

(Box 3) Recent Developments in International Commodity Prices and Domestic Prices

This box explains the effects of a recent rise in international commodity prices on domestic price developments, focusing on price developments at the producer level. It also outlines basic ideas regarding the effects on price developments at the consumer level.

Japan's producer price index (PPI) -- an index for goods prices at the producer level -- has shown a surge recently, and the quarter-on-quarter rate of increase for the April-June quarter of 2021 was the highest since the July-September quarter of 2008, which was the final phase of the "commodity supercycle" in the 2000s (Chart B3-1). The breakdown of developments in the quarter-on-quarter rate of change in the PPI shows that petroleum and coal products, including gasoline, have increased recently, reflecting developments in crude oil prices. In addition, a notable feature observed recently is a clear acceleration in the rates of increase in the following components: iron, steel, and building materials; nonferrous metals; and chemicals and plastic products, etc. These components are closely related to commodities other than crude oil (i.e., iron ore, iron and steel scrap, lumber, and copper).

In relation to developments in the PPI, the input and output prices DIs in the *Tankan* show the following (Chart B3-2). For the basic materials industry -- including chemicals, iron and steel, and

Chart B3-1: Producer Price Index

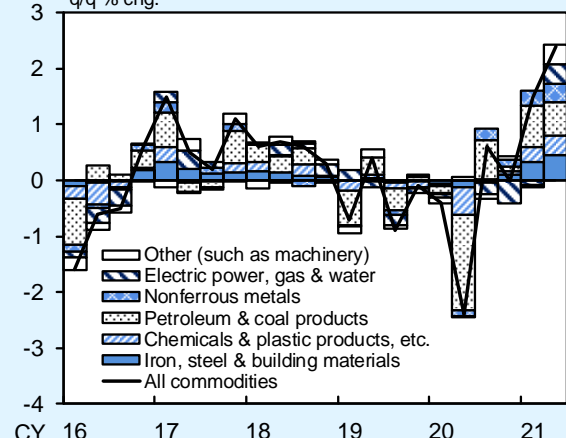
1. Quarterly Change

q/q % chg.



2. Decomposition of Quarterly Changes

q/q % chg.



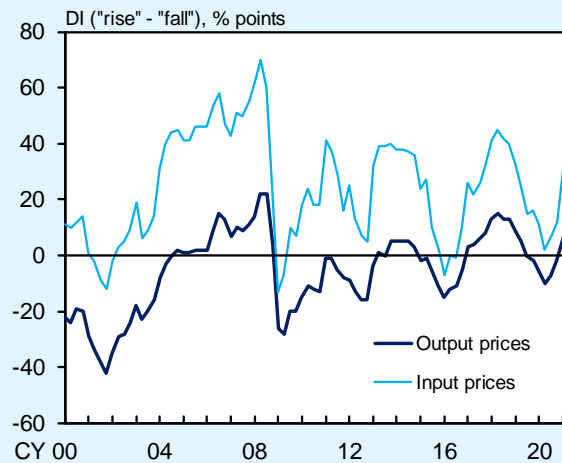
Source: Bank of Japan.
 Note: Figures are adjusted for the effects of the consumption tax hike and the hike in electric power charges during the summer season.

nonferrous metals -- the input prices DI has been rising in reflection of input cost increases. The output prices DI for this industry also has been rising to some extent, partly because (1) the practice (or pricing formula) of passing on a portion of input price increases to selling prices has taken hold and (2) the supply-demand conditions for goods have been tightening, mainly in the upstream and midstream of the distribution process. These rises in the indices are consistent with the aforementioned recent rises in PPI components, such as iron, steel, and building materials, as well as nonferrous metals. On the other hand, for the processing industry -- including transportation machinery, electrical machinery, and "general-purpose, production, and business-oriented machinery" -- a rise in the output prices DI has been limited relative to that in the input prices DI. In fact, PPI components relating to machinery -- which largely consist of prices of products in the processing industry -- have seen only marginal rises, and it seems that firms in this industry have not passed on increases in intermediate input costs to selling prices to much of a degree.

