

Market Economizing and Global Trade During the Pandemic

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Abstract. COVID-19 is a viral disease that is spreading worldwide, and because of this, exports, imports, and foreign direct investments have been seen to be drastically reduced there has been a drop in trade. With this background, this study used global data to gather information for various empirical analyses. The adverse consequences of COVID-19 are magnified whenever it impacts exporting, importing, suppliers, investors, or investment host countries. When assessing its impact on industries and investments, the COVID-19 pandemic is heterogeneous across various sectors. Depending on the necessity for cross-border movement, their magnitude varies as well. Several factors play a critical role in ameliorating the harmful effects of the disease. As examples of these factors, vaccinations, utilizing various online tools, and diversifying inputs may be cited. There has been an outbreak of COVID-19 around the world since 2020. One of the most distinctive features of the COVID-19 pandemic is the forced adoption of infection prevention measures, including lockdowns and social distancing, even though the global economy, such as financial crises and natural disasters, has experienced various types of adverse shocks. These measures have raised various categories of transactions and transaction-related expenses in the global economy.

Keywords: COVID-19; Market economizing; Global trade.

1. Introduction

With the onset of the pandemic, global trade was disrupted drastically. At its pinnacle in the mid of 2020, the products involved in global business fell by 12.2 percent, while services were more affected, recording 21.4 percent compared to the similar period in 2019. In particular, countries experiencing high infection levels, causing total or partial lockdowns, experienced the most supply chain disruptions. Therefore, products that rely heavily on global value chains (GVC- intensive goods) were more volatile than those that could be transacted online. In the first quarter of 2020, the exports of GVC-intensive products declined by approximately 30 percent, while the rest reported about 18 percent. Therefore, this research focuses on the possible description of the observed global trade patterns during COVID-19. Specifically, the study aims to explain how a standard model of demand and prices account for trade patterns in comparison with other past recessions.

Similarly, the study focuses on the particular elements of the pandemic that were essential in shaping the recorded trade patterns. Finally, the study will identify the effects of international spillovers resulting from the elements of the pandemic, such as lockdowns, social distancing, and entry/exit measures, among others, in response to COVID-19. The research uses an empirical framework built on standard models of global trade and uses secondary data to identify and analyze spillovers.

2. Theoretical background

2.1 Pandemic Trade Drivers

During the pandemic, a single model needs to describe changes in products and services in the early stages, including the conventional factors of demand and relative prices. Such a framework is essential in describing total trade rather than in a situation where the demand for goods and services is approached individually in 2020 [1]. In particular, analyzing trade patterns during this period requires using a standard import demand framework to explore the connection between demand and imports. The model associates the growth of imports of goods and services to the relative price of imports for 127 nations from 1985 to 2019. In line with the economic intuition and existing literature,

the estimated coefficients on the import measure based on the demand provide a positive relationship of almost 1 for most nations. The coefficient on relative price reveals that they have a negative relationship ranging from -0.2 to -0.3 [2]. Aggregating the forecasts from the regressions for the selected period between 1985 to 2019 using existing world import data provides efficient predictions of import growth. However, for 2022, the model underpredicts the service trade, where the prediction is a growth of 8 percent while the actual trade fell by 25 percent [3]. Similarly, the model overpredicts the fall in good trade by approximately 10 percent while the actual trade falls by 6 percent. The model considers goods and services are treated as independent items of analysis.

2.2 Pandemic Intensity and Containment Policies as Key Drivers of Trade Patterns in the COVID-19 Crisis

In identifying the discrepancies between the predicted and reported import growth, it is essential to describe several elements of policy responses to COVID-19. To determine the prediction errors of imports, it was evident that countries that experienced more severe conditions, evident in a higher number of positive infections, and low leniency in their containment policies, reported an excess import demand for goods. This means the country recorded a higher import level than initially forecasted. This error for the import levels was approximately 3 percent more than initially forecasted in the first quarter. Regarding services, the travel issue was responsible for the model's prediction [4]. Accordingly, the framework's over-prediction was determined by mobility restrictions, as most services depend on travel. Thus, the lockdowns had a drastic impact on the same. In this case, countries more lenient with movement restrictions or inter boundary laws recorded higher service imports than the others. The over-prediction of the model can be associated with expectations of overly strict responses from most countries in the early quarter of 2020.

