

## A STUDY ON THE IMPACT OF SUPPLY SHOCKS FACED DURING THE COVID-19 PANDEMIC

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### ABSTRACT

*The Covid-19 pandemic turned our world upside down. It resulted in innumerable consequences across different sectors around the globe. The pandemic and the subsequent lockdowns that were imposed brought regular economic activity to a complete standstill. The economy faced a demand shock as well as a supply shock. While the demand shock was somehow controlled owing to Government and other administrative efforts, the supply shock made an already problematic situation with the global supply chain worse by bringing all its drawbacks into the limelight. This paper seeks to understand the supply shocks and its impact on the economy. It also recommends friend shoring as a means to build a resilient supply chain.*

**Keywords:** Covid-19, Supply shock, Supply chain, Friend Shoring

### INTRODUCTION

Since time immemorial people have been engaged in trade across the globe. What began with the barter system in an inter-regional context slowly evolved into the globalized, digital and expeditious activity that we know trade to be today. Over the years several theories of international trade ranging from Adam Smith's Theory of Absolute Advantage to David Ricardo's Theory of Comparative Advantage to Paul Krugman's New Trade Theory have been developed and debated (Blonigen & Wilson, 2013). With the expansion of globalization and the establishment of the World Trade Organization (WTO), the international trade scenario evolved from mercantilism to multilateralism. Research indicates that the proliferation of information and communication technology coupled with the economic liberalization of countries brought about in the era of globalization has augmented world trade and growth (Adeleye et al., 2021; Freund & Weinhold, 2004; Mohaghegh & Valipour, 2021; Raghutla, 2020; Salimi et al., 2014; Vemuri & Siddiqi, 2009; Xing, 2018). Multilateral trade has enhanced the socio-economic development of nations (Gnangnon, 2018, 2019). Moreover, the operations of the WTO have resulted in greater stability in international trade (Chowdhury et al., 2021). Multilateral trade, therefore, has various benefits to offer. However, in order to reap these benefits and for effective and smooth international trade the existence of a robust and efficient supply chain is paramount. Owing to the reduction in tariffs and cost of transportation in this globalized era, the production process has been split up across different countries. Input sourcing, manufacturing and assembling are being done in different countries by the firms depending on cheaper costs. Therefore, it can be observed that firms are manufacturing their products in emerging economies which have a low cost of production owing to low-cost labour or cheaper raw materials while high-value services like research and development are secured from advanced countries which are endowed with highly skilled labour and modern technology. While this looks good on paper, it brings with it certain disadvantages. With a multinational production line in place, firms are susceptible to global crises and predicaments. For instance- if a firm in country X manufactures its product in country Y, which was recently affected by a natural disaster or some other crisis, it would affect the production process in country Y resulting in a snag in other activities further down the supply chain. Furthermore, ever-changing Government policies keeps firms on their toes to ensure smooth production and operations. Such issues challenge the resilience of a transnational supply chain. These vulnerabilities were evident in recent years owing to the COVID-19 Pandemic.

### OBJECTIVES OF RESEARCH:

- 1) To examine the impact of various supply shocks that were generated due to the Covid-19 Pandemic.

- 2) To understand the importance of a resilient supply chain and recommend measures to develop the same.

## DATA COLLECTION

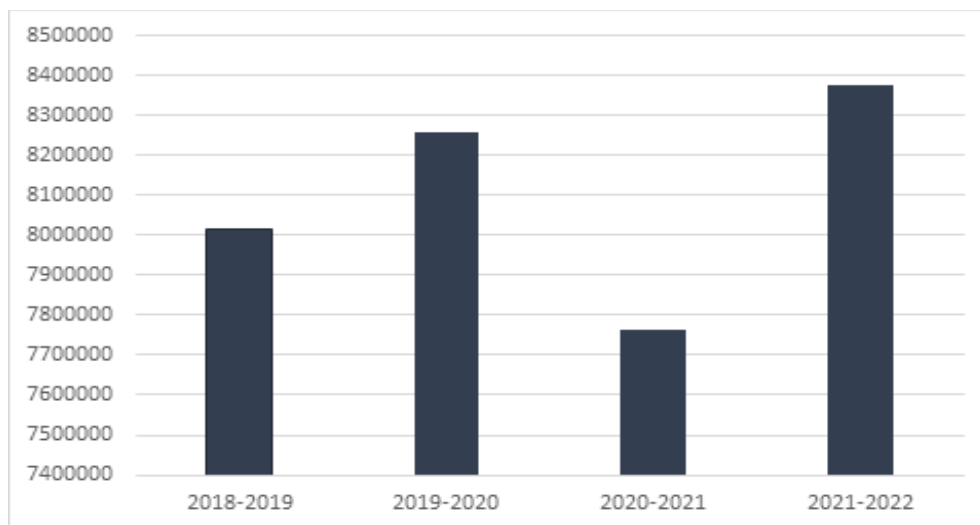
The data required for analysis is collected from Government of India and Reserve Bank of India websites. Information has also been sourced from journals and Government reports.

