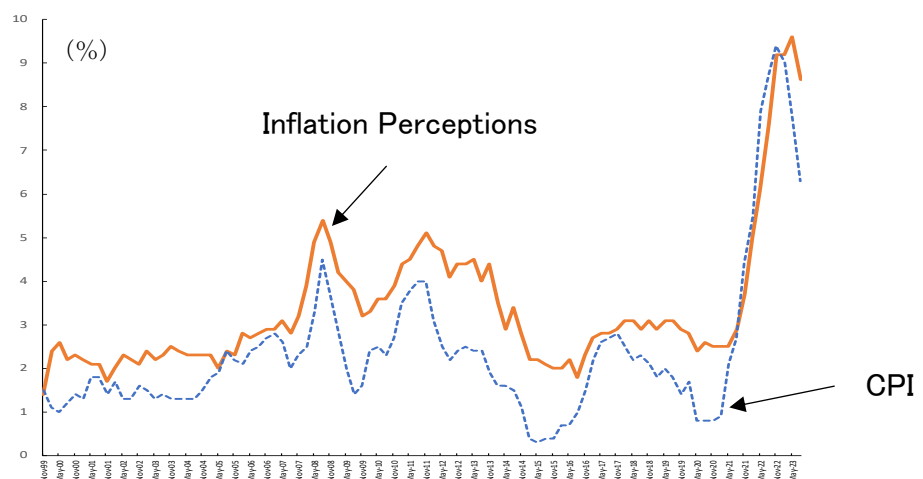
been consistently higher than the changes in CPI, caused economists inside and out of Japan to question the reliability of inflation perceptions. Therefore, only small number of studies have been conducted in this field. In fact, a paper published by the Bank of Japan in 2022 pointed out that although the reasons behind the gap between CPI and inflation perceptions have not become apparent, only a few studies have tried to explain the cause of the gap.<sup>4</sup>



(Source) Statistics Bureau of Japan for CPI, Bank of Japan (2023b) for inflation perceptions

Figures 3 and 4 show that inflation perceptions have been higher than the actual price index, not only in Japan, but also in the U.K. and Eurozone.

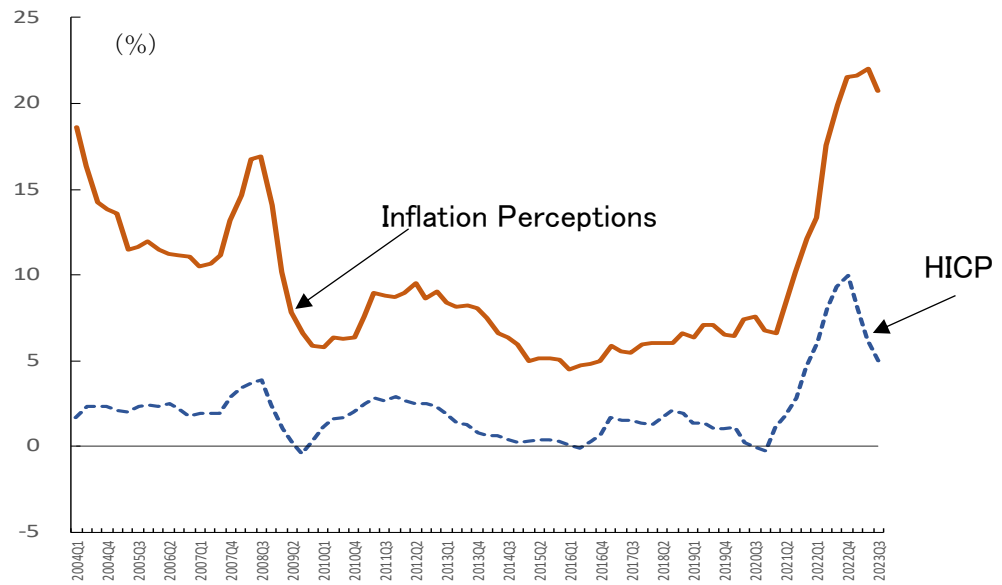
(Figure 3): Inflation Perceptions and CPI in U.K. Households



(Source) CPI from Office for National Statistics, inflation perception from BOE “Inflation Attitude Survey”

<sup>4</sup> Bank of Japan (2022). Cabinet Office (2013) refer the same point.

(Figure 4) Inflation Perceptions and CPI in the Eurozone



(Source) HICP from European Commission, Inflation Perceptions from European Commission’s Harmonized Consumer Survey

Both U.K. and Eurozone households share the same features as those of Japan. First, inflation perceptions constantly exceed CPI (HICP), but closely follow CPI (HICP). Second, in the Eurozone, the gap between inflation perceptions and HICP widens during inflationary periods. Third, inflation perceptions remain at zero percent or higher even when CPI (HICP) falls into negative territory.<sup>5</sup> The first point mentioned above, where inflation perceptions constantly exceed CPI, is often called the “inflation perception conundrum” and has been observed in many developed countries, including Sweden, Italy, and Canada. However, research activities to analyze inflation perceptions are scarce, as studies in this field only began in the 2000s.<sup>6</sup>

<sup>5</sup> In case of the U.S., Michigan University has conducted research on inflation expectations, but not on inflation perceptions. In February 2016, FRB (2016) committed a special survey on inflation perceptions by adding questions to the regular survey. The survey results showed that inflation perceptions for the past year were +1.7 percent, while corresponding CPI was +1.3%. Similarly, inflation perceptions for the past 5 to 10 years were +2.5 percent while corresponding CPI was +1.8%. These results indicate that even in the U.S., the inflation perceptions conundrum holds.