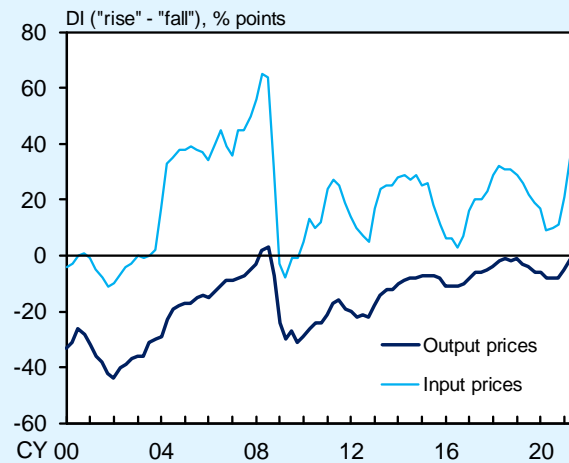
As explained, reflecting the rise in international commodity prices, the rate of increase in Japan's producer prices has been accelerating, albeit with variation across industries. That said, for now, the degree of such increase has been considerably smaller than that in the United States and also somewhat smaller than that in Europe (Chart B3-3). In the United States and Europe, firms have faced tight supply-demand conditions for products as well as logistics disruptions caused

Chart B3-2: Output and Input Prices (*Tankan*)

1. Basic Materials Industry

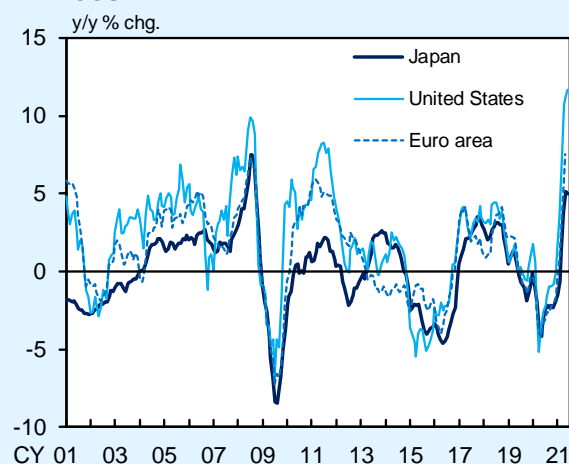


2. Processing Industry



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

Chart B3-3: Developments in Producer Prices

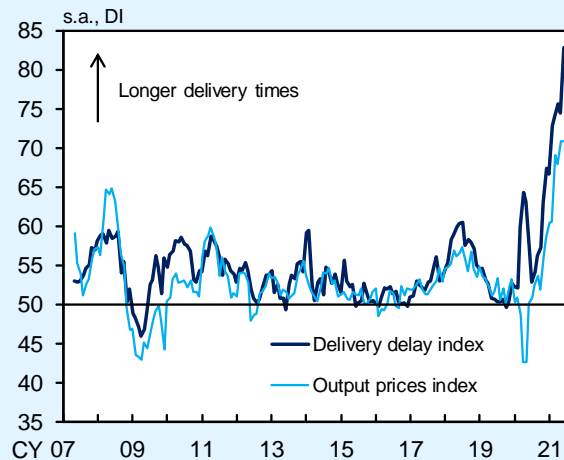


Sources: Bank of Japan; BLS; Eurostat.
Note: Figures for Japan are the producer price index (PPI) for all commodities (adjusted to exclude the effects of the consumption tax hikes). Those for the United States are the PPI for final demand goods. Figures for the euro area are the PPI for total industry except construction, sewerage, waste management, and remediation activities.

partly by shipping container shortages.²⁴ Since such tightening and disruptions have been observed at the same time, severe delays have occurred in goods deliveries, as shown by the clear increase in the delivery delay indices of the manufacturing PMI explained in Box 1, and producer prices accordingly have risen substantially. In this regard, a comparison of developments in the delivery delay index and the output prices index -- which also is a subindex of the manufacturing PMI -- between Japan, the United States, and Europe suggests the following (Chart B3-4). In the cases of the United States and Europe, the output prices indices have exhibited remarkable increases in tandem with the escalation of the delivery delay indices. This seems to indicate that firms that are raising selling prices have been increasing rapidly of late, because more firms are taking into account the tightening supply-demand conditions for their products while passing on cost increases to selling prices due to the rise in commodity prices. On the other hand, in the case of Japan, although both the delivery delay index and the output prices index have increased, the recent degree of increase for both indices has been limited compared with that in the United States and Europe. Given such different developments in the indices, although inflationary pressure at the producer level is likely to heighten not only in the United States and Europe but also in Japan for the time being, the magnitude of such pressure in Japan is highly likely to remain somewhat milder than in those economies.

