

# ON POINT

ECONOMIC AND POLICY INSIGHT FROM THE OCC

## Could Supply Chain Overcorrection Result in Excess Inventories?

Global supply chains operated under historic levels of stress in 2021. More than half of eurozone manufacturers cited shortages of material as the reason for limiting production, more than triple the previous high in a 30-year history.<sup>1</sup> Likewise, purchasing managers globally reported broad increases in supplier delivery times.<sup>2</sup> Long queues of container ships waiting to load and unload goods at the ports of Long Beach, Calif., and Los Angeles have become one of the most visible symbols of stressed logistics networks.

Despite inefficiencies and shortages, production and the volume of goods moved exceeded pre-pandemic levels during the past year. Supply chains have lacked the flexibility to meet the surge in demand for goods from advanced economies. To mitigate disruptions, firms have generally responded by increasing inventories, rather than taking more dramatic measures like moving production closer to home markets. Supply chain stress should abate during 2022, but firms may face excess inventories and declining prices when the boom in consumer demand eases.

### Production and Shipping Volume Now Exceeds Pre-COVID Levels

During the initial March 2020 lockdowns, industrial production plummeted globally as factories were shuttered. Firms reduced inventories and canceled orders in response to the economic uncertainty. Then, with services hampered by restrictions and virus concerns, consumers in advanced economies reallocated their spending toward goods. This shift to goods consumption was especially strong in the globally dominant U.S. market, where retail sales excluding food services and autos increased more than 15 percent in 2021 from 2019 levels (compared with similar eurozone sales that rose only 4 percent).

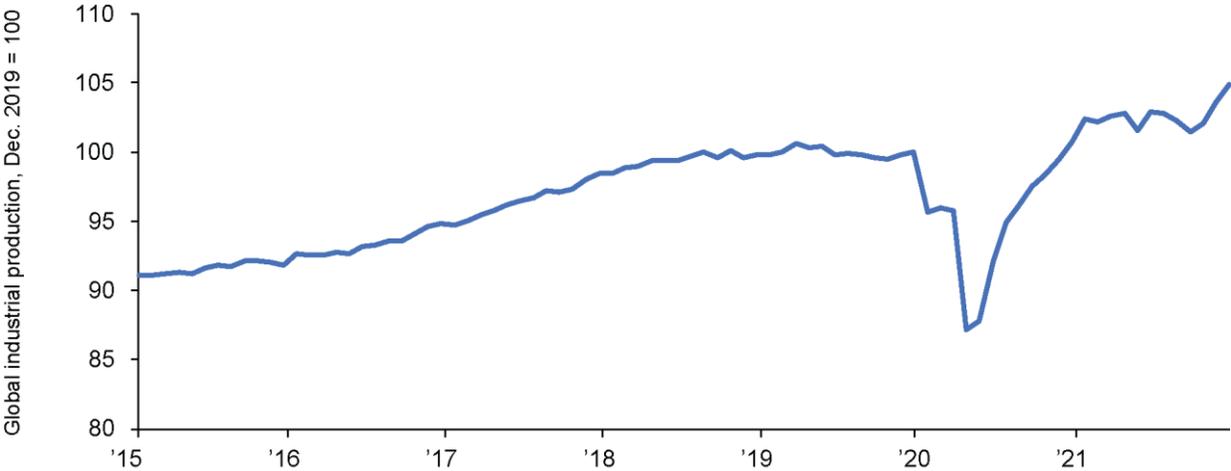
Global supply chain pressures continued to build as the delta variant spread in southeast Asian countries during the summer of 2021, leading to new highs in cases and tightened restrictions. But even in China, where authorities implemented strict regional lockdowns as part of their “zero-COVID” policy, there was only a moderate increase in supplier delivery times and backlogs. Chinese authorities applied restrictions more narrowly in export-intensive areas,

<sup>1</sup> [European Commission survey](#). (January 28, 2022). “Business and Consumer Survey Results for January 2022—Statistical Annex, Table 2a: Quarterly Survey of Manufacturing Industry (s.a.).”

<sup>2</sup> J.P. Morgan Global Manufacturing Purchasing Managers Index survey. (January 2022). [“Global Manufacturing Upturn Continues at End of 2021.”](#)

protecting export production. Chinese exports have run well above pre-pandemic levels during the past year, as has the overall level of global industrial production (figure 1).