### The Covid-19 Pandemic

On March 11, 2020 the World Health Organization (WHO) declared Covid-19 as a global pandemic. The disease, which is caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2) is believed to have originated in Wuhan, China and it rapidly spread across countries. Amidst the fear and uncertainty caused by the disease which had no cure (as vaccines were developed only by December 2020), a fast transmission rate and had the potential to be life threatening, Governments across the globe adopted several protection measures to curb the spread of the virus. Initially people were advised to follow basic hygiene practices such as washing hands more frequently, using a hand sanitizer, wearing a mask in public places and avoiding social gatherings. However, as the number of cases kept steadily rising, many nations were forced to declare a lockdown. This meant that other than people working in “essential sectors/services” such as healthcare, police, banking; all others were restricted from venturing out of their homes. In addition to the pandemic induced lockdowns, other regulations such as social distancing norms, quarantine regulations and travel restrictions which were strictly enforced resulted in a global recession and economic crisis as it hampered crucial activities such as the production and distribution of goods and services. Several economists have deliberated whether the economic downturn accompanying the pandemic is a result of demand shocks emerging from the loss of jobs, income and purchasing power or is due to supply shocks emerging from the shutting down of business operations and supply chains. Studies indicate the presence of both. Research shows that the pandemic brought about both a demand and supply shock in the US economy which had far reaching consequences (del Rio-Chanona et al., 2020). The same behaviour can be observed across the world.

On the demand side, economic disruptions were industry specific. While essential goods, groceries, pharmaceutical sector and software industry especially financial technology and remote working tools saw a huge spike in demand, other sectors especially those which are contact-intensive such as tourism, transportation, hospitality, real estate and construction faced a setback (Nicola et al., 2020). At a micro level, the transition to ‘work from home’ coupled with school closures and a media induced buying frenzy led to a huge spike in demand for goods like toys, larger houses, recreational equipment, kitchen appliances and groceries. On the other hand, the loss of jobs and pay cuts imposed, resulted in people delaying consumption of non-essential goods and ultimately led to a decline in overall demand in the economy (Gupta et al., 2021). Figure 1 indicates the demand in the economy represented through the Private final consumption expenditure. It can be seen that although it experienced a decline in 2020-2021, demand picked up rapidly by 2021-2022, that too at a stage greater than pre-pandemic levels.

**Figure 1:** Private Final Consumption Expenditure (₹ Cr) at 2011-12 prices



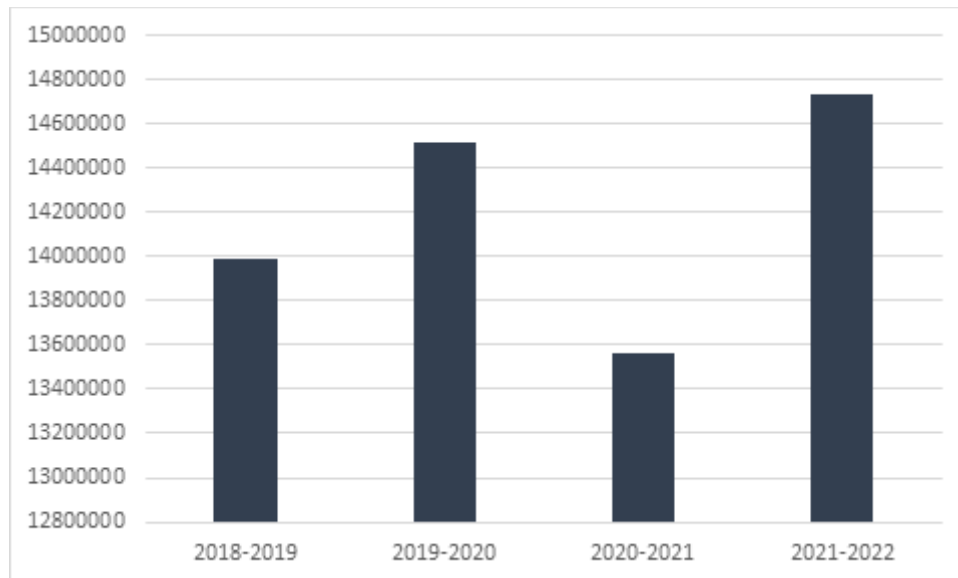
Source: Ministry of Statistics and Programme Implementation (MoSPI)

