

## THE RISE OF DEGLOBALIZATION: IS THE WORLD MOVING AWAY FROM FREE TRADE?

Murodjon Sagdiddinov Rahimjonovich

University of World Economy and Diplomacy, Student, Tashkent, Uzbekistan

beachfront525@gmail.com

### Abstract

The rise of deglobalization signals a crucial transformation in the international economy. This phenomenon of deglobalization presents a new challenge to international trade as it has existed since the mid-20th century. In this article, I attempt to analyze the broad question of whether deglobalization is just a phase or an enduring change. There has been a deglobalization movement marked by an increase in protectionism, and economic and environmental factors. The current evidence of trade, foreign direct investment, and the emergence of regional trade integration, such as RCEP, increases the scope of regions with lower economic growth rates and rising economic disparities. Deglobalization offers opportunities for less environmental damage and a decrease in income inequality on a global scale. However, it also has negative effects, such as promoting economic fragmentation and a decline in interdependence among nations. Therefore, there is a need for "smart globalization," which encourages a degree of self-reliance at the local level while also promoting global social interaction. This approach can help foster innovation, equity, and sustainable economic growth.

**Keywords:** Globalization, deglobalization, trade-to-GDP ratios, income inequality, supply chain disruptions, carbon tariffs, regional trade blocs, smart globalization.

### Introduction

The phenomenon of deglobalization is recognized as a complex process that emerged in response to long-standing trends of globalization. A significant shift away from economic interdependence was observed during the second half of the twentieth century, leading into a period of international cooperation in the early twenty-first century. This onset of deglobalization can be attributed to a variety of factors that have transformed the global economy. The phenomenon of deglobalization was fueled by poly-crisis, the rise of national protectionism, heightened geopolitical tensions, and shifts in the consumer's worldviews. These forces have caused a reconsideration of the drivers of globalization, which require governments, companies, and citizens to modify their strategies for international commerce, investments, and collaborations. While shifting our attention to the processes of deglobalization, we must look into the history of the construct alongside the narrative of the global economy and its integration over the years.

The notion of globalization traces its roots to the late 20th century when technological, communicational, and transportation advancements improved the interconnectivity and interaction among countries. The rise of multinational companies, coupled with increased trade liberalization, has positively transformed the international supply chain, allowing goods, services, and capital to flow freely across different nations. Certain parts of the world transitioned from poverty to affluence and prospered due to globalization, leading to innovation in multiple fields.



The division of dual structures allows nations to utilize their resources effectively through comparative advantages and trade, contributing positively to economic development on an international scale.

Nonetheless, globalization did come with negative consequences such as inequality in social stratification, along with economic income division, increasing the gap of disparity in certain regions. Opponents of globalization expressed their worries regarding job loss, environmental harm, and cultural standardization, leading to a push for a reevaluation of the pros and cons of economic integration. Despite these challenges, globalization remained a major undertaking in the world economy, influencing trade relations, foreign investments, and operations of businesses in various sectors. The advancement of digital technologies and the growth of e-commerce propelled globalization further by making it possible to communicate and conduct business around the world instantly.

A set of disruptive events and phenomena that catalyzed a reconsideration of globalization's logic and components peaked in the early 21st century. A noticeable shift towards deglobalization experienced over the past decade is attributable to the resurgence of restrictionist policies actively practiced by major economies that include tariffs, trade quotas, and other forms of trade limitations. Through the implementation of the Trump administration, the United States took a more robust trade agenda by placing tariffs on steel, aluminum, and many other imports to try to maintain local industries and fix the trade discrepancy problems. The rapidly growing trade conflicts between the United States and its trading partners, particularly China and the European Union, resulted in a series of negative responses from these nations. The adoption of economic nationalism, in particular, is achieving foremost importance due to unfriendly relations among countries and the deglobalization trend. Nations globally have prioritized fostering internal industries, securing employment, and protecting economic interests due to international conflict and economic challenges.

