

Bachelor's Degree in International Business

From Free Trade to Protectionism: How Can Firms Build Resilient Global Value Chains Amid Growing Uncertainties?

Mariona Mas Juncosa

Judit Montoriol Garriga

Economics Department, Faculty of Economics and Business

University of Barcelona

2021-2025



UNIVERSITAT DE
BARCELONA

Facultat d'Economia
i Empresa

From Free Trade to Protectionism: How Can Firms Build Resilient Global Value Chains Amid Growing Uncertainties?

ABSTRACT: This thesis investigates the global shift from trade liberalization to protectionism and its implications for global value chains (GVCs). It maintains a particular focus on the evolving trade policies of the United States under the first and second Trump administrations. The analysis employs a mixed-methods approach, combining institutional scenario modeling, macroeconomic data, and corporate case studies. Findings indicate that while protectionism aims to bolster domestic industries, it often results in higher costs, reduced investment, and unintended consequences such as accelerated technological self-sufficiency in rival economies. Firms are responding with adaptive strategies, including friendshoring, dual sourcing, and the emerging “USA +2” model, which balances domestic production with diversified international sourcing. Institutional forecasts suggest that GVCs are not collapsing but evolving toward more resilient, politically filtered structures. The thesis concludes that resilience in GVCs is best achieved through a hybrid strategy that integrates at least two of these four factors: diversification, domestic capacity, flexible production, and strategic stockpiling, enabling firms to navigate an increasingly fragmented and uncertain global trade environment.

Keywords: Global Value Chains, Protectionism, Resilience, United States, China, Strategy, Diversification, Uncertainty, International Trade

Del Libre Comercio al Proteccionismo: ¿Cómo Pueden las Empresas Construir Cadenas de Valor Globales Resilientes Ante Crecientes Incertidumbres?

RESUMEN: Esta tesis investiga el cambio de dinámica global del comercio abierto hacia el proteccionismo, así como sus efectos en las cadenas de valor globales (CVGs). Mantiene un enfoque en la evolución de las políticas comerciales desempeñadas durante la primera y segunda administración de Trump. El análisis emplea un enfoque metodológico mixto que combina modelos de escenarios institucionales, datos macroeconómicos y casos de estudio corporativos. Los resultados indican que, aunque las medidas proteccionistas pretenden fortalecer la industria doméstica, estas suelen resultar en costes más elevados, inversiones reducidas y consecuencias no deseadas, como una aceleración de la autosuficiencia tecnológica en economías rivales. Las empresas están respondiendo con estrategias adaptativas, incluyendo *friendshoring*, *dual sourcing* y el modelo emergente “USA +2”, que equilibra la producción doméstica con diversificación internacional. Las proyecciones institucionales sugieren que las CVGs no están colapsando, sino desarrollándose hacia una mayor resiliencia y estructuras más filtradas políticamente. La tesis concluye que la resiliencia en las CVGs se consigue con estrategias híbridas que incluyan al menos dos factores de entre: diversificación, capacidad doméstica, flexibilidad en la producción y almacenamiento estratégico, permitiendo a las empresas afrontar un entorno comercial global cada vez más fragmentado e incierto.

Palabras clave: Cadenas de Valor Globales, Proteccionismo, Resiliencia, Estados Unidos, China, Estrategia, Diversificación, Incertidumbre, Comercio Internacional

Del Lliure Comerç al Proteccionisme: Com Poden les Empreses Construir Cadenes de Valor Globals Resilients Davant les Creixents Incerteses?

RESUM: Aquesta tesi investiga el canvi de dinàmica global del comerç obert cap al proteccionisme, així com els seus efectes en les cadenes de valor globals (CVGs). Se centra en l'evolució de les polítiques comercials exercides durant la primera i segona administració de Trump. L'anàlisi pren un enfocament metodològic mixt que combina models d'escenaris institucionals, dades macroeconòmiques i casos d'estudi corporatius. Els resultats indiquen que tot i que les mesures proteccionistes pretenen enfortir la indústria domèstica, aquestes solen provocar costos més elevats, inversions reduïdes, i conseqüències no desitjades, com una acceleració de l'autosuficiència tecnològica d'economies rivals. Les empreses estan responent amb estratègies adaptatives, incloent-hi *friendshoring*, *dual sourcing*, i el model emergent “USA +2”, que equilibra la producció domèstica amb diversificació internacional. Les projeccions internacionals suggereixen que les CVGs no estan col·lapsant, però desenvolupant cap a una major resiliència i estructures híbrides que inclouen almenys dos factors d'entre: diversificació, capacitat domèstica, flexibilitat en la producció, i emmagatzematge estratègic, cosa que permet a les empreses enfrontar un entorn comercial global cada vegada més fragmentat i incert.

Paraules clau: Cadenes de Valor Globals, Proteccionisme, Resiliència, Estats Units, Xina, Estratègia, Diversificació, Incertesa, Comerç Internacional

Table of Contents

I.	INTRODUCTION	1
1.	Justification and Context	1
2.	Objectives	2
3.	Methodology	3
4.	Conclusions	4
II.	HISTORICAL PERSPECTIVE – FORMATION OF GLOBAL VALUE CHAINS	5
1.	The Rise of Globalization and Open Trade	5
2.	Globalization in the 21st Century.....	8
III.	TRUMP 1.0: GROWING USE OF PROTECTIONISM	9
1.	Timeline of the Trade War (2017 - 2021).....	10
1.1.	Evolution of US - China Trade Deficit	12
2.	Sectoral Impact: Key Products Affected.....	13
3.	Macroeconomic Perspective on the Economic Impact	16
4.	Corporate Strategy	18
IV.	TRUMP 2.0: CURRENT UNCERTAINTIES AND THEIR EFFECTS.....	21
1.	Timeline of Key Measures (Jan - May 2025)	21
1.1.	China	22
1.2.	North America - Mexico and Canada	23
1.3.	European Union and the Rest of the World.....	24
2.	Macroeconomic Perspective on the Early Signs	25
3.	Corporate Strategy	28
V.	FUTURE DIRECTIONS AND MNE STRATEGY.....	30
1.	Possible Consequences to GVCs	30
1.1.	Analysis on Empirical Scenarios from the IMF	30
1.2.	General Overview by Multinational Institutions	31
2.	How to Build a Resilient Global Value Chain.....	32
VI.	CONCLUSIONS.....	34
1.	Thesis statement	35
2.	Limitations	36
VII.	Bibliography.....	38

Table of Figures and Tables

Figure 1: Value of world trade since 1950 until 2024.	5
Figure 2: Timeline of cumulative tariffs between China and the US previous and during the trade war.	11
Figure 3: Imports and exports in the United States from China and trade deficit since 1991 until 2024.	13
Figure 4: Volume of imports from China to the United States of products in List 1 & 2 and total imports value from China.	14
Figure 5: Volume of imports from China to the United States of products in List 3 and total imports value from China.	15
Figure 6: Trade balance between the US and Vietnam since 2016 until 2024.	18
Figure 7: Tariff rates between the United States, China, and Rest Of the World (ROW) and volume of exports affected since 2018 until May 2025.	23
Figure 8: Value of the US dollar relative to the Euro during the US-China trade war on Trump's first term and the current Trump administration.	27
Table 1: Comparison of the Tax Foundation and PIIE models on the impact of United States tariffs worldwide on the US economy.	25
Table 2: Comparative table of 2025 Reports by the WTO, OECD, and UNCTAD including macroeconomic variations and effects of tariffs on GVCs.	32

I. INTRODUCTION

1. Justification and Context

The years following World War II reshaped the modern global economy, characterized by an increasing global interdependence among countries. There are four key factors that can be attributed to the increase in the volume of international trade and trade liberalization: the creation of multilateral institutions, the technological advancements in communication and transportation, a seek of cost optimization, and the rise of multinational corporations, along with the integration of emerging economies.

