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RHET 125-01

13 November 2022

## **~Supply chain crisis~**

### **Introduction**

The study focuses on the on-chain supply and demand fluctuation, resulting in a “supply-chain crisis”. The slowdown in the global supply chain and on-growing demand led to a slowdown in shipment, hence resulting in a shortage of supplies all over the world.

During the COVID-19 lockdown, supply chain issues were prominent due to shifts in demand, labor shortages, and socioeconomic conditions. The pandemic outbreak and restrictions prominently affected the availability of employees, as well as goods, hitting overall economic growth.

Supply chain disruption is primarily caused by lean manufacturing, which depends on precise pattern recognition seen between insight into raw materials and the production of refined products from manufacturing facilities to reduce the number of products preserved in stores and save money on overhead costs. It depends extremely on precise demand forecasting to generate savings and economies of scale, it is particularly vulnerable to sudden changes in demand, as we experienced during the time of the pandemic. The existing manufacturing venture and industries were unable to keep up with demand as consumer goods and medical supplies like personal protective equipment (PPE) saw an increase in demand, resulting in significant bottlenecks. As a

result of these disruptions, the supply chain crisis has been amplified by ports like the Port of Los Angeles, a major hub for imports from Asia, being unable to clear their shipyards. The conflict between Russia and Ukraine has significantly contributed to the product supply crisis, in addition to COVID-19's effects on global supply chains. With pandemics and conflicts between countries resulting in uneven trade being the recent reason for the supply chain crisis, Inflation has always been a major factor and contributor to the issue. There is an expected increase of 2-3% in the inflation rate, the inflation rate is expected to be between 4% and 5% in 2021 but is expectedly recorded to be 7% and 8% globally in 2022. ([2021–2022 global supply chain crisis - Wikipedia](#))The following research goes around to tackle what is a supply chain crisis. is, how is it affecting the world? Why is it prominent? Drawing conclusions out of ongoing industrial issues, and addressing the issues with examples and case studies.

A small-scale business owner experiences extreme profit in a month, in the moment of heat, hires employees, starts producing a product, and decides to maintain the same rhythm to make the business successful, but sadly in the coming 2 months, doesn't experience the same profit, and the following month the same situation leads to an exponential decrease in the overall product production, and following that the prices of the goods and supplies increases, leading to the owner facing a big-fat loss. This is a very short example of fluctuation in supply and demand, but we've experienced this happening on a very large, worldwide scale with the pandemic, the weapon war between hostile powers or large-scale goods-producing countries giving an example of accumulation of hostile power, and changes in foreign exchange policies leading to imbalance, disruption, and further encouraging the supply chain crisis. But to start with, what exactly is a "supply chain crisis"?

Since the emergence of the age of shipping containers in the late 1950s, the supply chain has been severely disrupted, and this disruption is primarily caused by the situation of the epidemic. An increase in e-commerce and labor scarcity contributed to the conditions, Ships are idle waiting to discharge their cargo at ports, while containers are waiting for further inland shipping. Presumably, *there are enough resources, but there is no equitable, unbiased, and fairly acknowledged systemization for the distribution of the resources.*

The supply chain is most severely affected in India, the United States, and Brazil, where there are significant shortages of many different product categories. These nations now face a disadvantage in international trade as a result of the difficulty in overcoming and controlling supply chain disruptions.

The pandemic has primarily been the sole aggravator of this global problem, and the demand for goods increased extensively. There was a sudden infatuation with online shopping, Amazon faced a 57% increase comparatively during this time ([The New York Times](#)). As the covid hit, people were required to put down their businesses and stop product production, in a way breaking the grit of the economy and economic development, the production slowed down, and, the manufacturer assumed that the demand would drop sharply due to low production, but the demand increased and there was a shortage in supply; this added a huge lump to the existing broken system. As demand grew, a flood of factory goods quickly overwhelmed US ports. Because there were too many ships arriving at the same time, vessels had to hang tight on the ports of Los Angeles.

