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Global Value Chains: Resilience, Reshoring, and Diversification Post-COVID-19

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Abstract

This paper evaluates the adjustment of the global value chains (GVCs) after COVID-19, with a focus on resilience building within existing chains, selective reshoring, and geographic diversification. The author first discusses the pre-pandemic idea that GVC participation increases efficiency and then explains how the pandemic dual supply-demand shock revealed the vulnerabilities.

The paper argues, based on recent empirical and policy work that large-scale reshoring is neither economically viable nor widely seen. Firms and governments mainly focus on supplier's diversification, building backups in strategic and critical sectors like semiconductors and pharmaceuticals, and improving the supply chain transparency.

The idea of "resilient globalization" describes this shift toward staying globally connected while actively reducing and managing the risks. Overall, the findings show that globalization is changing and not reversing (De-globalization), with global value chains becoming smarter and more diversified.

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III. List of abbreviations

GVC – Global Value Chain

GVCs – Global Value Chains

OECD – Organization for Economic Co-operation and Development

ECB – European Central Bank

EU – European Union

US – United States

API – Active Pharmaceutical Ingredient

R&D – Research and Development

CHIPS Act – Creating Helpful Incentives to Produce Semiconductors Act

IFRI – Institut Français des Relations Internationales

GDP – Gross Domestic Product

1 Introduction

COVID-19[1] exposed a series of significant vulnerabilities in the global value chains. These vulnerabilities had largely been overlooked in the academic and policy discussions. Before 2020, most economists and business leaders were thinking that participation in global production networks is extremely beneficial and was a source of efficiency gains and competitive advantage. Antràs (2020) argues that, despite the initial trade collapse, there is little evidence of broad "de-globalization" of GVCs, but some selective reshoring, near-shoring, and regionalization are likely responses to increased risk. However, the pandemic's disruption of both supply and demand revealed serious and critical weaknesses in this fragile just-in-time system, which was standard in manufacturing worldwide (Antràs, 2020).

This paper examines how firms, industries, and governments have responded to post-pandemic vulnerabilities. The key question is which mix of resilience within existing supply chains, selective reshoring, and geographic diversification makes economic sense. The most realistic, economically justified, and sustainable path forward is "resilient globalization. This means continuing to gain from the efficiency benefits of global production networks while simultaneously reducing catastrophic disruption risks via strategic adjustments (Antràs, 2020; Schwellnus/Haramboure/Samek, 2023). Empirical work for European firms shows that "GVC firms and MNEs performed better than other firms in terms of sales and closures" (Marvasi, 2023, p. 232). This represents neither a return to the pre-pandemic model nor a mass withdrawal from global markets, but a practical and realistic redesign that recognizes both the benefits of international specialization and the risks of too much concentration.

The paper is designed as follows. Section 2 defines global value chains and explores the pre-pandemic academic consensus. Section 3 analyzes the nature of the COVID shock and its diverse impacts on firms at different positions in supply chains. Section 4 explores strategies for building resilience within existing GVCs. Section 5 investigates reshoring as a policy response. Section 6 discusses that geographic diversification represents the

[1] The term "COVID-19" is used throughout this paper to refer to the pandemic and its economic consequences, without distinguishing between specific variants or waves.

primary realistic response to supply chain vulnerabilities. Section 7 places these changes in a broader geopolitical context and reviews government policy responses. Section 8 is a sector-specific analysis of semiconductors and pharmaceuticals to illustrate how responses vary by industry. Finally, Section 9 synthesizes these findings into a systematic framework of "resilient globalization" before concluding.

2 Global Value Chains: Definition and Pre-Pandemic Context

Global value chains (GVCs)[2] describe a world in which production is broken into many stages and spread across several countries instead of being completed in one place. In Global Value Chains, firms source, procure, and acquire components, services, and knowledge from different locations and then knit them together into a final product. This kind of production has become a hallmark of modern globalization. Indeed, empirical evidence suggests that "the hyperglobalisation of 1986-2008 was tightly related to the growth of global value chains" (Antràs, 2020, p. 8). This is especially visible in complex goods such as cars, electronics, and pharmaceuticals (Koopman et al., 2014). At the same time, it ties firms and countries more closely together, so shocks in one part of the chain can now travel quickly across borders (Antràs, 2020; Marvasi, 2023).

