



**GLOBAL TRADE & INNOVATION  
POLICY ALLIANCE**

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## **Global Value Chains After the COVID-19 Crisis**

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### **Executive Summary**

While the establishment of international value chains has created wealth on a global scale, globalization has recently come under pressure. Trade distortions caused by Chinese intervention into markets and protectionist measures in several countries have worsened the political environment for free trade. Integrated regional supply chains or new technologies that reduce cost advantages of global production can lead to a market-based re-organization of supply chains. The COVID-19 crisis also raised the issue of security of supply, as restrictions on international supply chains may have contributed to the economic downturn during the crisis.

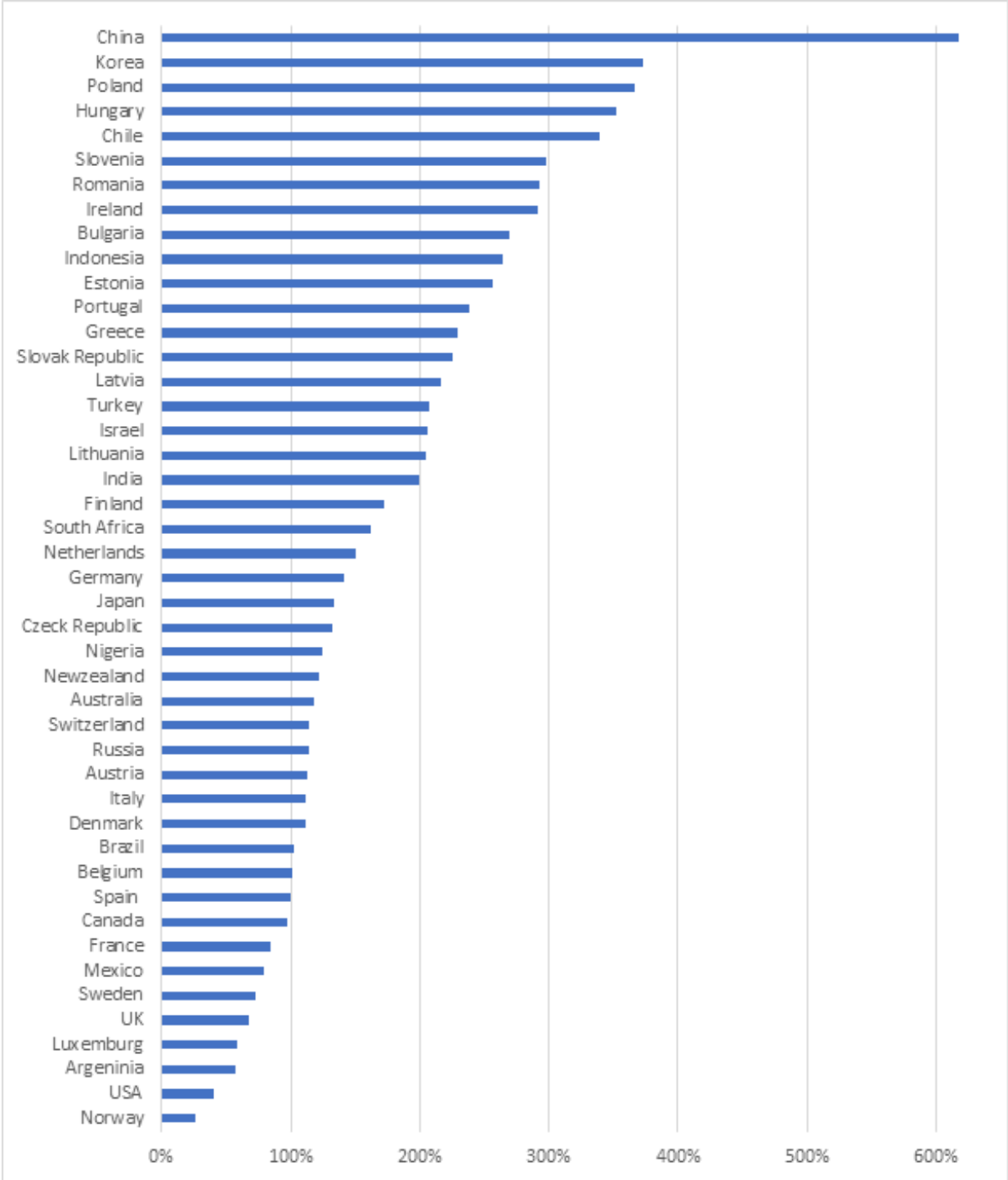
Diversification of supply, reshoring, and stockpiling are relevant objectives, for which companies may be willing to pay a price. Governmental provision of supply in the event of a global crisis may also be considered for very specific products—such as crude oil reserves. However, political intervention to force or to deeply subsidize reshoring has the potential to significantly reduce the wealth-creating effect of the global division of labor. Leveraging global value chains can often balance supply risks and help reduce costs. Security of supply should be managed by considering a range of options and costs at the company level. If global supply chains are utilized effectively, they can provide both wealth through the division of labor, competition, and a high level of security at the same time.