These results are in line with several hypotheses on the effects of pandemic-specific factors on trade. First, due to conditions unique to the pandemic, the quick rebound in the products trade may result from a broad shift in consumer spending away from services and commodities, such as remote-working equipment and medical supplies [5]. In addition, since some services were not available, some of the shifts may have been caused by a simple reallocation of income toward goods. Consequently, it is plausible also that nations with more severe lockdowns faced a major contraction in the manufacturing of the products domestically, which forced them to seek markets to import them as alternatives [6]. Surprisingly, the better the health readiness of a country's trading partners, the lower the decline of its imported goods relative to the forecast. The Global Health Security Index measures trade partners' preparedness for the pandemic and is associated with higher positive forecast errors for goods imports [7]. This suggests that some international spillovers occurred; specifically, countries whose trade partners experienced smaller disruptions in domestic supply were less negatively affected by shock transmission in trade networks.

2.3 Pandemic Containment Policy Spillovers

The pattern of imports in the first quarter of 2022 can be associated with the stringency of lockdowns in the importing nations. In particular, the tighter lockdowns in exporting trade partners would result in a supply deficit in the importing country [8]. This means that nations with strict lockdowns in global trade partners would result in low levels of goods imported from their counterparts. In addition, a study on containment policies revealed that they accounted for approximately 60 percent of the import reduction [9]. Thus, the spillover effect of the lockdown can be said to be short-lived, as it was mostly felt in the Asian continent before spreading to Europe later in the final months of the first quarter when the import levels of goods increased drastically [10]. For instance, in June, as most nations eased the lockdown restrictions, the effects of the spillover became indistinguishable from zero. Similarly, the spillover effect of lockdown restrictions was also vital in shaping the extent of the health crisis in the exporting nation, which was evident in the number of cases and resulting deaths per capita, changes in export conditions by the importer, and the fiscal policies developed by trading partners as a response to the pandemic.

It can be argued that spillovers were more impactful with global value chains and were mitigated by the extent of people working remotely. The average spillover effects contain several sources of heterogeneity [11]. On the one hand, the spillover impact of the lockdown was more than 200 percent strong for nations whose exporting compatriots were less able to telework (Figure 1).

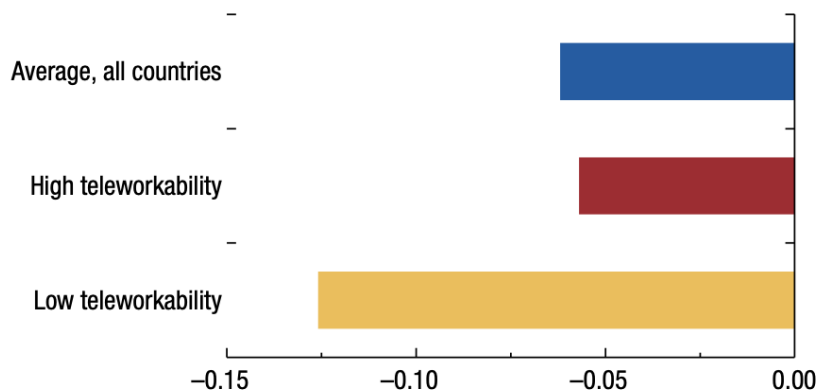


Fig. 1 Teleworkability (Source: IMF Data)

This data reveals that the ability to telework was essential in mitigating the impacts of reduced mobility due to lockdowns. Secondly, the effect of spillovers during lockdowns was higher in GVC-intensive sectors, such as electronics, that relied on physical presence to manufacture or assemble [12]. On the other hand, it can be argued that the impact of restrictions during the pandemic was more substantial in upstream sectors, such as mineral products. At the same time, it was stronger for those downstream, such as in the transport sector. It was observed that a one standard deviation increases in entities whose production is upstream causes a reduction of the spillover effect by approximately a third. This element reveals that downstream businesses are likelier to feel the impact of lockdowns and limited mobility in markets supplying intermediate products, such as raw materials.

