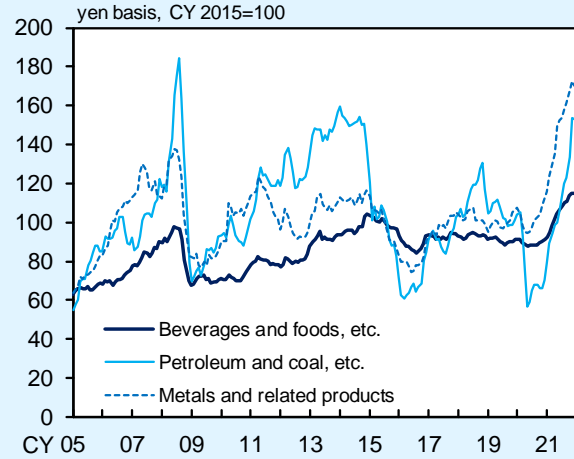


**(Box 2) Raw Material Cost Increases and Consumer Prices**

Japan's import prices have continued to show a clear increase since early 2021, and this is attributable to the fact that prices of a wide range of commodities -- including crude oil, food, and metals -- have risen or remained high, as well as to the effects of the yen's depreciation (Chart B2-1).<sup>25</sup> The significant increase in raw material costs has brought about a rise in product prices -- especially export prices -- in the manufacturing industry, where demand has recovered or expanded. Even in the case of the nonmanufacturing industry, as well as small and medium-sized firms, which do not directly benefit from an upturn in the export environment, there has been a gradual increase in the number of firms that pass on part of cost increases to selling prices. This box outlines the effects of the raw material cost increases on consumer prices.<sup>26</sup>

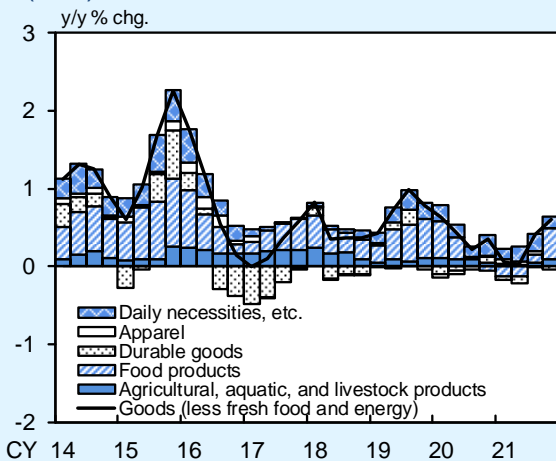
It is projected in this Outlook Report that a rise in upstream prices, such as raw material costs, will be passed on to the CPI, especially to items such as energy and food. That said, the baseline scenario is that the pace of the pass-through of cost increases is likely to be moderate and the year-on-year rate of increase in the CPI is expected to be quite low compared with the

**Chart B2-1: Import Price Index (IPI)**



Source: Bank of Japan.  
 Note: Figures for beverages and foods, etc. are those for "beverages & foods and agriculture products for food." Figures for petroleum and coal, etc. are those for "petroleum, coal & natural gas."

**Chart B2-2: Developments in Goods Prices (CPI)**



Source: Ministry of Internal Affairs and Communications.  
 Notes: 1. Figures exclude the effects of the consumption tax hikes.  
 2. Figures for 2021/Q4 are October-November averages.

<sup>25</sup> Developments in the import price index (IPI) show that, on a year-on-year basis, the recent rate of increase in Japan's import prices is mainly explained by an increase in prices in contract currency terms. The year-on-year rate of change in the IPI for December 2021 was 33.3 percent in contract currency terms and 41.9 percent in yen terms.

<sup>26</sup> Regarding the link between international commodity prices and domestic prices, see also Box 3 in the July 2021 Outlook Report.

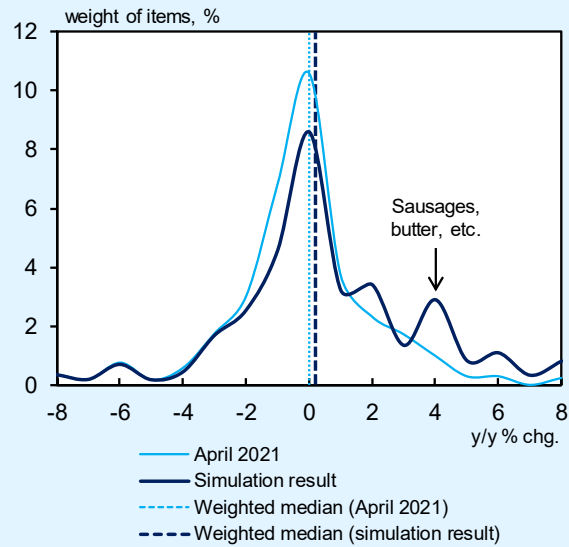
producer price index (PPI).

