Still Chained Down? Supply Chain Disruptions - Part 1

What Is a Supply Chain?

A company's supply chain comprises several suppliers that work together to create and deliver a particular product to the end-user. Different activities, people, organizations, information, and resources are all part of this network. The supply chain also refers to the stages of bringing a product or service from its initial condition to its destination. Companies can reduce costs and speed up product delivery by being more efficient in controlling the supply chain. To avoid costly recalls and litigation, organizations need good supply chain management. Hence, it is often aimed at centralizing or linking the product's manufacturing, transportation, and distribution. Internal inventories, manufacturing, distribution, and sales, as well as the inventories of firm suppliers, all need to be kept under stricter supervision.

Supply Chain Disruptions

Covid-related manufacturing concerns, labour supply challenges, "bullwhip effects" of pull-forward ordering, cautious inventory accumulation, and Russia's recent invasion of Ukraine have contributed to supply chain disruptions during the last two years. Some of the most significant economic concerns facing the Fed as it approached 2022 are a tight labour market, problems with effective management of supply chains, and increasing inflation. Over the last two years, two different events have drastically impacted people's understanding of supply bottlenecks.

Impact of Covid-19

Covid-19 has wreaked havoc on global supply networks. However, they have been a critical lifeline for the response, ensuring that critical medical supplies, food, and other critical essentials reach those in need the most. There is little question that the pandemic has put supply chain executives' resourcefulness, resilience, and adaptability to the test as they attempt to sustain critical operations.

Early in the pandemic, a dramatic but short-lived drop in demand drove many businesses to reduce stockpiles and output. However, soon after, fiscal stimulus and social distancing pushed goods demand to record highs. In October 2021, US consumer expenditure on durable goods was 40% higher than in October 2019. The pandemic's onset resulted in a fall in consumer goods demand, although the recovery took just four months.
With the virus remaining a menace and many countries under lockdown, while others emerge into a whole new world, supply chain disruption remains a painful issue. Over the past two years, global supply chains have been strained, exposing the flaws of a convoluted system that affects everything from computer chips to toilet paper. These disturbances have ramifications beyond everyday living; they echo across the global economy.

Impact of Russia-Ukraine's War

Growing geopolitical concerns from Europe have crept into global food markets even before Moscow's war on Ukraine. Last year, prices for critical fertilizers soared as the EU imposed sanctions on Belarus, a major potash producer. In contrast, both major fertilizer exporters, China, and Russia imposed export restrictions to protect their domestic supplies.

Russia dominates the markets for several vital commodities, including oil, wheat, aluminium, palladium, and is Europe's primary gas supplier. Since the 1970s oil shock, commerce has grown worldwide, and markets have become more intertwined. However, as firms and governments worked to lower costs in their supply chain operations, they unwittingly grew increasingly dependent on a few providers, from grains to computer chips, making them susceptible to product flow disruptions.

Now, from grains to energy to metals, Russia's invasion of Ukraine has shown how certain nations exert tremendous control over raw material supply due to their strong market position of basic commodities and minerals. These materials, such as rare earth minerals, will exacerbate semiconductor shortages. There is also wheat, which, since Ukraine and Russia are essential exporters, will significantly influence the global agri-food system. Furthermore, oil and natural gas output will affect transportation and logistical costs.

Russia is also a major palladium producer, which automakers use to eliminate hazardous pollutants from exhaust fumes and platinum, copper, and nickel, used in battery technologies. Neon, an odourless gas that is a product of steel processing and a vital raw element for chip fabrication, is likewise dominated by Russia and Ukraine. One of the most concerning consequences of the Ukrainian conflict has been the impact on grain and food prices. Food costs are already high due to poor harvests throughout the globe.

Fully electric and plug-in hybrid-electric cars account for 18% of new car sales in Europe in 2021, up from 10.5% the previous year. According to estimates, recent automobile sales in the area are at their lowest level since 1985. After the Russia-Ukraine conflict disrupted supply chains, S&P Global Mobility lowered its outlook - S&P analysts reduced their forecast for global auto output by 2.6mn cars to 81.6mn this year, with Europe accounting for more than half of the deficit. With the rising demand for electric vehicles, Tesla's move to open a new factory in Berlin might be considered credible. The company has managed the chip crisis better than the competition, and although the war between Russia and Ukraine has slowed down production, future profitability expectations remain high.