## **Globalization Under Pressure**

In the decades since 1990, globalization has led to growth in international trade, increased global competition, and broad economic expansion. The reintegration of the former planned economies into world markets, the removal of trade and investment barriers, and the reduction of communications and transportation costs have been enabled by international economic cooperation. Consequently, prosperity has grown on a global scale. Greater trade openness has also contributed to the elevation of global living standards. Evidence shows that a one-percentage point increase in trade openness can raise real per-capita income by 3 to 5 percent in the long run (Cerdeiro / Komaromi, 2017). Although large, wealthy, and industrialized countries such as Japan, the United States, and Germany are among the greatest beneficiaries of globalization, the strongest growth effect has been observed in former communist countries like China, Poland, and Hungary (Figure 1). There, the cumulative GDP per capita enabled by globalization is more than six times higher than per-capita GDP in 1990. In other words, China has seen a sixfold increase and Poland and Hungary a three- to fourfold increase compared to 1990, while Germany has advanced about 1 ½ times and the United States by 40 percent (Bertelsmann-Stiftung, 2020). The lower relative impact of globalization on the most-advanced countries is not surprising, as they were already integrated into global value chains, while the former communist countries opened their markets later and needed to catch up.

**Figure 1: Globalization Has Led to Prosperity**

Cumulative income gains per capita in relation to gross domestic product per capita in 1990



Source: Bertelsmann-Stiftung

Low- and middle-income countries have also substantially increased their per-capita income thanks to the expansion of foreign trade. For instance, trade agreements signed by Chile to eliminate trade barriers have grown the export sector, which accounted for 13 percent of GDP in 1960 to about 30 percent of GDP in 2020. Free trade agreements have also required these countries to establish more sophisticated internal institutions and coordination systems among government agencies that are required to monitor the commitments that have been made, and to manage conflict resolution systems. Hence, trade opening has brought other benefits besides access to new products and services which must also be taken into consideration when evaluating the positive impact of international free trade, including, most broadly, the improvement of competitiveness. Similarly, commercial agreements provide legal certainty and a long-term relationship horizon with other countries and economies, both of which are indispensable conditions to economic progress based on global economic integration and the development of alliances with larger economies.

In recent years, however, globalization has decelerated, with global trade growing more slowly than global GDP. Progress in trade negotiations at the multilateral level has been very limited, although several important regional and bilateral agreements have been reached. Meanwhile, new trade barriers have been introduced, and trade conflicts and punitive tariffs have had disruptive effects. Although China has entered the World Trade Organization (WTO), state subsidies, investment obstacles, forced technology transfer, and other interventions have disrupted market-based global competition. The major conflict between the United States and China has been the single most important event affecting global trade and cooperation, but the decreasing effectiveness of the WTO and the increased use of tariffs in a range of trade disputes are also factors. Some countries have implemented industrial reshoring policies that negatively impact trade relations. In China, the recently announced “dual circulation” plan, which aims to focus more on the development of domestic production and consumption and reduce dependence on the international economy may in the long term also have a dampening effect on trade. Apart from these political influences, supply and value chains themselves are also changing. In some industries, production is shifting closer to final markets. The automotive industry has developed regional value chains in Europe, North America, and Asia, producing cars in the region where they are sold. Suppliers have been following original equipment manufacturers (OEMs) in these regions to benefit from lower costs, better logistics, and other advantages of local production.