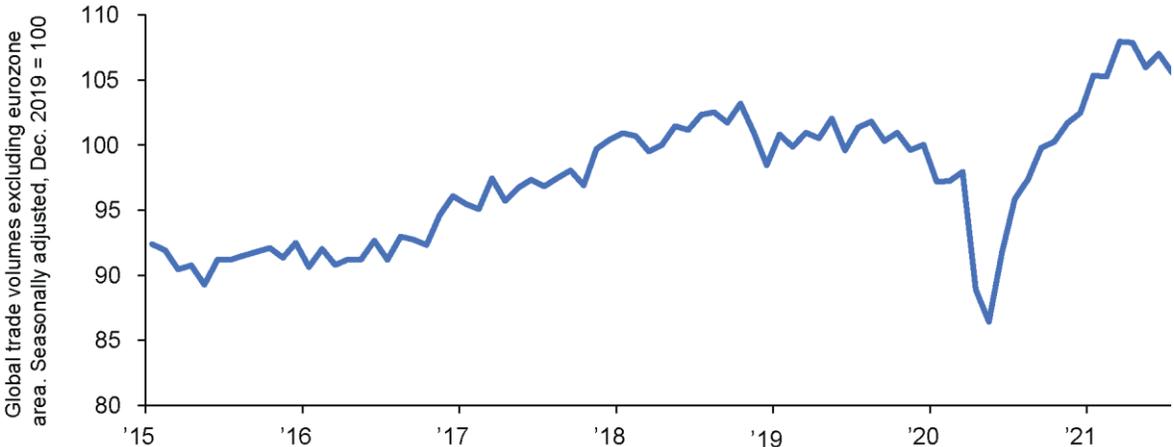
**Figure 1: World Industrial Production Still Strong Relative to Pre-Pandemic Levels**



Source: Netherlands Bureau for Economic Policy Analysis, Haver Analytics

The increase in goods demand drove a strong recovery of imports in advanced economies, especially from Asia. The value of U.S. real imports, which is adjusted for inflation, was nearly 10 percent more than the pre-pandemic level as of the fourth quarter of 2021. Global trade volumes have rebounded even faster than production, such that by November 2021 they were about 8 percent greater than their pre-pandemic level (figure 2). Shipping demand, especially for the Asia-U.S. routes, caused an increase in shipping prices. Throughput at U.S. ports in 2021 was at all-time highs, but ports struggled with inefficiencies and, as a result, backlogs of ships began to build in the second quarter of 2021. These queues effectively reduced global fleet capacity and also restricted port activity elsewhere.

**Figure 2: Trade Volumes Strong Relative to Pre-Pandemic**

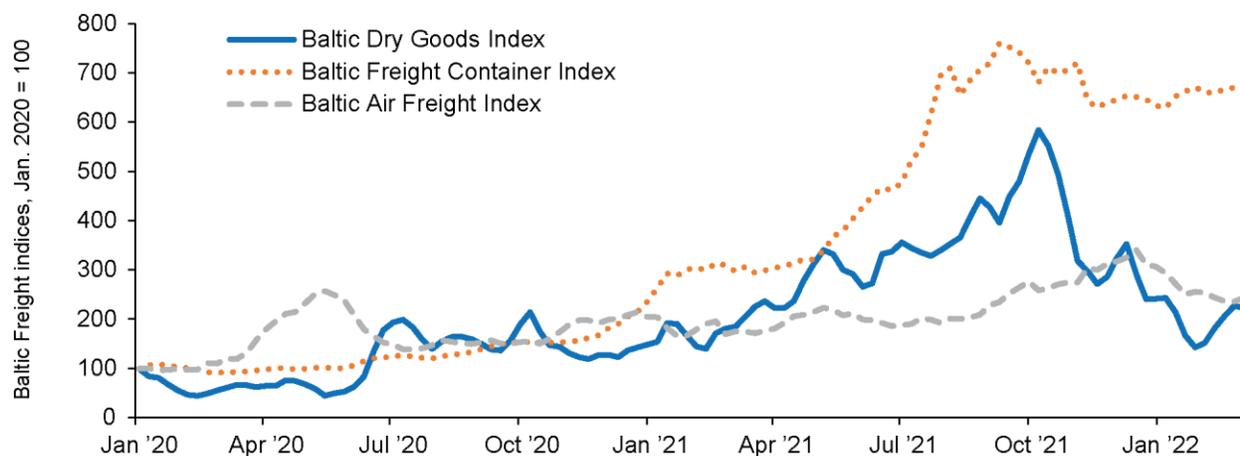


Source: CPB World Trade Monitor, Netherlands Bureau for Economic Policy Analysis, Haver Analytics

## Uncertain Timeline for Resolving Supply Disruptions

Shipping rates (figure 3) and supplier delivery times for manufacturers<sup>3</sup> suggest supply chain pressures have peaked, but it will take some time for bottlenecks to fully clear. Industry analysts and economic forecasters have generally projected most supply chain issues will abate in the second half of 2022, though they may persist into 2023 or longer in some industries.<sup>4</sup>

**Figure 3: Shipping Costs Show Signs of Easing, But Less Improvement for Container Shipping Costs**



Source: The Baltic Exchange, Haver Analytics

The timeline for completely resolving supply chain issues is subject to significant uncertainty. Consumer demand for goods is expected to wane, as many durables do not need to be replaced quickly and spending on services should continue to rise. Consumer demand is expected to face headwinds as central banks begin to hike interest rates and as enduring price increases in energy and elsewhere diminish consumer spending power. Many consumers, however, also have built up significant “excess savings” that could continue to fuel goods spending for longer than anticipated. Moreover, the Russia-Ukraine conflict has already impacted goods, food, and energy supply chains and could create shortages especially in energy, metals, and neon gas (an important input for semiconductor manufacturing).