2.1 Understanding The Global Value Chains

Global value chains is the fragmentation of the production across several different countries. Each stage of manufacturing, assembly or service provision occur in different geographical locations (Koopman/Wang/Wei, 2014). Modern manufacturing coordinates complex networks of suppliers, manufacturers, and distributors instead of a single factory producing an entire product. This model emerged in the 1990 and 2000 since shipping costs fell, information technology improved trade liberalization reduced tariff and non-tariff barriers.

From early 2020, this fragmented model became the dominant way of organizing the production (Koopman/Wang/Wei, 2014). Data from the OECD and World Bank indicate that approximately half of global merchandise trade consists of intermediate goods

[2] In this paper, “global value chains” (GVCs) refer to cross-border production networks in which value is added in at least two countries before the final good or service reaches the end user.

moving within these supply chains, rather than final products shipped directly from factories to consumers (Koopman/Wang/Wei, 2014).

2.2 Efficiency and The Overlooked Risks

Between the years of 2000 to 2010, academic economists mostly underscored the efficiency gains of this system, however after 2010, more papers started to discuss risks, vulnerability, and distributional issues in global value chains.

In this decade, firms integrated into global supply chains achieved significantly higher productivity growth than firms that operated mainly domestically (Antràs, 2020). Firms lower production costs led to lower consumer prices, and international specialization allowed countries to focus on what they could do most efficiently. This increased overall wealth creation. This optimistic consensus overlooked the vulnerabilities and risks in global value chains, such as just-in-time fragility and geographic concentration. Just-in-time manufacturing minimized the working capital and inventory costs, but eliminated butters and flexibility (Marvasi, 2023). A single disruption at a key supplier caused by natural disaster or local lockdown could disrupt the overall downstream production within days. The Geographic concentration added a second layer of risk. If one country dominated production of a critical input, shocks in that country would have global consequences.

The semiconductor industry illustrates this problem clearly. Taiwan which produces the majority of the word's most advanced chips, essential for smartphones, computers, and many industrial and military applications. Before 2020, this concentration risk was widely known but often treated as a theoretical or long-term concern rather than an immediate policy priority (Antràs, 2020). COVID-19 and rising geopolitical tensions changed this assessment.

3 The COVID-19 Shock

COVID-19 shock did not affect all firms in global value chains in the same way. In the short run, firms that strongly embedded in GVCs were affected harder than domestic firms because they depended on inputs that suddenly did not arrive. Over time, GVC firms with diverse supplier's base in several countries adapted more easily than those relying on a single foreign source. This means the real issue was not global integration itself, but how concentrated or flexible a firm's sourcing strategy was.

3.1 Dual Supply-Demand Shock

Most recent macroeconomic crises have affected either supply or demand, but not both at the same time. Financial crisis mainly reduces demand, whereas production capacity remains stable. A commodity shock restricts supply, while demand for the input continues. COVID-19 was unusual because it caused a dual shock with distinct geographic phases (Lebastard/Serafini, 2023).

In 2020 lockdowns in China disrupted supply which led to closure of factories and workers to stay home. A few weeks later, lockdowns in Europe and North America caused a sudden demand shock as consumers and firms cut spending. For companies incorporated in complex supply chains, this combination was particularly challenging. Many firms simultaneously lost access to key materials and saw orders from downstream customers cancelled or postponed. The result was a series of disruptions that exposed previously invisible interdependencies (Lebastard/Serafini, 2023).

3.2 Short-Run Vulnerability and Medium-Run Adaptation

Data from 2020 and 2021 give us mixed signals about the role of GVC participation. In the short run, firms that strongly integrated into international supply chains suffered larger export declines than domestically oriented firms (Lebastard/Serafini, 2023). At the same time, those that had diversified their sourcing across several countries experienced significantly smaller export losses compared to those relying on a single foreign supplier, as illustrated in Figure 1 (Lebastard/Serafini, 2023).

