Breaking down the breakdown of the global supply chain

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Even as the broader economic and pandemic recovery evolves, problems with supply and transportation stubbornly persist. We dig into what's going on, and what we can expect in the near- to mid-term.

As consumers emerge from the pandemic, they are still enduring months-long waits for a wide range of products — from furniture to cars to construction materials. Behind all of that is a long line of manufacturers, distributors, and retailers waiting for the parts to build them and the products to put on their shelves. While the eventual unwinding of the shutdowns, shortages, and congestion that caused it all has begun, it's been far from a linear process, and an optimistic time frame for resolution seems less likely every day, as new kinks develop even as old ones get worked out.

The upshot is that consumer patience will continue to be tested and companies will continue to scramble and put bandaids on the problem as they explore longer-term fixes. Investors will need to keep an eye on individual industry and company situations as a broader return to supply-chain-as-normal remains elusive.

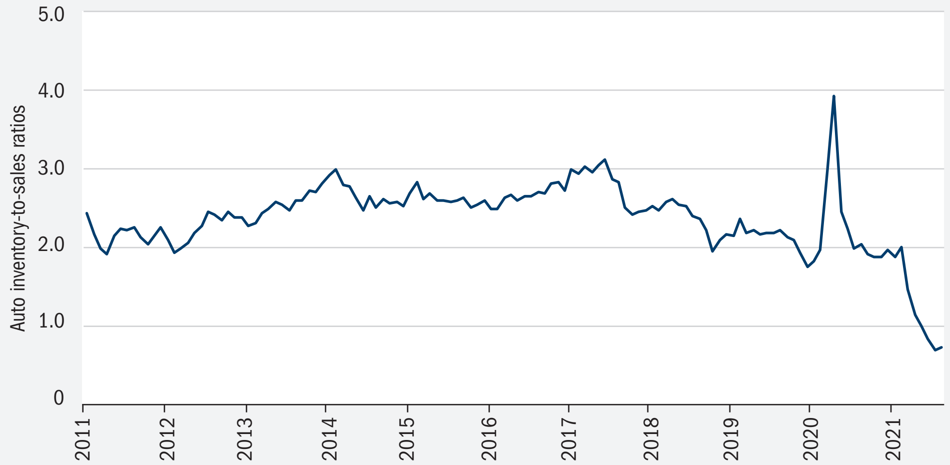
Lingering distortions in supply

The supply and demand equilibrium across many industries was thrown off-kilter by the shutdowns and restrictions early in the pandemic. These initial disruptions and shortages created a bullwhip effect through supply chains, freezing, slowing down, and elongating processes and activities from the manufacturing floor to the retail floor and at every point in between. That it's taken this long to even begin to unwind is a testament to the deep and far-reaching effects of the pandemic, as well as the susceptibility of today's hyper-optimized supply chains to unexpected disruptions.

Just-in-time manufacturing and right-on-time inventory methodologies have created great efficiencies and dramatically reduced costs for many manufacturers — and lower prices for consumers. But that lean and mean approach turned out to be an Achilles' heel when the pandemic turned everything on its head.

The auto industry is a perfect example. Automakers view their supply chain mostly as a cost center, so they have become extremely optimized to reduce costs. This means they're relatively inflexible and have a process that involves a lot of potential single points of failure. The initial demand miscalculation by automakers — that consumers would hold off buying cars due to the pandemic, not want to buy more, as they have — proved to be near fatal. They canceled orders for parts, most notably for the hundreds of semiconductors that are integral to every modern car, and were cut off from crucial supply when their reorders were rebuffed by overwhelmed semiconductor makers. So, auto assembly lines sat idle for the lack of just one type of part. And it's not over. Those early shortages continue to hound automakers, who have burned through inventory to keep up with demand and face another round of production slowdowns (exhibit 1).

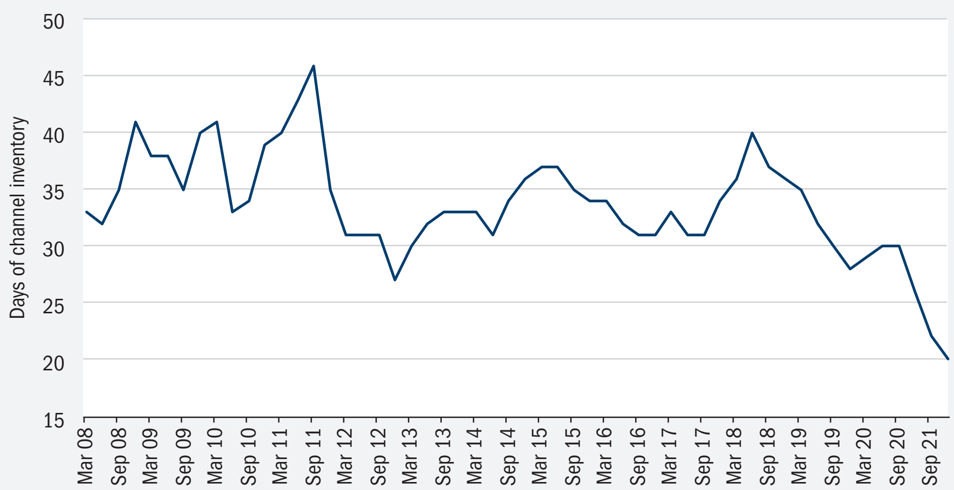
Exhibit 1: U.S. auto inventory is at a record low relative to sales