This has led to a rise in geopolitical conflicts like border disagreements, competition over resources, and even strategic hostilities, which have led to further withdrawal from globalization as nations want to protect and implement their sovereignty. The rise of populist movements and hostility towards globalist ideas has generated significant anti-sentiment against providing support to international multilateral institutions.

### **Analysis of the previous work part**

The discussion regarding the push towards globalization and the potential pullback from it is fueled by evidence that not only shows why it has been successful and unsuccessful but also looks at the more practical aspects of it. The following is an attempt to look into the relevant literature by focusing on fundamental trade-to-GDP ratios, inequality, and their relevant change in ratios to formulate plausible explanations for the driving forces affecting the world economy.

One of the simplest approaches to globalization is measuring the ratio of trade and commerce to the GDP figure, which denotes the extent to which different nations engage in trade. Following the World Bank Open Data, the fraction of global trade to GDP reached a record high of 61% in 2008, which represented the peak of globalization before the financial crisis. In the following years, this number steadily declined, and by 2022 it was only 58% <sup>[1]</sup>. This fall indicates an increase in the most advanced economy's integration rate and global economic integration, even before the



gaps created due to the pandemic and global unrest. Additionally, foreign direct investment (FDI) flows also declined sharply after the 2008 crisis, from their peak of \$2 trillion in 2007 to \$1.3 trillion in 2022, according to UNCTAD <sup>[2]</sup>. The decline of essential aspects of globalization is illustrated by phenomena such as border trade and investment, as previously mentioned.

Globalization is often blamed for increasing income inequality within and between countries. Even such an accomplished economist as Branko Milanović underscores these imbalances by studying global income distribution. The global economy is expanding, yet underlying crises are developing. There are significant disparities between the earnings of the top 1% and those of the bottom 50%. From 1980 to 2016, while the top 1% saw substantial gains, the bottom 50% experienced a mere 12% increase in their earnings over the same period <sup>[3]</sup>. This gap shows how globalization does not work for everyone, especially for poor people in wealthier nations. Milanovic's "Elephant Graph" further extends this argument by highlighting how the stagnation in middle-class incomes within advanced countries over the period runs parallel to inflation in developing economies like China and India. Moreover, legislations that is being introduced also play a crucial role. For example, in 2023, the European Union proposed a Carbon Border Adjustment Mechanism <sup>[4]</sup>. CBAM will likely alter global trade relations by seeking higher taxes on imports with high emissions.

To deepen the analysis, some recent studies have pointed out new patterns that reflect the dual complexities of globalization and deglobalization. McKinsey's & Company report (2021) states that 60% of the businesses surveyed had already considered bringing back or near-sourcing parts of their supply chains in an attempt to manage the geopolitical and pandemic-associated risks <sup>[5]</sup>. Another important point comes from the estimate of semiconductor trade between the United States and China. The Peterson Institute for International Economics claims that this trade has seen a decrease of 30% since 2019 due to the US-China technology war <sup>[6]</sup>. This drop demonstrates how geopolitical rifts have begun to affect global trade. The reduced volume of wholesaling semiconductors, a pillar of modern technology, is indicative of how strategic rivalries disrupt critical industries.

The decline in semiconductor trade also uncovers the other side of globalization and deglobalization. The decoupling of the US and China is a good case of deglobalization because a decoupling enables nations to reduce reliance on foreign suppliers for essential technologies. At the same time, this fragmentation allows room for regional players to fill the vacated slot, which can lead to new forms of localized globalization. The net effect, though, is a disorganized world economy that is less efficient, which shows the negative side of trying to protect national security interests and the advantages of international collaboration.

## Main Part

### Drivers of globalization

According to the World Economic System, deglobalization cannot be considered in isolation; it is brought about by a complex set of interrelated political, economic, and environmental forces that have been shaping the global economy and society. In further sections, we consider these forces in more depth using quantitative and qualitative data to demonstrate their implications.



### A. Political Shifts: The Rise of Protectionism and Nationalism

As previously stated, one of the most rigid determinants of globalization is the negative consequences of the re-emergence of protectionist trade policies and nationalist politics. All over the globe, governments have been looking inward, focusing on nurturing local industries and shying away from international trade.