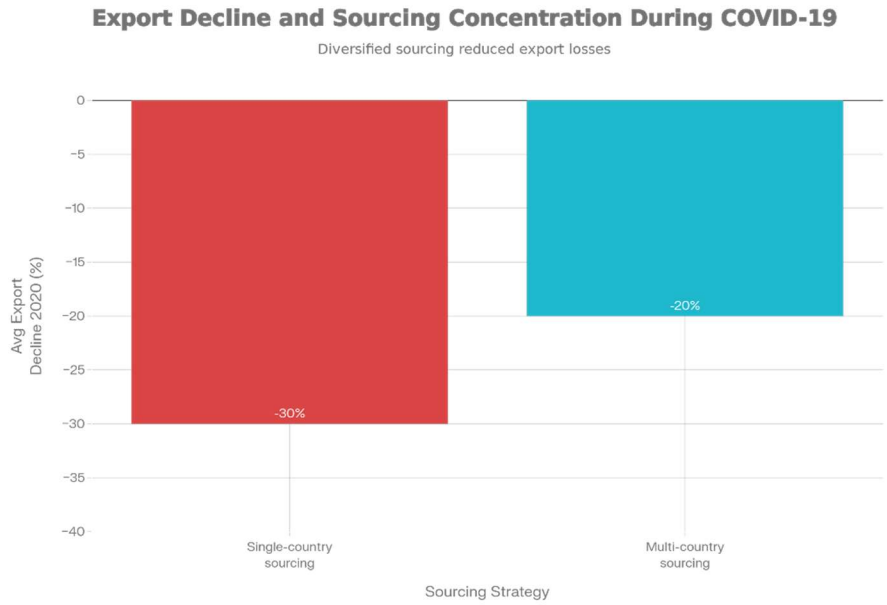

Figure 1: Stylized average export decline in 2020 for firms with single-country and multi-country sourcing of key inputs, based on ECB evidence on COVID-19 supply shocks (Lebastard/Serafini, 2023).

Source: Own illustration based on (Lebastard/Serafini, 2023).

The medium-term picture was different. Studies that followed firms through 2021-2022 showed that companies that engaged in global value chains had higher survival rates and recovered faster than firms operating only domestically (Gopalan/Miroudot/Reddy, 2022). GVC participants had higher chances to adjust by switching suppliers, and reallocating production or using their international networks to deal with disruptions. In contrast, domestic-only firms often lacked this flexibility and organizational capacity.

This contrast suggests that the main issue was not participation in GVCs itself, but the lack of buffer and flexibility in many supply chains. Firms that only focused on cost efficiency, with highly concentrated sourcing and very small reserve capacity, were especially vulnerable to a rare but severe shock.

4 Building Resilience Within Global Value Chains

An important lesson from the pandemic is that strengthening resilience does not require abandoning global value chains. Rather than relocating production back to domestic markets, firms and governments can focus on strengthening supply chain resilience. Through this approach they can preserve many of the efficiency gains achieved through global integration. The OECD analysis indicates that reinforcing and strengthening resilience within existing global value chains leads to more effective outcomes than broad reshoring strategies (Schwellnus/Haramboure/Samek, 2023).

4.1 Key Instruments for Building Resilience

The first instrument is geographic diversification of sourcing. Instead of relying on a single country or supplier for critical materials and inputs, firms develop and manage relationships with multiple suppliers in different locations. Empirical evidence for European exporters shows that firms sourcing key inputs from at least two countries were less affected during the pandemic. Their export declines were around 20–30% smaller compared to firms that relied on a single foreign supplier (Lebastard/Serafini, 2023).

The second instrument is investment in supply chain visibility and digital coordination. Many firms discovered that they did not know where second or third-tier suppliers were located. Investments in information systems, real-time monitoring, and forecasting tools make it easier to identify vulnerabilities early and to adjust sourcing strategies (Schwellnus/Haramboure/Samek, 2023).

The third instrument is the selective use of buffer stocks and process flexibility. Firms do not rely solely on just-in-time production. Instead, they keep limited inventories of critical inputs and adjust production so components from different suppliers can be substituted. This increases resilience while retaining most efficiency gains (Schwellnus/Haramboure/Samek, 2023).