2.4 Resilience in GVCs

Trade data shows substantial transformations in trade market shares between regions with vital roles in GVCs in the first quarter of 2020. In this way, markets that were quick to ease restrictions associated with mobility, such as lockdowns and social distancing, reported a sizeable increase in their market share. Nations that were hit earlier, such as China, and managed to control the curve earlier exhibited a quicker turnaround as they eased lockdowns and movements, which positively impacted the market share [13]. In comparison, countries such as Europe consistently experienced attacks, resulting in constant lockdowns and the loss of substantial market shares. According to Appendix A, by June 2020, “Factory Asia” nations experienced an increase in their market proportion in the GVC-intensive sector by 4.6 percent in Europe and 2.3 percent in North America [14]. In particular, Europe was the major victim of the GVC-related market. The literature also indicates that the Asian and European sectors will be downsized by 2021 and that market share in North America will continue to decline (Appendix A).

3. Methods, Model and Results

The data collection was mainly secondary based on the study targeting effects and changes during COVID-19. The collection process included references to arguments in public publications of the society, International Monetary Fund data, and trends over the years. Public publications denote professional data publications, such as statistical reports, academic literature, etc., to get the supporting data needed in this paper. The limitation is that due to the limited preparation time and the impact range of COVID-19 related to this topic, no primary relevant data were collected in this paper. The current data timeliness has drawbacks and is not sufficiently personalized. Future improvements in this area will be aimed at the experimental setup of primary data by collecting data directly from

the market for statistical and analytical purposes. For this collection of secondary data, the usability of the secondary data has been verified before use. First, we read publications, data, and reference arguments to understand the source and meaning of the data. A review followed this to ensure its validity, credibility, and limitations. The available data were categorized and appropriately adjusted to ensure their supportiveness during the analysis.

The model applied in this research aims to identify the prediction in calculating import forecasts. In this case, it was evident that countries that experienced more severe conditions, evident in a higher number of positive infections, and low leniency in their containment policies reported an excess import demand for goods [15]. This means the country recorded a higher import level than initially forecasted. This error for the import levels was approximately 3 percent more than initially forecasted in the first quarter. In terms of services, the element responsible for the model's overprediction was the issue of travel. This means that the framework's overprediction was determined by mobility restrictions, as most services depend on travel. Thus, the lockdowns had a drastic impact on the same. In this case, countries with more lenient movement restrictions or inter boundary laws recorded higher service imports than the others [16]. The overprediction of the model can be associated with expectations of overly strict responses from most countries in the early quarter of 2020. These results are in line with several hypotheses on the effects of pandemic-specific factors on trade. First, due to conditions unique to the pandemic, the quick rebound in the products trade may result from a broad shift in consumer spending away from services and commodities, such as remote-working equipment and medical supplies [17]. Second, since some services were not available, some of the shifts may have been caused by a simple reallocation of income toward goods. In this way, it is plausible also that nations with more severe lockdowns faced a major contraction in the manufacturing of the products domestically, which forced them to seek markets to import them as alternatives.

4. Results

2020 experienced one of the most significant trade and import volume reductions since 1945 in World War II. The decline in the import of goods was more affected than in services, which can be associated with limited mobility and lockdowns. The initial pandemic period predicted a double trade decline for the year 2020 as expressed in the figure 2 and figure 3.

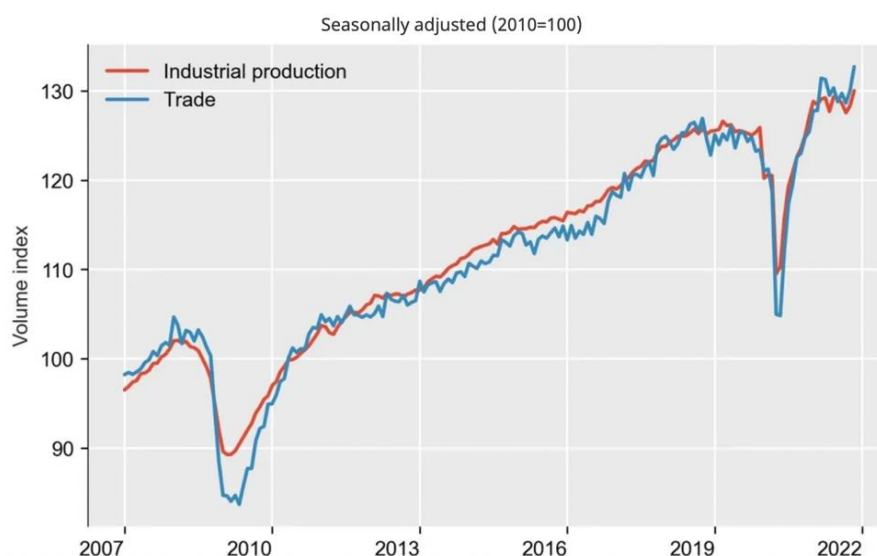


Fig. 2 Volume of world trade and industrial production (Source: OECD)