The economic consequences of Russia's invasion of Ukraine are largely unpredictable. Aside from the immediate consequences of increasing global oil and commodity prices, the invasion and associated events may stifle economic activity overseas and impair supply networks, resulting in ripple effects to the economy via trade and other channels. Financial market turbulence might tighten lending conditions and affect economic development, especially if it persists.

Food Industry

Battered by the coronavirus pandemic and the war in Ukraine, the food industry has experienced disruptions in the supply chain. When the pandemic hit, the issue of food supply immediately arose with the sight of empty supermarket shelves in several countries. This exposed fragilities in a concentrated, capital intensive and vertically integrated industry. For instance, in the UK, the nine big British food retailers control 90% of grocery sales.

If the Covid pandemic exposed an unstable system, the recent conflict between Russia and Ukraine looks set to cause havoc in the food industry. Even before that, food prices were high, because of poor harvests around the world and of higher fertiliser prices, after China and Russia placed export curbs to safeguard domestic supply. In January, analysts reported seven-year high food inflation of 7.8%. The conflict is set to push that figure even higher, as the war has caused significant disruptions in crop exports such as wheat and corn in Russia and Ukraine. To understand the impact of this, Russia and Ukraine together supply a third of the world's wheat, a fifth of its corn and 80% of its sunflower oil. Russia is also a very important exporter of fertiliser and chemicals, crucial to crop production, but also of grains, used for animal feed, which caused prices for goods such as milk and meat to rise. Wheat futures are up 42%, while the price of corn has risen 27%.

The disruptions in the supply chain start from production. Many Ukrainian farms have been destroyed or abandoned, with many farmers leaving their fields to defend their country. Those that are still active struggle to come to grips with soaring fuel and gas prices, shortages of chemicals, grains, fertilisers and even workers to take care of the crops. With crop yields set to diminish in the next batch, due for the European summer, this is not the only problem faced by Ukrainian farmers. With the closure of Ukrainian ports following Russia's attack, the country is struggling to find a different way of exporting crops, 90% of which were previously exported by sea. The short-term solution is to transport the crops by train, however at a much slower pace and with significantly smaller capacity, only managing to transport around 25-30% of production in the same amount of time.

The war is already wreaking havoc in the food industry, with shortages set to become much more acute. The effects of this are felt by the average person in the US, UK, and Europe through more expensive trips to the supermarket. However, a much more severe impact is currently felt by poorer countries that are dependent on the previously low crop prices from Ukraine, such as Lebanon, which imports 50% of its total wheat consumption from Ukraine, Yemen, Bangladesh and Egypt, the world's biggest importer of Ukrainian wheat. Not only that, but the UN World Food Programme bought 70% of its wheat from Russia and Ukraine. The threat of famine in these poorer countries is real, with wheat inventories only lasting for a few months and domestic production not enough, for most of these countries, to offset the impact of the war in Ukraine.

With food inflation soaring, crop yields set to fall, shortages of fertilisers, grains and chemicals set to continue and higher gas prices increasing costs of production, the future of a fragile food industry looks bleak, with prices expected to rise further and supply chain disruptions to worsen.

Automotive Industry

Shifting the focus to the automotive industry, the last two years also exposed the weaknesses of its co-dependent supply chain. There are roughly 30,000 parts in a car, most of them having very few, highly specialized producers, meaning that any slowdown or delay of one of these parts can cause serious disruptions along the supply chain. The Covid pandemic sparked a shortage of semiconductors, as producers struggled to keep up with the rising demand for such chips, crucial to producing mobile devices, PCs, and cars.

Almost two years later, chipmakers still struggle to meet demand. ASML, which dominates the market for lithography machines, the main tool used for mass production of semiconductors, is still not able to increase capacity, with CEO Peter Wennick blaming the problem on disruptions even higher up the supply chain. The effect of these shortages has hammered the automotive industry, with Europe's largest carmakers reporting steep falls in earnings at the end of the third quarter last year. The two largest European manufacturers, Volkswagen and Stellantis, reported falls in production of 35% and 30% respectively.