Firstly, the creation of international institutions like the World Bank or the World Trade Organization (WTO) contributed to the reduction of tariffs and trade barriers. The creation of these organizations was largely due to actions led by global powers like the United States, which played a leading role in the process of globalization. Secondly, improvements in technologies for transportation, such as the global standardization of containers, and communication, such as the internet, facilitated international interconnectedness and access to global trade. Thirdly, a drive to reduce costs encouraged firms to leverage global efficiencies. Strategies like outsourcing parts of production to countries with comparative advantage allowed firms to produce at a lower cost. Consequently, trade in intermediate goods increased, creating Global Value Chains (GVCs). The fragmentation of production across borders marked a new era in global trade organization, in which international commerce became a key driver of economic growth. Finally, the integration of emerging economies and the rise of multinational corporations also contributed to the expansion of global trade. China played an important role in the formation of GVCs, especially since its accession to the WTO in 2001.

About 70% of international trade involves GVCs, as services, raw materials, parts, and components cross borders often numerous times. Today, GVCs shape international trade flows and multinational firms' activities, and their reliance implies an interconnection between countries and firms, making economies more interdependent. Involvement in GVCs can lead to significant efficiency gains through specialization and cost reduction. However, it also exposes firms to various vulnerabilities. Vulnerabilities have been observed in multiple events throughout history, as recently highlighted in Europe with the significant increase in gas prices after Russia's invasion of Ukraine, or after Brexit. These vulnerabilities can have far-reaching consequences, further emphasizing the importance of strengthening resilience in GVCs. Previous research has examined the effects of various historical disruptions on GVCs, including terrorism, the COVID-19 outbreak, or the Japanese earthquake of 2011. Situations with high supplier concentration, single-region dependencies, or factors like distance and cultural differences, expose GVCs to vulnerabilities.

Overall, disruptions in GVCs have gained attention in recent years, due to their growing impact on international commerce and the increased use of protectionism policies. The complex interactions between protectionist trade policies and global production are being researched and analyzed. Protectionist trade policies counteract globalization, such measures include tariffs, quotas, and regulatory barriers. Events like the US-China trade war (2018-2020) have demonstrated how such policies can destabilize global markets and force the reshaping of supply chains. International trade has unified global markets, increasing the use of GVCs, their relevance, and the remodeling of production structures.

This paper offers a historical overview of how GVCs emerged and expanded under conditions of trade liberalization. It then analyzes the shift toward an increased use of protectionist trade policies, maintaining a special focus on the United States. This section first presents an analysis of the first Trump administration, in which the economic and structural impact is measured. And secondly, it analyzes the current Trump administration, where its possible effects on global trade dynamics are modeled through institutional scenarios. This paper also explores the macroeconomic consequences of these developments and the resulting reconfigurations of supply chains. Corporate strategies are examined to understand how firms are adapting in practice. Finally, the paper outlines key policy and business recommendations for building resilient and adaptable GVCs in an increasingly uncertain geopolitical context.

Integrating the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, this thesis supports the Sustainable Development Goal (SDG) number 9: Industry, Innovation and Infrastructure. It contributes to the specific target 9.1 by promoting the diversification of suppliers and the creation of strategic inventories of critical inputs, aiming to build resilient infrastructure toward external shocks. In line with target 9.4, it recommends the development of local production capabilities and reconfigurable manufacturing systems to enhance industrial sustainability through flexibility and efficiency. Finally, it aligns with target 9.b by emphasizing the role of advanced digital tools as key enablers of innovation and informed decision-making in supply chain management. Together, these strategies translate into practical contributions to a more adaptive and sustainable industrial ecosystem.

2. Objectives

It has been widely supported in economic literature that free trade and globalization are associated with economic growth, with emerging economies having a higher growth rate. The objective of this paper is to analyze the impact of protectionist policies on global trade and GVCs, as well as the different measures, strategies, and policies that can be implemented to increase the resilience and reliability of GVCs, and to minimize the vulnerabilities faced amid constant geopolitical changes and increased tensions. The paper places a special focus on the United States' role, as the country's increasing trade protectionism policies have recently introduced uncertainty.

Considering the increasing complexity of international trade dynamics and the growing use of protectionist measures, it becomes imperative to explore their potential long-term implications on GVCs. The persistence of trade barriers highlights a shifting paradigm in global trade relations. This study focuses on the events that took place during Trump's first and second administrations assessing the impact of their trade policies. This paper also examines the strategies adopted by firms in response to geopolitical tensions and disruptions affecting GVCs.

For firms to stay competitive, it is essential to anticipate the possible trajectories that international trade and GVCs may take in the coming years. Therefore, this study poses two central questions: How might changes in global trade affect GVCs in both the short and long run? How can companies design and implement more resilient and adaptable supply chains in response to these challenges? To address these questions, this paper combines a review of academic and institutional literature with the analysis of empirical studies, scenario-based modeling, and real-world case studies on corporate adaptation strategies.

3. Methodology

This study follows a mixed-methods approach that combines qualitative analysis with empirical data evaluation. The methodology is structured around three main components: an extensive review of academic and institutional literature, analysis of macroeconomic models from international organizations, and a review of strategic responses by multinational companies.

The first stage of the research involved reviewing academic and institutional publications. The sources used in this paper have been accessed through Google Scholar, University of Barcelona Academic Library, JSTOR, and ScienceDirect, along with official documents from the WTO, IMF, OECD, UNCTAD, and the World Bank. The literature review provided the theoretical basis and enabled the identification of emerging concerns related to trade protectionism and supply chain vulnerabilities. To complement this theoretical framework, macroeconomic modeling exercises from international institutions were analyzed and compared. These models were used to assess the potential effects of different trade policy paths on global GDP, trade volumes, and the structure of GVCs. Additional quantitative data was obtained from databases of international institutions. The empirical analysis helped identify relevant trends in trade flows and tariff impacts, and to support the interpretation of the data, the author produced a series of original charts and comparative tables. The final component of the methodology consists of qualitative case studies analyzing how multinational firms have responded to the uncertainty and policies imposed on

global trade. Strategies such as China Plus One¹, nearshoring, dual-sourcing, and reshoring were examined through real examples, including companies such as GoPro and Apple.

Altogether, this methodological approach is grounded in triangulating theoretical frameworks, institutional modeling, empirical data, and real-world business practice. The approach offers a comprehensive and realistic view of how protectionism is transforming GVCs, and how firms are working to build resilience in an increasingly uncertain global trade landscape.

4. Conclusions

This thesis argues that the rise of trade protectionism is reshaping GVCs, maintaining a particular focus on the United States. The global trade order established after World War II is being challenged, as firms are increasingly forced to adapt their supply strategies in response to growing geopolitical uncertainty. The resilience of GVCs is being put to the test, and rather than signaling the end of globalization or a total decoupling, current trends point to a transformation and reorganization of global trade.

Through the analysis of historical shifts, recent policy developments, and institutional projections, this study suggests that resilience, flexibility, and strategic diversification are becoming essential features of modern supply chain design. At the same time, this paper highlights the underlying causes of trade tensions, particularly those that originated under both Donald Trump administrations. An ongoing race for global leadership, especially in the development of advanced technologies, is shaping the future structure of global order.

As a result, firms must balance the pursuit of efficiency while managing political and operational risks to remain competitive. Strategies such as friendshoring reflect an emerging trend of trade reorganization along regional and politically aligned blocs. The findings of this paper bridge economic and geopolitical perspectives, contributing to the growing body of research on GVCs resilience by offering practical insights. Protectionism is reframed as a structural shift and represents not only temporary disruptions, but a deeper paradigm shift in global trade relations. The findings offer a nuanced analysis of how trade protectionism is reshaping GVCs by pushing firms to rethink their entire sourcing and production models.