Chart B3-4: Delivery Delays and Output Prices (PMI)

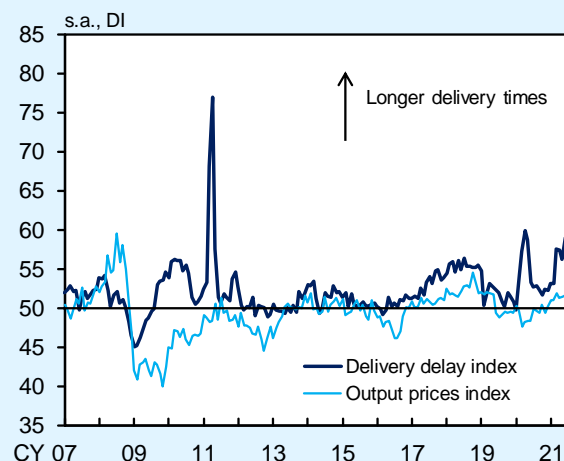
1. United States



2. Euro Area



3. Japan



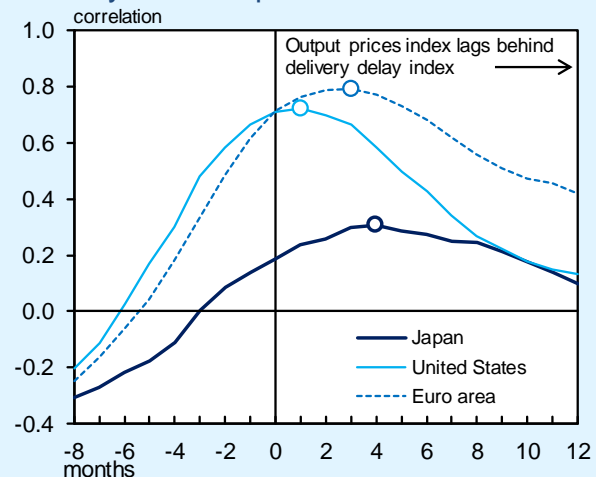
Source: IHS Markit (© and database right IHS Markit Ltd 2021. All rights reserved.).
 Notes: 1. Delivery delay index = 100 - Suppliers' delivery times index
 2. Figures for the United States and the euro area are for the respective manufacturing PMIs. Those for Japan are for the "au Jibun Bank Japan Manufacturing PMI."

²⁴ The delivery delay index in this box refers to the index calculated as 100 minus the value of the PMI suppliers' delivery times index published by IHS Markit.

The relatively small degree of rise in Japan's output prices index may be partly attributable to Japanese firms' strong tendency, at least in the short run, to ration their products without raising their selling prices when faced with excess demand. In fact, in terms of the correlation between the delivery delay index and the output prices index, these indices have far less correlation in Japan than those in the United States and Europe (Chart B3-5). This suggests that delivery delays in Japan typically are less likely to lead to a prompt rise in selling prices.

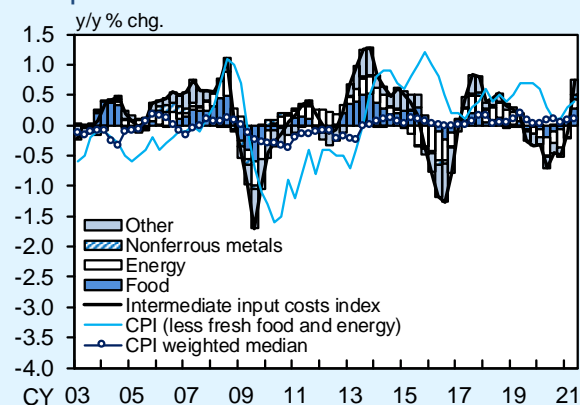
That said, such a rise in producer prices in the upstream and midstream of the distribution process may bring about inflationary pressure on downstream or consumer prices through cost increases. In order to gauge the upward pressure of upstream cost increases for a wide range of items, an index for intermediate input costs is calculated by linking input goods and transportation-related services in each industry with indices such as the import price index and the PPI, and then taking the weighted average using the input of each industry as weights (Chart B3-6). Developments in this index show that intermediate input costs have been rising clearly of late. In fact, among prices comprising the CPI, energy prices (consisting of prices of petroleum products, such as gasoline and kerosene, and of electricity as well as manufactured and piped gas charges) tend to directly reflect fluctuations in costs due to certain formulas used to compute such prices. Therefore, as mentioned in "The Background" section of this Outlook Report, the direct effects of cost increases on energy prices will at least push up the year-on-year rate of change in the CPI (all items less fresh food) for

Chart B3-5: Correlation between Delivery Delays and Output Prices



Sources: IHS Markit (© and database right IHS Markit Ltd 2021. All rights reserved.).
 Notes: 1. The estimation period is from May 2007 to June 2021.
 2. The round markers denote the maximum values of the correlation coefficients.