**America's Tariff Strategy:** The U.S. International Trade Commission mentions that from 2018 to 2023, the U.S. government placed tariffs on \$350 billion worth of Chinese products <sup>[7]</sup>. These actions aimed to curb the alleged trade deficits and safeguard American industries. These policies, designed to promote local industries, often resulted in global market fragmentation as foreign countries retaliated with their tariffs.

**The Impact of Brexit:** The UK still finds it challenging to grapple with the economic ill effects that followed its shedding of the European Union. According to The Office for National Statistics, UK-EU trade plunged by £20 billion in 2021 alone, indicating that the UK is paying significantly economically for leaving the EU and deepening long-established trade ties <sup>[8]</sup>. Brexit not only disrupted supply chains but also highlighted the challenges of reconciling national sovereignty with economic interdependence.

### B. Economic Pressures: Supply Chain Risks and Reshoring

Pre-globalization or economic disintegration can be attributed to negligence and ruin in supply systems, along with globalized resources competing in the market. Global Economic Challenges have been pivotal in the maximum modification of supply chains.

**Supply Chain Challenges:** The interruption of supply systems had visible effects on both the market and trade. Advances in technology and business lead to the creation of lean manufacturing systems that do not facilitate flexibility during a crisis. Blockages in the Suez Canal are a prime example due to the dependency on JIT manufacturing (Just in Time). It resulted in \$9.6 billion of trade being stalled every day and showed how fragile these systems truly are <sup>[9]</sup>.

**Reshoring Efforts:** The US had to come out and spend \$52 billion through the "CHIPS" act in order to strengthen the economy and mitigate risks due to the semiconductor industry being concentrated in chip manufacturers in Taiwan <sup>[10]</sup>. Other countries like Japan also boosted spending to construct equivalent legislation to increase independence among crucial technology branches. These steps parallel a new policy focus aimed at restricting reliance on international vendors, especially for dominant products.

The result of these changes has been significantly slower and has presented a boom in economic stagnation and deceleration in growth.

### C. Environmental Concerns: Sustainability vs. Global Trade

The complexity of de-globalization is now compounded by the fact that nations are now prefacing trade relations with sustainable, environmentally friendly practices due to climate change mitigation efforts. Trade policy is a domain where environmental changes have gained significant attention.

**Carbon Tariffs:** The European Union has a shining example of carbon tariffs in its Carbon Border Adjustment Mechanism (CBAM), which erects barriers for carbon-heavy imports. CBAM could cover up to 16 billion dollars of imports by the year 2030, as noted by European Parliament



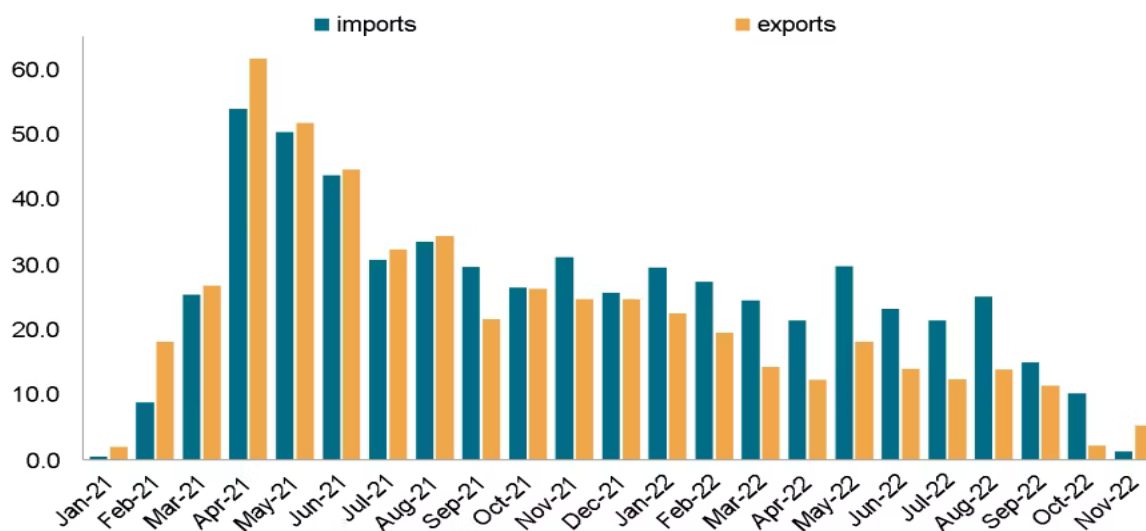
analysis <sup>[11]</sup>. CBAM attempts to support EU manufacturers while motivating trading partners to become less hostile to the environment. Criticism of such approaches suggests that they will generate further disputes and conflicts in international trade, and their major impact will be felt by poorer countries.