4.2 Costs and Coordination Problems

These strategies are not costless. Maintaining multiple suppliers increases transaction costs and coordination complexity. Digital systems and inventories require upfront and ongoing spending. When problems and disruptions are unlikely, managers feel pressure to reduce what they see as avoidable costs. This helps to explain why many firms stayed highly concentrated before 2020 (Lebastard/Serafini, 2023).

Another issue is coordination. If one firm diversifies and invests in resilience while competitors continue to minimize costs, it may face a competitive disadvantage in normal times. The economy as a whole benefits if many firms invest in resilience. This gap between private incentives and collective benefits explains why governments sometimes need to step in (Schwellnus/Haramboure/Samek, 2023).

5 Reshoring: Political Benefits and Economic Challenges

Reshoring has attracted political attention as a way to secure supply chains and create local jobs. Governments offer large incentives, such as in the U.S and EU. The overall effect on global trade has been limited. In practice, reshoring occurs mainly in high-tech and strategically important sectors where higher costs are acceptable for security reasons.

5.1 Reshoring Policies After COVID-19

After COVID-19 reshoring quickly became popular in political discussions. Policymakers liked the idea that bringing production back home could fix supply issues and create local jobs. In the U.S, the CHIPS and Science Act provided about $52 billion to support domestic semiconductor production. The European Union introduced its own Chips Act with multi-billion-euro incentives, and several Asian countries launched similar programs (Schwellnus/Haramboure/Samek, 2023).

These actions made it seem like reshoring was happening on a large scale. However, trade data up to 2024 show that global integration hasn't reversed. Most changes are limited to a few strategic sectors, while overall trade remains very international (Jean, 2024; Kolev/Matthes, 2021).

5.2 Why Reshoring is Selective

The biggest barrier to extensive reshoring is cost. Moving production to higher-wage countries raises the price of each product and can harm competitiveness. In labor-intensive industries like clothing, shifting production from low-wage countries to Europe or the U.S could increase costs by 20–40%. This makes products difficult to sell in price-sensitive markets (Sawik, 2025). This is why reshoring in garments and similar sectors has been limited, even after the pandemic.

In capital-intensive industries like semiconductors, labor is a smaller part of total costs, therefore, reshoring is more feasible. Producing advanced chips in Europe or North America instead of East Asia is estimated to cost 5–15% more (Sawik, 2025). With subsidies and strategic justifications, these extra costs are often acceptable to reduce reliance on a single region.

As a result, reshoring mostly happens in a few strategically important, high-tech sectors like semiconductors and some pharmaceuticals, where governments are willing to incur higher costs for security reasons (Schwellnus/Haramboure/Samek, 2023).

6 Geographic Diversification as the Main Resilience Strategy

Although reshoring matters in a few sectors, most firms rely on geographic diversification of their suppliers base to stay resilient. Sourcing from multiple countries with different risk profiles is similar to spreading investments in a financial portfolio. This approach helps firms reduce the impact of local disruptions and preserve the benefits of international trade (Schwellnus/Haramboure/Samek, 2023). Evidence from European exporters confirms the effectiveness of this approach. Firms with diversified sourcing structures experienced significantly lower export declines in 2020–2021 compared to firms dependent on a single source country (Lebastard/Serafini, 2023). Firms that already had alternative suppliers before the crisis gained the most benefits. Trying to diversify during the disruptions was slow and difficult.

After COVID-19, diversification also focused on quality, not just cost. Companies have looked for countries that are politically stable and reliable, not only the cheapest options. Places like Vietnam, India, Mexico, and some Central and Eastern European countries have become popular as firms try to avoid relying too much on a single location (Jean, 2024).

7 Geopolitical Tensions and Policy Responses

Geopolitical tensions among major powers are influencing how global value chains are organized. Fragmentation is occurring, but mostly limited to key sectors like high-tech trade between the US and China, and Russia's isolation from Western markets. In general, most global trade and production networks remain interconnected despite these disruptions.

7.1 Limited but Significant Fragmentation

Geopolitical tensions between the US, China, and Russia have influenced how firms organize their global value chains. Export controls, sanctions, and investment screening affect trade in sensitive technologies and energy. The open question is whether these developments are leading to a wider fragmentation of global trade.

