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Firms' Recent Price-Setting Behavior for Services Prices in the Consumer Prices

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In the consumer prices for services, labor costs account for a high share of output prices. With the strengthening linkage between wages and prices, services prices are an important factor for increases in underlying CPI inflation. Services prices in Japan remained at around 0 percent on a year-on-year basis and extremely sticky. Through an analysis of firms' recent behavior, it is clear that their price-setting behavior has begun to change, as shown by a rapid increase in the rate of wage increases in the annual spring labor-management wage negotiations for two consecutive years and the "beginning-of-the-period price hikes" seen in many services items in spring 2024. Going forward, it is important to continue to examine from a broad perspective whether these changes in firms' price-setting behavior will spread further and whether underlying inflation will rise steadily.

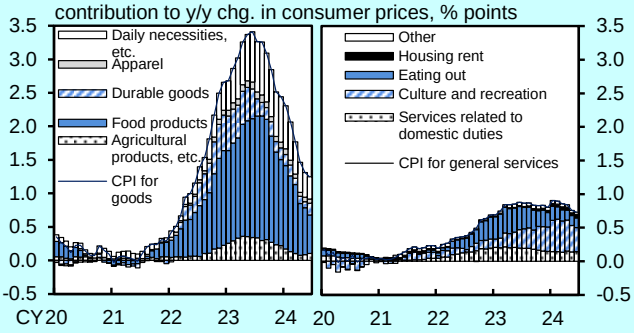
Introduction

The year-on-year rate of increase in the consumer price index (CPI, all items less fresh food and energy) had accelerated significantly through the middle of 2023, mainly in prices of goods, reflecting a significant rise in import prices since 2021 (Chart 1). As upward pressure on costs led by past rises in import prices has been decreasing recently, careful examination of whether the drivers of price increase will shift from the cost-push pressure previously seen to ones based on the strengthened linkage between wages and prices is necessary.[1]

From the perspective of how wages that continue to increase moderately will be reflected in price developments, developments in services prices — where labor costs account for a high share of output prices — are particularly important. Fluctuations in the year-on-year rate of change in services prices have been smaller than those of goods prices and have been more or less flat on the whole recently. Nevertheless, the decomposition shows that, while the rate of increase in items that are susceptible to changes in import prices (such as dining out and services related to housing repairs and maintenance) has been on a decelerating trend, in items susceptible to changes in labor costs (such as culture and recreation) it has been increasing gradually.

This article summarizes firms' recent price-setting behavior, focusing mainly on services prices. First, we examine what changes services prices, taking into account an analysis of cost structures. Next, we examine price revisions in spring 2024, considering the fact that many price revisions take place at the beginning of each period, such as the beginning of a fiscal year. Then finally we summarize changes in firms' recent price-setting behavior.

[Chart 1] CPIs for Goods and Services



Source: Ministry of Internal Affairs and Communications.

Notes: 1. Figures for goods exclude petroleum products. Figures for "agricultural products, etc." include aquatic and livestock products.

2. Figures for services related to domestic duties include services related to housing repairs and maintenance.

3. Figures are the contribution to changes in the CPI (less fresh food and energy). Figures are staff estimates and exclude mobile phone charges and the effects of the consumption tax hike, policies concerning the provision of free education, and travel subsidy programs.

What factors are behind changes in services prices?

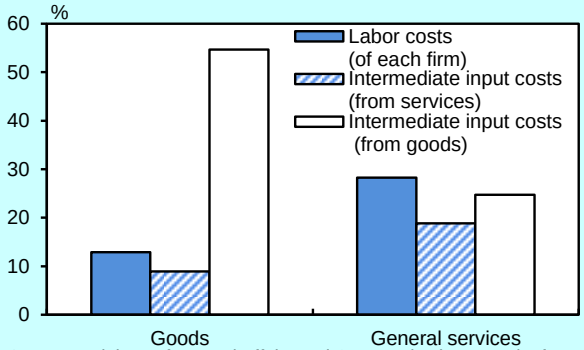
To examine the factors behind fluctuations in the price

of goods and services, we attempt to decompose costs of major items consisting of the CPI into labor costs of each firm and intermediate input costs using the input-output tables.[2, 3] Intermediate input costs are further decomposed into those of goods, such as raw materials, and those of services, such as transportation costs. Conceptually, in the supply chain, labor costs of firms in the upstream (from each firm) are included in the intermediate input costs.