**Green Industrial Policies:** In addition to carbon tariffs, numerous countries pursue policies of advanced green industrial policies that encourage and establish local marketplaces for renewable energy sources. For instance, within the framework of the US Inflation Reduction Act <sup>[12]</sup>, subsidies are provided for domestically produced electric automobiles and solar energy panels. Those policies also seek the goal of supply chain divorcement, but at the same time, serve climate objectives.

Everything concerned with trade policies alongside climate change reveals the thin line countries have to walk to achieve economic goals without imperiling nature.

Recent data further illustrates the deceleration of global trade activity. The graph created by S&P Global Market Intelligence displays the change in the percentage of imports and exports from the 10 biggest economies of the world in 2021-2022 <sup>[13]</sup>. At first, both imports (shown with blue bars) and exports (orange bars) had an impressive increase at the beginning of 2021 and reached their highest point of nearly 60% for exports and 55% for imports in May 2021. There was strong momentum. However, this was short-lived as growth rates began to decrease consistently throughout the last half of 2021 and continued into 2022. By late 2022, the rate of increase in both imports and exports, averaged on a year-by-year basis, reached almost zero percent.

**Average year-on-year growth rates for top 10 economies of exports and imports**



Data compiled Feb. 8, 2023.

Source: S&P Global Market Intelligence.

© 2023 S&P Global.

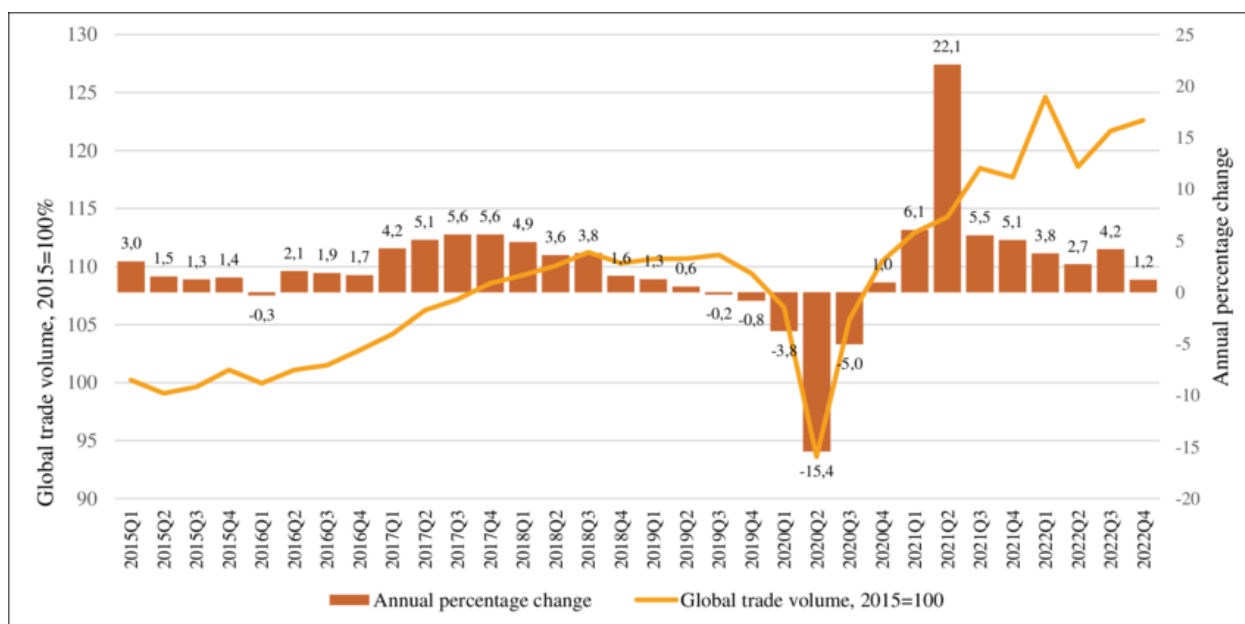
For example, in November 2022, the rate of increase of imports stood at slightly above zero percent, while exports showed a negative growth rate of less than zero percent. This steep drop illustrates the stark issues that international trade faces and brings attention to the fact that policymakers need to devise a plan to fix the structural problems concerning the interrelation of economies on a global scale.





