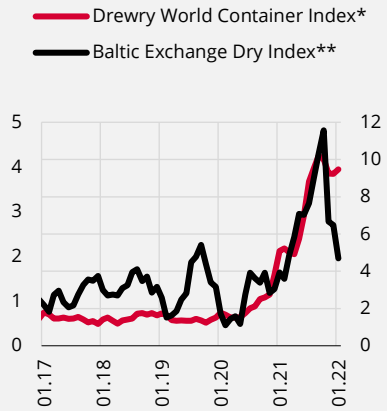
Box 2.4

What Do Survey Indicators Say About Supply Chain Developments at Sectoral Level?

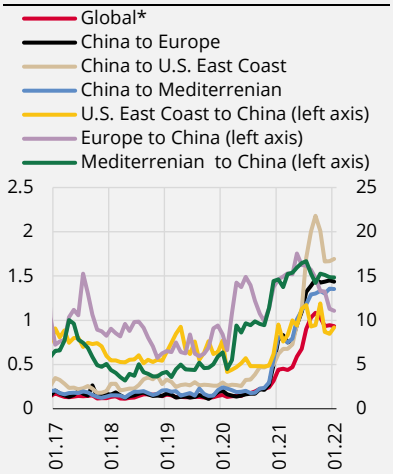
Global economies had to deal with disruptions in supply chains due to the pandemic. Factory shutdowns, losses in employment and mobility restrictions since the start of the pandemic caused difficulties across logistics networks, higher freight costs and longer delivery times. With widespread vaccination, the gradual removal of pandemic measures has increased the global demand. Accordingly, transportation costs have risen to historical highs due to the recovery in global trade and the price increases in commodities, especially for oil. As a matter of fact, the movements in the indicators of global container and freight costs have been quite striking. The Drewry Container Index, a weighted composite indicator of container costs on various shipping routes, rose by an average of 252% annually in 2021 and maintained its high levels as of January 2022. The Baltic Dry Index, another indicator of freight costs showing average transportation prices of raw material commodities such as coal, steel and grains for various routes, also posted an annual average increase of 175% throughout 2021. However, the passing of the traditional peak shipping season of August-October, and the implementation of measures such as increasing efficiency at ports and extended working hours in order to reduce the supply bottleneck in some countries caused the index to trend downward after October (Chart 1). Although there has been a decrease in container prices on some routes recently, costs remain high especially on the routes from China to the Mediterranean, Europe and the USA (Chart 2). Lastly, the global supply chain pressure index, which is derived by the New York Federal Reserve using various transportation cost indices, airfreight price indices and country-specific supply chain variables, reached its highest level in history at the end of 2021 (Chart 3).

Chart 1: Drewry World Container Index (Thousand USD) **and Baltic Exchange Dry Index** (Thousand USD)



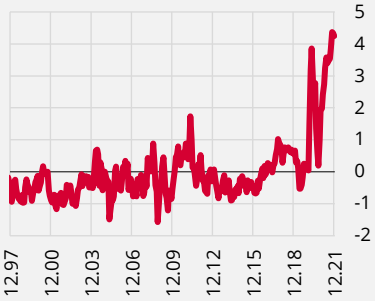
Source: Bloomberg.
* The index is derived from the size-weighted average of container costs of eight shipping routes (Shanghai-Rotterdam, Rotterdam-Shanghai, Shanghai-Genoa, Shanghai-Los Angeles, Los Angeles-Shanghai, Shanghai-New York, New York-Rotterdam, Rotterdam-New York).
** The index (January 1985=1000) shows the weighted average of Capesize (40%), Panamax (30%) and Supramax (30%) dry cargo freight forward contracts with an average maturity of approximately two months. January 2022 is the average of the first 21 days.

Chart 2: Freightos Baltic Container Index (Global and Selected Routes, Thousand USD)



Source: Bloomberg.
* The global Freightos Baltic Container index shows the weighted average of the container (40 ft) index for 12 routes. January 2022 is the average of the first 21 days.

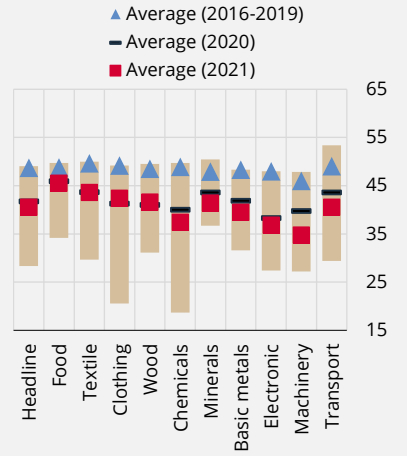
Chart 3: Global Supply Chain Pressure Index (Standard Deviations from Average Value)



Source: New York Fed.

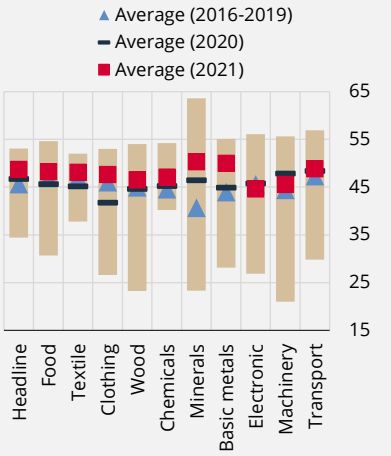
Disruptions in the international supply chain have had remarkable effects on domestic supply developments, both direct and indirect. Various survey indicators also provide important information on understanding these impacts at the sectoral level. "Suppliers' delivery times" showing how supply chain delays affect manufacturing industry companies, "backlogs of work" showing the volume of orders that firms have received but have not yet completed, and "purchased stocks" measuring the extent of inventory accumulation by firms are variables that can be used to follow supply chain developments in the PMI survey. Looking at suppliers' delivery times, not all sectors seem to have regained pre-pandemic levels due to ongoing disruptions in the supply of raw materials and problems in transportation, thus leading to longer delivery times. Suppliers' delivery times of firms with high global integration producing electrical and electronic products and firms producing chemical, plastic, rubber, machinery and metal products differed significantly from historical averages. With the global lifting of pandemic measures, delivery times differed positively in 2021 for tourism-related sectors, which are highly sensitive to pandemic conditions, the clothing and leather sector, and wood and paper sectors (Chart 4). The backlogs of work of firms producing construction-related basic metals and non-metallic mineral materials increased due to disruptions in the supply of inputs (Chart 5). The purchased stocks indicator shows a recovery in the purchased stocks of the vehicle sector, a goods exporter, and of tourism-related clothing, leather and textile sectors (Chart 6).

