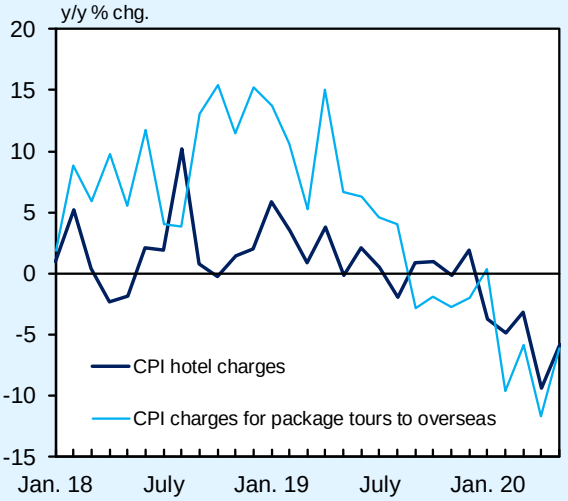
(Box 4) Impact of COVID-19 on Price Changes

This box examines the impact of COVID-19 on recent price developments, while focusing on the differences in price changes by item.

The year-on-year rate of change in the CPI (all items less fresh food) for January this year, which was before the outbreak of COVID-19, was 0.8 percent and that for May was minus 0.2 percent, indicating a decline of 1.0 percentage point (Chart 40). The decline in the CPI was largely attributable to the decline in energy prices, such as those of petroleum products (i.e., gasoline), pushing down the CPI by about 0.6 percentage point. It also was affected by a decline in the items that have relatively large weights in the CPI, mainly reflecting the direct impact of COVID-19 (Chart B4-1). Such items include (1) travel-related services such as charges for hotels and for package tours to overseas, (2) water charges, which declined due to a reduction and exemption by the local governments for those who have difficulty paying them, and (3) tutorial fees, which declined reflecting an introduction of online classes.[24]

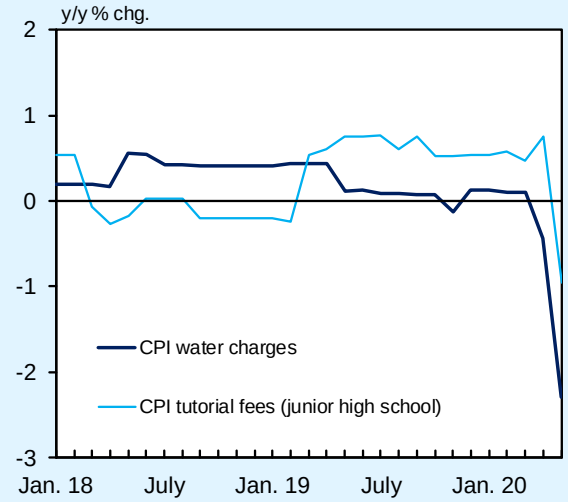
Chart B4-1: Price Changes by Item

1. Hotel Charges and Charges for Package Tours to Overseas



Source: Ministry of Internal Affairs and Communications.
Note: The CPI figures exclude the effects of the consumption tax hike.

2. Water Charges and Tutorial Fees

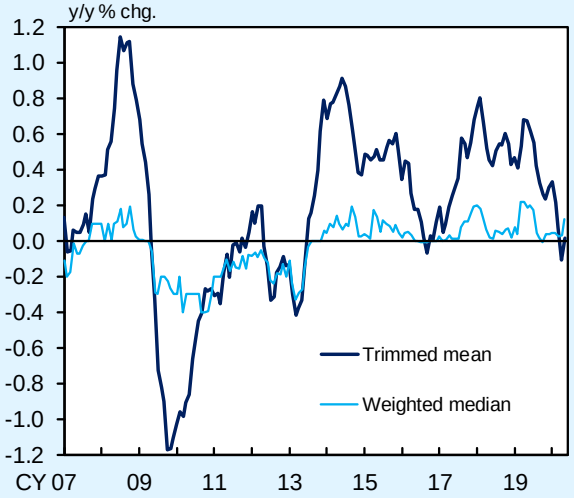


Source: Ministry of Internal Affairs and Communications.
Note: The CPI figures exclude the effects of the consumption tax hike.

[24] The decline in the CPI from April also is attributable to the provision of free higher education and a reduction in the mandatory auto insurance premium, both of which were decided before the outbreak of COVID-19.

Various core indicators for capturing the underlying trend in the CPI show the following developments.[25] The rate of increase in the trimmed mean, which is relatively susceptible to changes in prices of items that have large weights in the CPI, has decelerated, mainly reflecting developments in the aforementioned items (Chart B4-2).[26] On the other hand, the rates of increase in the median and the mode, which are less susceptible to developments in prices of items with large weights since these indicators are calculated by treating the effects of each CPI item equally, have been in the range of 0.0-0.5 percent recently, suggesting that there has been no particular change in the underlying trend (Chart B4-3).[27] The share of price-increasing items minus the share of price-decreasing items has maintained its relatively high level thus far, and the share of price-decreasing items alone has not risen significantly (Chart B4-4).