A look at the empirical results shows that, in goods prices, the share of intermediate input costs from goods is high, suggesting that the price is highly susceptible to changes such as increases in import prices (Chart 2). In contrast, for services prices, in addition to the high share of labor costs, the effects of services items in the upstream and midstream of the supply chain are profound and the share of intermediate input costs from services is high. As the share of labor costs is significant in costs deriving from services, it is clear that services prices are susceptible to fluctuations in labor costs.

Moreover, an analysis of factors behind changes in individual items of the consumer prices using a quantitative method (sparse estimation) suggests a similar picture.[4] In goods, food products are highly susceptible to changes in import prices. In services, "eating out" is susceptible to changes in wage costs of each firm and other services prices such as transportation costs, as well as import prices (Chart 3). In services, "culture and recreation," which has a higher share in labor costs, is susceptible to wage costs of each firm and transportation costs. Therefore, to realize price increases across a wide range of items, it is important that the spillover from wages to prices is intensified especially in service prices.

[Chart 2] Cost Structure of Output Prices



Sources: Ministry of Internal Affairs and Communications; Bank of Japan.

Notes: 1. Figures are based on the decomposition of output prices, which correspond to consumer prices, into intermediate input costs, labor costs, operating surplus,etc., using the *2015 Input-Output Tables for Japan*. Intermediate input costs (from goods/services) are aggregated from the sectors covered by Corporate Goods Price Index (CGPI) and Services Producer Price Index (SPPI), respectively.

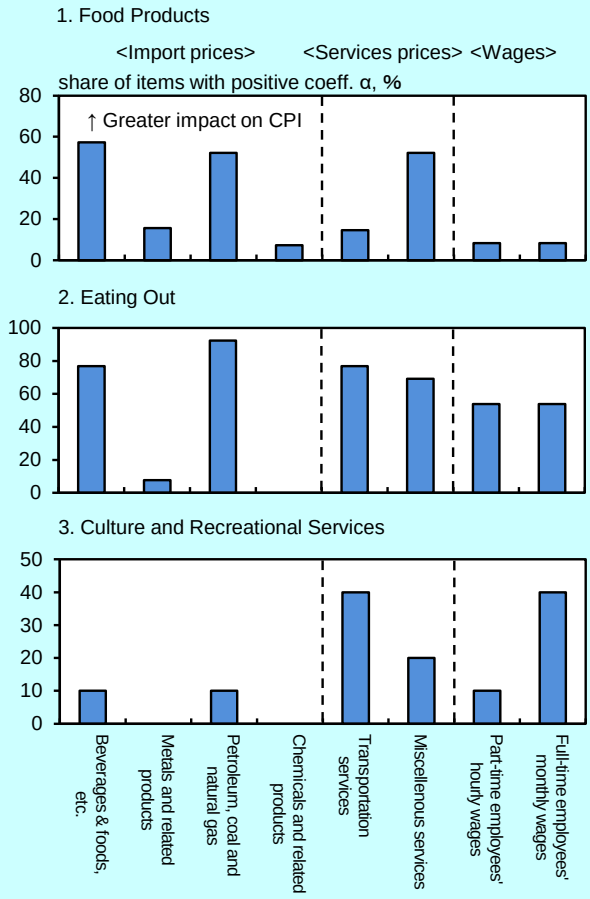
2. Figures for goods exclude fuel retailing, electricity, and gas, etc. Those for general services exclude housing rent.

[Chart 3] Factors in Services Price Developments: Sparse Estimation

Prices of individual CPI items（y/y % chg.）

$= \sum \alpha_i \times$ Prices of input indicators $(y/y\ \%\ \text{chg.})_i$

Prices of input indicators： Import Prices・Services Prices・Wages (Horizontal axis in the figure below)



Sources: Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare; Bank of Japan.