Source: U.S. Bureau of Economic Analysis. Retrieved from FRED, Federal Reserve Bank of St. Louis. Data as of October 2021.

Another factor in the single point of failure problem is regionalization. The U.S. became dependent on the Asian semiconductor foundries, and when they shut down during the early pandemic, there weren't really any alternatives at scale. In the wake of the initial disruptions in supply, the large Asian foundries reacted by pledging to add capacity, and the Biden administration announced incentives for onshoring chip manufacture back to the U.S. But building out more semiconductor capacity is complex and expensive. To meet current demand, manufacturers have been depleting their inventory (exhibit 2), and rebuilding that supply is a multi-year process.

Exhibit 2: For some providers, the inventory of semiconductors has not recovered



Source: Microchip Technology Inc., as of October 2021.

An evolving perspective

The modern global supply chain relies on predictability. The pandemic put that in high relief, but other unexpected events have also been part of the equation — some isolated, and some more systemic. Who could forget the image of the massive container ship hopelessly wedged into the Suez canal for weeks, and the supply chain chaos that ensued. In addition to COVID-related closings, recent tech supply woes were worsened by a fire in a key Japanese chip facility, the historic February ’21 freeze and power outage in Texas, and Trump administration restrictions imposed on major Chinese suppliers. In September, a freak power outage in Dresden, Germany, shut down one of Europe’s largest chip fabrication facilities — one that specializes in auto chips and that was brought online just this past June to add critical capacity. With the continuing effect of the pandemic shutdown added to these continuing setbacks, recent estimates from industry analysts see semiconductor shortages extending into 2023.

This confluence of challenges, and the myriad others that are affecting a broad range of industries, would seem to be a wake-up call for a fundamental change in supply chain management. But is anybody hearing it, and if so, are they heeding it? Across industries, there’s a lot of rhetoric today about rethinking supply chains and inventory. But the real test is going to be what companies are actually doing to diversify supply and suppliers over the next several years — to nearshore production, to have higher inventory levels in the warehouses, and to move product closer to customers.

In an industry that has had a life or death experience, like autos, we believe that fundamental change is more likely. They have already shown a lot of maturation in recognizing that they cannot afford to treat the semiconductor supply chain as just another supplier, cutting and ramping up orders at will, when it could mean the life or death of their business. A key to broader change could be a basic shift in perspective. For most companies, the supply chain is not viewed as a competitive advantage — it’s just an expense.

Signs of progress

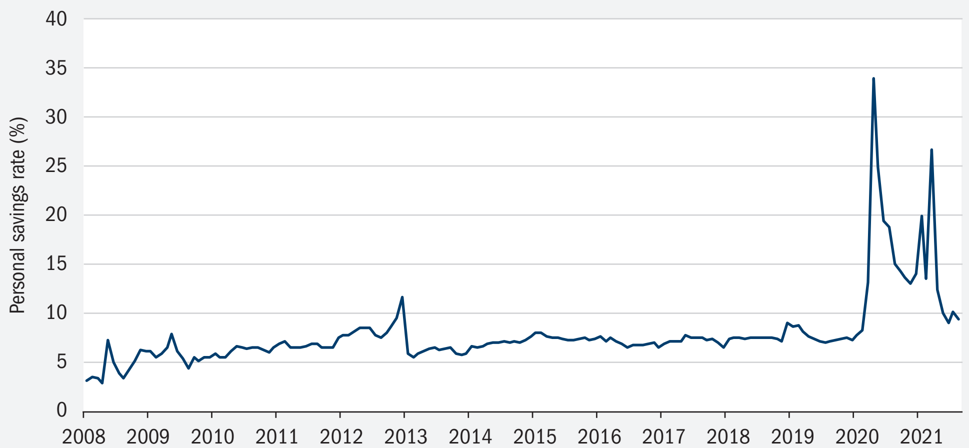
There are companies in the retail goods space that have made strides in creating more resilient and nimble supply chains, incentivized not by the most recent economic turmoil, but by the decade-past Great Recession. A good example is fast fashion, which was just coming into the market at the time, and which investors believed would decimate traditional retailers. With new competitive pressures, traditional retailers realized that they needed to be more flexible and nimble. Brands sought to diversify supply chains away from China, where wages had started to rise, to other areas in Asia and Latin America, and to build better relationships with vendors. The result was a less concentrated and more agile supply chain — something that helped them navigate the COVID crisis. They had already put the building blocks in place, so when they had to dramatically pull back on inventory and then rapidly ramp up to chase demand, they were able to do so. As these companies face this year’s holiday rush, they are primed to do whatever’s necessary to get their products to consumers, and use the price pressure created by lean supply and strong demand to their advantage.