Chart B4-2: Measures of Underlying Inflation (1)



Sources: Bank of Japan; Ministry of Internal Affairs and Communications.
Note: Based on staff calculations using the CPI excluding the effects of the consumption tax hikes and policies concerning the provision of free education. The CPI figures from April 2020 onward are based on staff estimations and exclude the effects of measures such as free higher education introduced in April 2020.

Chart B4-3: Measures of Underlying Inflation (2)

Sources: Bank of Japan; Ministry of Internal Affairs and Communications.
Note: Based on staff calculations using the CPI excluding the effects of the consumption tax hikes and policies concerning the provision of free education. The CPI figures from April 2020 onward are based on staff estimations and exclude the effects of measures such as free higher education introduced in April 2020.

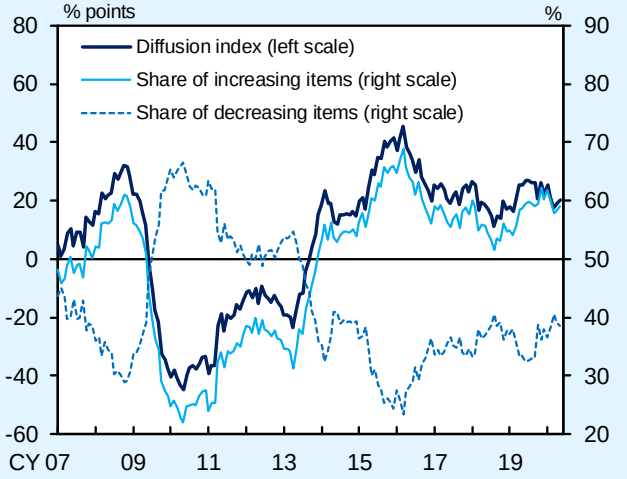
[25] The examinations of the following indicators are based on the CPI excluding the effects of the consumption tax hikes and policies concerning the provision of free education.

[26] The trimmed mean is calculated by excluding items that belong to a certain percentage of the upper and lower tails of the price change distribution (10 percent of each tail) in order to eliminate the effects of large relative price changes. The weighted median is the average of the inflation rates of the items at around the 50 percentile point of the cumulative distribution in terms of weight.

[27] The median is the average of the inflation rates of the items of the price change distribution. The mode is the inflation rate with the highest density in the price change distribution.

Looking at the price change distribution based on the weight of each item, the items for which prices have seen large declines have increased their share to some extent lately, reflecting the aforementioned declines in prices of certain items due to the impact of COVID-19 (Chart B4-5[1]). On the other hand, the distribution based on the number of items shows that there has been no significant change in the shape since the start of this year to date (Chart B4-5[2]). Thus, the shapes of these distributions imply that the decline in the year-on-year rate of change in the CPI to date can be explained mostly by the decline in prices of some items that are affected strongly by COVID-19.

Chart B4-4: Diffusion Index of Price Changes

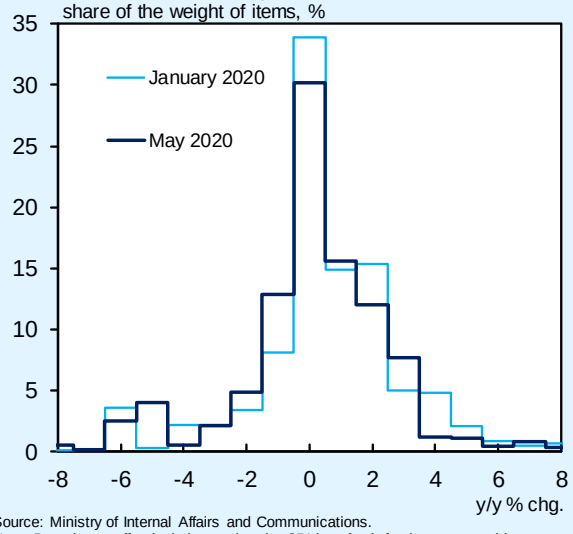


Sources: Bank of Japan; Ministry of Internal Affairs and Communications.
Note: The diffusion index is defined as the share of increasing items minus the share of decreasing items. The share of increasing/decreasing items is the share of items whose price indices increased/decreased from a year earlier. Based on staff calculations using the CPI (less fresh food) excluding the effects of the consumption tax hikes and policies concerning the provision of free education. The CPI figures from April 2020 onward are based on staff estimations and exclude the effects of measures such as free higher education introduced in April 2020.