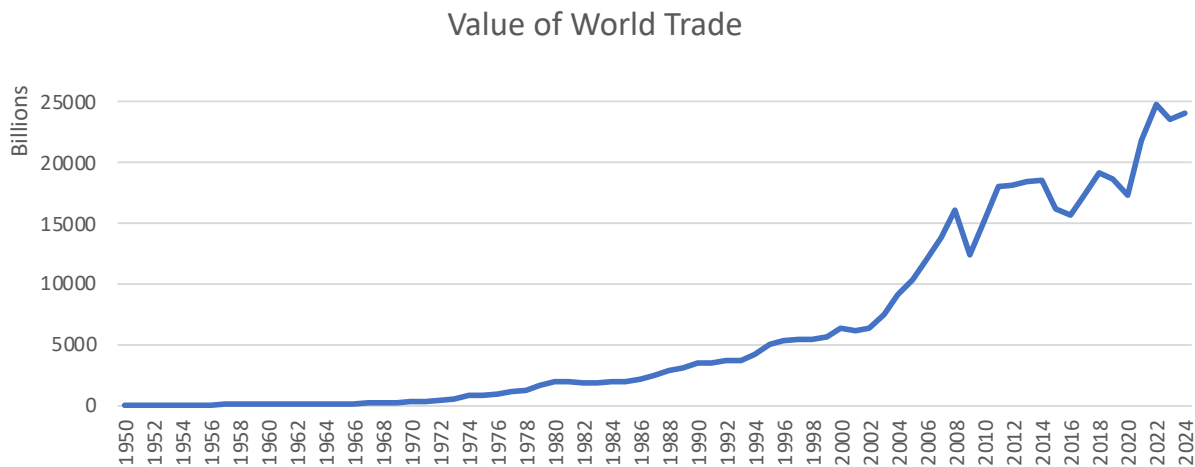
¹ Strategy to diversify the production apart from China. Firms keep part of their production there but also add at least one other country as an additional manufacturing base.

II. HISTORICAL PERSPECTIVE – FORMATION OF GLOBAL VALUE CHAINS

This section delves into the foundational drivers behind GVCs and their evolution over time. Firstly, it examines the rise of globalization and open trade, exploring the forces pushing the shift in global trade dynamics. A graph captures the evolution of global trade value since 1950, which can be mainly attributed to four key factors. These factors include the formation of international institutions, improvements in communication and transportation technologies, the rise of multinational enterprises (MNEs), and the increased need for cost optimization. Secondly, globalization in the 21st century explores how globalization has continually evolved in recent decades, leading to where we are today.

1. The Rise of Globalization and Open Trade

The modern global economy is defined by a growing interdependence among national economies (Baldwin, 2016). The era post-World War II marked a turning point in international trade, characterized by a transition from isolated, self-contained economies toward a more interconnected and globalized system (Eichengreen, 2008). This transformation can be primarily attributed to four key factors: advancements in transportation and communication technologies, the establishment of global institutions driven by the leadership of dominant economic powers (World Bank, 2020), an increasing aim for cost optimization, and the emergence of MNEs.



* Measured as the average between exports and imports, excluding Hong Kong's re-exports.

Figure 1: Value of world trade since 1950 until 2024.

Source: Author's creation based on WTO data.

Firstly, technological advancements have played a pivotal role in facilitating international trade. Transportation was revolutionized by the standardization of intermodal containers, developed in the 1950s. This event enabled the efficient and large-scale transfer of goods across different

modes of transport, including maritime, rail, and road, without the need to unload and reload cargo at each transition point (Levinson, 2006; Gianoni, 2023). This innovation significantly minimized risks associated with cargo damage or loss, reduced handling times and transportation costs, and greatly enhanced logistical efficiency. By reducing distribution costs, it facilitated the fragmentation of production across borders, enabling firms to manufacture goods in lower-cost regions and thereby leverage comparative advantage. As a result, containerization has become a cornerstone of globalization.

Simultaneously, the evolution of communication technologies such as the internet, mobile networks, satellite systems, cloud computing, and enterprise software has further facilitated the expansion of GVCs (UNCTAD, 2021). These technologies have reduced the barriers for small and medium-sized enterprises (SMEs) to enter global markets, promoting more inclusive participation in GVCs and increased competition (World Bank, 2020). These tools allow firms to efficiently manage and coordinate increasingly complex production processes. By ensuring real-time information flow between headquarters, suppliers, and subsidiaries, communication technologies have made outsourcing and offshoring more feasible and reliable. Furthermore, they have enhanced firms' flexibility and responsiveness during global disruptions, enabling firms to adjust quickly to changing circumstances and to maintain the continuity of operations.

Secondly, beyond technological advancements, the strategic actions of dominant economic powers, particularly the United States, have played a critical role in advancing globalization. Following World War II, the US emerged as a central actor in fostering global economic integration. Its leadership was instrumental in the creation of the Bretton Woods system in 1944 (Ghizoni, 2013), which laid the foundation for international monetary cooperation and facilitated global trade and post-war economic recovery. As part of this framework, the United States championed the establishment of key institutions such as the World Bank and the International Monetary Fund (IMF), which were aimed at overseeing the international monetary system and stabilizing exchange rates (Blanco and Carrasco, 1999). It also supported the General Agreement on Tariffs and Trade (GATT), which sought to reduce trade barriers and promote international commerce (Eichengreen, 2008). This institution was later succeeded by the establishment of the WTO, positioning the country as a historical advocate for open markets and multilateral trade liberalization (Fergusson, 2007).

According to the WTO, during the first 25 years after the war (1945-1970), world economic growth averaged about 5% per year, a high rate that was partly the result of lower trade barriers. At the same time, world trade grew even faster, averaging about 8% during the period. This rapid expansion of international trade had significant positive economic repercussions, which in turn encouraged more countries to integrate into the global trading system and attract foreign direct investment (FDI) (Makki & Somwaru, 2004). Southeast Asia, and China in particular, has had increasing relevance in the evolution of GVCs (Cigna et al., 2022). The joining of China to the WTO in 2001 was a major milestone in the process of globalization. Joining this global institution allowed

China to liberalize its economy, attract FDI, and integrate into global markets (Prasad, 2004; WTO, 2023).

Thirdly, the pursue of cost reductions caused multinational companies to relocate parts of their production processes to regions with low-cost labor and favorable production conditions such as China and the broader Southeast Asian region. China's large labor force and competitive cost structures positioned it as an optimal location for labor-intensive manufacturing, reinforcing its role as a central pillar of GVCs (Chen & Li, 2019). The country earned the title of “the world’s factory,” taking on key roles in component production, final assembly, and large-scale exports (Woetzel et al., 2019). This transformation not only reshaped China's domestic economy but also redefined global production flows, aligning with trade models that emphasize specialization based on relative efficiencies and dynamic gains from trade (Woetzel et al., 2019). Rising competitiveness and expanding opportunities intensified firms’ drive to reduce costs and exploit economies of scale. For example, the American company Nike outsourced its manufacturing to lower-cost regions in Asia, taking advantage of comparative advantages offered by different regions, while retaining control over branding and design in the US. This strategy set a model that would later be followed by many other companies (Locke, 2002). This phenomenon reflects not only cost reduction strategies but also broader strategic reorganization.

Fourthly, the expansion of multinational firms increasingly leveraged economies of scale and cross-country comparative advantages, further fueling trade liberalization. Firms like General Motors, IBM, and Nike were among the first to capitalize on this global shift by the second half of the 20th century. Their early success established a model that many other companies followed, accelerating the internationalization of production. Nike’s global expansion strategy in the late 20th century exemplified the effective use of economies of scale to reduce production costs and increase competitiveness. By outsourcing manufacturing to low-cost countries in Asia while retaining control over branding, design, and marketing in the United States, Nike was able to streamline operations and maximize efficiency across geographically dispersed production networks. This approach laid the groundwork for a broader transformation in how multinational firms structure their supply chains.

Nike’s model became a reference point for other companies seeking to optimize cost structures and scale their operations internationally, thereby accelerating the development and normalization of GVCs. Building on the other factors mentioned above, MNEs expanded rapidly, establishing complex networks of suppliers, subsidiaries, and contractors across multiple countries. This wave of internationalization not only boosted efficiency and competitiveness but also cemented the role of MNEs as key architects of GVCs.

2. Globalization in the 21st Century

The openness and expansion of global markets have increased the value of winning market share, thereby, intensifying competition among firms. As the potential rewards for market share grow, modern firms must take greater risks to stay competitive. Geographic distance between countries, as well as differences in language and cultural profiles, are factors that reduce engagement in value-added trade (Tinbergen, 1962). Although cost advantages and economies of scale can partially offset these barriers, recent years have shown trends toward the formation of regional trade blocs or bilateral agreements, driven not only by the economic benefits of geographic proximity but also by cultural divergences and strategic competition for global influence.

