

Volume 14:17
May 2021

SPP Communiqués are brief articles that deal with a singular public policy issue and are intended to provide the reader with a focused, concise critical analysis of a specific policy issue.

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SHORTAGES IN ESSENTIAL GOODS: ARE GLOBAL VALUE CHAINS PART OF THE PROBLEM OR THE SOLUTION?

Ari Van Assche

SUMMARY

Supply chain disruptions did not cause the shortages of personal protective equipment (PPE) and other essential goods that the world experienced in the early months of the COVID-19 pandemic. Rather, the cause was manufacturers' inability to step up production of PPEs to meet the demands of the crisis. The accepted wisdom that the pandemic exposed serious structural problems in international supply chains, such as an over-dependence on China, and that it would be better for countries to source supplies domestically, is inaccurate.

The companies that produced PPEs and other essential goods were experienced when it came to developing risk-management strategies. Manufacturers have understood the risks related to international supply chain shocks at least since 2008's global recession and have long since responded by diversifying supplier bases, increasing manufacturing capacity and creating stockpiles. Many firms also relied on the China Plus One strategy as a buffer, which entailed duplicating

production in China and at least one other country to protect against supply chain disruption and currency fluctuation.

Far from exposing a weakness in global value chains, the pandemic instead revealed their resilience. So well did the face-mask industry rebound from its initial shortage in fact, that industry revenues grew by 450 per cent from 2019 to 2021. Rather, the shortages arose because of limited stockpiles, governments' lack of preparedness and constrained production, such as the difficulty in accelerating the melt-blowing process that creates the masks' non-woven fabric. Exacerbating the situation - but only temporarily - were export bans of the type the Trump administration imposed on manufacturers, which required them to obtain federal approval before exporting PPE.

COVID-19 will not be the last pandemic the world experiences. Governments can prepare for the next one by establishing stress tests that assess a country's ability to deal with demand spikes and other disruptions. The tests should consider the government's level of stockpiling, the speed with which domestic and foreign production can be ramped up, the diversification of import sources and the limitations created by foreign export restrictions. If the market fails to pass these stress tests, then government must design policy tools to deal with the shortcomings the tests reveal. Limiting export restrictions to strengthen resilience, conducting joint procurement and drafting agreements to share essential goods are ways countries can work together to promote resilience.

Self-sufficiency, which looked to be the solution in the early days of pandemic shortages, only increases vulnerability to local disasters that can curtail domestic production. It also creates higher production costs and reduces the ability to ramp up production. Self-sufficiency forces countries to absorb the shocks themselves, resulting in large price swings and production changes.

It is now up to governments to learn the hard lessons that COVID-19 taught and improve preparedness for future pandemics.

The COVID-19 pandemic has once again put global value chains (GVCs) front and centre in policy debates. When shortages of personal protective equipment (PPE)¹ came to light in the first six months of 2020, several policy-makers and academics were quick to point fingers at structural flaws in cross-border supply chains, which they believed made the production of essential goods vulnerable to pandemic-related supply chain disruptions (Javorcik 2020). They asserted that GVCs have become too complex, that countries have become overly dependent on China and that GVCs were not designed to operate in today's turbulent geopolitical landscape. Across government, academic and consultancy circles, calls were made to make supply chains more resilient by forcing manufacturing and supply networks to diversify and localize (Jones and Kapelos 2020; Lighthizer 2020).

The aim of this brief is to examine the evidence behind this narrative. While the COVID-19 pandemic caused GVC disruptions in early spring of 2020, I will show that these events cannot be generalized to argue that they exposed structural flaws in GVCs. In addition, I will point out that GVC disruptions were not the principal cause of the highly mediatized shortages in essential goods. Rather, the scarcity in PPEs and other essential products was triggered by firms' inability to rapidly ramp up production to keep up with the astronomical spike in demand caused by the pandemic. I will nonetheless discuss several policy actions that the Canadian government can adopt to strengthen the resilience of its essential goods sector against future pandemics.

INTERNATIONAL SUPPLY CHAIN RISKS ARE REAL (AND MOSTLY MANAGEABLE)...

