

# Global Value Chains in the Era of COVID-19



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Back in last December, when a cluster of cases of pneumonia was first reported, there was no sign that COVID-19 would become a pandemic. Coming into May 2020, however, a total of more than 5 million COVID-19 cases have been confirmed in almost all countries around the world.<sup>1</sup> What is worse is that the development of vaccines and treatments is expected to take a significant period of time.

A perfect storm is on the horizon, as COVID-19 has drastically aggravated the global economy and trade. Many countries restricted movements of goods as well as natural persons to prevent the contagion of COVID-19. As a result of such border control measures, global supply chains based on global connectivity end up being almost frozen because the whole system of supply chains can be disrupted when even one single part or component is lacking. The global economic growth rate is predicted to drop down from 2.9% to -3% in this year according to the IMF World Economic Outlook, and global trade is projected to fall by 32% according to a pessimistic scenario.<sup>2</sup>

<sup>1</sup> <https://coronavirus.jhu.edu/map.html> (accessed May 22, 2020)

<sup>2</sup> [https://www.wto.org/english/news\\_e/pres20\\_e/pr855\\_e.htm](https://www.wto.org/english/news_e/pres20_e/pr855_e.htm) (accessed May 14, 2020)

Global value chains (GVCs) are characterized by the increasing share of intermediate goods in total gross trade value, which results in decreasing share of domestic value added in total value added in exports. When we analyze the ADB Multi-Region Input-Output (MRIO) database between 2000 and 2018, the shares of intermediate goods in total export values turn out to increase from 60.1% in 2000 to 64.7% in 2018.<sup>3</sup> In addition, the vertical fragmentation of production causes the length and the geographical distribution of production stages to be substantially large.

It is not surprising that global value chains have a tendency to magnify risks from the exposure to economic crises and natural disasters in terms of frequency and magnitude. Any unnecessary dwell time in a segment of GVCs creates a substantial impact on whole production processes because intermediate goods used to cross borders many times until a final goods is assembled. For example, the tsunami in the eastern area of Japan had a substantially negative effect on supply chains of the global electronics industry, and the flood accident in Thailand resulted in the reduction in supply of computer-related components in 2011.

Differently from the previous disasters, however, COVID-19 is not specific to a country or an industry, but a pandemic that affects the global connectivity of goods and services. Furthermore, the so-called bullwhip effect aggravates the negative impacts from the demand shock, where an initial demand shock tends to be magnified as one moves upstream. Through such transmission channels, the global financial crisis of 2009 ended up with the largest decrease in global trade since the Great Depression in 1930s. Currently, the global supply chains do not successfully deliver the promised products depending on a just-in-time system.

There have been considerable debates over GVCs in the era of COVID-19. Generally speaking, the future of GVCs is determined by various factors including production costs, trade costs, technological innovations, global geographic distribution of demand, and preparedness to meet supply chain risks.

The differentials of production costs, including wage rate gaps between developed countries and developing countries, are one of the main motives of FDI along with market-seeking and resource-seeking. Wage rate gaps and productivity improvement in the offshored production locations have contributed to the rise of GVCs since late 1990s. However, production costs in

<sup>3</sup> Author's calculation using the ADB MRIO database

offshored locations are expected to elevate due to additional costs on inventory and transportation of raw material and intermediate goods as a result of border control measures.

GVCs are endogenous to trade costs because the costs are magnified as goods cross borders in GVCs multiple times. Government policies have been more than ever interdependent as costs of a given product affect all products in the countries which are involved in the GVCs. If it will take some time for the world economy to recover from the economic recession caused by COVID-19, protectionism to remedy industrial damages from import competition will be prevalent by any means. Recently, many countries have negotiated FTAs to attain deep regional integration by going beyond traditional trade negotiation issues. Such deep regional integration will contribute to the consolidation of global value chains centered around the regional clusters.<sup>4</sup>

The digital innovations related to artificial intelligence, big data analysis, cloud computing, and the internet of things have driven hyper-connection between all products and services through global networks, thereby facilitating data-driven manufacturing systems and reducing the necessity of specialization in production tasks. Digital transformation accelerated by an increased preference for so-called “un-tact” consumption, as an aftermath of COVID-19, will possibly result in contraction of GVCs through reshoring and onshoring of the offshored production facilities.

The developing countries have adopted their economic development strategies to establish only specialized production blocks and participate in small segments of global supply chains rather than foster an entire industry based on traditional comparative advantage theory. Efficient participation in GVCs transformed global geographic distribution of demand in favor of developing countries, whose current shares in world gross national product based on purchasing power parity global demand amount to about 60%. The impact of COVID-19 on the increasing share taken by demand of developing countries is limited in terms of magnitude because it depends on their economic and industrial structures and their individual capacities to absorb the challenges.

<sup>4</sup> Choi (2020) indicates that a deep regional trade agreement (RTA) has heterogeneous effects on global value chains depending on the regional clusters. Choi, Nakgyoon, 2020, “Deeper Regional Integration and Global Value Chains,” *Seoul Journal of Economics*, 33-1, pp. 60-62.

Risk sources for GVCs include not only natural disasters, but also market dynamics, policy changes, and innovations, among others. Such risks will possibly be mitigated if the information on production, sales, and inventory in the GVCs is shared among stakeholders. For its part, however, a supply chain operator does not release such information because it is proprietary to them.<sup>5</sup> Furthermore, the interconnected web of GVCs and systemic risks such as natural disasters and geopolitical instability extend beyond the individual stakeholder. An efficient system of supply chain risk management could be possibly coordinated only through the leadership of G20 governments as well as voluntary cooperation of the multinational enterprises.

The future of GVCs will be different from the pre-COVID-19 era. The contraction of GVCs will be accelerated by reshoring and onshoring of the offshored production facilities by multinational enterprises. At the same time, GVCs will be also consolidated around the regional/local hubs closer to end markets as international trade will become more regional than global.<sup>6</sup> The future configuration of GVCs will be determined by the various factors mentioned earlier, but it will depend upon the dynamic factors including digital transformation and supply chain risk management to a larger extent than other factors in the long term. **KIEP**

<sup>5</sup> The recommendations of current OECD Guidelines for Multinational Enterprises cover the issues related to respect of labor and human rights, protection of the environment and the fight against corruption, but there are no guidelines on data sharing of global value chain stakeholders. Lee, Padmanabhan, and Whang (1997) points out that the manufacturer needs to access the sales data and inventory status data to overcome the bullwhip effect. Lee, H., V. Padmanabhan, and S. Whang (1997), *Management Science*, Vol. 43, No. 4, p. 558.

<sup>6</sup> According to OECD (2017), production may become increasingly concentrated in regional/local hubs. OECD 2017, *The Future of Global Value Chains: "Business As Usual" or a "New Normal"?* DSTI/CIIE(2017)2/FINAL, p. 17.