Between January 2020 and April 2021, the cumulative value of semiconductor shipments from the ten largest exporters was 17.3% more than what would be typically based on 2019 trends.

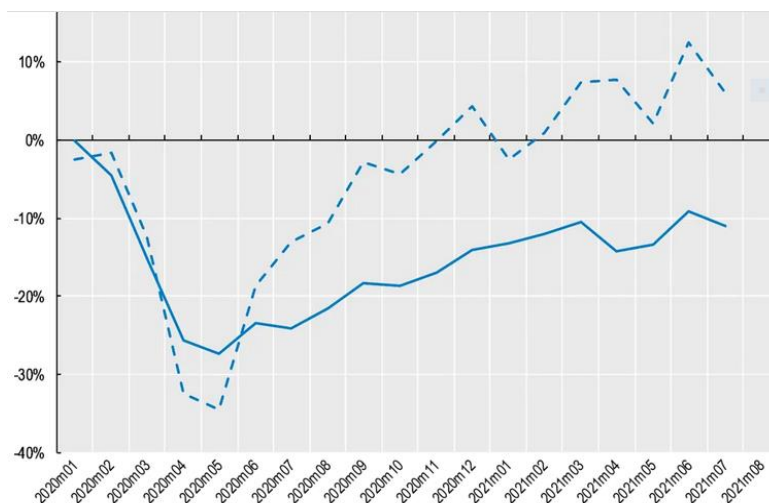


Fig. 3 Export of China (Source: OECD)

China, for example, has seen a significant increase in export demand in 2020, which puts Asia at the center of supply chain development. In addition, the growth in transport distances for imported goods in 2020 is partly due to China and other Asian countries filling supply shortages caused by the embargo and shifts in demand. These changes come during a severe disruption in the global transportation industry.

5. Discussion

The global supply chain underwent major disruptions during the pandemic, especially in the first quarter of 2020, which eased gradually after June as most countries managed to level the spread of the virus. One of the major impacts of the pandemic was the increase in shipping costs. As the pandemic was spread through contact, it was essential for governments to restrict peoples' mobility, which included imposing lockdowns. It shows that organizations were forced to shift to remote working, which impacted downstream production firms, such as transport [6]. Therefore, these changes show that nations with strict lockdown restrictions experienced higher delivery costs than the others, which can be associated with complicated delivery routes, most likely taking longer courses to avoid hot zones, which meant more cost on fueling and wages for the delivery.

Similarly, the delivery staff was often unwilling to interact with people, especially during the peak season. As a result, the available workforce demanded more wages for the risk and the increased demand. On the other hand, most parcel delivery companies were required to sanctify their warehouses, packages, trucks, and even employees, which increased their operation costs. These changes increased the overall cost of delivery organizations, which were eventually spread to the overall price per delivery, thus, the higher cost of delivery.

Secondly, delivery times lengthened significantly during the pandemic. In most situations, countries identified red zones with high infection rates, which were usually in city centers that are densely populated [18]. The main issue with this element was that such urban centers consisted of the company's establishments, which required social distancing and strict movement restrictions. Therefore, most organizations imposed social distancing rules, which reduced the number of employees working per shift. On the other hand, most city centers had route management to avoid the possibility of congestion. As a result, the normal delivery routes were disrupted, leading to longer distances and a higher cost per mile. Therefore, the combination of these aspects resulted in the overall shortage of employees working for delivery companies and changes in routes, resulting in longer delivery times.