<sup>6</sup> FRB (2001), Central Bank of Ireland (2020).

### 3. Inflation Expectations in Japanese Households Are Unstable Compared to Those of the U.S. and European Countries

#### 3.1. Japanese Household Inflation Expectations

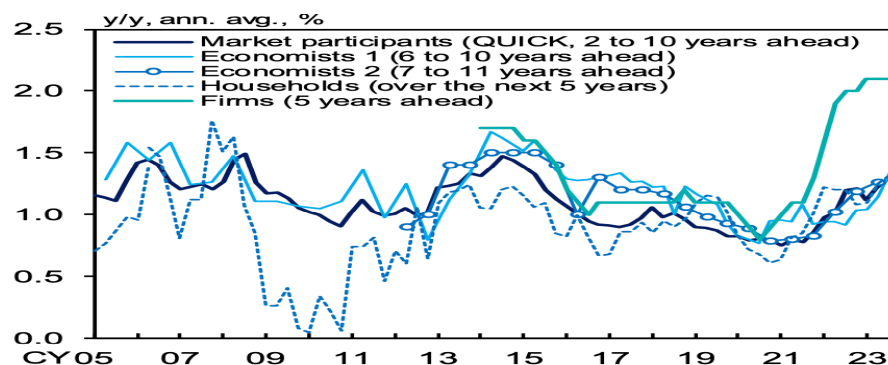
While research on inflation perceptions is relatively scarce, inflation expectations have attracted the attention of academics and central bankers. This marked contrast arises because movements in inflation expectations greatly influence aggregate demand, such as personal consumption and corporate fixed investments, through changes in real interest rates. Real interest rates are defined as nominal interest rates minus expected inflation. If this rises, the activities of households and the corporate sector fall, and vice versa.

Inflation expectations have attracted academic attention since the 1980s, and particularly since the global financial crisis. This is because monetary policies in major developed countries maintained nominal interest rates at zero or in the negative range for a substantial period, and real interest became closely linked to movements in inflation expectations.

Since inflation expectations are not directly observable variables, professional forecasts of inflation expectations, such as surveys of economists and people engaged in financial markets or inflation expectations derived from yields on inflation-linked bonds, are often used as alternative variables (Figure 5). As of October 2023, these alternative figures ranged between 1 and 1.5 percent.

When the inflation expectations are used as a variable in macroeconomic models, they often assume rational expectations (people act according to the assumption that they know all the information about the macroeconomic variables) or adaptive expectations (people rely on past inflation rates as a proxy for future inflation rates).

(Figure 5) Expected Inflation in Japan



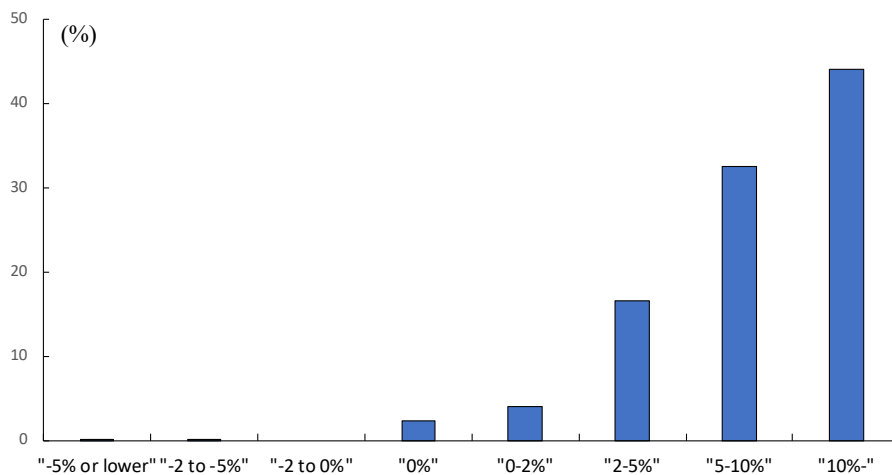
Sources: Bank of Japan; QUICK, "QUICK Monthly Market Survey <Bonds>"; JCER, "ESP Forecast"; Consensus Economics Inc., "Consensus Forecasts."  
 Notes: 1. "Economists 1" shows the forecasts of economists in the *Consensus Forecasts*.  
 2. Figures for households are from the *Opinion Survey on the General Public's Views and Behavior*, estimated using the modified Carlson-Parkin method for a 5-choice question.  
 3. Figures for firms show the inflation outlook of enterprises for general prices (all industries and enterprises, average) in the *Tankan*.