Notes: 1. Sparse regression was conducted using the year-on-year rate of change in the CPI for each item in the categories from 1 to 3 as the dependent variable and prices of input indicators shown in the horizontal axis in the figure (1 to 4 quarter lags) as independent variables. Figures show the percent of items with positive coefficient in each category from 1 to 3. The estimation period is 1991/Q2-2023/Q4.

2. Major groups of import price index (on a yen basis) and SPPI are used for import prices and services prices.

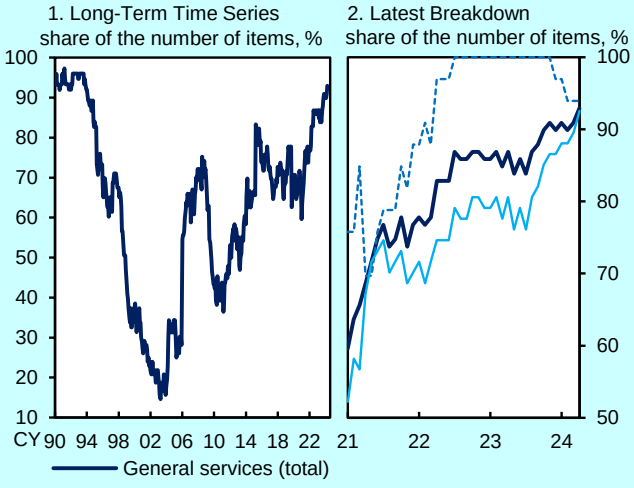
Developments in the "Beginning-of-the-Period Price Hikes"

Services prices tend to be revised in April and October and these are called the "beginning-of-the-period price hikes."[5] In Japan, the year-on-year rate of change for both wages and prices had hovered at close to 0 percent for a long time. That being said, firms' behavior has begun to change, as shown by, for example, a rapid increase in the rate of wage increases for two consecutive years at the annual spring labor-management wage negotiations. Developments in

services prices in April 2024 warranted attention as they were considered an indication of the outlook for firms' wage- and price-setting behavior. The following takes a closer look at services price revisions in April 2024 and shows the spread of price changes that was observed.

By individual item, there were widespread moves to pass on higher labor costs to selling prices, particularly for items that are susceptible to labor costs, such as lesson fees for English conversation and other schools (services related to culture and recreation), tutorial fees for junior high and high school students (services related to education), charges for domestic help and automotive maintenance charges (services related to domestic duties), and charges for massage (services related to medical care and welfare). Also, a calculation of the shares for items whose price indices increased or decreased from a year earlier shows that price indices for most items had increased from the year earlier and that the level of the ratio of increased items is akin to that of the early 1990s (Chart 4). It is evident that moves to raise prices are particularly accelerating in sectors such as culture and recreation, etc.

[Chart 4] Share of Increasing Items in General Services Prices

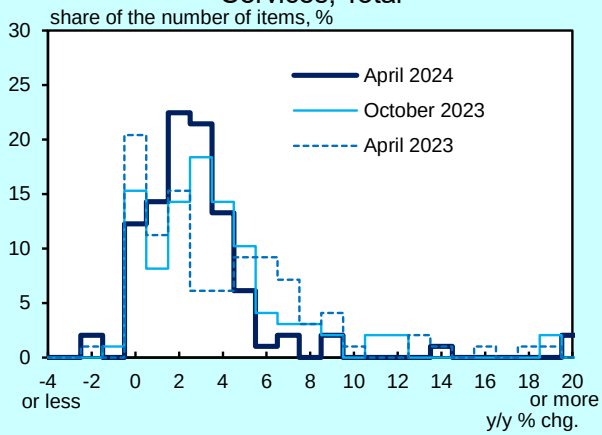


Source: Ministry of Internal Affairs and Communications.

Note: The share of increasing items is the share of items whose price indices increased from a year earlier. Figures are staff estimates and exclude mobile phone charges and the effects of the consumption tax hikes, policies concerning the provision of free education, and travel subsidy programs. "Culture and recreation, etc." includes services excluding eating out and services related to housing repairs and maintenance. The latest figures are as of April 2024.