As the background to this, it can be pointed out that the pass-through of upstream price rises to selling prices for consumers has been observed thus far mainly in food prices, rather than in a wide range of items (Chart B2-2). That is, even though prices of metals and related products have risen markedly in the current phase, partly due to the increase in demand related to decarbonization, and have pushed up the PPI significantly, the pass-through to the CPI seems to have been small, at least in the short run. Using sparse estimation, the extent to which a rise in import prices pushes up the individual CPI items in the short run is examined (Chart B2-3).<sup>27</sup> The result shows that (1) the rise in import prices of beverages and food pushes up the prices of many CPI items categorized as food products (moreover, the prices of some items in food products with a high percentage of raw materials see particularly large increases), whereas (2) the impact of the rise in import prices of metals and related products is very small, mainly reflecting their low share in the costs of final products.

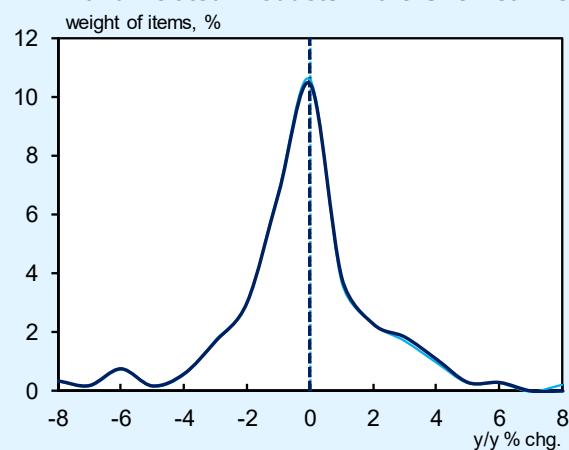
That said, there are both upside and downside risks regarding the extent to which raw material cost increases will be passed on to the CPI. Along with the resumption of economic activity, price competition, which has been constrained during the pandemic, may resume. In general, a recovery in demand brings about price rises. That said, in the case of Japan -- where fierce price

### Chart B2-3: Price Change Distribution (CPI)

#### 1. Impact of the Increase in the IPI for Beverages & Foods, etc. in the One-Year Period



#### 2. Impact of the Increase in the IPI for Metals and Related Products in the One-Year Period



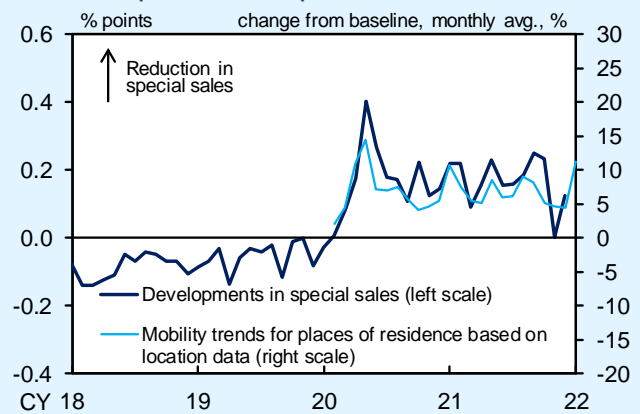
Sources: Ministry of Internal Affairs and Communications; Bank of Japan.  
 Note: The short-term impact of the increase in the IPI in the one-year period from October 2020 to October 2021 on the price change distribution for the CPI items is simulated using the result of sparse estimation, based on the price change distribution for the CPI items in April 2021. For the sparse estimation, a LASSO regression was conducted using the year-on-year rate of change in the CPI for each good excluding fresh food and energy as the dependent variable and that in the IPI for selected items (i.e., beverages & foods, etc., petroleum & coal, etc., metals & related products, textiles, lumber & wood products and forest products, and chemicals & related products; 6-month lag) and the real Consumption Activity Index as independent variables. The estimation period is January 2004-October 2021. The weight of items is that in the CPI (less fresh food, energy, and mobile phone charges).

<sup>27</sup> Sparse estimation is an estimation method that selects only variables with high explanatory power from a large number of variables.

competition was common at the retail level during normal times -- it can be expected that, as the impact of COVID-19 wanes and the number of people going out recovers, the resumption of price competition in some types of stores will curb the pace of retail price rises. On this point, the Nikkei CPINow, which captures price developments at retail stores such as supermarkets using point-of-sales (POS) data, suggests that there have been fewer special sales during the pandemic as a result of efforts to avoid creating crowds and due to the fall in the price elasticity of demand (Chart B2-4).<sup>28</sup>

On the contrary, there is also a possibility that raw material cost increases will be passed on to the CPI by more than expected. Firms' sentiment toward inflation has strengthened recently, as evidenced by the clearer uptrend in the Price Sentiment Index (PSI), which is based on comments from the *Economy Watchers Survey* (Chart B2-5).<sup>29</sup> The output prices DIs in the December *Tankan* also have risen, although not as much as the input prices DIs, and have reached the highest level since 1980 for the manufacturing industry and since 1991 for the