## ‘Just-in-Case’ Inventory Model May Create Overbuilding Risks

The uncertainty around supply chain disruptions and future demand creates risks for firms. Most firms responded to supply chain disruption by attempting to increase inventories, especially of key inputs, since strategically relocating production or supply chains closer to customer markets would take far more time and resources.<sup>5</sup> More firms may look to operate under a “just-in-case” model, wherein a manufacturer maintains larger inventories of production inputs (safety stocks), that can provide a firmer cushion in case of supplier delays compared to a “just-in-time” model, whereby firms only hold inventories needed to meet current orders. But building up these safety

<sup>3</sup> J.P. Morgan Global Manufacturing PMI

<sup>4</sup> Oxford Economics. (2021). [“When Will Supply Chain Pain Recede, and What Lessons Can Businesses Learn?”](#)

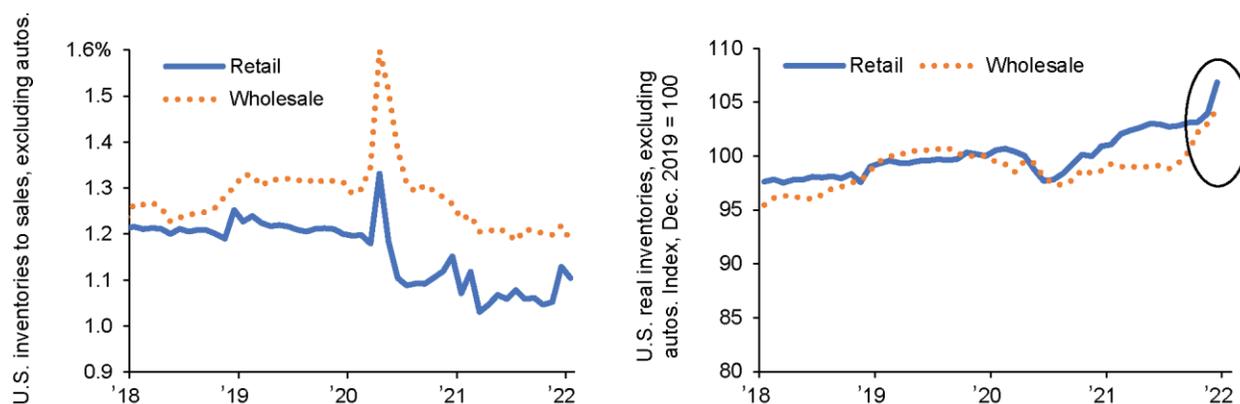
<sup>5</sup> McKinsey and Company. (November 23, 2021). [“How COVID-19 is reshaping supply chains.”](#)

stocks can create a bullwhip effect,<sup>6</sup> as additional demand compounds and creates further pressure upstream in the supply chain. These simultaneous inventory builds of intermediate goods and finished products may create an impression of stronger demand than is the case, accentuating the risk of overbuilding inventories across the supply chain. This overbuilt inventory may then be liquidated quickly across the supply chain when final demand normalizes, resulting in large price declines that can hurt profitability.

“Boom-to-bust” cycles are common in commodities and shipping, two sectors that have been under significant strain in recent years. Lumber has already gone through a boom-to-bust cycle. A lumber shortage turned into a glut in May and June of 2021 as the main bottlenecks in homebuilding moved from framing lumber to other homebuilding components. Lumber prices crashed, before rising again near the end of 2021.

Relative to sales, the level of inventories remains tight (figure 4, left chart). These ratios, however, are skewed by the sharp increases in retail sales, as inventories have surpassed pre-pandemic levels and are rising quickly (figure 4, right chart). As some, possibly many, companies look to maintain safety stocks in a just-in-case model, the risk of an inventory overbuild may be higher than in the past. This could cause prices to be more volatile, especially for upstream producers if demand for product changes along the supply chain. Some firms within the chain and retailers may face profit challenges even with a small decline in consumer spending if sharply rising inventories do not normalize with the level of economic growth.

**Figure 4: Retailers’ Inventories Are Tight, but Inventories Are Rising Quickly Overall**



Sources: U.S. Bureau of Economic Analysis, Census Bureau, Haver Analytics

## The Point?

The global supply chain bottlenecks have lessened but there is a risk of firms accumulating excess inventories into a slowdown of consumer and business demand.

<sup>6</sup> The [bullwhip effect](#) (also known as the Forrester effect) is defined as the demand distortion that travels upstream in the supply chain from the retailer through to the wholesaler and manufacturer due to the variance of orders, which may be larger than that of sales.