Recent analyses indicate that fragmentation is concentrated in a few key trade relationships rather than across the entire global economy. The clearest changes involve US–

China trade in high-technology goods and Russia's separation from many Western markets (Jean, 2024). In most other sectors and regions, trade and production networks remain closely connected.

7.2 Industrial Policy: Rationale and Risks

From the perspective of individual firms, sourcing from low-cost suppliers in politically sensitive countries can still be a sound choice. But from a national security perspective, heavy dependence on a rival power for critical inputs involves significant risks. This gap between private incentives and collective risk explains why governments intervene through measures such as subsidies for domestic production, requirements to diversify suppliers, strategic stockpiles, and export controls (Schwellnus/Haramboure/Samek, 2023).

As illustrated in Figure 2, the OECD framework recommends different policy priorities depending on the degree of supply concentration and the strategic importance of products, ranging from ex-ante agility and risk mitigation to ex-post adaptation (Schwellnus/Haramboure/Samek, 2023). These tools can help fix coordination problems, but using them too much can cause inefficiency, cost a lot, and lead to retaliation from other countries.

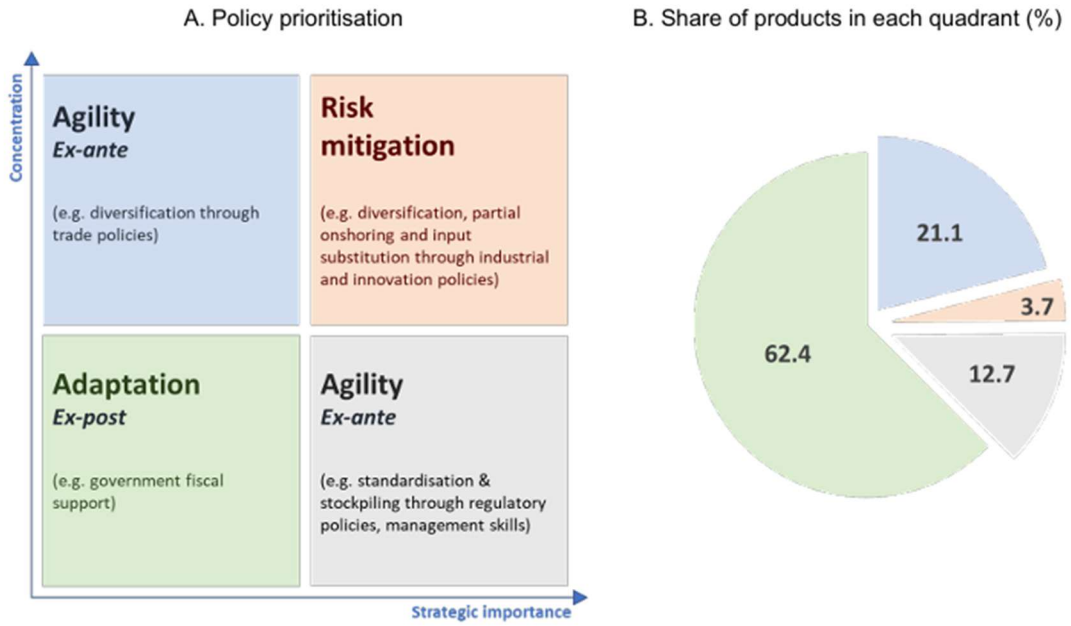

Figure 2: Policy prioritization for strengthening global value chain resilience along concentration and strategic importance.

Source: (Schwellnus/Haramboure/Samek, 2023), "Policies to strengthen the resilience of global value chains", Figure 7.

These policies can help address coordination problems and provide what the market might not. But they also have risks: The industries might become dependent on support, and the protectionist actions can cause retaliation. At the same time, high costs can take resources from other needs. Policymakers need to focus policies on real vulnerabilities and avoid unnecessary protection.

8 Sector-Specific Responses: Semiconductors and Pharmaceuticals

Semiconductors and pharmaceuticals are highly strategic and concentrated, which makes them vulnerable to disruptions. Governments respond by supporting domestic production, investment, and stockpiles. Full relocation is unlikely; instead, production and sourcing are gradually diversified.