(Source) Bank of Japan (2023a)

As for inflation expectations of Japanese households, the Bank of Japan’s “Opinion Survey” is conducted on a quarterly basis. The latest survey results (September 2023) show that the most common choice among five categories for one-year-ahead inflation expectations was “prices will go up significantly,” and that the median value was +10 percent, which was much higher than the Bank’s projection of +2.8% for fiscal 2023. In addition, the survey indicated that the median value for five-years-ahead inflation expectations was +5 percent, which was much higher than the professional economists’ forecast of +1 to 2 percent. These results have led economists to conclude that the household inflation expectations were too high to “justify” or “impractical to use in economic analysis.”<sup>7</sup>

Household inflation expectations were surveyed using the Cabinet Office’s “Consumer Confidence Survey.” It asked about respondents’ inflation expectations by offering choices from seven categories (Figure 6-2). The distribution of inflation expectations is similar to that found in the Bank of Japan’s survey. The most common choice was that “prices will go up greater or equal to five percent.” The survey does not directly ask for the numerical values of inflation expectations. However, calculating a weighted mean yielded +4.7 percent, which was lower than that of the Bank of Japan’s survey, but much higher than the professional survey results.

(Figure 6) Japanese Household Inflation Expectations (one-year-ahead)  
6-1 “Opinion Survey” by the Bank of Japan (Sept. 2023)



<sup>7</sup> The Bank of Japan’s “Opinion Survey” asks inflation expectations by choosing from five categories. Based on the distributions of the responses, it is possible to calculate a numerical value of inflation expectation under a certain assumption. However, expectation values generated by such statical procedures are quite often much lower than the value from asking directly about inflation expectations. This inconsistency suggest that statistical procedures or assumptions need further review.

6-2. "Consumer Confidence Survey" by the Cabinet Office (Oct. 2023)

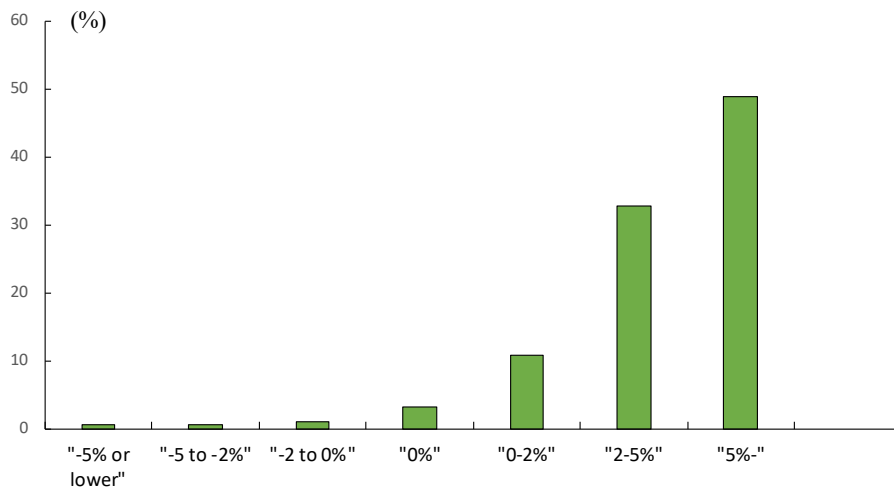
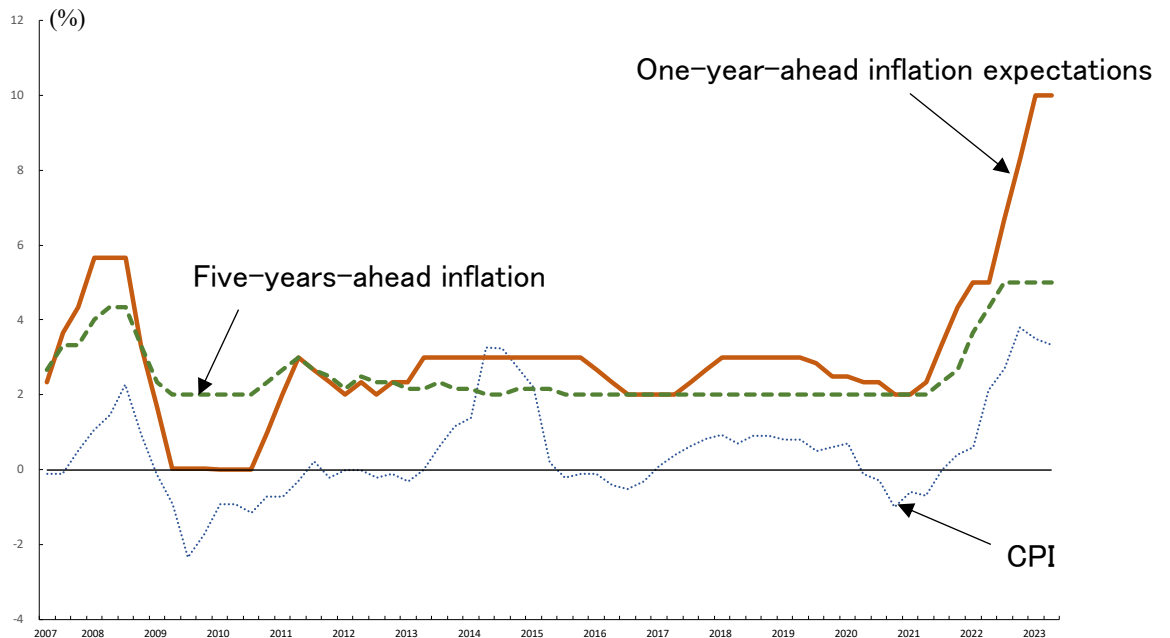


Figure 7 indicates one- and five-years-ahead inflation expectations based on the Bank of Japan's survey, as well as the changes in CPI.