3D printing can also increase production close to market and thus potentially reduce international trade. For instance, ING Bank estimated that the rise of 3D printing may decrease global trade by up to 25 percent (ING, 2017). However, other studies have questioned that finding, suggesting that the emergence of 3D printing and other advanced industrial production technologies (particularly the digital technologies generally described as the Internet of Things (IoT) or Industry 4.0) could actually have the effect of increasing international trade flows. For example, a study by Caroline Freund, Alen Mulabdic, and Michele Ruta (2019) of the World Bank found that the use of 3D printing in the hearing aid industry increased trade in that field by 58 percent over nearly a decade, compared to

what would otherwise have been expected. Other technologies, such as AI and 5G, have the potential to facilitate trade by significantly improving shipment tracking systems and automated payments (Lund / Bughin, 2019).

International trade not only leads to efficient production and innovation based on competition and the division of labor, but can also provide reliable supply. Not being dependent on one supplier but having alternative sources internationally increases the security and stability of supply as more sourcing options are available. Though complexity and highly specialized suppliers bring their own risks, since short-term shifting to other options may be difficult, dependence on only one foreign supplier or on only a few suppliers from one country presents a significant risk.

The management of complex supply chains is one of the core functions of every manufacturer. Besides over-dependence on a single supplier, procurement and logistics considerations include quality and prices, but also reliability and—increasingly—sustainability. These are all concerns in risk management, which must also consider the costs of risk reduction measures such as warehousing or contracting additional, but perhaps less cost-effective sources.

### **The COVID-19 Shock on Global Value Chains**

Global supply chains based on undistorted international trade have enabled businesses to deepen the global division of labor and to specialize in their core competences. This has increased the efficiency of production and innovation, providing new and better products and services to consumers around the world. Global procurement and production also offer access to additional sources of goods needed for production or consumption. A broad variety of options help to hedge supply chain risks. Therefore, international trade generally increases the security of supply, as dependencies on individual local companies can be reduced. However, even with open borders, a lack of diversification can lead to new dependencies on one supplier or region abroad. If a region is affected by an epidemic or similar event, supply chains can be stabilized by expanding production in other regions. While increased domestic sourcing can reduce logistical risks, for example, it excludes regional diversification options. If managed appropriately, international trade enables a diversification of supply in value chains and can thus help mitigate the risk of supply chain disruptions.

In 2020, COVID-19 posed a challenge to value chains of unprecedented dimension. Studies suggest that disruptions of global supply chains may have been responsible for as much as one-quarter of GDP loss caused directly or indirectly by the pandemic (Bonadio et al., 2020). What seemed to be a risk only for supplies from China turned out to be a global problem. Most countries were hit hard by the pandemic, with temporary border closures and reduced transport capacities. Export restrictions and import relief measures were introduced in many countries (which resembles a reversed mercantilism) (Matthes, 2020; Evenett, 2020).

Companies have since worried about severe supply-side restrictions. As almost the entire world faced restrictions, options to reap the benefits of geographical diversification and reorganize value chains accordingly were often not available as import dependence seemed to become a significant hazard for domestic economies during the crisis. The lack of medical equipment, such as masks or ventilators, seemed to prove that domestic production is essential to secure the supply of necessary goods. Fearing critical shortages and under immense public pressure, more than 80 jurisdictions implemented export restrictions to keep critical products within their borders. A study by the U.S. Institute for Supply Chain Management conducted in March 2020 found that 95 percent of the 630 respondents reported supply chain disruptions in some capacity due to coronavirus-related export bans or other transportation restrictions (Tripp, 2020). Furthermore, transportation operating costs have increased at the fastest rate in 2020 due to higher insurance premiums and COVID-19 related expenses. For instance, the cost of shipping a container of goods has increased 80 percent since November 2020, and tripled over the past year (Lynch, 2021). And according to the United Nations Conference on Trade and Development's (UNCTAD's) "Review of Maritime Transport 2020" report, the global health and economic crisis triggered by the pandemic has upended the landscape for maritime transport (-4% YoY) and trade, significantly affecting growth prospects and further supply chain development (UNCTAD 2020).