Toward the end of the 20th century and the beginning of the 2000s, US trade strategy evolved toward regional trade agreements (RTAs) with the implementation of the North American Free Trade Agreement (NAFTA), a regional trade pact involving the United States, Mexico, and Canada (US House of Representatives, 1993). This marked the beginning of a shift from a predominantly multilateral approach toward RTAs, reflecting a growing emphasis on trade blocs and bilateralism. While RTAs can foster trade among member countries, scholars such as Karacaovali and Limão (2008) have argued that regionalism may undermine multilateral trade liberalization by reducing incentives for broader global agreements. By the early 2000s, US trade policy increasingly favored bilateral agreements, including those with Chile, Singapore, and Australia, with the aim to expand market access and to strengthen intellectual property protections (Office of the US Trade Representative, 2003; 2004). Despite the strategic pivot toward RTAs, the United States continued to be one of the world's leading proponents of open trade and remains a central player in the international trading system due to the scale of its economy.

In recent years, efforts to reshape global trade dynamics have impacted the stability of GVCs. As the risks faced by modern supply chains have intensified and global trade trends continue to shift, the need to build resilience in GVCs has become increasingly critical. Resilience is the capacity to adapt to adverse situations, minimize the effects of disruptions, and quickly return to a stable trajectory following a period of uncertainty. Developing resilience not only ensures operational continuity but also enhances long-term competitiveness by enabling firms to better anticipate, absorb, and recover from external shocks.

III. TRUMP 1.0: GROWING USE OF PROTECTIONISM

In 2016, the 45th president of the United States was elected, Mr. Donald Trump. During his presidential campaign, criticisms of China and other trading partners were raised, accusing them of stealing American jobs. China was accused of unfair trade practices, including intellectual property theft, forced technology transfers, and maintaining trade barriers that disadvantaged American companies (Zahra et al., 2025). These accusations, fueled by the “America First” slogan, initiated a series of tariff measures and broader efforts to renegotiate existing trade agreements.

The trade policies enacted during the first Trump administration (2017 - 2021) marked a dramatic shift in economic relations between the United States and China, which led to a period of heightened tariffs, retaliatory measures from trading partners, and strategic decoupling. This section outlines the timeline of key policy actions, from the imposition of steel and aluminum tariffs to the signing of the Phase One trade deal, concluding with the change of administrations. It then examines the impact of these measures on bilateral trade flows, highlighting both the initial disruption and the eventual partial recovery. From a macroeconomic perspective, this paper assesses the broader economic consequences of the protectionist measures used during the period of Trump's first mandate, including their effects on US GDP, consumer prices, and employment, drawing on recent econometric studies. Finally, the analysis examines the effects of these measures on specific sectors, such as technology, consumer goods, and agriculture, and concludes by exploring how these policies reshaped GVCs, encouraging firms to diversify supply sources and reconsider long-standing production strategies.

The four years of Trump's first mandate were marked by aggressive protectionist measures against China and other trading partners. This eventually led to the start of a trade war. Both countries started introducing measures to reduce their mutual dependence in sectors critical to global economic and technological leadership, including areas such as technology, manufacturing, critical infrastructure, and raw materials. These industries have become central to the competition for global power, as control over them enables leadership in emerging technologies like artificial intelligence, quantum computing, and next-generation infrastructure. The trade war accelerated efforts to secure control over these strategic assets and intensified this strategic rivalry, as both the US and China recognized the risks of relying on a strategic rival for essential inputs. As a result, reduced interdependence became a priority not only to shield their own supply chains from potential disruptions but also to avoid giving the other side leverage in a context of growing geopolitical rivalry.

It is important to recognize that the escalating tensions between the United States and China are an underlying broader race for global leadership. While this paper does not explore the geopolitical dimensions in depth, it is relevant to recognize them as a foundational cause of the trade conflict. Beyond the immediate economic implications, the trade war reflects a strategic rivalry centered on control over critical technologies, including semiconductors, artificial intelligence, and quantum

computing, which are increasingly perceived as critical to secure future global influence. Technological leadership in these areas is not only associated with economic competitiveness, but also with the ability to shape international standards, influence global governance, and enhance geopolitical power. In this context, the protectionist measures and efforts to decouple supply chains pursued by both countries can be interpreted as part of a wider effort to redefine the global order.

1. Timeline of the Trade War (2017 - 2021)

The intentions to implement protectionist policies were noticeable from the start of his mandate. These actions raised concerns in international trade regarding the possibility of decoupling in value chain activities and highlighted the risks associated with supply chain strategies. In January 2017, the US withdrew from the Trans-Pacific Partnership agreement. This trade agreement contained measures to lower both tariff and non-tariff barriers to trade, and it established an investor-state dispute settlement (ISDS) mechanism (Estrada & Koutronas, 2025; Office of the United States Trade Representative, 2017). As Zahoor and coauthors explain, Trump feared it would undermine the US economy and its independence.

At the beginning of 2018, the US administration imposed a series of tariffs on goods worth billions of dollars, with a strong focus on Chinese products. The administration strategically targeted specific products justified as global safeguard tariffs. On January 22, 2018, imports of solar panels and washing machines were subject to tariffs of 30% and up to 50%, respectively, except those from Canada. On March 8th of that same year, tariffs of 25% on steel and 10% on aluminum were applied to all imports, although exemptions for Mexico, Canada, and the European Union (EU) were initially applied. In that same month, the US Trade Representative (USTR) released the Section 301 report (Office of the United States Trade Representative, 2018), accusing China of intellectual property theft and forcing technology transfers. In April of 2018, China retaliated against the tariffs on mostly agricultural products worth US\$3 billion (Ministry of Commerce of the People's Republic of China, 2018), and in June the US responded with the announcement of a List 1 of targeted products, worth US\$34 billion (Office of the United States Trade Representative, 2018).

According to the WTO trade war timeline, the start of the trade war is considered to be on July 6th, 2018 (Figure 1). That day, the US Customs and Border Protection (CBP) began collecting a 25% tariff on a series of products specified in the List 1 previously announced in June. List 1 included 818 targeted Chinese products, valued at US\$34 billion. That same day, China retaliated by imposing a 25% tariff on 545 goods, worth US\$34 billion (Ministry of Finance of the People's Republic of China, 2018). The products targeted in List 1 did not directly attack consumer goods, but targeted high-tech and industrial sectors. The United States justified this action by arguing that China engaged in unfair trade practices, including forced technology transfers, state subsidies, and intellectual property theft, as part of a broader strategy to dominate key strategic sectors.



Figure 2: Timeline of cumulative tariffs between China and the US previous and during the trade war.

Source: Author's creation from WTO data and Statista.

Alongside tariffs, the US began implementing broader strategic controls, such as proposed restrictions on the export of emerging technologies like AI and quantum computing, limiting China's technological advancement as part of the trade conflict. In August 2018, the US signed the Export Control Reform Act (ECRA) into law, expanding US authority to restrict exports of "emerging and foundational technologies" critical to national security. That same month, List 2 of new tariffs came into effect. The new set of tariffs affected US\$16 billion worth of products, and targeted semiconductors, chemicals, and auto parts. The tariffs on products in List 3 came into effect in September 2018, worth US\$200 billion. The duty rate began at 10% and was later raised to 25% on 10 May 2019 after several postponements. With 5,745 eight-digit Harmonized Tariff Schedule (HTS) lines on the final schedule, List 3 more than doubled the scope of the earlier Section 301 rounds. Unlike the first two lists, which leaned toward industrial inputs, List 3 extended significantly