(Figure 7) Japanese Household Inflation Expectations (one and five years ahead)



(Source) Statistics Bureau of Japan for CPI, Bank of Japan (2023b) for inflation expectations



Comparing Figure 7 with Figure 2, movements in inflation expectations are more stable than those in inflation perceptions. In addition, both variables exceed the CPI increase rates in almost all observation periods.<sup>8</sup>

The features of one-year-ahead inflation expectations are as follows: First, inflation expectations did not increase with inflation perceptions during the 2008 inflation period. Second, before the current inflationary period, inflation expectations were stable, ranging between approximately 2 to 3 percent. Third, during the current inflationary phase, inflation expectations increased 10 percent, similar to inflation perceptions.

Next, the five-years-ahead inflation expectations also constantly exceed the CPI increasing rate, except during the consumption tax increase period. Before the current inflationary phase, five-year expectations moved moderately by approximately 2 percent and were more stable than one-year-ahead inflation expectations. However, during the current inflationary phase, five-year expectations increased swiftly to the 5 percent level and exceeded actual CPI. This contradicts the basic feature of five-years-ahead inflation expectations, which should reflect the long-run average of inflation rates rather than short-term fluctuations in actual inflation. In other words, Japanese household inflation expectations have not been anchored firmly.

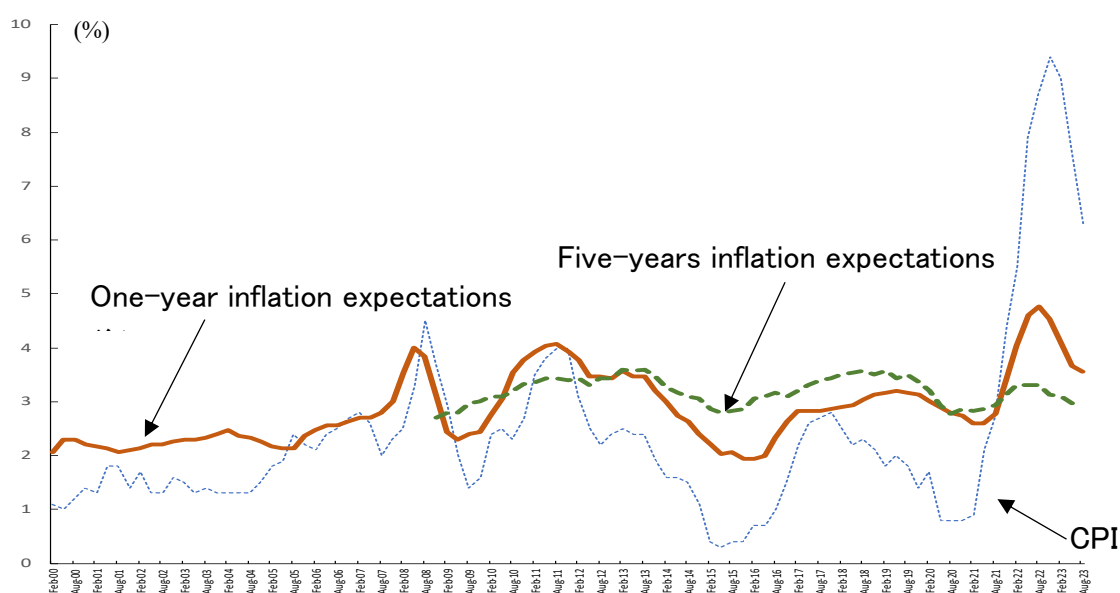
### **3.2. Comparing Japanese Household Inflation Expectations with Those of U.S. and European Households**

In this subsection, the inflation expectations of Japanese households are compared with those of U.S. and European households. Figure 8 shows one- and five-years-ahead inflation expectations of U.K. households. Even in the U.K., inflation expectations consistently exceed CPI. However, in contrast to Japanese households, five-years-ahead expectations exhibit only minor responses to changes in the CPI. In addition, the peak level of one-year-ahead expectations was approximately 4 percent, which was about half of the CPI increase. Since U.K. CPI rose to about 10 percent year-on-year, which was about double that of Japan, the inflation expectations of U.K. households were much more stable than those of Japanese households.

---

<sup>8</sup> In Figure 7, inflation expectations in 2014 were lower than the actual CPI. This is due to the effect of a consumption tax rate increase at the time.