With Russia's recent invasion of Ukraine, further disruptions are set to occur, as a squeeze on the supply of rare gases, produced in Russia and refined in Ukraine, crucial to producing semiconductors have only piled on the pressure on chip manufacturers. However, this might be the least of the problems of car manufacturers around the world.

The war in Ukraine is affecting the industry's supply chain, with important suppliers being forced to halt production, severed trade routes delaying shipments, and sanctions forcing automakers to close their factories in Russia. Russia's exclusion from SWIFT only further strained the critical supply chains, slowing trade and movement of goods.

Despite all of this, there is one crucial component, the shortage of which has hit production most: electric wire harnesses. These often-overlooked components are crucial for organising the labyrinth of wires inside a car. Ukraine supplies about a fifth of Europe's harnesses. This low-cost part is highly individualised for different car companies and car models, making it difficult to replace. Shifting the assembly of harnesses to neighbouring countries such as Serbia and Romania might be an alternative. For now, Ukrainian assembly plants will be looking to meet as much demand as possible, increasing production in plants unaffected by war and taking advantage of the largely female workforce, as production of harnesses takes a lot of dexterity. Not managing to keep production up could have dire consequences, with the harness industry at risk of collapsing completely in Ukraine.

VW, Europe's largest carmaker, has been one of the hardest-hit automotive producers. Even before the war, VW was struggling to keep production up at its main plant in Wolfsburg, Germany. The aftermath of Russia's invasion of Ukraine has forced Volkswagen to idle its plants in Zwickau and Dresden, after failing to receive crucial parts from Ukraine. This closure will lead to about 1,200 fewer cars being produced every day, and unless the disruptions in the supply chain are fixed, production and earnings forecasts will keep on falling. This temporary closure resembles the one taken at the end of 2020, caused by the shortage of semiconductors sparked by the pandemic, which was reflected by a poor performance in the last quarter of that year.

For French automaker Renault, the impact has been even more acute. On top of the disruptions experienced by virtually every European automaker, Renault owns Avtovaz, producer of the Russian brand Lada, sales of which accounted for 8% of Renault's revenues before the war. As a result of the invasion, Renault's shares have fallen by 30%.

With the war in Ukraine showing no signs of stopping, further factory closures, delayed or blocked shipments, and supply chain disruptions are set to occur. The war in Ukraine and the shortage of semiconductors has exposed a highly concentrated, intricate, and co-dependent supply chain that, over the past two years, has rarely functioned smoothly.

Airline Industry

Lastly, recent sanctions imposed by the West on Russia have triggered disruptions in the country's airline industry, but also for other carriers around the world. Once again, this occurred at a time when the industry, which accounted for 6% of the world's airline capacity last year, was still recovering from the impact of the pandemic.

State-owned carrier Aeroflot was arguably the hardest hit by these sanctions. Earlier this month, Airbus and Boeing announced that they are suspending the supply of parts and removing maintenance support for Aeroflot's planes. This means that 70% of the carrier's commercial fleet will be without maintenance services and therefore unusable, at least until they find an alternative. Not only that, but two out of the three dominant technology providers for the airline industry have stopped selling to Aeroflot. These sanctions come on top of export bans of aircraft and components officially imposed by the US and EU.

The only solution for Aeroflot seems to be developing its own parts, as proposed by one industry executive. In regards to maintenance services, Russia's transport ministry proposed that "third-party" companies take over the maintenance of aircraft. Still, these sanctions, as well as Aeroflot's recent cancellation of all flights outside Russia and Belarus, have caused a massive disruption in the company's business. Boeing and Airbus will both be suffering after stopping business in Russia, with Boeing previously estimating the Russian market to be worth over £80bn over the next 20 years.

For carriers around the world, record oil prices have raised costs significantly, given that fuel can represent up to 35% of an airline's operating costs. Even though airlines usually hedge against oil prices, hedging policies have changed for most carriers in Europe, after the collapse in the price of oil in 2020, leaving them much more exposed to these rising prices. One company that has particularly suffered from this is Wizz Air, which has completely stopped hedging and have seen their stock fall by nearly 50% since mid-February. The question is whether airlines will be able to pass on these costs to customers, in times of fragile demand outside peak periods.

TAGS: Supply chain, coronavirus, pandemic, Ukraine, wheat, airlines, automakers