8.1 Semiconductors

The semiconductor sector is a key example of an important strategic, highly concentrated industry. A large share of advanced chips is manufactured in Taiwan and South Korea; this creates strong incentives for the US, EU, and other advanced economies to pursue risk reduction. (Antràs, 2020). The pandemic and geopolitical tensions have reinforced concerns about over-dependence on a few fabrication plants.

Policy responses have focused on supporting additional capacity outside the existing core locations. The US CHIPS Act and the EU Chips Act aim to attract investment by major producers through subsidies and regulatory support (Schwellnus/Haramboure/Samek, 2023). At the same time, replicating the full network of suppliers, skilled workers, and the know-how built up over decades in East Asia is difficult and expensive.

This means that the most likely outcome is not a full relocation of production, but a partial rebalancing. More advanced facilities will gradually appear in the United States, Europe, and Japan, while Taiwan and South Korea remain the key players. Firms will then be able to diversify their sourcing of critical chips across several regions, which reduces the risk that a single geopolitical event disrupts global production completely (Sawik, 2025).

8.2 Pharmaceuticals

Pharmaceutical supply chains are also highly internationalized. Many active pharmaceutical ingredients (APIs) are produced in India and China and then shipped to other countries for formulation and packaging. COVID-19 revealed how vulnerable this structure can be when export restrictions or factory shutdowns occur in key API-producing countries (Schwellnus/Haramboure/Samek, 2023).

Complete reshoring to high-cost countries would dramatically increase prices. Many governments have focused on reshoring only essential medicines, supporting domestic production of some APIs, and building strategic stockpiles. Less critical medicines and generics will likely stay in global supply chains, though sourcing may be slightly more diversified.

9 Synthesis: Toward "Resilient Globalization"

Core strategies for enhancing global value chain resilience:

Strategy	Main instruments	Typical sectors/use cases
Resilience within GVCs	Supplier diversification, buffers, visibility, and flexibility	Broadly across manufacturing and services (OECD, 2023)
Selective reshoring	Domestic capacity, subsidies, and industrial policy	Semiconductors, selected pharmaceuticals (OECD, 2023)
Geographic diversification	Multi-country sourcing, near-shoring	Electronics, automotive, and many GVC-intensive industries (ECB, 2023)

Table 2: Main post-COVID adjustment strategies for global value chains.

Source: Own summary based on OECD (2023) and European Central Bank (2023).

The evidence across sectors and countries points toward an adjustment of global value chains rather than their collapse. A pattern of "resilient globalization" seems to be emerging (Marvasi, 2023; Schwellnus/Haramboure/Samek, 2023; Kolev/Matthes, 2021). Its main elements are:

- Continued participation in GVCs for most products and preserving efficiency gains

- Greater geographic diversification of suppliers to avoid over-reliance on single countries
- Selective reshoring or near-shoring in a small number of strategic sectors
- Investments in information systems, risk management, and process flexibility
- Limited but targeted use of industrial policy instruments to address coordination problems

The right mix of policies depends on the context. Capital-intensive, high-tech sectors like semiconductors with clear security implications need more active policy and some domestic backup. Labour-intensive, low-margin sectors like apparel will likely stay concentrated in low-cost locations, with resilience coming from sourcing from multiple countries rather than reshoring. (Sawik, 2025).

Resilience measures always come with costs. Small increases in production costs can be worth it to reduce the risk of major disruptions, but very high costs are rarely justified. Firms and policymakers need to find a balance between efficiency and security.

10 Conclusion

COVID-19 showed that global value chains, though very efficient, can be vulnerable to rare but serious shocks. The pandemic, along with rising geopolitical tensions, led firms and governments to rethink the balance between efficiency and resilience. The data and findings suggest that a complete pullback from globalization is neither realistic nor desirable. Instead, GVCs are evolving through changes that strengthen international production networks while keeping their benefits preserved (Antràs, 2020; Kolev/Matthes, 2021; Schwellnus/Haramboure/Samek, 2023).

Resilience is being pursued mainly through diversification, better information, and targeted reserves, which is complemented by selective reshoring in a few critical sectors. Governments step in when private incentives alone do not address national security concerns, but policies must be designed carefully to avoid lasting inefficiencies. In the end, the success of “resilient globalization” will depend on how well firms and policymakers maintain this balance when future shocks occur.

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