Despite many countries' initial efforts to impose export bans, global value chains proved to be a vital part of the global COVID-19 response. For instance, the production of ventilators, which are so critical to saving coronavirus patients, involves the installation of up to 700 parts and components sourced from vendors from around the world (Geneva Network, 2020; Ferek, 2020). With regard to COVID-19 vaccines, many are the result of international collaborations and many of the key inputs (from active pharmaceutical ingredients to vials) are likewise contributed by partners in international supply chains. As the European Medicines Agency notes, during the pandemic, pharmaceutical companies, including many direct competitors, partnered to secure critical, high-demand medicines for hospital intensive-care units by establishing an industry single point of contact (i-SPOC) system, which enables close monitoring of possible disruptions in supply chains (Tripp, 2020).

Compared to the scale of the impact of the coronavirus on the world economy and the severe restrictions in many countries, the real damage caused by the disruption in value chains seems to be surprisingly low. Many companies had to reorganize their supply chain and rethink stockpiling. In most cases, these measures stabilized production. Shortages of masks or other medical equipment were caused by the enormous additional demand, which was met by increasing capacity. Companies were able to respond to this rapidly growing demand for medical equipment (protective gear, ventilators, etc.), and many companies started developing vaccines and building production capacity in record time. Overall, global markets proved to be flexible and global value chains adaptable. More regional supply would not have reduced the remaining issues: In Europe, most of the problems did not come from trade with China, but from integrated production within Europe. Globally interconnected markets actually supported and stabilized markets. From

this perspective, a deglobalizing of the world economy would not only endanger prosperity, but also reduce the flexibility of companies and economies to respond to changing circumstances when the supply of goods is restricted.

### **What Should Companies and Governments Do?**

An increase in supply security is typically associated with additional costs. Stockpiling is expensive, domestic production often leads to higher costs, and managing multiple suppliers is also expensive. In a market economy with decentralized planning, it is primarily up to private companies (and consumers) to decide how to increase the resilience of supply chains (e.g., through more diversification or storage) and what costs are appropriate for more security (Kolev / Obst, 2020). If, following the COVID-19 crisis, companies place more importance on the resilience of their production and supply chains, they will have the ability to further diversify their procurement. Some may also decide to reshore parts of their value chain—encouraged by targeted regulatory and policy frameworks.

More complex supply chains that rely on a larger number of suppliers or decisions to reorganize supply chains will absorb management capacities and therefore will also increase costs for companies, even if external costs stay the same. Additional costs do not only include transportation and fleet costs, custody and warehouse fees, but also bureaucracy at the point of origin and destination. This bureaucracy involves fixed costs (per transaction, regardless of export value) and is directly affected by regulations, norms, and good or bad functioning of the authorities at the relevant customs offices and other applicable departments and services. Countries with high fixed costs for export make fewer large transactions, while countries with low fixed costs make many small transactions. Thus, securing supply from a variety of international suppliers from countries with less-efficient bureaucracies and higher transaction costs is more expensive and therefore difficult to achieve. Countries with higher trade frictions already have difficulty competing in world markets. These problems can increase with greater trade complexity. Governments can try to reduce bureaucratic costs as well as shipping costs and other barriers that restrict trade in smaller quantities.