The distribution of price changes by item shows that the peak of the distribution has shifted from close to 0 to close to 2 percent, indicating a change in price-setting behavior in the services sector as a whole (Chart 5). To get a more detailed understanding of this change, the distribution is divided into items with a high and a low ratio of labor costs to total costs. This shows that the distribution of items with a low labor cost ratio (such as eating out) — prices of which had been rising at a high rate due to the effects of past upward pressure on costs — has shifted to the left, while the distribution of items with a high labor cost ratio (such as lesson fees) has clearly shifted to the right (Chart 6). Together with the results of the sparse estimation mentioned above, they suggest that wage increases have been driving a wide range of firms' behavior to change.

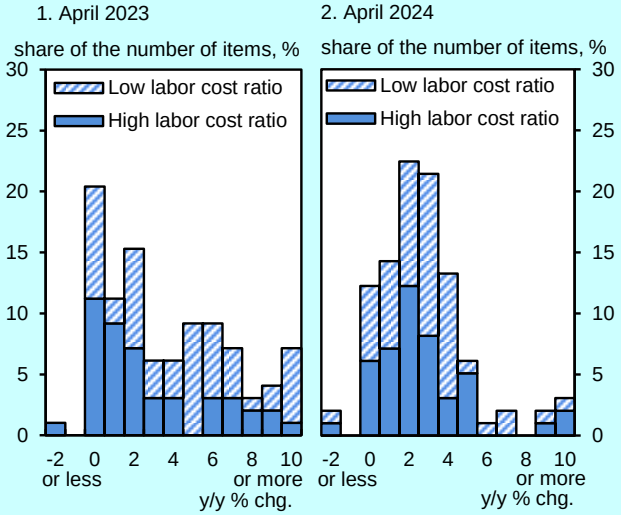
[Chart 5] Price Change Distribution of General Services, Total



Source: Ministry of Internal Affairs and Communications.

Note: Figures show the CPI for general services (less housing rent). Figures are staff estimates and exclude the effects of policies concerning the provision of free education and the effects of travel subsidy programs.

[Chart 6] Price Change Distribution of General Services, Breakdown



Source: Ministry of Internal Affairs and Communications.

Notes: 1. Figures show the CPI for general services (less housing rent). Figures are staff estimates and exclude the effects of policies concerning the provision of free education and travel subsidy programs.

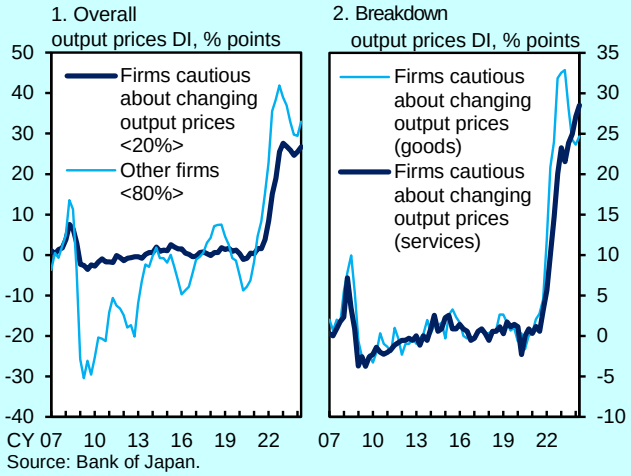
2. CPI items are matched to the items in the *2015 Input-Output Tables for Japan* and grouped in terms of the share of "wages and salaries" and other labor costs in the domestic output of those items. Figures for high (low) labor cost ratio consist of the items grouped in the top (bottom) 50 percent in general services (less housing rent).

Characteristics in Firms' Recent Price-Setting Behavior

As described above, moves to raise prices are spreading steadily to services prices which have fluctuated less relative to goods prices. With regard to firms' recent price-setting behavior, an analysis of microdata for the Bank of Japan's (BOJ) *Tankan* survey (Short-Term Economic Survey of Enterprises in Japan) also suggests that the mindset and behavior based on the assumption that wages and prices will not rise has been changing.