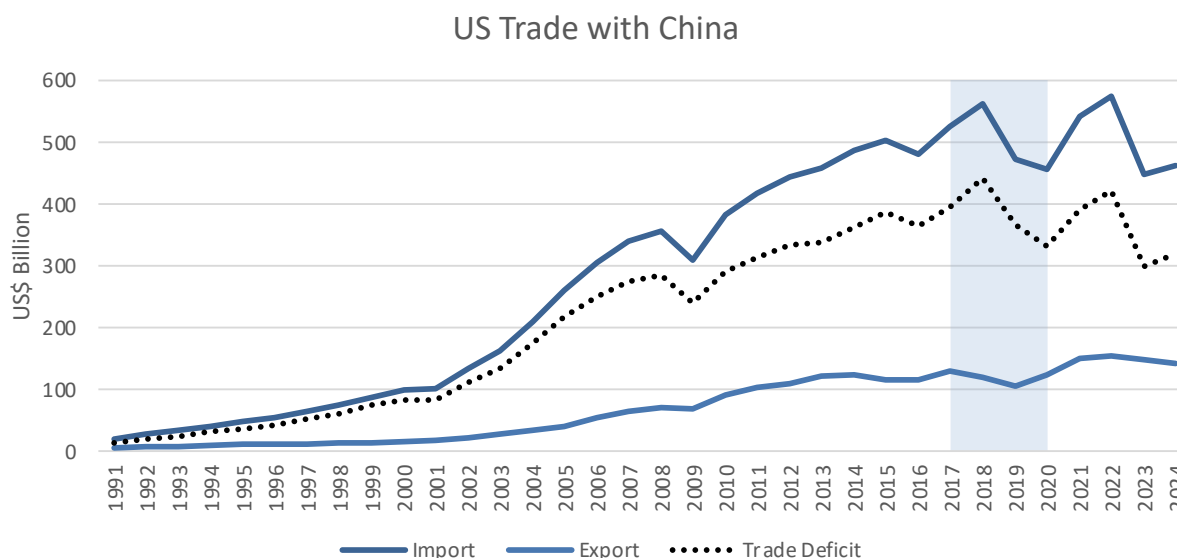
into consumer-facing supply chains. It included frozen pork, nuts, fruit, and other farm staples; a wide range of chemical intermediates and plastics; building materials; fabrics and finished apparel; consumer appliances; display panels and a wide range of electronic components; automotive components; and finished household furniture. Analysts noted that the list touched over half of all eight-digit tariff lines in the US schedule.

A 90-day trade truce was agreed in December 2018, but despite ongoing negotiations, major disagreements on the conditions persisted. This led to escalating tariff threats, retaliatory measures, and disruptions in global trade. In the early months of 2019, both countries took part in several rounds of negotiations in Beijing and Washington, aiming to resolve the remaining issues. On May 10, 2019, the US increased tariffs on Chinese goods worth US\$200 billion, ranging from 10% to 25% tariff rates and marking a significant escalation in the trade war after talks failed to result in an agreement. This move was justified as a response to China's position during the negotiations and triggered further retaliatory tariffs from China. On September 2, 2019, China filed a complaint with the WTO against the US, challenging the legality of tariffs imposed on US\$300 billion worth of Chinese exports. It was the third case China brought to the WTO over US trade measures.

As tensions continued to rise, the US ultimately imposed tariffs on about US\$550 billion in Chinese goods, while China responded with tariffs on American goods worth roughly US\$185 billion (WTO, 2024; Tan, 2025). Despite the escalation, both countries repeatedly reaffirmed their commitment to implementing the phase one trade deal. The Phase One trade deal aimed to reduce protectionist practices, strengthen intellectual property protections, and increase Chinese purchases of US goods, while also creating a mechanism to resolve future disputes. The phase one deal was officially signed in January 2020.

1.1. Evolution of US - China Trade Deficit

The measures implemented during the trade war aimed to relocate GVCs back to the US and to reduce the trade deficit with China. The trade deficit had grown from nearly US\$14 billion in 1991 to US\$347 billion in 2016, the year Trump was elected. As these actions were put in place, trade flows between the two countries declined (Figure 2). In 2019, American exports to China fell by 11.3% (US\$13.5 billion) compared to the previous year, while US imports from China dropped by 16.2% (US\$87.4 billion), despite the imposition of significant tariffs. However, the trade deficit decreased only slightly, with an average reduction of 0.56% over the four years of Trump's term.



* Shaded area indicates the First Trump Administration.

Figure 3: Imports and exports in the United States from China and trade deficit since 1991 until 2024.

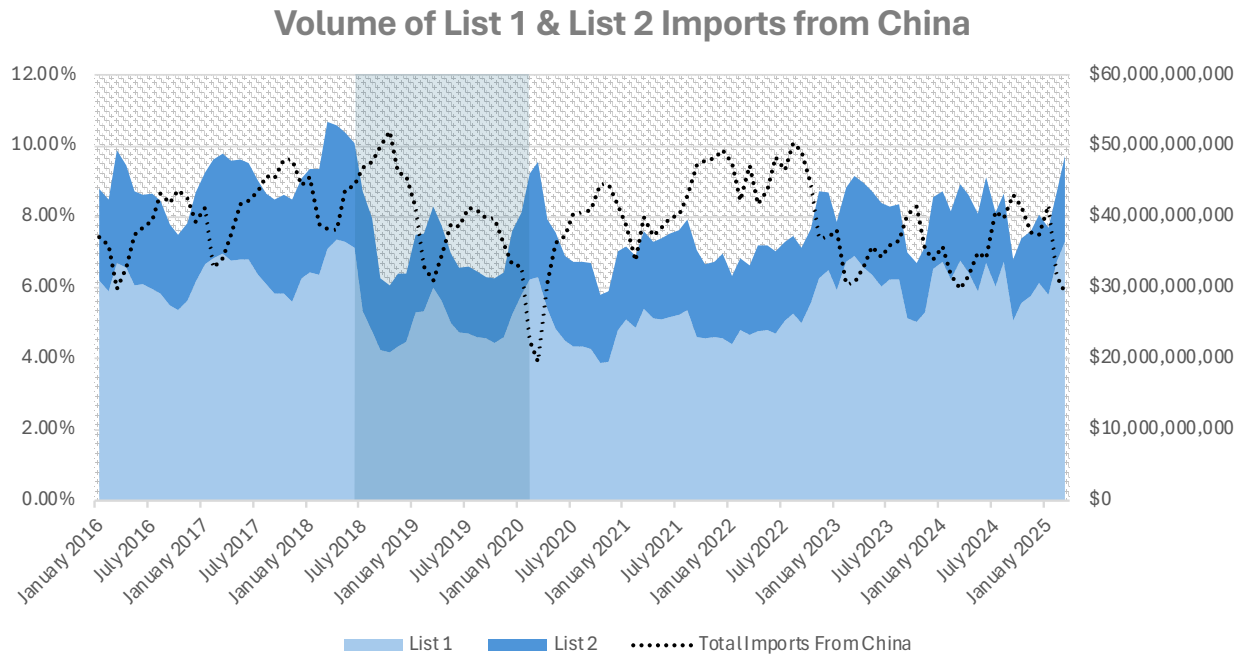
Source: Author's creation from WorldBank and UN Comtrade Data.

In 2021, trade returned to pre-trade war levels, reaching record highs. This phenomenon can be mostly associated with the global pandemic Covid-19, which underscored global dependencies during critical times, especially in the medical sector, and highlighted US dependence on Chinese exports (Congressional Research Service, 2020). Companies that had tried to diversify away from China had to revert during the crisis, as China remained the most reliable and cost-efficient source for many critical goods during a time of crisis. In 2023, imports from China decreased a staggering amount of US\$127.67 billion compared to the previous year, which represents a decrease of 23.5% and lowest amount in value since 2012. American exports decreased by 4.08% (US\$60 billion). The trade deficit between the two countries remained high at US\$319 billion in 2024.

2. Sectoral Impact: Key Products Affected

The US imports of products targeted by the tariffs declined, indicating early signs of decoupling (Bown, 2022). The first list targeted mainly industrial and intermediate goods, including machinery and mechanical appliances, electrical equipment and parts, automotive components, aerospace and aviation parts, categories of medical equipment, robotics, semiconductors, and high-tech manufacturing inputs. The list focused on high-tech sectors closely linked to China's strategic industrial policies, such as Made in China 2025, and aligned with the country's broader tech development goals. This specific targeting was designed to minimize the immediate impact on consumers. In response, China directed its first round of retaliatory tariffs primarily at agricultural

products. Subsequently, products in List 2 expanded the scope beyond the initial categories by including a wider range of intermediate goods and components used in American manufacturing.



