

The Impact of Pandemic Control on GVCs and welfare: A Simulation Analysis Based on COVID-19

Pan Peichen*

Graduate School of Economics, Kobe University

Abstract

The COVID-19 pandemic, which began in early 2020, had an unprecedented and lasting impact on the global economy. The pandemic not only led to a decline in global trade but also profoundly reshaped the GVC division system. The traditional gross trade framework cannot effectively reflect the adjustments in the GVC division system caused by the pandemic control.

This study uses a multi-country, multi-sector quantitative trade model that embodies input-output linkages. By estimating the impact of pandemic control on trade costs, its impact on global trade and the GVC division can be further estimated. Using data of the year 2018 from the OECD-ICIO database, this study conducts a numerical calculation to simulate effects of global pandemic control on GVCs and welfare. Key findings include: (1) Pandemic control significantly increases trade costs for all economies, resulting in an average rise of 4.14% as an importer and 3.72% as an exporter. (2) Global trade values are anticipated to decrease by 11.23% due to pandemic control. At the sectoral level, trade values decline across all sectors except for the Chemicals and Medical sector. (3) From the GVC perspective, these control measures prompt adjustments of GVC division, which reduce the degree of GVC participation and make each economy more inclined to focus on local production. By calculation, the pandemic control has led to the world average GVC participation close to that of 2009. (4) Pandemic control reduces the welfare levels of economies, with a world average decline of 1.85% and a 0.51% decline for China. From the perspective of trade in gross, the welfare effects of pandemic control are highly correlated with the initial level of trade openness in each economy. From the GVC perspective, these measures adversely affect the welfare levels of economies by reducing imports of intermediate goods, with the impact strengthening as initial GVC participation increases.

Keywords: COVID-19; pandemic control; quantitative trade model; global value chains (GVCs)

* Email: panpeichen99@gmail.com