Chart 4: PMI Suppliers' Delivery Times** (Seasonally Adjusted, Level)*



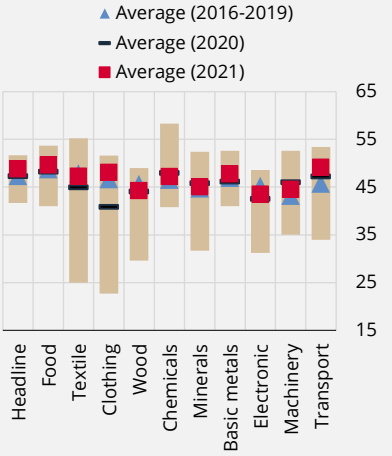
Source: Markit.
* Bars show the lowest and highest levels between 2020 and 2021.
** Lower values of the series indicate longer delivery times.

Chart 5: PMI Backlogs of Work Seasonally Adjusted, Level)*



Source: Markit.
* Bars show the lowest and highest levels between 2020 and 2021.

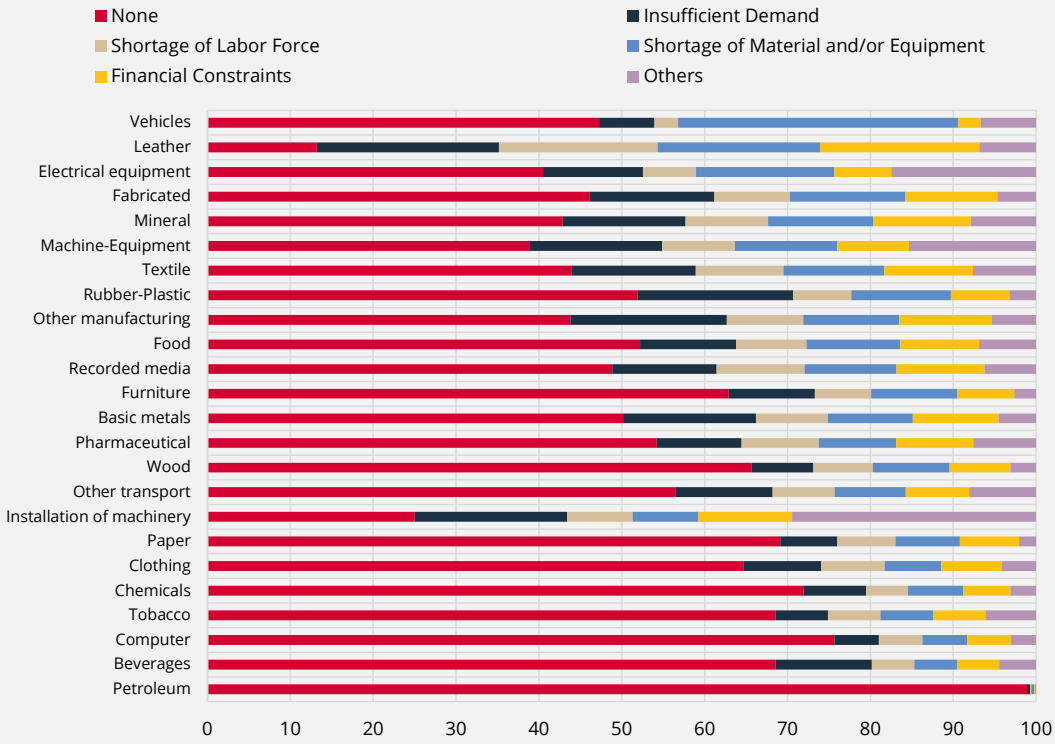
Chart 6: PMI Purchased Stocks (Seasonally Adjusted, Level)*



Source: Markit.
* Bars show the lowest and highest levels between 2020 and 2021.

The number of firms reporting no factor limiting production on the quarterly Business Tendency Survey (BTS) increased in the first quarter of 2022. The ratio of firms that indicate inadequacy of raw materials and equipment among factors limiting production is decreasing but is still higher than historical averages, which indicates that there remain supply chain-related supply problems. Supply shortages account for a significant share of the factors that restrict production in exporting sectors (vehicles, leather, electrical equipment, textile) that are highly sensitive to the course of the pandemic (Chart 7).

Chart 7: Business Tendency Statistics Main Factors Currently Limiting Production
(2022 Q1)



Source: CBRT.

In conclusion, after rising amid shutdowns, labor shortages and logistics problems at the start of the pandemic, transportation costs surged to historically high levels due to pent-up demand and increased global trade. These problems in the global supply chain have caused domestic manufacturing industry firms to experience difficulties in the supply of raw materials and transportation. Survey indicators indicate that sectors with high global interaction and high sensitivity to pandemic conditions experience more supply shortages.