## Evidence of globalization

The Global Merchandise Trade Volume Index shows the decline in global trade with activity <sup>[14]</sup>. As can be seen in the diagram below, these changes are evidenced through the index, which is benchmarked to 2015, equals 100. The indices indicate growth until the COVID-19 pandemic, a sharp contraction for the index in 2020, and some recovery in 2021. Despite these trends, the most noticeable feature is the stagnation of trade volumes after 2021 because, in 2023Q4, the global trade volume percentage growth reduced to a bare 1.2%. This stagnation shows deeper structural changes in the global economy and suggests the transition from hyper-globalization that characterized the previous decades.



The initial shock of the pandemic in 2020 caused global trade volumes to plummet to approximately 85 on the index, representing a staggering 15.4 percent decline in annual trade volume. The supply chains, as well as consumer demand, showed a rebound in and demonstrated resilience 2021, evidenced by the sharp increase in trade volumes by 22.1%. Global trade volume was short-lived, steadying out after this sharp rise. Trade growth started rapidly decelerating by 2023, accompanied by a disheartening decline in the annual percentage change of trade volume from 4-5% to 1.2%.

Also, the Global Trade Alert Database cites that within the G20 nations, almost 1,500 new trade-permissible regulations were made for the year 2022 <sup>[15]</sup>. This is a big increment compared to just under five hundred figures noted for the year 2011, which means these countries prefer isolating themselves instead of being net-trade economies.

The modification of the frameworks for conducting commerce on a global scale is done in combination with the reduction of trade barriers between nations, which facilitates the creation of new regional trade alliances. According to the RCEP secretariat, the defense partnership covering 15 nations in the Asia Pacific region now makes up over a third of the world's GDP <sup>[16]</sup>. Such treaties endorse heightened regionalism in the economy, indicating that nations are attempting to build stronger connections in certain geographic areas instead of being dependent on international supply chains. The fragmentation of self-sufficient economies across the globe commits these



states to inter-cooperation through non-PC-based programs to challenge, ultimately sparking further disengagement from globalization.

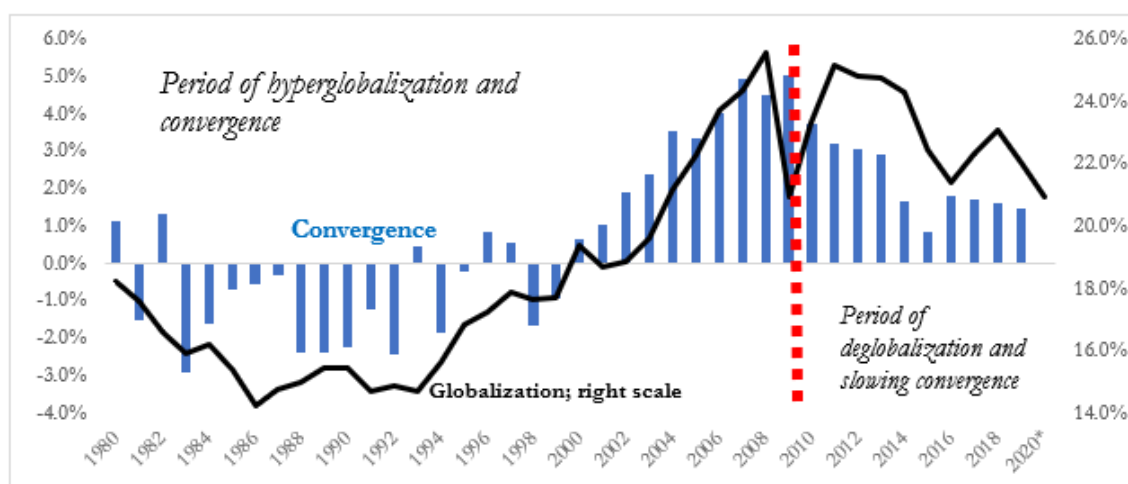
As indicated by the graph, the plateauing of global trade volumes showcases the difficulties that come with international commerce in the present. These changes in the global footprint of trade further illustrate that deglobalization is not simply a temporary adjustment, but rather a profound change to the economic system of the world.

