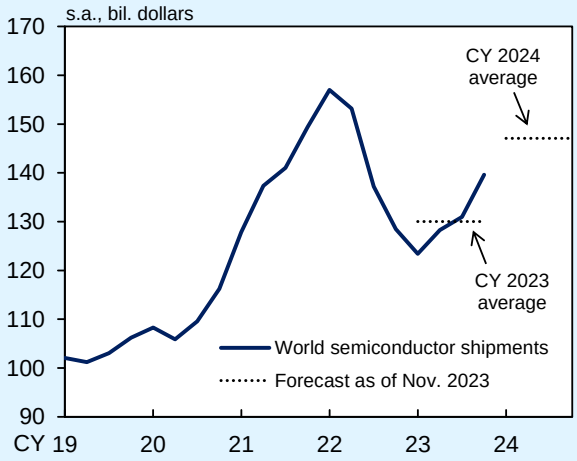
(Box 1) The Recent Pick-Up in Global IT-Related Demand and Its Background

Global IT-related demand continued to be weak from the second half of 2022, after increasing significantly due to factors such as restrictions on going outside and an expansion of remote work during the COVID-19 pandemic. However, it has picked up recently, as seen in semiconductor shipments turning to an increase (Chart B1-1).

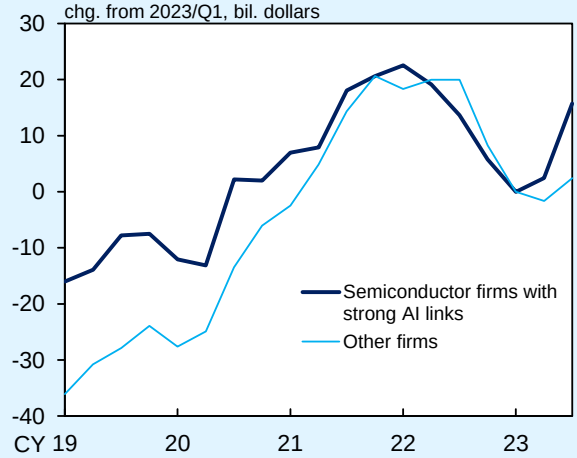
Chart B1-1: World Semiconductor Demand (WSTS)



Notes: 1. Based on staff calculations using World Semiconductor Trade Statistics (WSTS) data.
2. The figure for 2023/Q4 is the October-November average.

This seems to be largely attributable to a fast-paced expansion of generative artificial intelligence (AI) services. Along with advances in the use of these services, there have been moves to actively invest in AI servers, and demand for high-performance semiconductors and other components installed in these servers has been growing rapidly. In fact, revenue of major semiconductor firms with strong AI links has recently increased markedly (Chart B1-2). Moreover, recent developments in IT-related goods production in Asia show that the NIEs, where many firms are engaged in manufacturing AI-related high-performance semiconductors, have seen a clear increase in production of IT-related goods, unlike the ASEAN countries, where firms tend to be engaged in the assembly and testing processes in manufacturing semiconductors that are more general-purpose (Chart B1-3).

Chart B1-2: Revenue of Major Semiconductor Firms



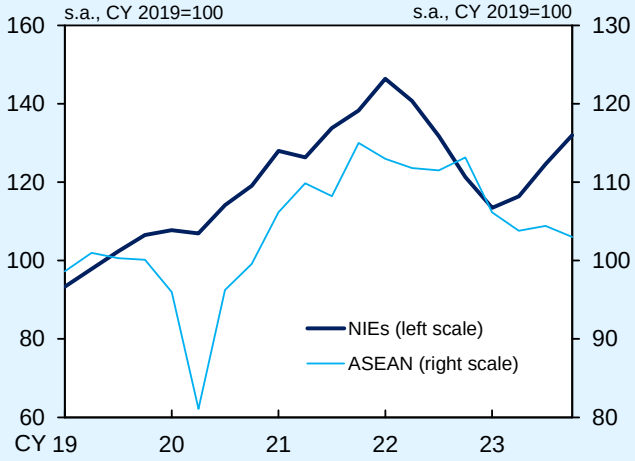
Source: S&P Global Market Intelligence.
Note: Semiconductor firms with strong AI links here consist of 4 major firms engaged in the design and manufacturing of semiconductors for AI servers, demand for which has been growing rapidly in recent years, while other firms are 46 other major semiconductor firms.

Meanwhile, inventory adjustments for other IT-related products have progressed on the whole, especially among assemblers of personal computers (PCs) and smartphones, although the adjustments have been protracted in some

sectors (Chart B1-4). Under these circumstances, even when excluding firms with strong AI links, revenue of major semiconductor firms has bottomed out recently (Chart B1-2).

Regarding the outlook, participants in the semiconductor industry and relevant parties have expressed the view that global IT-related demand is likely to continue picking up, driven by the expansion of generative AI services (Chart B1-1). However, the following two points warrant attention.

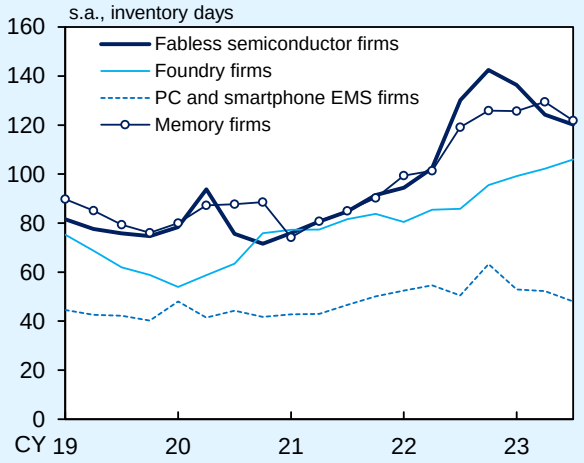
Chart B1-3: IT-Related Production in Asia



Sources: CEIC; IMF.
Notes: 1. Figures for 2023/Q4 are October-November averages.
2. Figures are the weighted averages of IT-related production indices for countries and regions in Asia using their shares in global GDP as weights. Figures for the NIEs are those for South Korea, Taiwan, and Singapore. Figures for ASEAN are those for Thailand, Malaysia, and the Philippines.

First, the whole process of manufacturing AI-related high-performance semiconductors tends to be completed within a limited number of countries and regions, mainly for the purpose of preventing technology leaks and ensuring quality. Therefore, there are high uncertainties over whether the recovery in IT-related demand on the back of the expansion of generative AI services will widely spread across countries and regions.

Chart B1-4: Inventories of IT-Related Firms



Source: S&P Global Market Intelligence.
Notes: 1. Fabless semiconductor firms here consist of 12 major firms engaged in the design and selling of logic ICs, foundry firms of 9 major foundries, PC and smartphone EMS (electronics manufacturing services) firms of 9 major EMS providers, and memory firms of 6 major firms engaged in memory production.
2. Inventory days are calculated by dividing the total end-of-period inventory by the total cost of goods sold, multiplied by 365.

The second point concerns demand for products such as PCs and smartphones. The pace of recovery in this demand is expected to gradually increase due to factors including replacement demand for products purchased during the pandemic and the introduction of new products. That said, a full-fledged recovery in demand for products such as PCs and smartphones could take time owing to diminishing remote work-related demand and to a prolonged replacement cycle.

It is necessary to closely monitor future developments in global IT-related demand, including developments in individual countries and regions, those in different final products, and how these developments will affect Japan's economy.