

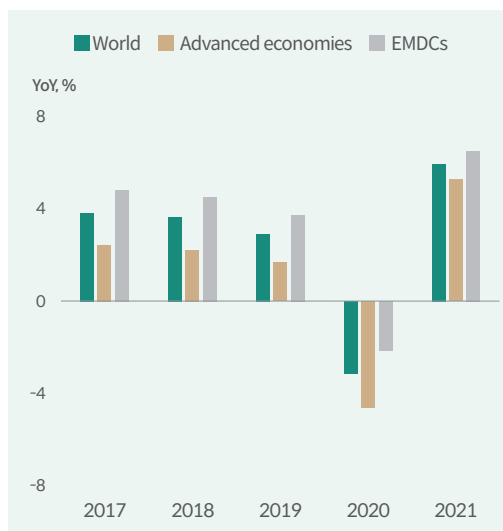


Recent Disruptions to Global Supply Chain and Inflationary Pressures

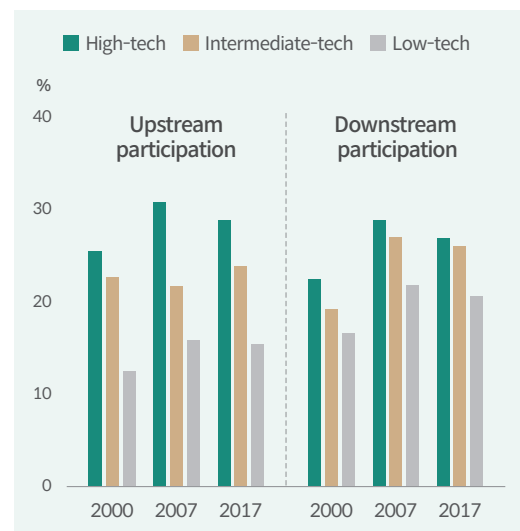
Macro-Economic Analysis Division, Economic Analysis Department Analyst Park Sun-woo

COVID-19 Pandemic Aggravated Demand-Supply Mismatches

- The global economy is recovering thanks to widespread COVID-19 vaccination and economic stimulus measures. However, the global supply chain remains unstable.
 - Global demand is recovering rapidly from the pandemic as major countries implement large-scale stimulus measures.
 - The IMF forecasted that the global growth rate will rise from -3.1% in 2020 to 5.9% in 2021, backed by stimulus measures in major advanced countries (World Economic Outlook, Oct. 2021).
 - As the global value chain (GVC) has expanded and become more complex, especially among high-tech industries, global supply chain has become more vulnerable (e.g., supply-demand mismatches around the world during the pandemic).
 - Among high-tech businesses, the GVC upstream participation rate rose from 25.3% in 2000 to 28.8% in 2017. The downstream participation rate increased from 22.3% to 26.8% during that period.
 - Although each company's efficiency and profitability has increased due to the division of labor through the GVC, COVID-19 has caused supply bottlenecks in some production sectors that strain the production of final goods, causing global supply chain disruptions.

[Figure 1] Global GDP Growth Rate Trends

Note: Data for 2021 and 2022 are projections
Source: IMF (Oct. 2021)

[Figure 2] GVC Participation Rate by Industry

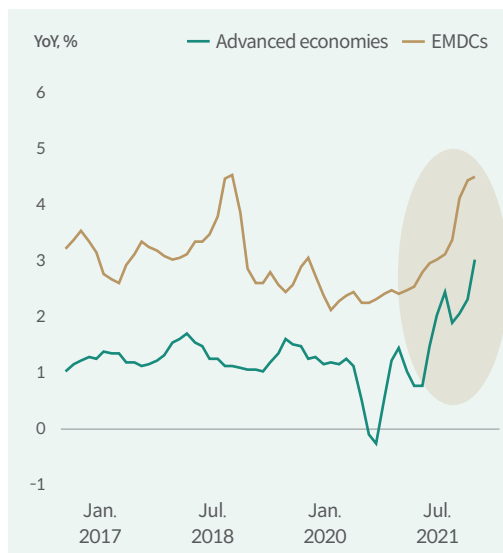
Note: Upstream participation is an input of intermediate goods made in Korea for overseas production. Downstream participation is an input of intermediate goods made overseas for production in Korea.
Source: WTO (Apr. 2019)