State regulation that would force companies to reshore production would be a fundamental intervention into market-based planning and threaten the autonomy at the core of business decisions. Any state intervention needs to be justified, as it reduces the known advantages of market-based division of labor. This is particularly the case if the cost-benefit calculation of the company does not require additional security measures. Reshoring cannot increase security of supply if domestic value chains are disrupted. Even in rare events such as a global pandemic, where the government steps in like a major reinsurer and bears the costs of economic decline due to disrupted value chains, the cost of removing all supply chain risks is potentially very high. Undermining global trade and the international division of labor, and therefore also technological exchange, can create costs that may exceed the benefit of avoiding the limited economic damage that occurs in those rare cases where international supply chains are fundamentally disrupted.



However, some products can be defined as more sensitive than others. The economic impact of a shortage of crude oil, for example, would be much higher than the value of the oil itself. If price developments do not lead to market reactions fast enough, reserves can help to avoid damage in other sectors. That is the reason why there are strategic reserves for crude oil. The situation is similar for basic medical equipment. Without basic medicine, masks, or protective gear, the medical system would not be able to fulfil its tasks—regardless of the specific disease. To limit the impact of a medical crisis in the future, it would be advisable to stockpile these materials, especially if they are durable and necessary in different crisis scenarios and their costs are moderate. Decentralized stocks in pharmacies or wholesalers already play an important role in the continuous supply of medical equipment. Stockpiling should be supported by adequate technological infrastructures and data monitoring systems for the demand and supply of these goods. Limiting procurement to local production, on the other hand, could increase costs and limit the option of importing medical goods that are available in other countries. The development of the global supply of medical goods and vaccines during the coronavirus pandemic shows that free trade in medical supplies is even more important during a medical crisis (Kober / Kirchhoff / Matthes, 2020).

## **Conclusion**

Globalization will continue to evolve over time and supply chains will constantly be redesigned. Security of supply and resilience will probably play a more important role in the future, but should not be pushed to the point of deglobalization. International trade provides not only competition and division of labor, but also opportunities for diversification and thus greater flexibility in managing future risks.

This evolution can add new opportunities for certain regions. African countries, for example, could benefit from the diversification of global supply chains if additional or alternative production capacities are developed there because American or European companies may want to rely less on Asian-based value chains. However, this requires additional efforts to improve competitiveness. Financial limitations in Africa may limit the ability of governments to provide financial support for domestic industrialization, but, by removing tariffs and trade barriers, they can indirectly stimulate increased industrial (economic) activity. The new Africa Continental Free Trade Area (AfCFTA) can encourage and bind African governments to increase intra-African trade—and through such a process strengthen value chains in ways that can attract investment and engagement from non-African partners.

In summary, despite some challenges, especially early in the crisis, global supply chains have proven to be resilient and in fact have played a critical role in helping the world overcome the challenge of the pandemic and the resulting impact on economic and public health. While governments worldwide may naturally wish to pursue policies aimed at capturing as much market share as possible in advanced-technology industries (as long as those policies are WTO compliant), the COVID-19 crisis has actually revealed the importance of global value chains in the development of complex, innovative biopharmaceutical and medical products. According to Bonadio et al. (2020) “there is no sector in which supply chain renationalization notably improves resilience, measured either



by GDP, or by value added of the sector itself.” In other words, despite calls for “renationalization of manufacturing/supply chains” such a move would actually have the opposite effect and not enhance supply chain resilience. Rather than each nation feeling it must have its own full production network, a better approach would be to ensure that no single location has a monopoly on critical inputs or products. Policymakers should continue to work to enhance the security and stability of global supply chains and to ensure that competition in global markets and supply chains continues to unfold according to rules-governed, market-based principles that enable products to be developed on a best-value basis, as enabled by constructive international competition.

There may be a temptation to think that ‘isolation is strength’ and that countries need to minimize their connectedness with others as much as possible. But crises such as pandemics are best managed when information, skills, and resources can flow quickly not only between countries of the same geopolitical and supranational areas, such as the EU, but also between different regions of the world. The benefits of increased trade—with well-implemented and resilient supply chains criss-crossing communities, countries, and continents—far outweigh their potential negative aspects.

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