(Figure 8) The U.K. Household Inflation Expectations (one and five years ahead)



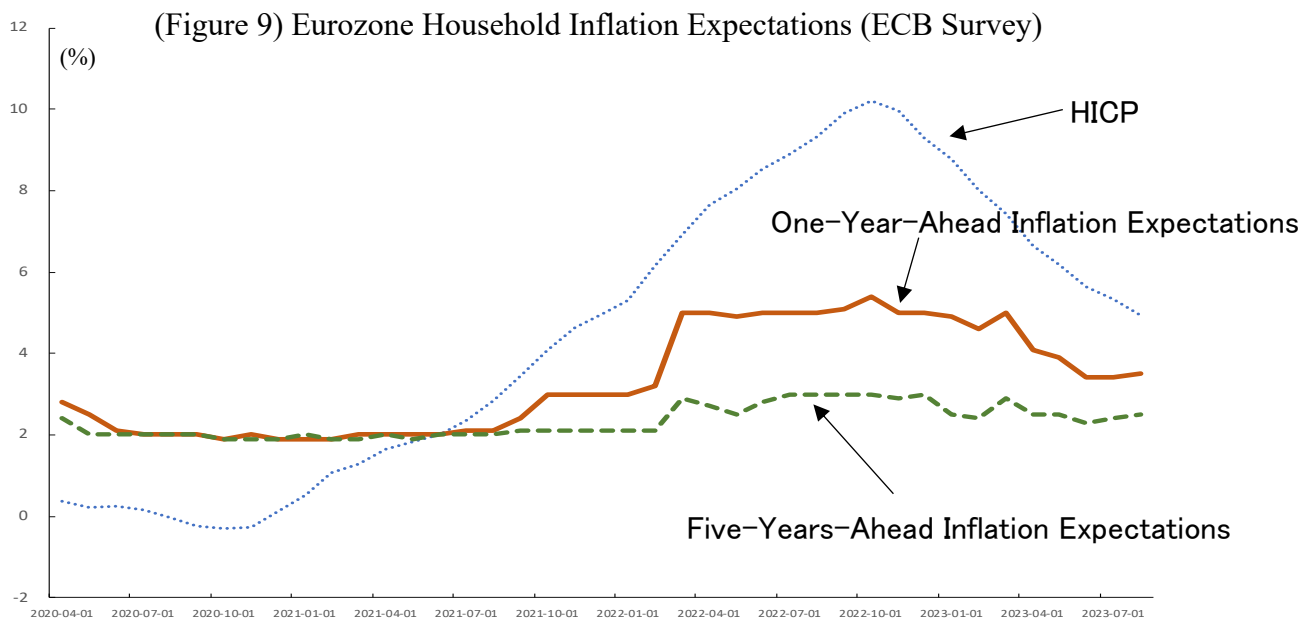
(Source) CPI from Office for National Statistics, inflation expectations from BOE “Inflation Attitude Survey”

Two different surveys are available regarding the inflation expectations of Eurozone households. A survey conducted by the European Central Bank (ECB) asked for both one- and five-years-ahead inflation expectations, although the survey only went back as far as 2020 (Figure 9).<sup>9</sup> Another survey conducted by the European Commission offers a long observation period; however, it lacks long-term inflation expectations (Figure 10). Bearing in mind such statistical limitations, the ECB survey during the current inflationary phase showed that, although HICP moved up to about 10 percent, the increase in the one-year-ahead expectations was much more modest, and their peak level was only about 4 percent. In addition, five-year expectations did not seem to be significantly influenced by the surge in HICP. Both one- and five-years expectations are much more stable than inflation perceptions, jumping to about 25 percent at the peak.

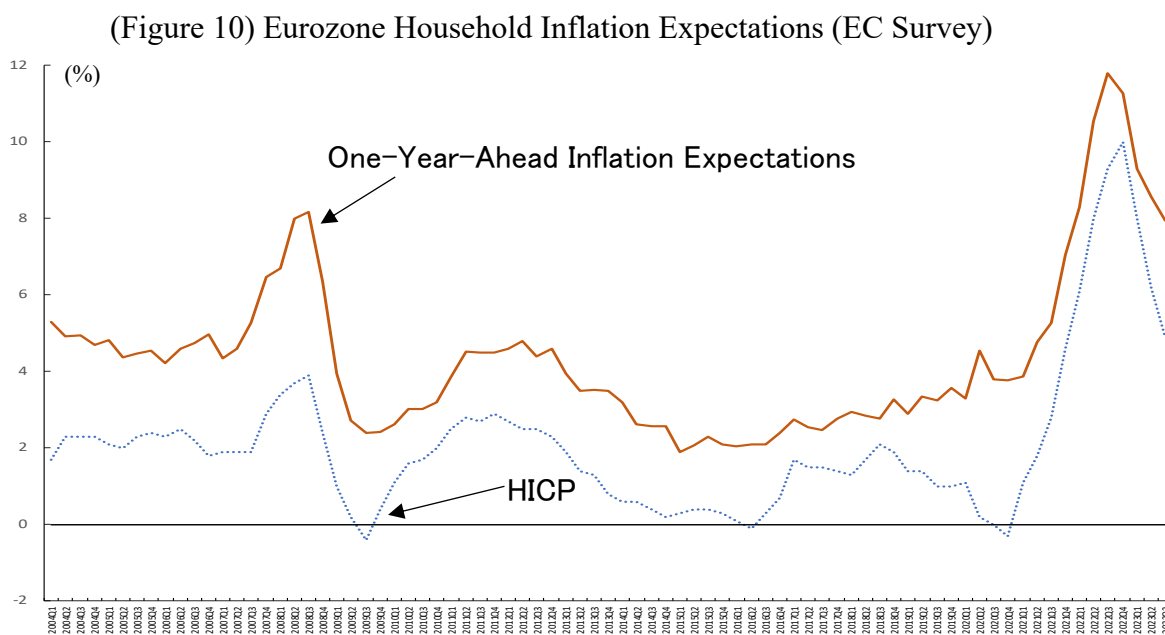
Figure 10 shows a survey conducted by the European Committee. The one-year-ahead inflation expectations go back to 2004. As with the ECB survey, inflation expectations consistently exceed CPI and follow it more closely than inflation perceptions. However, in the current inflationary phase, inflation expectations from the two surveys diverge significantly. For