My point is not to downplay the existence of international supply chain risks. Whether it is a pandemic, a natural disaster or a policy intervention, production can suddenly stop in one country and induce a contagion effect to other countries through GVCs (Miroudot 2020). History has provided us with numerous examples. During the great recession of 2008-2009, negative liquidity shocks in one country caused a chain reaction of financial difficulties throughout GVCs as firms relied on each other for credit, aggravating the downturn-induced trade collapse (Bems et al. 2013). In the immediate aftermath of the 2011 Tohoku earthquake and tsunami, the production of many Japanese automotive and electronics components dried up, creating a disruption in international supply chains that affected the price and availability of cars and computers around the world (Escaith et al. 2011). The Chinese supply shock at the end of January and beginning of February 2020 led to similar knock-on effects. On February 14, for example, Fiat Chrysler announced that "it is temporarily halting production at a car factory in Serbia because it can't get parts from China" (Foldy 2020). Recently, the container vessel Ever Given's six-day blockage of the Suez Canal created shipping delays that were expected to keep disrupting global supply chains for more than a month after the events (Dempsey 2021). Companies understand the risks related to international supply chain shocks and have developed sophisticated risk management strategies to deal with many of them. In the wake of the 2008-2009

¹ PPE includes respirators, surgical masks, hospital gloves and medical goggles.

recession, countless firms have added agility to their supply chains by diversifying their supplier bases, increasing manufacturing capacity and creating buffer stocks (Simchi-Levi and Simchi-Levi 2020a). Well before the start of the 2018 Sino-U.S. trade war, for example, many companies had adopted a China Plus One strategy where they duplicated production in China and at least one other country to reduce their vulnerability to supply chain disruptions and currency fluctuations in any individual country (Symington 2013).

These risk management strategies have strengthened the resilience of many firms' supply chains by allowing their production "to return to its original state or move to a new, more desirable state after being disturbed" within a reasonable time frame (Christopher and Peck 2004). Indeed, a remarkable yet under-reported story of the COVID-19 pandemic is how little GVCs' disruptions affected production despite the economic crisis's suddenness, severity and global synchronicity. Confinement measures in the early months of the pandemic put an unprecedented halt to production across the globe and the unparalleled grounding of airline fleets put the global transport infrastructure in turmoil (Gagnnes and Van Assche 2020). Despite these hardships, while a majority of companies surveyed by McKinsey did encounter some problems in their production and distribution (Alicke et al. 2020), they were mostly temporary (Seifert and Markoff 2020). That is, the rapid adjustment of international supply chains to the once-in-a-lifetime economic turmoil principally exposed the resilience of most GVCs, not the existence of structural flaws (OECD 2021).

...BUT THEY WERE NOT AT THE SOURCE OF ESSENTIAL GOODS SHORTAGES

Several scholars and pundits have pointed to the shortages in N-95 masks in early 2020 as a counter-example of GVCs gone too far, but recent studies find that this argument is on shaky grounds. The scarcity of N-95 masks was driven by an exceptional surge in global demand and not by disruptions on the supply side (Evenett 2020; Gereffi 2020). Worldwide, face mask industry revenue grew from US\$737 million in 2019 to US\$22 billion in 2021, suggesting a compound annual growth rate of almost 450 per cent (Research and Markets 2020). In the United States, the medical face mask market is projected to reach about US\$7 billion in 2020, which is a year-on-year growth rate of 453 per cent (Arizton Advisory and Intelligence 2020). In Canada, demand for medical- and non-medical-grade masks will be 3.3 billion units in 2021 (Allam Advisory Group 2020).

Both local and global mask production increased rapidly to meet the demand surge, but limited stockpiles and constrained production capacity made it impossible to keep up with the explosion in mask consumption (Gereffi 2020). First, stockpiles in Canada and other countries were woefully low to deal with an airborne pandemic. As Health Minister Patty Hajdu said on April 1, 2020: "I think federal governments for decades have been underfunding things like public health preparedness, and I would say that obviously governments all across the world are in the same exact situation" (Leo 2020).

Second, the main production chokehold in N-95 value chains was not international supply chain disruptions but rather the difficulty to ramp up the melt-blowing process that is needed to manufacture the non-woven fabric at the heart of the mask (OECD 2020). This production bottleneck not only triggered mask shortages in countries like Canada which heavily depended on imports for their mask consumption, but in January and February 2020 it also instigated a plummeting of exports and a rise of imports in the world's largest PPE exporter: China (Bown 2020a). In fact, once China got its pandemic under control, the country contributed to solving the North American mask shortage problem with massive exports to the region (Evenett 2020; Miroudot, 2020).