First, we extract "firms cautious about changing output prices" that had responded to a question on their output prices as "unchanged" for many years and see developments in their price-setting stance.[6] Since 2021, with regard to goods prices, such firms have raised prices markedly due to cost-push pressure led by the rise in import prices (Chart 7). On the other hand, with regard to services prices, changes in the behavior of such firms that have been historically hesitant to price increases have remained moderate relative to that of goods prices. However, even these firms have been making more moves to raise prices recently.

[Chart 7] Change in Firms' Price-Setting Stance



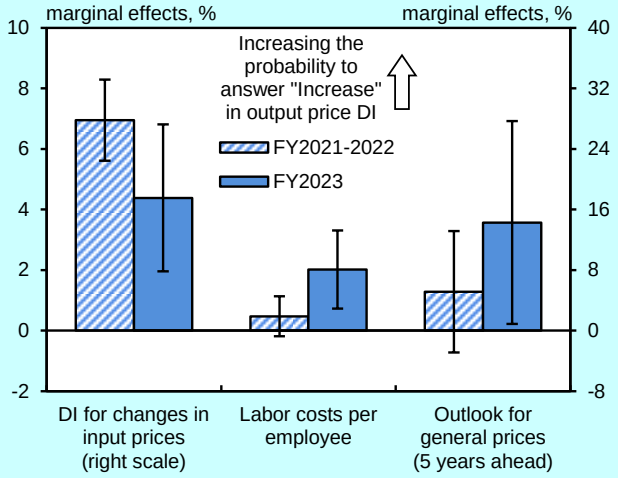
Source: Bank of Japan.

Note: Based on the *Tankan* (all enterprises). Figures for firms cautious about changing output prices are for firms that replied their output prices were "unchanged" for at least about 95 percent of the period from 1991 to 2019 . Figures for "firms cautious about changing output prices (goods)" are for manufacturing firms, while those for "firms cautious about changing output prices (services)" are for nonmanufacturing firms.

Second, by matching microdata from both the *Tankan* and the *Financial Statements Statistics of Corporations by Industry* to examine the factors behind changes in output prices, it is clear that around 2022, firms faced with an increase in the cost-push pressure (an increase in input prices) tended to shift their stance on passing on cost increases to output prices amid a rise in import prices (Chart 8). Recently, however, as the cost-push pressure and the rise in import prices have decelerated, it has become clear that an increase in upward pressure on wages and a rise in inflation expectations are having an impact on firms' price-setting behavior.

Meanwhile, the BOJ conducted the "Survey regarding Corporate Behavior since the Mid-1990s" as part of its "Review of Monetary Policy from a Broad Perspective." In the survey, many firms answered that the state in which both prices and wages rise moderately was preferable for their business activities.[7] There were also questions that asked about firms' stance on passing on higher costs to prices and on wage revisions. A cross tabulation using the microdata for firms' responses to both questions shows that the number of firms that passed cost increases onto output prices and raised wages was limited in the past. Recently, however, the number of firms that have conducted both has been increasing significantly, suggesting that firms' behavior has begun to change (Chart 9).

[Chart 8] Factors behind Changes in the Output Price Diffusion Index



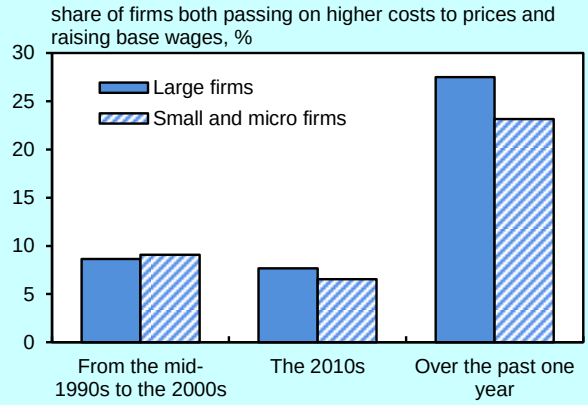
Sources: Ministry of Finance; Bank of Japan.