Orders also surpassed shipping container accessibility, as well as the cost of shipping a container from Shanghai to Los Angeles elevated exponentially. China being a worldwide producer of plastic and PPE, faced a shortage of shipping containers due to the pilling of shipping containers. Businesses across the industry struggled to find qualified employees, Even as employers raised wages, layoffs prevailed, exacerbating the scarcity of goods. The shortage of one and other things put more strain. Russia-Ukraine conflict issues, adversely affected affecting supply in various sectors such as consumables, commodities, meals, chemical products, and goods. Russia's dominance in global energy, industrial metals, and soft commodity supply has already driven commodity inflationary pressure. Due to Russia being a hostile power for the production of metals and the supply of oil, the war is like a halter to the increasing issues in crisis. Russia and Ukraine account for more than 25% of global wheat trade, more than 60% of global sunflower oil, and 30% of global barley exports, impacting the global economy. As Russia

is a significant source of 35 critical minerals important to American economic and national security interests, including 30% of the world's supply of platinum, 13% of titanium, and 11% of nickel, it will have an effect on the global supply chain ([J.P. Morgan](#)). There has been a huge impact on Chemical supply, automotive sector, semiconductors supply, and change in policies of shipment (yet to elaborate all these points) The direct sales and earnings exposure to Russia for the majority of European chemical companies is minimal, at only 1% to 2% of sales. However, because Russia is a very significant producer and exporter of potash, accounting for about 18% of the world's production in 2021, the supply of fertilizers is likely to be impacted. 2021 saw Belarus contribute another 17% of the world's production, despite the major producer there having already declared an extension of time. Additionally, about 10% of the world's ammonia production, 20–25% of its ammonia exports, and 5% of its urea production are all accounted for by Russia. The production of fertilizers is likely to be significantly disrupted in the nearish term due to low or no supply from Russia and high energy prices, and the situation has already led to price increases, as well as, The availability of products made of nickel, copper, platinum group metals, aluminum, and steel, as well as the cost of these materials, is causing disruption in the automotive industry. The situation may become unstable as a result of rising risks related to Russia, intricate automotive supply chains, and reliance on essential metals.

“We believe that the second half of 2022 will reflect the recovery of the supply chain situation in Russia-Ukraine. With this in mind, we write off any hopes of seeing full-year global car production volume recovery in 2022” Jose M Asumendi, Head of European Autos, J.P. Morgan.

The global car production estimates from J.P. Morgan Research have been revised from +4% to -1% for the fiscal year 2022 (FY22) and from 6% to 7% for the fiscal year 2023. (FY23)

([JP Morgan](#)). The Russia-Ukraine war not only affects the automobile industry, chemical supply, and food industry but also affects the semiconductor supply- Metals directly needed for the production of semiconductors are unaffected by global politics, but neon gas may become a problem. In Ukraine, a byproduct of the steel industry is neon gas; and The industry-wide silicon chip shortage and the disruptions caused by the COVID-19 lockdowns in China have led to new supply constraints for the technology sector.

### **Case study: Trucker's situation**

The Ambassador Bridge, which connects Detroit with Windsor, Ontario, was blocked off on February 7. U.S. trucks are still unable to cross into Canada on the bridge, according to officials from both nations, even though it was partially reopened as of Feb. 9, according to The Wall Street Journal Alternatively, truckers are making the 66-mile trip up north to the Blue Water Bridge, which links Port Huron, Michigan, and Sarnia, Ontario. Truckers reported waiting lengths of up to five hours when attempting to cross the Blue Water Bridge, and trucks were backed up more than 17 miles on the route to the Michigan Bridge. Lawmakers in Canada are getting more and more worried that the disruptions would hurt the economy of the country. Depending on the source, the Ambassador Bridge transports 25% to 30% of all trade between the United States and Canada ([Edward Segal](#)). The blockades are having an effect on Canada's food chain since, during the winter, it imports up to 90% of its fruits and vegetables from the U.S. Midway through January, the Canadian Federation of Independent Grocers stated that there were already supply problems in grocery stores ([Forbes](#)). According to a New York Times article, the unrest in Canada may migrate to the United States as an online rally in the form of a convoy seems to be gaining momentum. According to social media, trucks would travel across the country from Sacramento, California, to Washington, D.C. for the planned demonstration. The