* Shaded area indicates the First Trump Administration.

Figure 4: Volume of imports from China to the United States of products in List 1 & 2 and total imports value from China.

Source: Author's creation from USITC DataWeb and Office of the United States Trade Representative.

Figure 3 illustrates how imports of products from lists 1 and 2 increased in the months leading up to the start of the trade war. Freight shipping volumes and warehouse utilization spiked around mid-2018, especially in sectors expected to be most affected, as companies stockpiled inventories in advance of the impending measures. This strategy aimed to reduce disruptions, although it is only effective in the short term. It helped build resilience and allowed firms to soften the initial impact of the policy.

However, stockpiling comes with a high cost, often accounting for 20 to 30% of the total inventory value, and it increases with storage duration (McCue, 2020). This approach conflicts with lean systems and strategies like just-in-time (JIT), which had gained momentum in recent decades. The efficiency of JIT models was seriously challenged by growing uncertainty and geopolitical tensions. Overall, the trade war revealed that purely JIT-based systems can be vulnerable to geopolitical risks, leading some firms to adopt hybrid models that combine JIT efficiency with a certain level of strategic stock.



Figure 5: Volume of imports from China to the United States of products in List 3 and total imports value from China.

Source: Author's creation from USITC DataWeb and Office of the United States Trade Representative.

The tariffs on List 3 products took effect on September 24, 2018. This round marked a significant escalation, targeting a broader range of consumer and industrial goods following unresolved issues from earlier rounds after the imposition of Lists 1 and 2. The affected products included consumer items such as furniture, handbags, and suitcases; intermediate and capital goods such as industrial chemicals, auto parts, and building materials; and technology products such as modems, routers, and components.

According to a study conducted by the Peterson Institute of International Economics (PIIE) (2022), within the period of the trade war, the import value of Chinese products not affected by the tariffs increased. The exempted products included laptops and monitors, phones, toys, and video game consoles: mostly products from the 4B list, which was never implemented. The COVID-19 pandemic further amplified demand for these goods, as remote work, online learning, and home entertainment became essential. In 2017 these products represented US\$107 billion in Chinese imports and rose to US\$139 billion by 2021 after the tariffs were implemented. The total import value of items not affected by tariffs boomed, increasing by 50% from June 2018 to August 2022. Consequently, the sharp increase in imports of these tariff-free products offset the decline in imports of products that were subject to tariffs, keeping overall imports from China elevated despite the trade war.

Toward the end of Trump's first term, the trade war slowed down and was put on pause after the signing of the phase one deal. This deal de-escalated the trade tensions that had been building up since 2018 and included several commitments from both sides. It led to an increase in Chinese purchases of American goods, greater protections on intellectual property, certain tariff de-escalations, among others.

The administration that followed Trump's first term in 2020 kept many of the tariffs in place, and efforts to de-risk from China gained traction. In addition to the imposition of tariffs, the US government implemented export restrictions to limit China's access to advanced technologies. In October 2022, the Biden administration enacted a new set of export controls on advanced semiconductor technology, restricting American companies from exporting advanced semiconductors to China, as well as semiconductor manufacturing equipment used to produce chips smaller than 14 nanometers for export to China. The United States also passed the CHIPS and Science Act, appropriating over \$52 billion to support semiconductor manufacturing, research, and workforce development in the United States, with the broader goal of reducing supply chain dependencies and maintaining technological leadership in strategic sectors (Gupta, et al., 2024).

Although not explicitly stated, the CHIPS and Science Act carries significant strategic implications. One of its underlying objectives is to reduce US reliance on Chinese supply chains, particularly in the semiconductor sector, which is critical for advanced technologies such as AI, 5G, and quantum computing. By imposing export controls on high-end chips and manufacturing equipment and simultaneously investing over \$52 billion in domestic production and R&D, the United States aims to safeguard its technological advancements and limit China's increased presence in this domain. However, a key vulnerability remains: the United States currently lacks the capacity to produce the most advanced chips at the scale that China and Taiwan can, placing it at a relative disadvantage in the global race for technological leadership. This imbalance underscores the geopolitical stakes of semiconductor self-sufficiency and reinforces the strategic rationale behind recent US industrial and trade policy initiatives.

3. Macroeconomic Perspective on the Economic Impact

Recent academic and governmental research studies draw a consistent picture: the tariff package first rolled out under President Trump, and later maintained by President Biden, has imposed a burden on US economic growth. Multiple studies have documented higher consumer prices, reduced investment budgets and a contraction in employment, despite the policy's stated aim of revitalizing domestic industry.

A macro-econometric study by the think tank Tax Foundation, using the Tax Foundation's General Equilibrium Model, estimated the effects of the 2018-2019 tariff rounds. The model results concluded the Section 301 and Section 232 tariffs will cut long-run real GDP by roughly 0.2%, reduced the capital stock by 0.1% and eliminated about 142,000 full-time equivalent positions (York

& Durante, 2025). A paper from January 2024 by the IMF shows that “surprise” tariff shocks tend to reduce imports more than exports, leading to slight decreases in the trade deficit at the expense of persistent gross domestic product losses; the IMF study estimates that removing the 2018-2019 duties would lift US real output by around 4% over a three-year horizon (IMF, 2024).

Further analysis by Nilsson and Nolte (2023) uses a computable general equilibrium model, which further traces the ripple effects of the trade war and the Phase One agreement. It reveals trade diversion not only between the United States and China but also across third-country suppliers. The analysis presents a sector that emerged as a winner. Nations such as Mexico and Malaysia saw growth in their electronics and machinery sectors, filling the gap left by the reduced Chinese exports into the US. The sectors that suffered the consequences of the protectionist measures more negatively include US agriculture, as American farmers faced significant losses due to China's reciprocal tariffs targeted to US agricultural products. The automotive industry also faced the consequences of the trade war, as the US automotive sector encountered higher production costs on imported parts and materials, reducing profitability and competitiveness.

The modeling for private sector reaches similar conclusions. The Tax Foundation's dynamic scoring framework attributes a US\$542 billion decline in imports to the tariff regime, and a 0.7% drop in GDP, alongside notable household income losses (Tax Foundation, 2025). Taken together, these findings signal that the protectionist turn has imposed overall broad economy costs, while delivering only modest gains in terms of the bilateral trade balance it sought to correct.

Tariffs are not the only tool shaping GVCs. Recent developments suggest that the imposition of export-controls, during both the Trump and Biden presidencies, may have inadvertently accelerated China's pursuit of technological self-sufficiency, particularly in the field of artificial intelligence (AI). By restricting access to the cutting-edge US chip technology, these measures appear to have incentivized Chinese firms to develop alternative AI models that rely on less sophisticated, domestically produced hardware (Xiao, 2025). This shift not only mitigates the immediate impact of the export restrictions but also challenges the long-term effectiveness of such policies. The export controls applied fostered innovation pathways that are less dependent on Western technological ecosystems. Evidence emerging from China has suggested this unintended consequence occurred. By cutting access to advanced American chips, Washington's controls encouraged Chinese firms toward self-reliant innovation trajectories, most visibly in the field of AI.

This trend gained international attention with the January 2025 release of DeepSeek, a Chinese-developed AI model comparable to ChatGPT. This Chinese AI model was created with export-controlled versions of advanced American chips and, according to the training cost presented by the DeepSeek company, the Chinese robot was around 10 to 50 times cheaper to train. In summary, both tariffs and export controls have delivered mixed results: they seek to boost national

competitiveness, yet so far, they have imposed measurable economic costs on the country and have encouraged adaptive responses that may eventually undermine their effectiveness.

4. Corporate Strategy

The trade war between the US and China during the first Trump administration had far-reaching consequences. Beyond the impact on bilateral trade, tensions between the two global powers triggered a reconfiguration of GVCs. As tariffs increased and policy uncertainty grew, multinational companies began reassessing their dependence on Chinese manufacturing. This environment accelerated a shift toward more diversified and regionalized trade dynamics. In response to rising costs and geopolitical risks, firms adopted a variety of strategies detailed in this section. These included transshipment practices, China Plus One sourcing models, increased investment in Southeast Asia and Mexico, and renewed efforts toward reshoring.