### Implications

Deglobalization has effects that go beyond single industries or regions—they impact protective measures, consumer prices, and expenditures across the globe, which can harm economic stability, equity, and growth in the long term. For example, one prominent result is the increase in consumer expenditure on protective measures. For example, tariffs on Chinese products raised consumer expenditure by 51 billion dollars annually, according to the Peterson Institute for International Economics <sup>[17]</sup>. The inflationary aspects tend to be ruthless for those in low-income households, being aggressive and reducing purchasing power while widening the inequality gap. While these measures are pleasing to domestic industries in the short run, they are devastating for consumers and businesses that rely on imports, as they are offered low-quality products at high prices.

To grasp the understanding of deglobalization and its impact on the economy, consider what the World Bank's World Development Report offers <sup>[18]</sup>. This includes other ranges like the ratio of world commerce exports to world GDP and convergence, where the population income  $I_p$  and  $M_r$  ratio is divided by the high-income countries. Combining those two ratios provides a macro scope of how deglobalization is undergoing processes around the globe.

Convergence and Globalization, 1980-2020



Source: World Bank's World Development Indicators

Globalization is measured as the ratio of world merchandise exports to world GDP; convergence is measured as the difference between the per capita GDP growth of low- and middle-income countries and that of high-income countries (2020 is an estimate).

Over the last 40 years, the shift from hyperglobalization to deglobalization is quite evident in the figure. From 1980 to 2008, globalization attained its peak because of the unparalleled growth in China, trade liberalization, and technological advancements. Globalization during this period, with trade and investment, is depicted by the increasing red line. At the same time, developing

countries were narrowing the income gap with developed countries as depicted by positive convergence values and blue bars (convergence). Hyperglobalization had positive aspects, like poverty reduction in a lot of regions around the world and enhanced consumption of goods due to them becoming more affordable.

However, after the financial crisis of 2008, there was a decline in convergence and globalization. Globalization, depicted by the red line, began to drop steadily, which indicates reduced foreign direct investment (FDI) trade flows and an increase in protectionism. In contrast, the blue bars showed negative or slow convergence, indicating that the developing countries were benefiting less and less from globalization.

This is worrying for almost all regions, like Sub-Saharan Africa, whose GDP growth is forecasted to drop to 3.6% in 2023 <sup>[19]</sup>, which is partially attributable to trade fragmentation and lesser global market access. The slowdown in economic growth explains why deglobalization has more negative consequences on poorer economies by restricting their convergence towards richer economies and increasing global inequality.

Restating the problem in the closing lines, it is evident from the illustration that the negative ramifications of deglobalization are multifaceted for the global economy. This suggests that without prior policy coordination, there can be a major lack of strategy, even more than is necessary to improve economic resilience and self-sufficiency while being open for collaboration. Ignoring these policy interventions would risk driving a bigger wedge between developed and developing economies and reverse decades of sustained global development.

### Future Outlook

Avoiding the dangers of unchecked deglobalization and learning from the past excesses of globalization is what will define the future of globalization. Although the phenomena examined in the article- such as the increasing protectionism, the decrease in trade volumes, and regionalization- imply a movement towards fragmentation, they also offer the chance to establish a more equitable and sustainable global economy. This shift, however, must be controlled. Otherwise, it will intensify geopolitical tensions, inequality, and inefficiency.