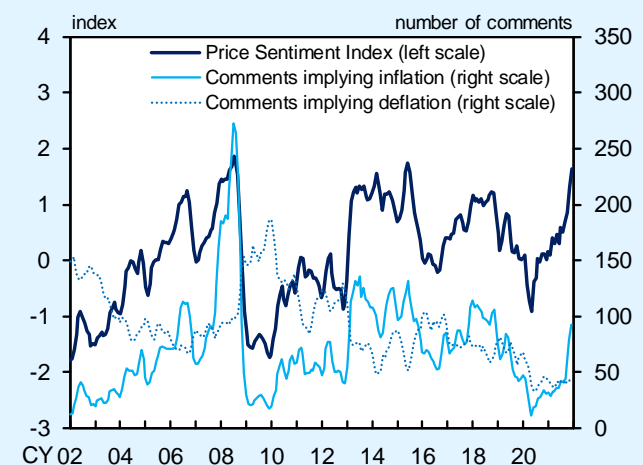
**Chart B2-4: Mobility Trends and Developments in Special Sales**



Sources: Nowcast, Inc., "Nikkei CPINow"; Google LLC "Google COVID-19 Community Mobility Reports." <https://www.google.com/covid19/mobility/>. Accessed: January 18, 2022.

- Notes: 1. Developments in special sales are calculated as the difference between prices including those for special sales (the Nikkei CPINow T-index) and the most frequent prices in 28 days before/after the date (the Mode Index). Both are changes from two years earlier (annualized).
- 2. The baseline of mobility trends for places of residence based on location data is the median on the corresponding day of the week during the 5-week period from January 3 to February 6, 2020.

**Chart B2-5: Price Sentiment Index**



Source: Cabinet Office.

Note: The Price Sentiment Index is calculated as follows: Using the Naïve Bayes classifier, comments on current economic conditions in the *Economy Watchers Survey* are first classified into (A) comments implying inflation, (B) comments implying deflation, (C) comments implying zero inflation, and (D) comments not referring to price developments. The Price Sentiment Index is then calculated as  $(A-B) / (A+B+C) \times 100$  and normalized (3-month backward moving averages).

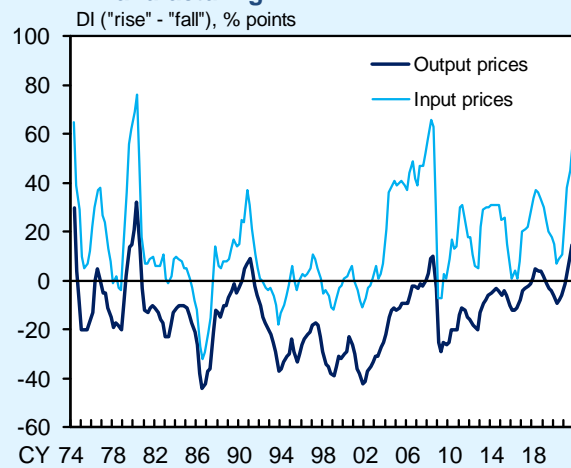
<sup>28</sup> Among the Nikkei CPINow indices, the T-index captures selling prices including those for special sales, whereas the Mode Index tracks the most frequent prices during a certain period, which is regarded as exhibiting similar developments to list prices. This box therefore refers to the difference between these two indices as the effects of special sales. Technically, however, while the T-index covers all prices for special sales, the CPI compiled by the Ministry of Internal Affairs and Communications excludes prices for special sales which last for seven days or less. Therefore, the effects of special sales, calculated as the difference between the two Nikkei CPINow indices, are not entirely applicable to developments in the CPI.

<sup>29</sup> For details on the PSI, see "Extracting Firms' Short-Term Inflation Expectations from the Economic Watchers Survey Using Text Analysis," *Bank of Japan Working Paper Series*, no. 21-E-12, October 2021.

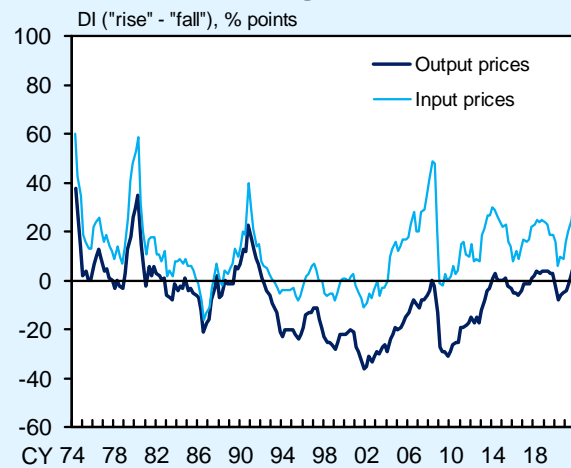
nonmanufacturing industry (Chart B2-6). Whether firms' strong sentiment toward inflation will lead to an increase in the CPI depends on factors such as consumers' tolerance for price rises. That said, it is necessary to take into account the possibility that prices will be pushed up by a faster-than-expected pass-through of cost increases.

**Chart B2-6: Output and Input Prices (*Tankan*)**

**1. Manufacturing**



**2. Nonmanufacturing**



Source: Bank of Japan.  
Note: Figures are for all enterprises.