Out of the two shocks faced by the economy- namely the supply shock and the demand shock, the disruptions on the supply side are a greater cause for concern. The demand shocks were temporary in nature and demand soon picked up, as indicated in Figure 1 due to the timely intervention by the Government in the form of direct provision of aid, unemployment benefits and other financial assistance for the low and middle-income households which helped mitigate the shock, at least temporarily and prevented any further decline in the aggregate demand. The issues in supply, on the other hand points fingers at several inherent problems in the supply side of the economy. If left unaddressed this could have devastating consequences such as that experienced during the Covid pandemic wherein a negative supply shock resulted in a shortage in demand that ultimately culminated in a fall in aggregate economic activity and output. Thus the initial supply shock would give rise to a subsequent demand shock far greater than the original one, causing a snowballing effect in the economy (Guerrieri et al., 2022).

### Supply Side Shocks

As per economic literature, aggregate supply deals with the behaviour of prices given output. Based on this constitution, an aggregate supply shock occurs when output and inflation move in opposite directions, which has been empirically tested in past research and was found to be consistent in the US economy (Blanchard, 1989). The Covid-19 pandemic tested the supply side of the economy in various ways. The lockdowns imposed brought robust economic activity to a standstill.

**Figure 2: Gross Domestic Product (₹ Cr) at 2011-12 prices**

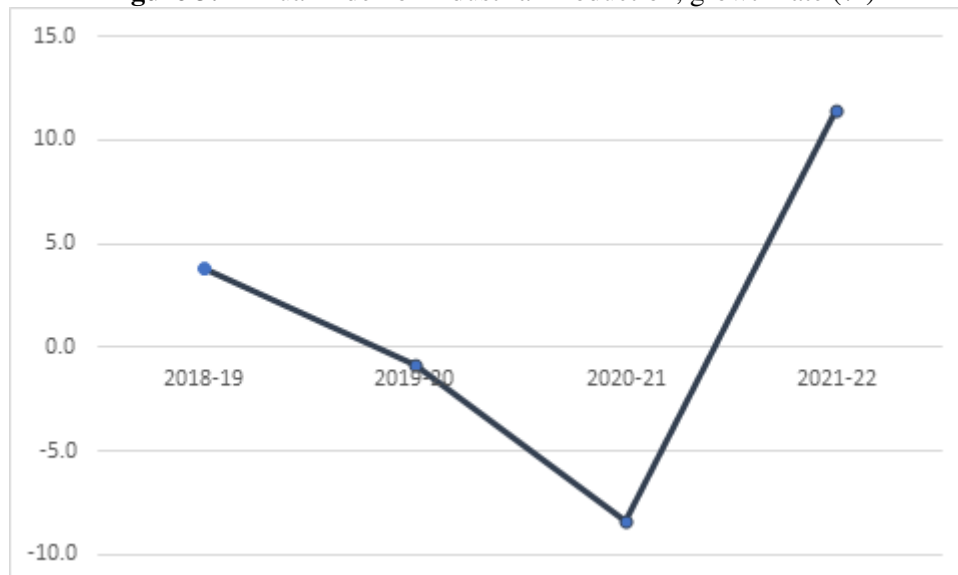


Source: Ministry of Statistics and Programme Implementation (MoSPI)

As indicated in Figure 2, national income, which is the monetary value of all final goods and services produced in the country measured in the form of the Gross Domestic Product (GDP) experienced a decline during the crisis period. However, owing to the rapid shift in policies of the Government and RBI, the national income picked up from 2021-2022.

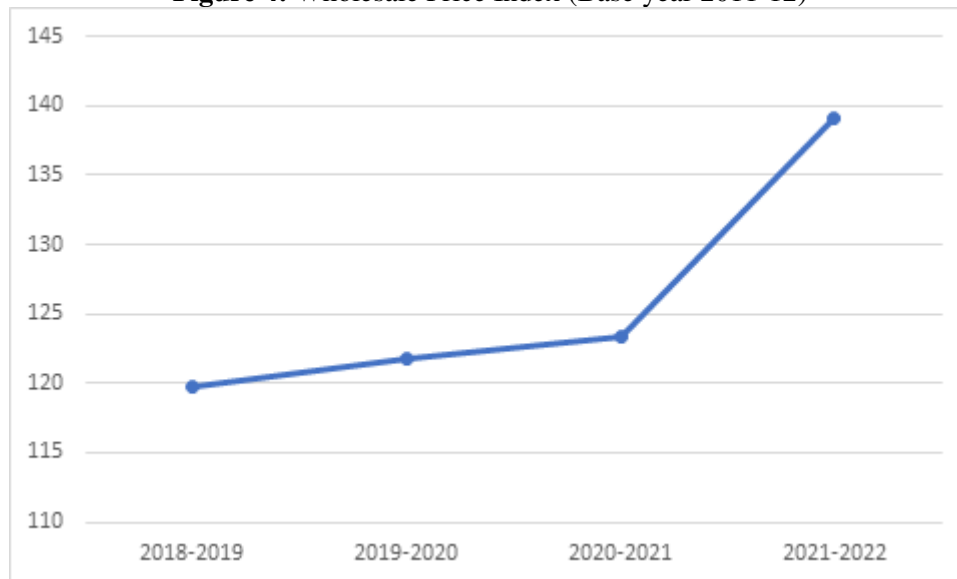
During the pandemic all the businesses classified as “non-essential” were shut down temporarily. As people were unable to venture out of their homes, many started hoarding goods which led to a shortage of basic commodities in the market. Coupled with other regulations such as social distancing norms and limited workers in the workplace there was a slowdown in production in the factories which resulted in a severe supply crunch in the economy.