shipping fleet is anticipated to grow more quickly between 2023 and 2024 due to a more constrained capacity situation that has existed since the COVID-19 pandemic.

It can be concluded that this all led to more Shortage of supply, severely affecting industries dealing with semiconductors shortage, the rising cost of automobiles during the pandemic was a key factor in keeping inflation high, mostly affecting small part suppliers, and independent workers.

“Auto factories in the U.S. typically keep at least two weeks of materials on hand, so if the disruptions last longer than that, ‘then you’re looking at layoffs,’ said Carla Bailo of the Center for Automotive Research; The U.S. and Canada exchange \$140 million worth of cars and parts every day” ([Edward Segal](#)). More domestic challenges confronted the Port of Oakland: protests by truckers. The strains exposed the modern supply chain's fragility and there is a need for a redesign of supply chain networks to increase resilience and agility.

## Conclusion

Companies and governments alike are realizing that supply chains cannot be designed solely on the basis of efficiency at the expense of resilience, and can be made more resilient by inventories with better storage capacity, More production, more supply, and therefore the formation of better transportation. In order for businesses to redesign their supply chains for the long term without going back to their pre-pandemic practices, a new paradigm for competitive resilience is more important than ever. Supply chains that are resilient will boost and rebuild domestic manufacturing capacity, and generate high-paying jobs. Additionally, they will assist small businesses, advance economic growth in communities of color and economically struggling areas, and advance the fight against climate change.

Either an increase in capacity or a decrease in demand appears to be the best solution. According to Samuel Bland, European Transport and Logistics Analyst at J.P. Morgan, "on the capacity side, increased U.S. trucking capacity and reduced working restrictions related to COVID-19 should help."

On the macroeconomic level, recovering inventories in importing countries are anticipated to be beneficial, and a shift in the consumer's mix of spending back to discretionary services as well. More generally, growing financial strains on consumers could cause a slowdown in import demand.

There is a need for a Centralized index of supply chains that maintains a database and keeps a track of who is who's the supplier (some goods of national importance are never out of supply, except in extreme cases, cuz they are maintained by the government and they pay attention to it)



For instance, Japan during 2011 tsunami, wasn't able to track who are exactly supplying semiconductors raw material. it took them a year to do it just for semiconductors. "In the wake of the Japanese tsunami in 2011 a global semiconductor giant tried to map its vulnerabilities to third- and fourth-tier vendors; it took a team of 100 executives more than a year to work out which firms were in its extended supplier networks"

As the majority of manufacturing is private, such tracking is necessary, also, as each commodity's supply chain is different. Usually, the crisis is generalized with all the industry, in no way they can be generalized, So every industry should have a database accumulation at all levels.

Before making new changes, the old ones need to be refined. *Custom reform, port congestion*; California container congestion were mainly because of the broken customs process. It is age-old. needs fixing.

A more powerful supply chain department is needed, which needs to be checked regularly for adding new databases as well as comparing the older ones with that of other industries, to refine the data. *Regulatory interventions*; Should be included in all departments  
For example, Truckers protest; Shane Gusman, a spokesman for CA Teamsters, which is not part of the protests, told Yahoo Finance that the current law allows truckers to be independent contractors, If there was be a department in the centralized system then it would've been able to put light on broader concepts.