<sup>9</sup> According to by D’Ancuto et al. (2019), until recently, the ECB was reluctant to publish household inflation expectations, since the high expectation results might cause damage to the reliability of the central bank.

example, the peak level of inflation expectations in the ECB survey was 5 percent, whereas that in the European Committee survey was 12 percent. Although it is well known that differences in survey methods, such as how questionnaires and answers are provided, affect survey results significantly, the gap between the two surveys is too large to justify such factors alone.



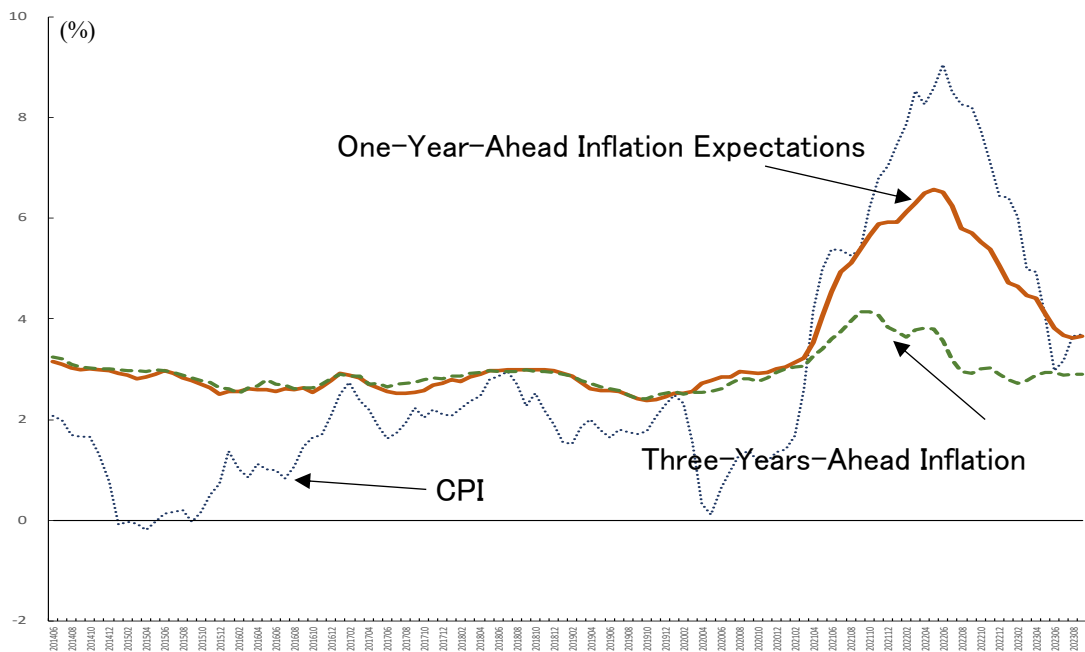
(Source) HICP from European Commission, Inflation expectations from the ECB’s Consumer Expectations Survey.



(Source) HICP from European Commission, inflation expectations from the European Commission’s “Harmonized Consumer Survey”

Regarding U.S. household inflation expectations, surveys conducted by the Federal Reserve Bank of New York (FRBNY) and Michigan University are considered reliable. The FRBNY survey, shown in Figure 11, has the following characteristics. First, before the current inflationary phase, even one-year-ahead inflation expectations were quite stable at around 3 percent. Second, during the same period, the levels of one- and three-year-ahead inflation expectations were remarkably close to one another. Third, during the current inflationary phase, three-year-ahead expectations swiftly returned to a 3 percent level in the latter half of 2023, while one-year-ahead expectations rose to 6 percent. Overall, U.S. household inflation expectations seem to be much more stable than those of Japan.

(Figure 11) Inflation Expectations of U.S. Households (FRBNY survey).