**Figure 3:** Annual Index of Industrial Production, growth rate (%)



Source: Ministry of Statistics and Programme Implementation (MoSPI)

The shortage of goods, especially perishable goods, led to a sharp rise in their prices. Inflation soon emerged consequently as seen in Figure 4. Necessity goods such as food, fuel have an inelastic demand and hence will be consumed by everyone irrespective of their price. Therefore, despite a spike in inflation, demand for these goods didn’t register much of a decline.

**Figure 4:** Wholesale Price Index (Base year 2011-12)

Source: RBI, Database on Indian Economy (dbie.rbi.org.in)

In addition to the production crisis, disruptions faced in transportation, communication and storage affected the supply chain as well. The multiple lockdowns resulted in slow down of the transportation of raw materials, intermediary goods and finished goods which affected manufacturing across the globe. Product availability experienced a drastic fall in case of those retail stores which are located far away from the production zones. Longer the distance between processing units and retail stores, greater was the severity of food shortages (Mahajan & Tomar, 2020). Rise in shipping costs, labour shortages especially in strategically crucial portions of the supply chain and climate vulnerabilities have tested the resilience of the supply chain (Ozdemir et al., 2022). The Covid-19 crisis threw yet another spanner in the works. China was severely affected by the pandemic and the lockdowns imposed coupled with the fast spreading of the disease disrupted their manufacturing process drastically. Being the largest exporter in the world, all disruptions experienced in China had repercussions being felt across the globe. Countries were now in a frenzy to find alternative suppliers in the international market. Additionally, China was virtually ostracized globally due to the fear of the pandemic as it was believed to have originated there. Countries were fearful of goods originating in China owing to the angst and worry about whether coming into contact with these products would result in transmission of the virus. This disrupted the global supply chain in a big way. Thus, fixing the supply chain to make it more robust, collaborative, innovative and resilient to different kinds of obstacles and crises- be it anticipated or unexpected, is the need of the hour.

## RECOMMENDATIONS

Supply chain follows two standard theories- just-in-time and just-in-case. The roots of just-in-time manufacturing can be traced to Japan. It is a popular strategy that emphasizes on seeking efficiency though cost reduction, saving time and reducing inventories. It is essentially an inventory management strategy that seeks to order materials as and when they are needed in the production process. Despite being a paragon of excellence, the just-in-time manufacturing has been criticized for being too much dependent on suppliers. It has several choke-points that makes it difficult to be resilient. Just-in-case manufacturing on the other hand, aims to maintain inventories as a precaution against unforeseen events in life. It seeks to minimize the probability of being unable to supply their goods & service due to lack of inventory (Jiang et al., 2022). In light of this, several economists have suggested an option for building a resilient supply chain namely- friend shoring. This refers to shifting the supply chains to certain “trusted nations”. It involves restricting the trade of crucial inputs to certain trusted nations. While this sets back the era of globalization by a few years it provides an excellent foundation to build a robust and efficient supply chain. Friend shoring deals with bringing

production closer to home, hence it is also synonymous with “near shoring” and “re shoring”. Research indicates that friend shoring has several advantages to offer (Hsu et al., 2022). It helps eliminate the uncertainties involved in international trade and would aid in solving the bottlenecks involved in the global supply chain.

Friend shoring is the way ahead. It would solve the problem of just-in-time manufacturing as friend shoring involves greater independence from suppliers. Reduction of dependency on authoritarian suppliers would give nations greater flexibility and autonomy while maintaining strong geopolitical relations with all nations, especially allies. In a world divided between free-market democratic nations and authoritative regimes, friend shoring could be the golden goose that would help supply chains become more resilient, robust and sustainable thereby ensuring that in case of any future crises we don't experience such a drastic economic setback anymore.

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