Several policy experts have suggested that early shortages were exacerbated by governmental export bans (Fiorini et al. 2020), and there is some truth to this. In March, for example, Germany required government approval for its firms to export protective equipment such as masks, goggles and gloves. In April, the Trump administration in a similar fashion prohibited PPE exports without prior approval from its Federal Emergency Management Agency (FEMA). In virtually all cases, however, foreign policy pressure and pushback quickly watered down these export restrictions, thus limiting their disruptive impact (Bown 2020b). PPE exports to Canada and Mexico, for example, were exempted from FEMA authorization (Leonard 2020). While export restrictions were a real nuisance that generated significant international tensions, they were not at the origin, nor were they the main instigator, of the mask shortages.

Gereffi (2020) nicely summarized the root cause of the N-95 mask fiasco by suggesting that it was mainly the result of policy failures, not GVC failures. The origin of the mask shortage was a lack of governmental preparedness that had limited the development of stockpiling strategies and contingency plans. For Gereffi, the key policy problem was how to ensure that supply can be ramped up during future demand spikes, not how to deal with supply chain disruptions.

BUILDING FUTURE PANDEMIC PREPAREDNESS

How can governments ensure that the supply of essential health-care goods such as pharmaceuticals and equipment is nonetheless better prepared for future pandemics? Simchi-Levi and Simchi-Levi (2020b) have come up with an interesting proposal: similar to bank stress tests that were imposed after the 2008-2009 recession, governments should work together with industries that provide essential goods to establish stress tests that capture a country's ability to deal with demand spikes or other disruptions. These stress tests should consider the government's own stockpiling, the speed with which both local production and imports can be ramped up, the diversification of import sources and the impact of potential export restrictions by other countries. This would encourage both governments and businesses to collaborate on identifying what level of societal resilience is desirable and on designing the policy tools that can be implemented to attain it. In places where the market alone does not provide sufficient resilience, the government can introduce extra buffer stocks and additional supply diversification through targeted stockpiling and public procurement policies, among other things.

Government authorities should treat international co-operation as an integral part of their strategy to develop resilience in the supply of essential goods (OECD 2021). Bilateral or plurilateral agreements to share essential goods, to conduct joint procurements and to limit export restrictions can all strengthen resilience by both reducing a country's vulnerability to disruptions and increasing its ability to bounce back post-disruption.

It is critical to point out that economic self-sufficiency is not the best way for Canada to build resilience. Yes, fully localized production reduces a country's exposure to shocks that disrupt foreign production or trade (e.g., the Suez Canal blockage). But it also increases a country's vulnerability to local disasters that curtail domestic production (e.g., the Texas power failure). In other words, building resilience implies that countries should avoid putting all their eggs in one basket, and GVCs can play an important role in guaranteeing this. Adding to this, economic self-reliance comes at significantly higher production costs and a reduced ability to ramp up production. The OECD (2020b) recently conducted a set of economic model simulations to capture the impact of production localization on OECD countries' economic performance and vulnerability to idiosyncratic shocks. It found that production localization forces countries to shoulder more of the adjustments to absorb shocks themselves, translating into larger price swings and large changes in production, ultimately leading to greater variability of incomes. According to the study, welfare and real GDP in OECD countries would on average have contracted five per cent more if production had been more localized than it is today. Canada's real GDP would thus have been affected particularly harshly, at 13 per cent lower than it is today.

CONCLUSION

My analysis suggests that the narrative about structural flaws in GVCs that has dominated policy discussions in the last year is shaky. The assertion that the pandemic has exposed serious structural problems in GVCs, which in turn are pushing companies to reconfigure their international supply chains, seems overblown. The notion that these same deficiencies were at the root of shortages in essential goods such as PPE is weak. And the idea that economic self-sufficiency must be strengthened to overcome these deficiencies has been shown to be unhelpful at best and dangerous at worst.

There is a general understanding that governments need to do more to improve their countries' preparedness for future pandemics, and the establishment of stress tests in essential goods industries is particularly interesting. Doing so in a resilient fashion will require GVCs to be an integral part of the story, not something that needs to be sidelined.

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ISSN

ISSN 2560-8312 The School of Public Policy Publications (Print)
ISSN 2560-8320 The School of Public Policy Publications (Online)

DATE OF ISSUE

May 2021

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