One area that poses a challenge is the production of semiconductors, which are vital components for modern technologies. The United States intends to achieve a 20% share of global semiconductor production within the next seven years, an increase from the current 12% share, as a strategy towards less reliance on foreign vendors (SIA Factbook) <sup>[20]</sup>. Reshoring primary industries, such as semiconductor manufacturing, might help to boost their national security, but it also increases the risk of giving rise to supply chains that are fragmented, expensive, and devoid of innovation. In this scenario, policymakers need to cultivate domestic 'capability' while remaining connected to other national economies.

The need for international collaboration is further enhanced by trying to achieve net-zero emissions. Bloomberg NEF's New Energy Outlook 2024 estimates that achieving a fully decarbonized global energy system by 2050 could cost approximately \$215 trillion, which is only 19% more than the investment required under an economics-driven transition scenario where the Paris Agreement goals are missed, and global warming reaches 2.6°C <sup>[21]</sup>. Rather than retreating to isolationism, countries must work collaboratively to develop green technologies, ensuring that emerging economies have the necessary resources and markets to thrive. Otherwise, the gap





between rich and poor nations will widen, hindering global climate objectives.

Ultimately, the future ought not to be one of choosing between globalization and deglobalization, but instead be one of transforming globalization into one that prioritizes resilience, equity, and sustainability. It requires the nurturing of regional economic groupings such as RCEP, whilst still leaving the door open for international participation. Above all, it calls for addressing the structural imbalances that gave rise to the populist revolt against globalization in the first instance. This way, we can build an economy for everyone, not just for the richest countries and multinational companies. The way to go about this is to adopt what is called smart globalization, which is a hybrid of the local self-sufficiency and global interdependency models. Government leaders have an opportunity to rethink the framework for international trade and capital allocation, ensuring that the next phase of globalization is less exclusive, more self-sufficient, and more environmentally conscious than its predecessor.

### References:

1. Trade (% of GDP). Available at: <https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS>
2. World Investment Report. Available at: <https://unctad.org/publication/world-investment-report-2023>
3. Facundo Alvaredo, Lucas Chancel, Thomas Piketty, Emmanuel Saez, Gabriel Zucman. The elephant curve of global inequality and growth. Available at: <https://eml.berkeley.edu/~saez/ACPSZ2018WIDWP.pdf>
4. Carbon Border Adjustment Mechanism. Available at: [https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism\\_en?utm\\_source=chatgpt.com](https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en?utm_source=chatgpt.com)
5. Taking the pulse of shifting supply chains. Available at: <https://www.mckinsey.com/capabilities/operations/our-insights/taking-the-pulse-of-shifting-supply-chains>
6. Nicholas R. Lardy. China's Growth Is Slowing, but Not Because of the Trade War. Available at: <https://www.piie.com/blogs/china-economic-watch/chinas-growth-slowing-not-because-trade-war>
7. USTR Issues Tariffs on Chinese Products in Response to Unfair Trade Practices. Available at: [https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/june/ustr-issues-tariffs-chinese-products?utm\\_source=chatgpt.com](https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/june/ustr-issues-tariffs-chinese-products?utm_source=chatgpt.com)
8. UK exports to the EU fell by £20bn last year, new ONS data shows. Available at: [https://www.theguardian.com/politics/2022/feb/11/uk-exports-to-eu-fell-by-20bn-last-year-new-ons-data-shows?utm\\_source=chatgpt.com](https://www.theguardian.com/politics/2022/feb/11/uk-exports-to-eu-fell-by-20bn-last-year-new-ons-data-shows?utm_source=chatgpt.com)
9. 2021 Suez Canal obstruction. Available at: [https://en.wikipedia.org/wiki/2021\\_Suez\\_Canal\\_obstruction?utm\\_source=chatgpt.com](https://en.wikipedia.org/wiki/2021_Suez_Canal_obstruction?utm_source=chatgpt.com)
10. CHIPS and Science Act. Available at: [https://en.wikipedia.org/wiki/CHIPS\\_and\\_Science\\_Act?utm\\_source=chatgpt.com](https://en.wikipedia.org/wiki/CHIPS_and_Science_Act?utm_source=chatgpt.com)
11. Carbon Border Adjustment Mechanism. Available at: [https://epthinktank.eu/2023/12/01/carbon-border-adjustment-mechanism/?utm\\_source=chatgpt.com](https://epthinktank.eu/2023/12/01/carbon-border-adjustment-mechanism/?utm_source=chatgpt.com)
12. Inflation Reduction Act of 2022. Available at: [https://www.energy.gov/lpo/inflation-reduction-act-2022?utm\\_source=chatgpt.com](https://www.energy.gov/lpo/inflation-reduction-act-2022?utm_source=chatgpt.com)