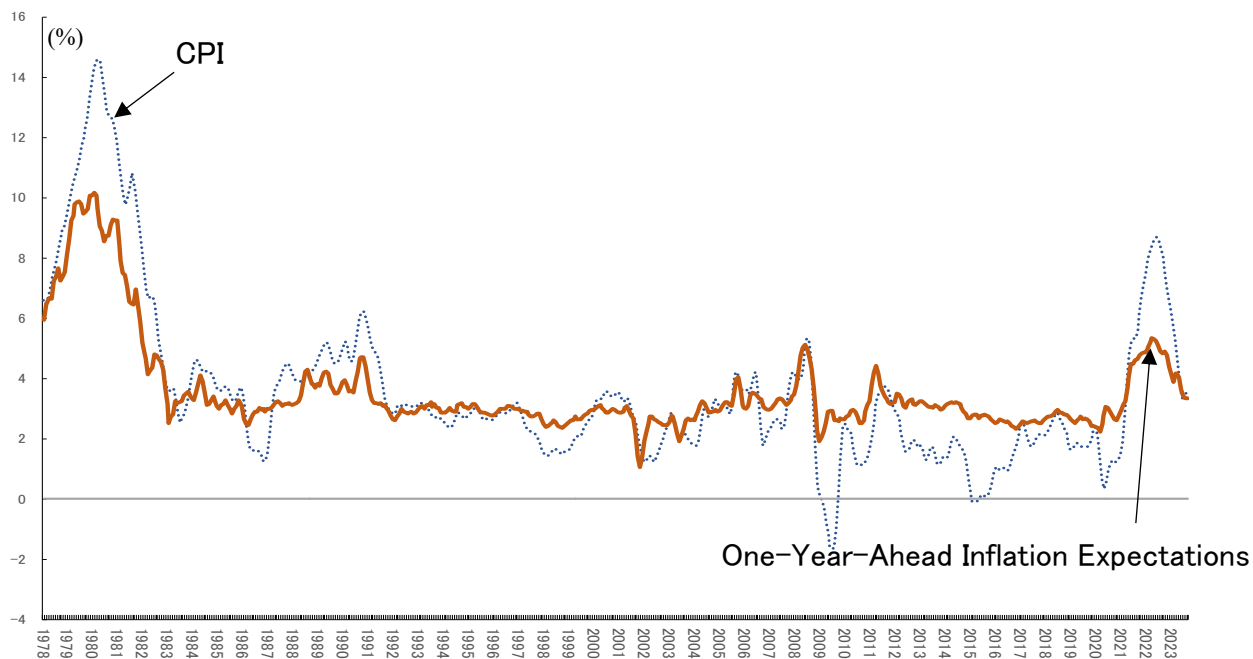


(Source) CPI from the Bureau of Labor Statistics, inflation expectations from the FRBNY “Surveys of Consumer Expectations.”

Figure 12 illustrates the results of the Michigan University survey. As the survey goes back to 1978 on a monthly basis, it covers the famous “great inflation” period of the latter half of 1970s. During this period, the inflation expectations of U.S. households increased to an astonishingly high level of about 10 percent, while actual CPI rose to about 15 percent at the time. Then, inflation subdued in the first half of the 1980s, as did inflation expectations, which hovered around 2–3 percent. The exceptions were the pre-Great Recession period and the current inflationary phase. Comparing these two periods, the peak level of inflation expectations was approximately the same, whereas the actual CPI increased more during the current phase. This implies that inflation expectations were more stable during the current period. The differences in

survey methods contributed to the fact that peak inflation expectation levels during the current inflation phase were lower than those of the FRBNY.<sup>10</sup>

(Figure 12) Inflation Expectations of U.S. Households (Michigan University Survey)



(Source) CPI from the Bureau of Labor Statistics, inflation expectations from the Survey of Consumers by the Michigan University

A comparison of the inflation expectations in the three countries and regions strongly suggests that Japanese household inflation expectations show much lower stability than those in the other two countries and regions. This conclusion follows from the following observations during the current inflationary phase. First, it was only in Japan and the Eurozone (and only by the ECB survey) that one-year inflation expectations exceeded the actual CPI. Second, only the Japanese long-term inflation expectations overshoot changes in CPI. Third, the peak level of long-term expectations in Japan jumped up to 5 percent during the current inflationary phase, which was higher than in the other two countries/regions, where CPI rose significantly more than in Japan.

<sup>10</sup> The Michigan University survey adapted the telephone-survey method. When the respondents' answer of their inflation expectations was either below minus 5 percent or more than plus 5 percent, the procedures required the examiner to reaffirm the answer by asking "Do you really think so?" This procedure might have resulted in less frequent outliers, leading to relatively smooth movement of inflation expectations. For more details see Bank of Japan (2008).

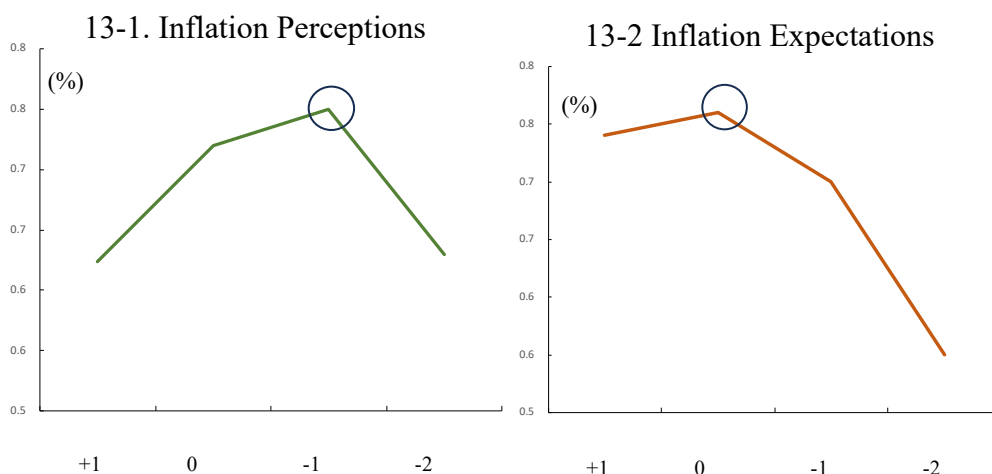
#### 4. Forward-looking Information Contained in Household Inflation Expectations