Notes: 1. Figures are calculated by matching microdata for enterprises that responded to both the survey for the *Financial Statements Statistics of Corporations by Industry, Quarterly* and the *Tankan* survey.

2. Probit regression was conducted using the output prices DI as the dependent variable and input prices DI, labor costs per employee (year-on-year changes, 1 quarter lag), and outlook for general prices (5 years ahead) as independent variables (controlling DI for domestic supply and demand conditions and dummies by industries, size, and time).

3. Figures show the marginal effects, which are the probability of responding "Increase" in output prices DI. The bands denote the 90 percent confidence intervals.

[Chart 9] Firms' Wage- and Price- Setting Stance



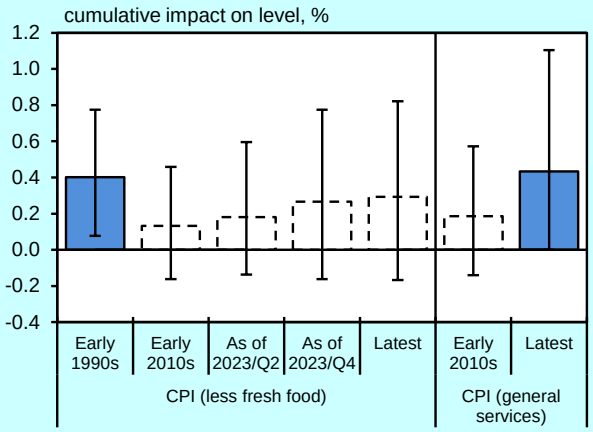
Source: Bank of Japan.

Notes: 1. Firms both passing on higher costs to prices and raising base wages are firms that responded "not applicable" for both questions about difficulties in passing on higher costs to prices and sluggishness in basic wages in the *Survey regarding Corporate Behavior since the Mid-1990s.*

2. Firms were asked to respond to some questions by dividing the past 25 years since the mid-1990s into three phases, namely, (1) the first phase, defined as the period from the mid-1990s to the 2000s, (2) the second phase, defined as the 2010s, and (3) the current phase, defined as the period over the past one year.

In addition, a quantitative study examining the linkage between wages and prices also shows changes in firms' behavior. In Chart 10, a look at elasticity, which represents the response of inflation rates to wage increases, indicates that, although the CPI (all items less fresh food) has been increasingly reactive, it is not statistically significant yet; on the other hand, the elasticity of services prices, of the CPI (all items less fresh food), to wage increase has increased recently in a statistically significant way.[8]

[Chart 10] Response of Prices to a 1% Increase in Wages



Sources: Ministry of Internal Affairs and Communications; Cabinet Office; Bank of Japan.

Notes: 1. Figures show the estimation results of a time-varying parameter VAR model consisting of the output gap, nominal wages, and the CPI. Import prices are added as an exogenous control variable. The CPI figures are staff estimates and exclude temporary factors.

2. Figures are 4-quarter cumulative impulse responses. The bands indicate the 75 percent confidence intervals, while the broken lines indicate that the results are not statistically significant.

3. Figures for the early 1990s are as of 1991/Q2, those for the early 2010s are as of 2012/Q2, and the latest figures are as of 2024/Q1.

Concluding Remarks

This article summarizes firms' recent price-setting behavior in terms of consumer prices, mainly focusing on services prices. In services prices, labor costs account for a high share of output prices. Accordingly, they are an important factor to see whether the linkage between wages and prices will be further strengthening and whether underlying inflation in the CPI will rise.

The year-on-year rate of change in services prices in Japan had been hovering at close to 0 percent since the end of the 1990s and remained highly sticky. However, as results of various empirical analyses in this article show, firms' price-setting behavior has begun to change, amid increasing upward pressure on wages, as shown by, for example, a rapid increase in the rate of wage increase for two consecutive years at the annual spring labor-management wage negotiations.