13. The Evolution of Deglobalization. Available at: <https://www.spglobal.com/en/research-insights/market-insights/geopolitical-risk/evolution-of-deglobalization>
14. Marcelli Hazla. Global merchandise trade volume (2015=100%) and quarterly changes in volume (annual basis). Available at: [https://www.researchgate.net/figure/Global-merchandise-trade-volume-2015100-and-quarterly-changes-in-volume-annual-basis\\_fig1\\_371417347](https://www.researchgate.net/figure/Global-merchandise-trade-volume-2015100-and-quarterly-changes-in-volume-annual-basis_fig1_371417347)
15. Jason Douglas, Tom Fairless. Trade War Explodes Across World at Pace Not Seen in Decades. Available at: [https://www.wsj.com/economy/trade/trade-war-explodes-across-world-at-pace-not-seen-in-decades-0b6d6513?utm\\_source=chatgpt.com](https://www.wsj.com/economy/trade/trade-war-explodes-across-world-at-pace-not-seen-in-decades-0b6d6513?utm_source=chatgpt.com)
16. Regional Comprehensive Economic Partnership. Available at: [https://en.wikipedia.org/wiki/Regional\\_Comprehensive\\_Economic\\_Partnership?utm\\_source=chatgpt.com](https://en.wikipedia.org/wiki/Regional_Comprehensive_Economic_Partnership?utm_source=chatgpt.com)
17. Tariffs in the first Trump Administration. Available at: [https://en.wikipedia.org/wiki/Tariffs\\_in\\_the\\_first\\_Trump\\_administration?utm\\_source=chatgpt.com](https://en.wikipedia.org/wiki/Tariffs_in_the_first_Trump_administration?utm_source=chatgpt.com)
18. Arvind Subramanian, Josh Felman. Are Intellectuals Killing Convergence? Available at: <https://www.project-syndicate.org/commentary/covid-deglobalization-end-of-convergence-by-arvind-subramanian-and-josh-felman-2020-09>
19. IMF's Sub-Saharan Africa Regional Economic Outlook: Reform Amid Great Expectations. Available at: [https://www.imf.org/en/News/Articles/2024/10/25/pr-24395-ssa-imf-ssa-reo-reform-amid-great-expectations?utm\\_source=chatgpt.com](https://www.imf.org/en/News/Articles/2024/10/25/pr-24395-ssa-imf-ssa-reo-reform-amid-great-expectations?utm_source=chatgpt.com)
20. Semiconductor Industry Association. America Projected to Triple Semiconductor Manufacturing Capacity by 2032, the Largest Rate of Growth in the World. Available at: [https://www.semiconductors.org/america-projected-to-triple-semiconductor-manufacturing-capacity-by-2032-the-largest-rate-of-growth-in-the-world/?utm\\_source=chatgpt.com](https://www.semiconductors.org/america-projected-to-triple-semiconductor-manufacturing-capacity-by-2032-the-largest-rate-of-growth-in-the-world/?utm_source=chatgpt.com)
21. New Energy Outlook. Available at: [https://about.bnef.com/new-energy-outlook/?utm\\_source=chatgpt.com](https://about.bnef.com/new-energy-outlook/?utm_source=chatgpt.com)