6. Conclusions

COVID-19 caused a major disruption in global trading patterns. As the virus is spread through contact, most countries enacted strict mobility regulations that impacted the import and export market globally. The role of factors specific to the pandemic, such as lockdowns, social distancing, limitations of cross border trade, and remote working, developed patterns that were unique in shaping global trade, unlike other financial crisis, such as the financial depression in 2008. In particular, the development and enactment of policies aimed at managing the pandemic, especially containment, were essential in creating spillovers and majorly affected GVCs related industries. The data in this study reveals that countries with trade partners holding strict containment policies experienced export and import shocks due to the disruption of the respective supply chains. This scenario reveals that the global supply chain is still exposed to pandemics that would restrict the movement of people and products worldwide. Therefore, the major stakeholders in international trade need to focus on building infrastructure that encourages remote working and eliminates the overreliance on human run supply chains in the future, especially in delivering inputs to manufacturers and final products to customers. Further research would focus on the possible changes in trade elasticities in GVCs in the post-epidemic period when economic activity recovers. There will be more diversification and substitution in trade to drive the demand for services back to the past, thus focusing on collecting primary data to compensate for data limitations while also considering future trends in the upside of global trade.

References

- [1] Hanspal T, Weber A, Wohlfart J. Income and wealth shocks and expectations during the COVID-19 pandemic. CESifo Working Paper, 2020.
- [2] Conférence des Nations Unies sur le commerce et le développement. Impact of the COVID-19 pandemic on trade and development: transitioning to a new normal. UN, 2020.
- [3] Chronopoulos D K, Lukas M, Wilson J O S. Consumer spending responses to the COVID-19 pandemic: an assessment of Great Britain. Available at SSRN 3586723, 2020.
- [4] Chen H, Qian W, Wen Q. The impact of the COVID-19 pandemic on consumption: Learning from high-frequency transaction data. AEA Papers and Proceedings. 2021, 111: 307-11.
- [5] Ciravegna L, Michailova S. Why the world economy needs, but will not get, more globalization in the post-COVID-19 decade. Journal of International Business Studies, 2022, 53(1): 172-186.
- [6] Alfaro-Urena A, Manelici I, Vasquez J P. The effects of joining multinational supply chains: New evidence from firm-to-firm linkages. The Quarterly Journal of Economics, 2022, 137(3): 1495-1552.
- [7] Global value chains in a postcrisis world: a development perspective. World Bank Publications, 2010.
- [8] Carvalho V M, Nirei M, Saito Y U, et al. Supply chain disruptions: Evidence from the great east japan earthquake. The Quarterly Journal of Economics, 2021, 136(2): 1255-1321.
- [9] Bounie D, Camara Y, Fize E, et al. Consumption dynamics in the covid crisis: real time insights from French transaction bank data. Covid Economics, 2020, 59: 1-39.
- [10] Liu T, Pan B, Yin Z. Pandemic, mobile payment, and household consumption: Micro-evidence from China. Emerging Markets Finance and Trade, 2020, 56(10): 2378-2389.
- [11] Cadot O, Carrère C, Strauss-Kahn V. Trade diversification, income, and growth: what do we know?. Journal of Economic Surveys, 2013, 27(4): 790-812.
- [12] Carrère C, Cadot O, Strauss-Kahn V. Trade diversification: Drivers and impacts. Trade and employment: From myths to facts, 2011: 253-307.
- [13] Baker S R, Farrokhnia R A, Meyer S, et al. How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic. The Review of Asset Pricing Studies, 2020, 10(4): 834-862.
- [14] Antràs P, Chor D, Fally T, et al. Measuring the upstreamness of production and trade flows. American Economic Review, 2012, 102(3): 412-16.

- [15] Antràs P. De-globalisation? Global value chains in the post-COVID-19 age. National Bureau of Economic Research, 2020.
- [16] Andersen A L, Hansen E T, Johannesen N, et al. Consumer responses to the COVID-19 crisis: Evidence from bank account transaction data. Available at SSRN 3609814, 2020.
- [17] Andersen A L, Hansen E T, Johannesen N, et al. Pandemic, shutdown and consumer spending: Lessons from Scandinavian policy responses to COVID-19. arXiv preprint arXiv:2005.04630, 2020.
- [18] Alessandria G, Kaboski J P, Midrigan V. US trade and inventory dynamics. American Economic Review, 2011, 101(3): 303-07.