Recent studies suggest that inflation perceptions are the key determinants of inflation expectations. The Infotainment Research Center conducted another study to examine the relationship between these two factors and the factors determining inflation perceptions. This section examines whether inflation expectations contain forward-looking information by following the ECB's analysis.

The statistical method employed by the ECB calculates the time difference correlations between the CPI and inflation perceptions/expectations and identifies the peak correlation period for each variable. The ECB's analysis indicated that, in the Eurozone, although the inflation perceptions lagged behind the movement in CPI by three months, the lag in inflation expectations was only one month. Judging from the result, the ECB study concludes that inflation expectations contain "limited but useful forward-looking information."<sup>11</sup>

The results of applying the ECB method to the Japanese data are shown in Figure 13. The peak of the inflation expectations correlation had no lag against the CPI, while inflation perceptions lagged behind CPI by three months. This result indicates that similar to the ECB analysis, Japanese household inflation expectations contain limited but useful forward-looking information.

(Figure 13) The Time Difference Correlation between CPI and Inflation Perceptions/Expectations in Japan



(Source) CPI from Statistic Bureau of Japan, inflation perceptions/expectations from Bank of Japan (2023b).

The measurement period is from June 2007 to June 2023 on a quarterly basis

<sup>11</sup> ECB (2016), ECB (2021)

## **5. Conclusion**

This study analyzed Japanese household inflation perceptions and expectations and compared them with those of European and U.S. households during the current inflationary phase. From the observations below, we conclude that Japanese household inflation expectations are unstable.

First, during the current inflationary phase, inflation expectations jumped to a level well beyond the CPI's increasing rate. In particular, both one-year-ahead and five-years-ahead inflation expectations exceeded the CPI rate, diverging significantly from the previous trend.

Second, comparing such developments with those of the U.S. and the Eurozone, although the peak increasing rates of the CPI were higher in those countries, their inflation expectations were more stable than those of Japan. The contrast is more distinctive in the case of five-years-ahead expectations, as their expectations are barely affected by the CPI hike.

Further analysis of the stability of inflation expectations under different economic circumstances and comparisons among countries is required. One area to examine is the mechanism behind household inflation perceptions, as inflation expectations seem to be significantly affected by inflation perception movements. Inflation perceptions appear to have significantly affected heightened inflation expectations during the current inflation phase. As previously mentioned, the Infotainment Research Center prepared a new study based on this view.

## **(References)**

- Bank of Japan (2008) “About the inflation expectations” BOJ review series 2008 J-15, T. Sekine, K. Yoshimura, C. Wada, December 2008, (available only in Japanese)
- (2022) “Households’ perceived inflation and CPI inflation: A case of Japan”  
Y. Takahashi, Y. Tamanyu, Bank of Japan WP series No.22-J-2
- (2023a) “Outlook of Economic Activity and Prices” October 2023, Bank of Japan
- (2023b) “Opinion Survey” September 2023, Bank of Japan
- Cabinet Office (2013) “Disagreement and Biases in Inflation Expectations of Japanese Households,”  
ESRI Discussion Paper Series No.300, Y. Ueno, R. Namba
- Central Bank of Ireland (2022) “What Drives Consumers’ Inflation Perceptions in the Euro Area?”  
Economic Letter Vol. 2022, No.6
- Consumer Affairs Agency (2019) “An Analysis of inflation Expectation Using “Price Monitoring  
Survey in Japan” May 2019
- D’Ancuto et al. (2019) “Exposure to Daily Price Changes and Inflation Expectations,” E. D’Ancuto, U.  
Malmendier, J. Ospia, M. Weber, NBER Working Paper 26273, September 2019
- Demarks National Bank (2019) “Revisiting the Inflation Perception Conundrum,” K. Ablidgen, A.  
Kuchier
- ECB (2016) “EU Consumers’ quantitative inflation perceptions and expectations: An Evaluation”  
Discussion Paper 38, November 2016
- (2021) “Making Sense of Consumers’ Inflation Perceptions and Expectations—The Role of  
(un)certainly” A. Meyler, L. Reiche, ECB Economic Bulletin February 2021
- FRB (2001) “The Demographics of Inflation Opinion Surveys” Federal Reserve Bank of Cleveland,  
October 2001
- (2016) “Inflation Perceptions and Inflation Expectations” A. Detmister, D. Lebow, E. Peneva,  
FED Notes December 5, 2016
- Statistics Bureau of Japan “Consumer Price Index”