Labor law changed without thinking about the supply chain, if there would be a department focused on that or a policy then the process would be more thoughtful, everyone involved in the

supply chain has to be thought of better from that perspective (just as we would think of hospitals before changing doctor certification-related laws)

“The supply chain has been viewed as a necessary evil for a long time, trapping companies into incremental thinking,” argues Pete Guarraia of Bain, a consultancy ([Edward Segal](#)).

## Appendix

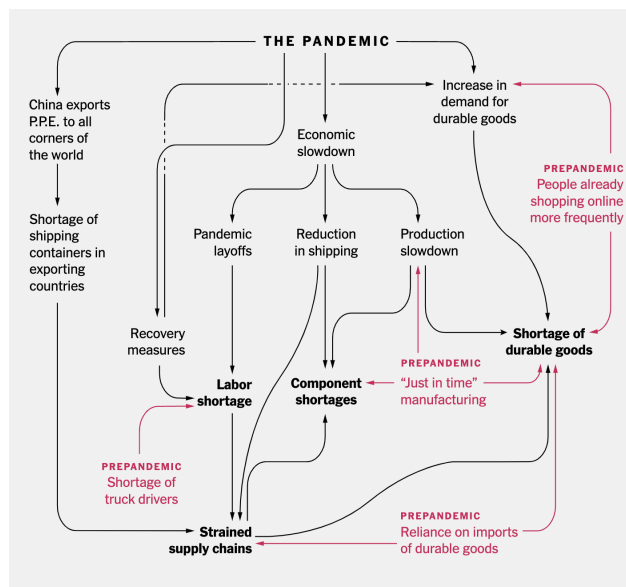
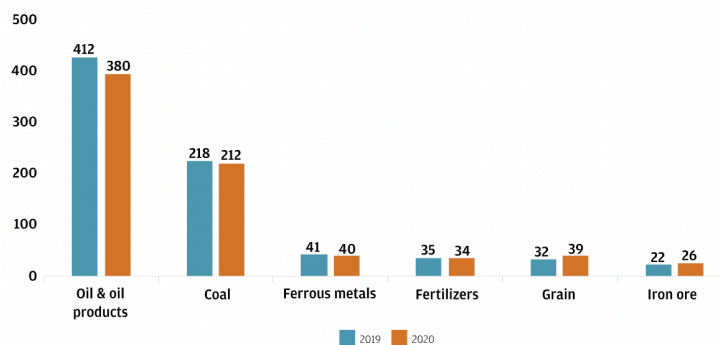


Figure 1. A mind map for how the pandemic has affected the supply chain crisis  
Source:

Russia's exports of select commodities - historical total volumes (Mt)



Source: Russian Federal Customs Service

Figure 2. Russia's exports of commodities  
Source: Russian Federal Customs Service

- Centralized index of supply chains, maintaining a database
  - means keeping track of who is who's the supplier
  - Some goods of national importance are never out of supply, except in extreme cases, cuz they are maintained by the government and they pay attention to it
    - japan during 2011 tsunami, wasn't able to track who are exactly supplying semiconductors raw material. it took them a year to do it just for semiconductors. "In the wake of the Japanese tsunami in 2011 a global semiconductor giant tried to map its vulnerabilities to third- and fourth-tier vendors; it took a team of 100 executives more than a year to work out which firms were in its extended supplier networks"
  - as the majority of manufacturing is private, such tracking is necessary
  - also, as each commodity's supply chain is different. like in no way you can generalize it, so again- this is so crucial.
  
- Custom reform → port congestion prop
  - California container congestion was mainly because of the broken customs process. It is age-old. needs fixing.
  
- A more powerful supply chain department is needed
  - Regulatory interventions
    - Should be included in all departments
    - Truckers protest; Shane Gusman, a spokesman for CA Teamsters, which is not part of the protests, told Yahoo Finance that the current law allows truckers to be independent contractors.
  - If there would be a department in the centralized system then it put light on broader concepts
    - Labor law changed without thinking about the supply chain, if there would be a department focused on that or a policy then the process would be more thoughtful
    - everyone involved in the supply chain has to be thought of better from that perspective, just how we would think of hospitals before changing doctor certification-related laws

### **Existing proposed changes**

Section 1: Policy. To ensure both our economic prosperity and national security, the United States needs supply chains that are robust, diverse, and secure.