Transshipment practices were widely used, especially in China. This practice involves rerouting goods through a third country to bypass trade restrictions like tariffs or quotas. While not inherently illegal, transshipment often operates in a legal grey area. It may be considered fraudulent if the practice violates rules of origin, for instance, by mislabeling goods to exploit preferential trade agreements or reduced tariffs. For example, the Chinese logistics firm YTO Express Group partnered with VietJet Air to create a transshipment hub in Vietnam, with the goal of channeling Chinese exports to the US, the EU, and other markets through Vietnam (Yicai Global, 2019). As transshipment practices gained popularity, they prompted American customs investigations and stricter enforcement of rules of origin.



Figure 6: Trade balance between the US and Vietnam since 2016 until 2024.

Source: Author's creation through the website of IMF Data.

Figure 6 shows a sharp and sustained increase in Vietnam's trade surplus with the United States. This surge suggests that Vietnam became a major alternative hub for goods entering the US market, likely benefiting from both transshipment practices and genuine relocation of production. The spike in trade volumes, especially from 2020 and beyond, raised concerns among US trade authorities regarding the misuse of origin labels and potential circumvention of tariff rules. In this context, Vietnam's increasing trade surplus with the US not only reflects increased export competitiveness but also highlights the ambiguous boundary between legitimate supply-chain diversification and potentially fraudulent transshipment.

Another strategy employed by companies amid GVC uncertainty is diversification. Diversification efforts led to the emergence of the so-called China Plus One strategy, which gained traction in the aftermath of the 2018-2019 US-China trade war. The important tariff escalation exposed the vulnerabilities of many firms that were too dependent on China, especially in the sectors of electronics, textiles, and machinery. China Plus One emerged as a risk diversification model: maintain core operations in China but build parallel capacity in countries such as Mexico, Vietnam, or India. Several Southeast Asian countries benefited from trade diversion effects triggered by the US-China trade war. This was due to their production conditions being similar to those in China. A more politically neutral stance also favored their export growth. Among Southeast Asian countries, Vietnam already had an established manufacturing base and competitive labor costs, which enabled the country to strengthen its position as a manufacturing hub while remaining relatively insulated from the consequences of the war (Xing, et al., 2024). Vietnam emerged as a key alternative production and export hub, particularly for goods destined for the US. The country attracted significant inflows of FDI from multinational firms seeking to diversify their production bases and mitigate supply chain risks. Many reconfigurations of GVC nodes occurred in Vietnam, where China continued to supply intermediate inputs, while final assembly operations located in Vietnam, thereby reducing tariff exposure on finished goods (IMF, 2016).

The relocation of production facilities has occurred through reshoring, which means bringing operations back to a company's home country, and nearshoring, which involves moving production to geographically proximate countries. These strategies have increased firms' regional presence and encouraged investment. A clear example of nearshoring combined with China Plus One strategy was implemented by Dell, which in response to the Section 301 tariffs, the American technology company announced it would shift 30% of its production out of China and move the assembly of US-bound laptops and servers to a facility in Mexico. By doing this, the company avoided the 10 to 25% tariffs imposed on electronics and consumer goods included in List 3. The transition was initiated by mid to late 2019, allowing DELL to gradually shift production. At the same time, the company maintained its China-based production for parts that could not be relocated and other markets to remain globally competitive. Beyond helping the company avoid the financial burden of Section 301 tariffs, Dell's nearshoring strategy also contributed to strengthening its brand image. Dell positioned itself as both strategically agile and socially

responsible. This move not only offered a competitive advantage over less-prepared competitors but also enhanced consumer perception by projecting itself as a company that proactively safeguards customers' interests and adapts effectively to geopolitical uncertainty.

Except for transshipment strategies, the strategies mentioned above matured and became more institutionalized during the early 2020s, evolving from temporary responses into long-term components of corporate supply chain strategy. As US customs enforcement tightened rules of origin, transshipment practices became increasingly risky, making firms shift toward genuine relocation of assembly operations, particularly to countries like Vietnam, Malaysia, and Mexico. At the same time, the China Plus One approach evolved into a structural realignment of production, with companies establishing parallel operations in alternative markets. The shift led to growing FDI in economies like India and Vietnam, with Vietnam emerging as a key hub for U.S.-bound exports. Importantly, these strategies have evolved beyond pure cost-efficiency motives; they are now equally driven by the need to avoid supply shortages, meet customer expectations, and preserve brand image. Firms increasingly recognize that adaptability and proactive risk management are not only operational necessities but also critical to maintaining consumer trust and long-term competitiveness in a volatile global environment.

IV. TRUMP 2.0: CURRENT UNCERTAINTIES AND THEIR EFFECTS

Having analyzed the transition from Trump 1.0 to Biden's pragmatic continuity, the return of Trump in 2025 marked a new escalation. The events of Trump's first administration altered operational managers' perspectives on global trade, instilling a more cautious approach to long-term strategic planning and flexibility. The assumption that free trade would remain the norm was increasingly distorted. This shift required firms to engage in continuous planning to navigate geopolitical frictions with possible effects on trade. While not all companies were directly affected by the measures, the unpredictability of trade policy and persistent geopolitical uncertainty became a structural risk factor that led many firms to permanently revise their design and management of GVCs.

With Donald Trump's return to the Oval Office on 20 January 2025, the United States has entered a new and more assertive phase of trade protectionism. Campaign pledges to "reset global trade on America's terms" have already translated into higher tariffs and broader restrictions that go well beyond the measures of his first term and the relative continuity maintained during the Biden administration. While Trump's initial term relied on sector-specific and country-specific duties, Trump's second term has imposed a universal baseline tariff alongside a rotating set of "reciprocal" surcharges that match or exceed the trade barriers of key partners (White House, 2025a).

This shift signals a deliberate push toward economic decoupling and a consistent effort to reshore critical industries. China has been placed at the center of US trade tensions, and GVCs now face a renewed wave of uncertainty. Firms are reevaluating sourcing strategies, reshaping production footprints and bracing for a more fragmented, politicized trade landscape in which policy announcements can disrupt supply-chain operations overnight. In summary, the second Trump administration is redefining the rules of international trade. Companies involved in GVCs must adapt quickly or risk exposure to supply disruptions that could compromise their operational stability and long-term competitiveness.

1. Timeline of Key Measures (Jan - May 2025)

Since the beginning of Trump's mandate, the United States has intensified its regulatory approach to international trade. While maintaining a continued focus on China, the scope of affected countries has expanded to the entire world, including the application of universal tariffs, politically filtered exemptions, and a more aggressive enforcement of rules of origin. The result goes further than a transformation of global trade dynamics and has a broader effect on geopolitical and economic systems. The uncertainty is contributing to global financial volatility, fueled swings in the value of the US dollar and increased pressure on US Treasury yields. At the same time, these trade tensions interact with ongoing global conflicts, complicating even more international alliances.

The United States' shift toward aggressive trade protectionism under Trump's leadership reflects more than just economic policy. It is part of a broader race for global leadership. While China remains the primary focus, recent measures extend beyond it and signal a structural shift in the global order. Universal tariffs, politically filtered exemptions, and stricter enforcement of rules of origin are being used not only to contain rivals but also to reshape alliances, protect strategic industries, and reinforce economic sovereignty in an increasingly fragmented geopolitical landscape.

This subsection provides a chronological account of the most relevant measures between January and May 2025, organized into three geographical blocs: China, Canada and Mexico, and the European Union.

1.1. China

China remains the primary target of US protectionism due to its history of trade practices deemed unfair, including state subsidies, forced technology transfers, and intellectual property violations. Its rapid technological rise and global economic influence position it as the main rival in the race for global leadership.

The first international trade measure enacted during Trump's second term occurred on February 4, 2025. That day, a 10% tariff was imposed on all Chinese imports associated with the production and distribution of fentanyl, as part of a broader effort to combat fentanyl trafficking (White House, 2025b). This rate was later increased to 20% in March. The measure imposed increased the amount of Chinese exports affected to 100%. China responded with retaliatory measures shortly after the announcement. On February 10, 2025, tariffs ranging from 10 and 15% came into effect, targeting the energy sector, automotive sector, industrial and agricultural machinery, and other industrial goods.