Examples of Supply Chain Disruptions and Rising Inflationary Pressures

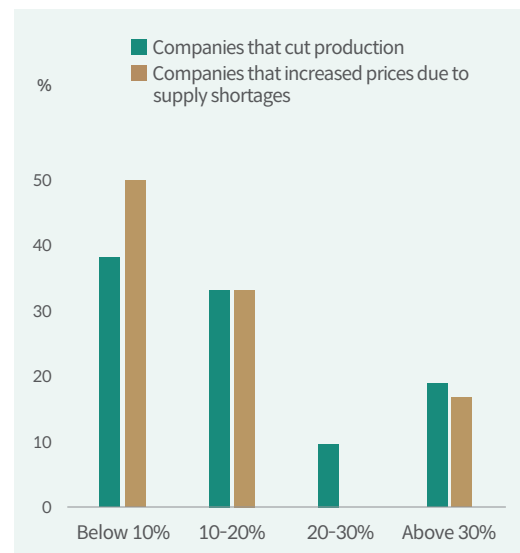
- **Inflation in advanced economies and emerging markets/developing countries is partly due to strong global demand. Global supply shortages caused by the global supply chain disruption in 2021 are another factor.**
 - Cost-push inflationary pressure is increasing due to the disruption.
 - Recent issues regarding the global supply chain include automotive semiconductor supply delays, a mismatch between labor supply and demand, and delays in maritime logistics.
- **Automotive semiconductors shortages are causing automakers to cut production and increase prices.**
 - Disaster-hit chip companies halted their production, which disrupted car production; Renesas (Japanese) suffered an earthquake in February and a factory fire in March, while NXP (Dutch) and an Infineon (German) factory in Texas suffered blackouts due to cold waves in February, and TSMC (Taiwanese) suffered an unexpected power outage in April.
 - As COVID-19 resurged in Malaysia and other Southeast Asian countries, factory utilization rates dropped at many automotive semiconductor assembly and test companies there.
 - The production of GM and Ford dropped by 33.1% and 27.6%, respectively, in the Q3 2021 compared to the same period last year.
 - The supply-demand mismatches of chips and finished cars contributed to higher prices for parts and finished cars.
 - Production has been reduced by over 10% recently at 61.8% of Korea auto parts makers due to the shortage of automotive semiconductors.
 - In the US, the new car supply decreased, and used car prices rose 23.2% YoY in September. This is a major factor in the consumer price hike.

[Figure 3] Inflation Rates Trends



Source: IMF

[Figure 4] Impacts of Chip Shortages on Korean Auto Parts Makers



Note: Survey results of 21 companies directly handling automotive chips

Source: Korea Automobile Industry Association (May 2021)

▪ **Inflation in Europe is mainly due to the supply-demand mismatch in the labor market, material and parts shortages, and the resulting manufacturing disruptions.**

- The UK and other Western European countries are seeing severe truck driver and dock worker shortages. Vacancies for those jobs have increased significantly as COVID-19 pushes potential foreign candidates to permanently return home.

• The EU is short approximately 400,000 truck drivers. (Financial Times, 13 Oct.)

- In the euro area, the share of companies that reported a commodities and machinery shortage as a factor in production cuts increased significantly in Q3 2021.

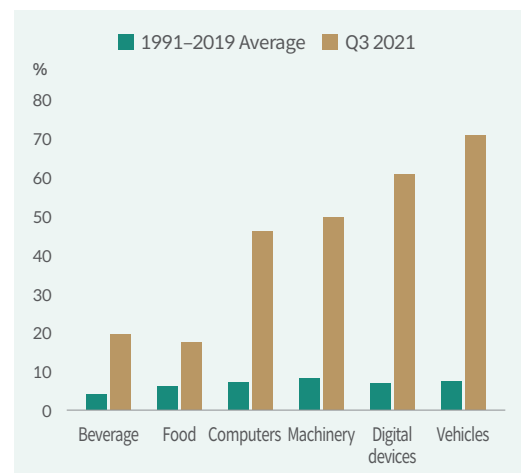
• Particularly, approximately 71% of companies in the automotive industry stated that the lack of parts is crippling production.

[Figure 5] Recruitment Trends for UK Transport and Warehousing



Source: ONS

[Figure 6] Shortage Reports by Industry in the Eurozone



Note: The bars show the proportion of companies that reported the shortages as reasons to cut production.