Chart B3-6: Developments in Intermediate Input Costs

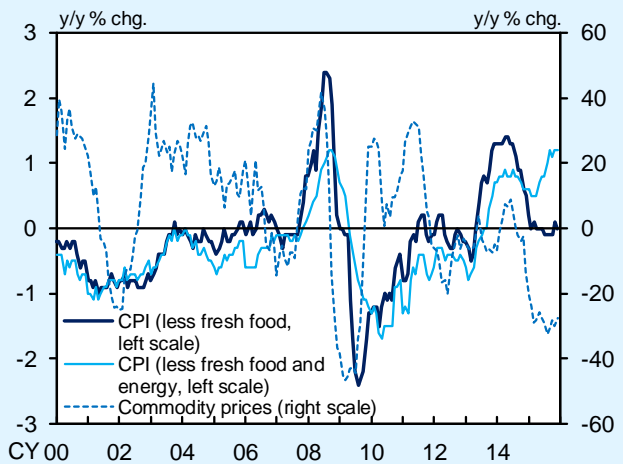


Sources: Ministry of Internal Affairs and Communications; Bank of Japan.
 Note: Figures for CPI (less fresh food and energy) are staff estimates and exclude mobile phone charges and the effects of the consumption tax hikes, policies concerning the provision of free education, and the "Go To Travel" campaign, which covers a portion of domestic travel expenses. Intermediate input costs index is calculated by multiplying the intermediate input ratio of each sector in the 2015 Input-Output Tables for Japan by price data from the corporate goods price index (CGPI) or the services producer price index (SPPI) and then taking the weighted average using consumption expenditure shares as weights. Figures for 2021/Q2 are April-May averages.

the time being. On the other hand, while also taking into account the spillover effects of the rise in energy prices, the extent to which upstream cost increases will be passed on to the CPI (all items less fresh food and energy) largely depends on the strength in domestic demand, including private consumption, and the consequent price-setting stance of firms in the retail and services industries.

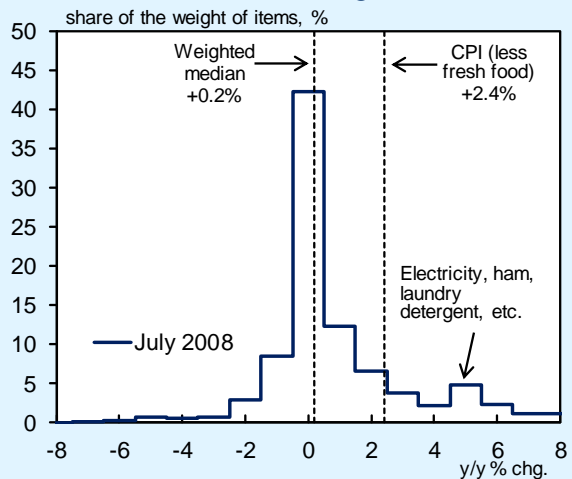
In this regard, in the final phase of the rise in commodity prices in the 2000s, the year-on-year rate of change in the CPI excluding fresh food temporarily increased to around 2.5 percent, mainly due to the rise in energy prices, and even that in the CPI excluding fresh food and energy somewhat exceeded 1 percent temporarily (Chart B3-7). That said, the price change distribution at that time shows that the rates of increase for a majority of CPI items stayed at around 0 percent, and only those for a limited number of items, for which the raw material ratio is large, saw high price rises of around 4-6 percent (Chart B3-8). The indicators capturing the underlying trend in the CPI at that time even show that the year-on-year rate of increase in the trimmed mean was at around 1 percent and the rates of increase in the mode and the weighted median stayed at less than 0.5 percent (Chart 47). Considering these past experiences, it seems highly likely that the CPI inflation that merely reflects upstream cost increases will spread to other items to only a limited extent, and thus will be only transitory. That said, since the aforementioned period of rising commodity prices in the 2000s was followed by the outbreak of the GFC -- which brought the economy into a completely different phase -- it may be difficult to

Chart B3-7: Long-Term Developments in Consumer Prices



Sources: Ministry of Internal Affairs and Communications; Bloomberg.
 Note: Figures for commodity prices are the CRB Index. Figures for the CPI exclude the effects of the consumption tax hike.

Chart B3-8: Price Change Distribution



Source: Ministry of Internal Affairs and Communications.
 Note: Based on staff calculations using the CPI (less fresh food). The distribution is calculated by adding up the CPI weights of items falling into each 1 percentage point bin.

grasp the effects of a rise in commodity prices in the somewhat long run from the experience during that period. Therefore, it is necessary to continue to carefully monitor the effects of the recent rise in commodity prices on domestic prices while taking into account the difference in the past and the current external environments.