Resilient and burgeoning demand

The 800-pound gorilla in the room in all of this is consumer demand — something that's been surprisingly more resilient than expected during the pandemic, and, in some cases, unpredictably strong. Demand for technology products is a good example of both cases. Demand for PCs, a mature market that had seen declining sales for years, grew in double-digit percentages as consumers rushed to outfit their home offices. Longer-term, a potential lasting shift toward office/home work hybrids and "nesting" has increased and will likely sustain growing demand for the tech products that make it possible — from Wi-Fi to virtual meetings to delivery apps, and so on.

Pent-up demand, while likely to ease over time, remains a key factor in the current supply chain story. From a macro standpoint, the biggest factors contributing to this trend are the savings that consumers have amassed by not spending during the pandemic (exhibit 3), and the rising wage benefits they're capturing as they return to work. This could drive a rising tide across the consumer sector — as long as companies can effectively manage the inventory.

Exhibit 3: Higher than normal savings could continue to drive consumer demand



Source: U.S. Bureau of Economic Analysis. Retrieved from FRED, Federal Reserve Bank of St. Louis. Data as of October 2021.

The weakest link

The link in the supply chain that every product and factory part touches is shipping and transport. It starts with the massive East to West flow of goods on sea and in the air and moves through the trains and trucks that serve factories, distribution centers, and local retailers.

Routine shipping and transport have been redefined in the COVID era — in some obvious and expected ways, but also in ways that were harder to see before the pandemic struck. Trade with Asia, and China in particular, is a case in point. Historically, there are two types of air cargo. Dedicated freighters are the primary one, but there is also belly space in passenger airlines. The China-to-U.S. air cargo market is normally 70% dedicated freighters and 30% passenger belly space. But because of the pandemic, there's been virtually no business or leisure travel between the U.S. and China. Pre-pandemic, there were typically 60 flights a week from China to the U.S. Now there are two. That's one third of the capacity that's not going to come back anytime soon. And when it does, it's going to come back slowly. Some analysts think it may not come back fully at all.

From Los Angeles to Rotterdam, there's serious congestion at the world's major seaports and distribution hubs as well. At the Port of Los Angeles, the average wait time to offload has more than doubled over the past few months, a problem so sticky the Biden administration authorized 24-hour operations to try to ease the backlog. There's been a massive dislocation in pricing, too. Air freight has quadrupled, and ocean and trucking rates are close to record highs (exhibit 4).

Exhibit 4: Shipping costs have risen dramatically in the pandemic period

Hong Kong to Los Angeles shipping rates, price per container, January 2015–September 2021

Source: Drewry, Columbia Threadneedle Investments. Price is per forty-foot equivalent container (FEU).

The people problem

Part of the problem at the airports, seaports, and trucking hubs is the part of the supply chain that's usually never in question — a steady stream of willing workers. There's freight backed up at the ports, at the warehouses, and what is referred to as line-of-road, which could be trucks and trains and planes connecting those nodes in supply chains. The infrastructure is fine, but there's a buildup of goods and equipment. The way businesses typically address this is with more people. But, for a number of reasons that are not fully understood yet, there is a significant shortage of labor. It's a trend that's challenging a broad segment of industries, from core manufacturing to main-street retail.

Conclusion

Stories about trouble in global supply chains aren't going to disappear from the news cycle anytime soon. Just factoring in the impacts from the first wave of pandemic shutdowns and disruptions, there's still a lot of ground to make up, and manufacturers, transporters, and retailers are working hard to do so against steady consumer demand. The main ingredient in that project is time. What's harder to measure are the ripple effects that could have lasting impacts, changes in consumer behavior and demand, and the opportunities that these stubborn challenges may have opened up — to rethink and remake supply chains for a new, less predictable and more volatile normal. Companies that learn these lessons, that can be creative, resourceful, and adaptive in their approach to supply chain management should be more valuable to investors over the long term, especially if they can do it at scale. In the meantime, investors may benefit from paying close attention to individual company and industry prospects vis-à-vis their specific supply chain challenges and opportunities — the kind of focused, fundamental research that's a hallmark of the Columbia Threadneedle Investments approach.

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