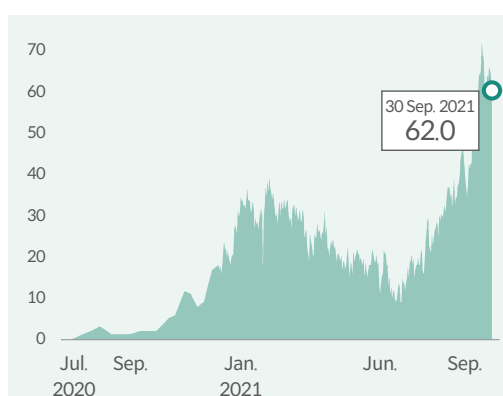
Source: Eurostat

▪ **Logistics costs soared as congestion at ports worsened after pandemic-related port closures and dock worker shortages.**

- Shipping containers from Shanghai to Chicago now take 73 days due to port congestion, up from 35 days (Financial Times, 31 Jul. 2021).

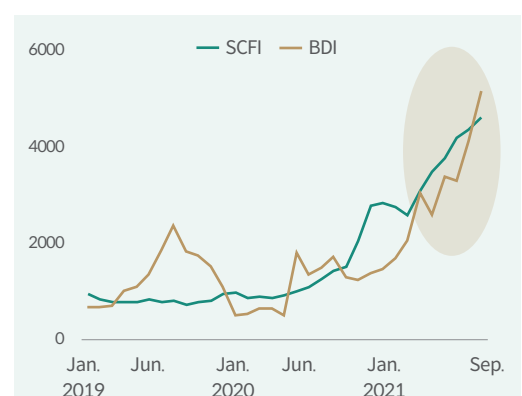
- Consequently, global sea freight rate indices, the Shanghai Containerized Freight Index (SCFI) and the Baltic Dry Index (BDI), rose by 227% and 200% YoY in September, respectively, increasing corporate logistics costs.

[Figure 7] Container Ships outside Long Beach



Source: Bloomberg

[Figure 8] Trends of Sea Freight Rate Indices



Source: Bloomberg

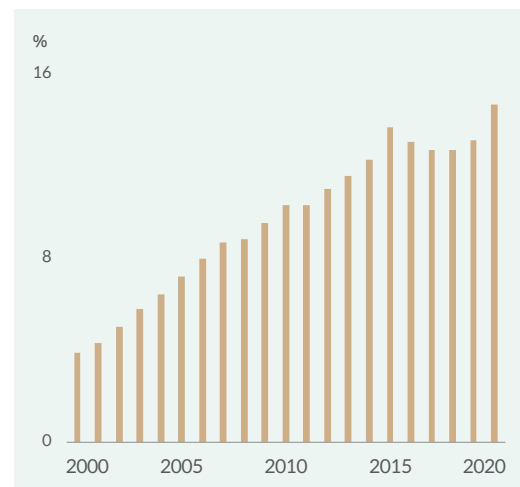
- **Recently, issues regarding China's international relations have emerged as a factor increasing global inflationary pressures.**
 - Since China banned Australian coal imports (Oct. 2020), China's producer price inflation rate rose from 0.3% YoY in January to 9.5% YoY in August 2021 due to turmoil in the supply of and demand for energy sources and soaring energy prices in China.
 - China's export volume stood at \$2.6 trillion in 2020, and price hikes on the Chinese exports may increase the risk of global inflation.
 - This shows how a political issue can shock the commodity supply chain (China's imports), causing global inflation.

[Figure 9] China Producer Price Trend



Source: CEIC

[Figure 10] China's Share in Global Exports



Source: WTO

Implications

- **The supply chain disruption, whose end is uncertain, may increase inflationary pressures at home and abroad.**
 - In Korea, 56.7% of companies reported business setbacks due to the global supply chain issues (Federation of Korean Industries, May 2020).
 - It is difficult to predict when the global supply chain disruption will be resolved as uncertainties (e.g., delays in vaccine distribution and the possible spread of a new COVID variant) grow.
 - A fast recovery of the global supply chain is expected to be driven by faster vaccine rollouts in low-income countries and the rapid return of workers to the labor force.
 - Higher vaccination rates in major manufacturing hubs, such as Vietnam (11.8%), Thailand (30.3%), and the Philippines (19.8%), the utilization rate of Asia factories relied on by global companies will increase, stabilizing production. (Percentages are vaccination rates as of 4 Oct. 2021.)
 - Many workers are hesitant to return to the labor market after the Delta variant's rise and restrictions on movement (e.g., regional lockdowns). However, a swift vaccine rollout may expedite their return.