Section 2: Cooperation The executive branch will be coordinated by the Assistant President for National Security Affairs (APNSA) and the Assistant President for Economic Policy (APEP).

#### Section 3: 100-Day Supply Chain Review

- The Secretary of Commerce is required to submit a report identifying risks in the supply chains for advanced packaging and semiconductor manufacturing, as well as policy recommendations to address these risks.
- A report identifying risks in the supply chain for high-capacity batteries, including electric vehicle batteries, and policy recommendations to address these risks must be submitted by the Secretary of Energy in consultation with the heads of relevant agencies.
- The Secretary of Defense (in his capacity as the National Defense Stockpile Manager) is required to submit a report outlining supply chain risks for rare earth elements and other strategically important materials, as well as policy recommendations to address these risks, in consultation with the heads of relevant agencies.
- The Secretary of Health and Human Services

#### Section 4: Sectoral Supply Chain Evaluations

- Defense Secretary and Secretary of Health and Human Services, respectively the Secretaries of Energy, Commerce, and Homeland Security; the Secretaries of Transportation and Agriculture; and the Secretaries of Energy and Homeland Security, respectively.

### **New changes**

- Regular inventory checking in inter-databases
- More powerful supply chain department on national, international, and well on industry-level as well
- There need for a better accumulation of data
- The department needs to focus on comparing industries as well, for eg, comparing weather database with production, and resource requirements.
- Custom reform, port congestion

### Works Cited

- “Are US supply chain problems over?” *The Hill*. 29 Oct. 2022. Retrieved November 5, 2022, from <https://thehill.com/business-a-lobbying/business-lobbying/3709929-are-us-supply-chain-problems-over/>
- “Supply Chain Issues Could Worsen If Truckers' Protests Continue” *Forbes*. 11 February 2022. Retrieved November 5, 2022, from <https://www.forbes.com/sites/edwardsegal/2022/02/11/supply-chain-issues-could-worsen-if-truckers-protests-continue/>
- “California's Busiest Port is Straining the Global Supply Chain Causing Delays” *Bloomberg.com*. 22 November 2021. Retrieved November 5, 2022, from <https://www.bloomberg.com/graphics/2021-congestion-at-americas-busiest-port-strains-global-supply-chain/>
- “Executive Order on America's Supply Chains”. *The White House*. 24 February 2021. Retrieved November 5, 2022, from <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/02/24/executive-order-on-americas-supply-chains/>
- “How the Supply Chain Crisis Unfolded” *The New York Times*. 5 December 2021. Retrieved November 5, 2022, from <https://www.nytimes.com/interactive/2021/12/05/business/economy/supply-chain.html>
- “How to build more secure, resilient, next-gen U.S. supply chains”. *Brookings Institution*. 3 December 2020. Retrieved November 5, 2022, from

<https://www.brookings.edu/techstream/how-to-build-more-secure-resilient-next-gen-u-s-s-supply-chains/>

“What’s Behind the Global Supply Chain Crisis?” *J.P. Morgan*. 25 May 2022. Retrieved November 5, 2022. from

<https://www.jpmorgan.com/insights/research/global-supply-chain-issues>

“Multinational companies, are adjusting to shorter supply chains”. *The Economist*. 11 July 2019. Retrieved November 5, 2022. from

<https://www.economist.com/special-report/2019/07/11/multinational-companies-are-adjusting-to-shorter-supply-chains>

“Supply chains: Why truckers in California are protesting legislation passed in 2019”. *Yahoo Finance*. 26 July 2022, Retrieved November 5, 2022. from

<https://finance.yahoo.com/news/supply-chains-truckers-california-gig-economy-150448930.html>