Although firms reduced their prices to stimulate demand during the deflationary period in the past, such price-setting behavior is not observed widely at this point. The following can be considered as factors behind this. The first factor is that, despite a rapid depression in overseas economies, there has not been a sudden appreciation of the yen, and thus downward pressure on prices of durable goods and food products, which are sensitive to developments in the foreign exchange rates, has not intensified significantly (Chart B4-6). These developments are contrary to those observed immediately after the global financial crisis, when the declines in prices of these items pushed down the overall CPI due to a sudden appreciation of the yen. Second, since the government's large-scale income support measures have firmly supported households' disposable income, their preference to cut back on spending has not increased as much as it did during the deflationary period in the past. A third factor is that, under the "new lifestyle," a decline in

Chart B4-5: Price Change Distribution

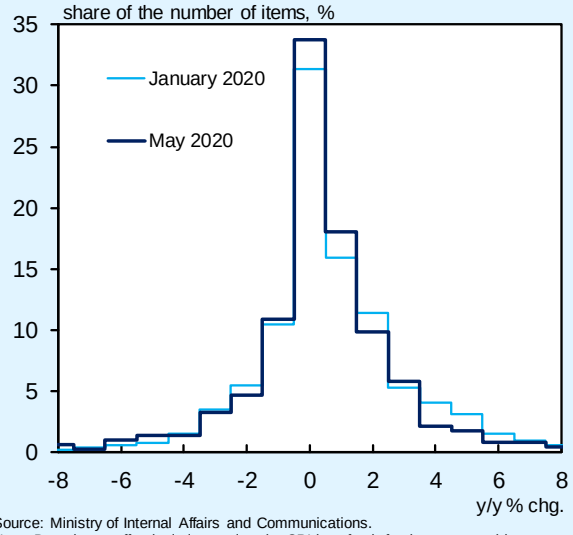
1. Based on the Weight of Items



Source: Ministry of Internal Affairs and Communications.
Note: Based on staff calculations using the CPI less fresh food, energy and house rent (private and imputed rent) excluding the effects of the consumption tax hike and policies concerning the provision of free education. The figure for May 2020 is based on staff estimations and excludes the effects of measures such as free higher education introduced in April 2020.

productivity (i.e., a decline in customers to which services can be provided with the same input) is inevitable for firms in the services industry, such as dining-out as well as culture and recreation, in view of avoiding crowds, and thus those firms cannot reduce their prices for the purpose of stimulating demand. Since developments in the CPI slightly lag behind the business cycle, it is necessary to wait a little longer until more data become available to examine these factors.

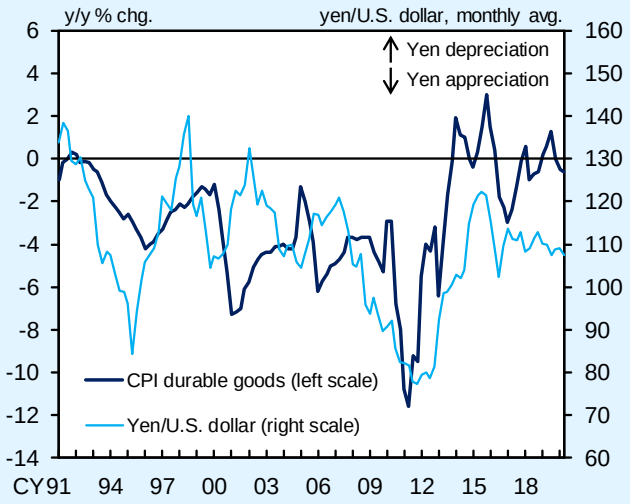
2. Based on the Number of Items



Source: Ministry of Internal Affairs and Communications.
Note: Based on staff calculations using the CPI less fresh food, energy and house rent (private and imputed rent) excluding the effects of the consumption tax hike and policies concerning the provision of free education. The figure for May 2020 is based on staff estimations and excludes the effects of measures such as free higher education introduced in April 2020.

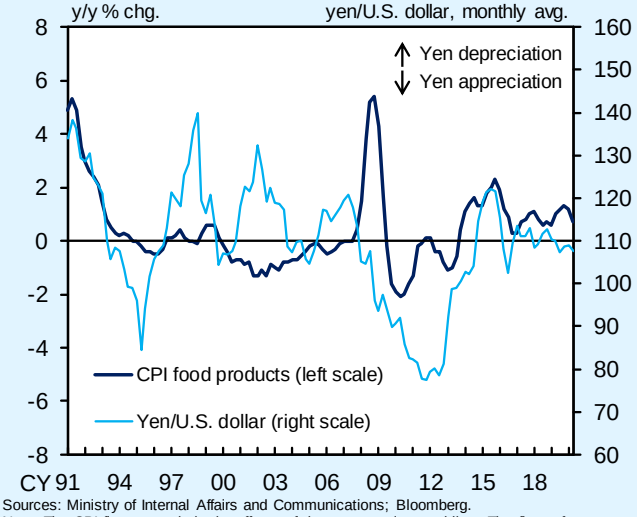
Chart B4-6: Inflation Rate and Exchange Rate

1. Durable Goods Prices and Exchange Rate



Sources: Ministry of Internal Affairs and Communications; Bloomberg.
Note: The CPI figures exclude the effects of the consumption tax hikes. The figure for 2020/Q2 is the April-May average.

2. Food Products Prices and Exchange Rate



Sources: Ministry of Internal Affairs and Communications; Bloomberg.
Note: The CPI figures exclude the effects of the consumption tax hikes. The figure for 2020/Q2 is the April-May average.