Going forward, it will be important to continue to examine from a broad perspective whether changes in firms' price-setting behavior spreads further and whether drivers of price increases will shift from a cost-push pressure led by the rise in import prices to the strengthening linkage between wages and prices. In particular, in conjunction with firms' wage-setting behavior, the following also warrants further careful examination: (1) whether the high level of wage hikes seen in the annual spring labor-management wage negotiations will be reflected in selling prices, particularly for services; (2) whether more firms will set selling prices in anticipation of future wage increases; and (3) whether the continuation of these trends will lead to a further strengthening of the linkage between wages and prices.

Moreover, to examine firms' price-setting behavior, demand developments — in other words, developments in private consumption — warrant attention. Regarding this point, it is necessary to examine whether the rate of wage increase will rise, and the virtuous cycle from income to spending gradually will intensify as corporate profits continue to improve.

To confirm those points, it is therefore important to grasp changes in firms' behavior appropriately by carrying out a variety of ongoing quantitative analyses and by carefully conducting qualitative analyses, such as interviews with firms.[9]

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[1] With regard to examining underlying inflation, see Box 4 of the April 2024 *Outlook for Economic Activity and Prices* (Outlook Report) released by the Bank of Japan (BOJ).

[2] An intermediate input cost index for the production of various consumer goods and services, excluding fresh food and energy, is estimated, based on the transaction structure in the input-output tables. For details, see Box 3 of the April 2022 Outlook Report.

[3] This article analyzes cost structures of the CPI. Yutani *et al.* (2024) analyzes the Services Producer Price Index (SPPI) from a similar perspective. For details, see the following article.

Yutani, T., E. Howard, T. Yoshino, and M. Higashi (2024), "Special Aggregate Index of the Services Producer Price Index (SPPI) based on Labor Cost Ratio," Bank of Japan Review Series, 2024-E-6.

[4] Sparse estimation is a method that builds a more accurate model utilizing a number of data series as explanatory variables and which is used widely in recent years in areas including machine learning. In general, the more explanatory variables used, the lower the accuracy of the estimation. However, in sparse estimation, it is possible to automatically choose a model that uses the smallest possible number of variables so that the model becomes more concise, and the accuracy of the estimation can be ensured in this way.

[5] In Box 2 of the July 2024 Outlook Report, the probability of change in prices of items corresponding to those in the CPI for general services in each month is estimated using microdata from the *Retail Price Survey*. It shows that the probability is clearly higher in April and October.

[6] Ikeda *et al.* (2022) examine firms' price-setting stance using microdata from the *Tankan*. They find that, in the current phase, moves to raise selling prices have been spreading even among firms that are cautious about changing such prices. Based on this analysis, moves by those firms are explored further by goods and services prices in this article. See the following article for details.

Ikeda, S., T. Kondo, Y. Kurachi, T. Matsuda, and T. Yagi (2023), "Firms' Recent Price-Setting Stance: Evidence from the *Tankan*," Bank of Japan Review Series, 2023-E-2.

[7] For details, see the annex paper to the Regional Economic Report, "Results of the Survey regarding Corporate Behavior since the Mid-1990s: Economic Activity, Prices, and Monetary Policy over the Past 25 Years from Firms' Perspective" released by the BOJ in 2024. In this question, firms were asked which state they considered to be preferable for their business activities: one in which both prices and wages rise moderately or another in which they hardly change.

[8] The empirical results in this article are an updated version of the empirical analysis conducted in the following article using data up to March 2024. The fact that large base pay increases were realized in the annual spring labor-management wage negotiations in 2024 and that beginning-of-the-period price hikes were confirmed in the beginning of fiscal 2024 are expected to further enhance spillover from wages to prices.

Ozaki, T., M. Jimbo, T. Yagi, and A. Yoshii (2024), "Recent Developments in the Linkage between Wages and Prices," Bank of Japan Review Series, 2024-E-2.

[9] For wage increases, too, the results of the BOJ's interview with firms show that their behavior has begun to change. For the results of a recent survey, see the annex paper to the Regional Economic Report, "Wage Developments in Regional SMEs: Focusing on Changes in Firms' Behavior" released by the BOJ in 2024 (available only in Japanese).

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