Tensions escalated further on April 2, a day the American president labeled as "Liberation Day". The administration introduced a sweeping "reciprocal tariff" policy. Under this policy, Chinese goods were subject to a 54% tariff, marking one of the highest country-specific tariff rates imposed to date. This aggressive escalation sparked concern over a full-scale trade war and prompted retaliatory measures from Beijing, including export restrictions. On April 9, 2025, the United States more than doubled their tariff rate reaching to 104% duties. In response, the day after China retaliated with a rate of 107%, and 100% of US exports affected by tariffs.

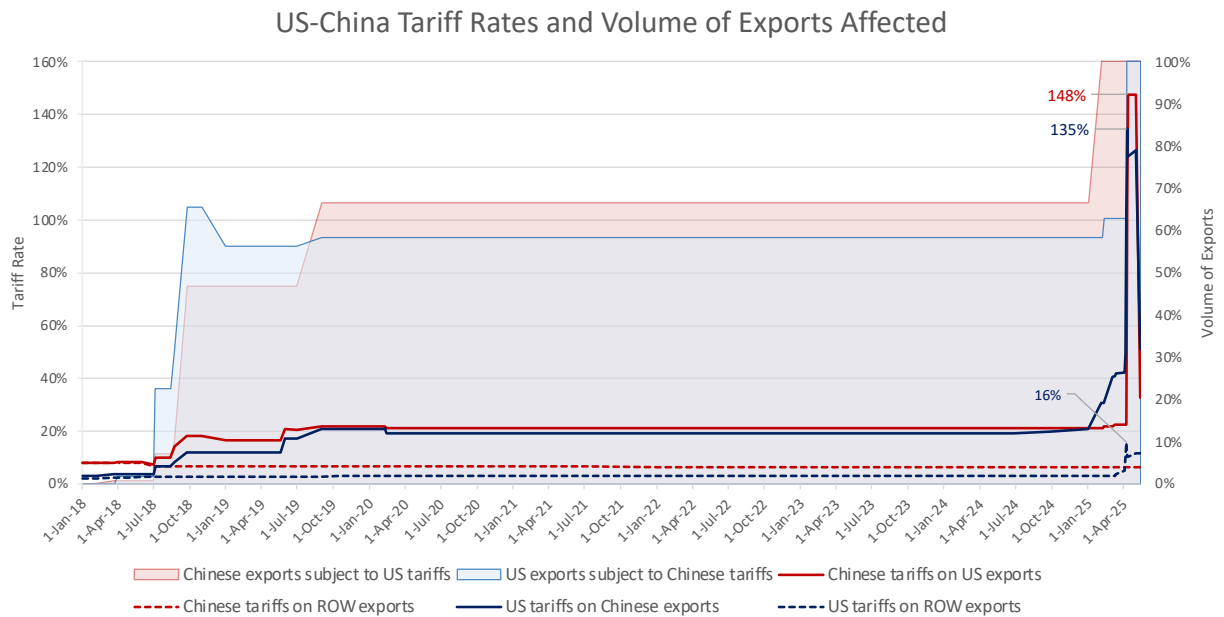


Figure 7: Tariff rates between the United States, China, and Rest Of the World (ROW) and volume of exports affected since 2018 until May 2025.

Source: Author's adjustment through PIIE data.

In April, tariffs escalated to unprecedented rates (Figure 7). Chinese tariffs on US exports reached 148% and US tariffs on Chinese exports rose to 135%. However, in the weeks that followed, both sides began to step back. By mid-May, China had started to reduce its tariffs and resumed diplomatic negotiations. The US lowered its tariffs on Chinese goods from 125% to 32.6%, effective through August 2025. Although underlying tensions persist, the shift toward talks signals a partial de-escalation.

1.2. North America - Mexico and Canada

Trump's early measures included a sharp turn against the United States' closest trade partners. By February 12, a 25% tariff was imposed on all goods from Mexico and Canada, except Canadian oil and energy, which remained subject to a 10% tariff (White House, 2025c). This marked a shift from the singular focus on China and expanded the complexity of the situation, disrupting the USMCA agreement and putting at risk nearshoring strategies, especially since relocating to these countries had become a key tactic.

The automotive industry is particularly vulnerable to shocks to North American supply chain integration (Bilinski, 2024). This sector responded quickly to the tariffs imposed on North American countries. The sector responded by lobbying the government and pushing for exemptions, arguing that the tariffs would raise vehicle prices by US\$1,000 to US\$4,000. On March 5, 2025, Trump announced a one-month exemption from the imposed tariffs on goods from Mexico and Canada

applicable to US automakers. The pause came after the president held talks with leaders of the “Big Three” automakers: Ford, General Motors, and Stellantis. The following day, Trump announced a one-month delay on the imposition of 25% tariffs on a wide range of imports from Mexico and selected imports from Canada. The rationale behind the tariffs was broad, mostly linked to drug trafficking issues, including fentanyl, and broader concerns over immigration and border security.

While the rhetoric remained confrontational, the actual implementation of these policies showed signs of softening over time. By late May, the intensity of the measures against Canada and Mexico had eased, with ongoing policy adjustments reflected a more flexible approach, shaped by domestic industry lobbying and regional economic interdependence.

1.3. European Union and the Rest of the World

In the current global context, the European Union finds itself navigating a delicate balance between defending its economic interests, responding to geopolitical tensions, and maintaining internal solidarity, all of which place increasing strain on the bloc's stability.

On April 2, 2025, threats against all countries running trade surpluses with the United States were announced. Notably, the US is the world's largest importer, which highlights the complexity and underlying paradoxes in the announcement. On April 5, the US baseline tariff took effect on all imports coming into the United States, regardless of origin, justified as a response to a “national economic emergency” (White House, 2025a). Although framed as a universal measure, certain EU products like pharmaceuticals and timber received exemptions, while others were hit with elevated, sector-specific tariffs. European steel, aluminum, and automobiles faced a 25% duty. The EU responded to the measures immediately. On April 3, Ursula von der Leyen announced the preparation of a 26 billion € retaliation package and warned of further action if negotiations with the United States failed.

A week later, on April 9, 2025, countries with the largest bilateral trade deficits with the US were subjected to tariffs, including the European Union (20%) and Vietnam (15%) (Trade Compliance Resource Hub, 2025). Financial markets reacted dramatically. Global indices plunged; the Dow Jones dropped 1,500 points and US investment losses reached \$6 trillion in a matter of days. The US average effective tariff rate on all imports increased to 14.5% in 2025, its highest level since 1938.

The European Union's response to the tariff escalations in April 2025 highlighted the complexity of the current global landscape. It demonstrated that today's trade tensions extend beyond regulatory disputes and reflect a broader contest for global influence and geopolitical leadership, in which trade policy is used as a key instrument of power projection. With 27 member states, the EU's ability to coordinate a collective response was essential in preserving its negotiating power and preventing Washington from exploiting internal divisions. For instance, when the United States threatened to impose a 200% tariff on French champagne, if US whiskey was targeted in

retaliatory tariffs, the EU adjusted its countermeasures and removed the good from the retaliation list, maintaining a coordinated front and calibrating its retaliation package to protect vulnerable sectors and specific member states. This political case exemplifies how unity can serve as a strategic asset, reinforcing the EU's resilience amid growing volatility in global trade.

Despite initial tensions, diplomatic efforts have since advanced. An agreed 90-day cooling-off period has been set during which negotiations are ongoing (Time, 2025). The United Kingdom, now outside the EU, reached a bilateral agreement with the United States, providing a parallel example of how bilateral disputes can be resolved.

2. Macroeconomic Perspective on the Early Signs

Two recognized think tanks have modeled possible macroeconomic outcomes on the US economy resulting from the global tariff measures implemented by the Trump administration. The models analyzed in this paper are conducted by two American think tanks: the Peterson Institute for International Economics and the Tax Foundation. Both published in late April 2025. The two studies in the table address the tariff issue with two distinct yet complementary macro-models and reach similar conclusions (Table 1).

Modeled Outcomes for US Tariffs Worldwide

	Tax Foundation – General Equilibrium Model	PIIE – G-Cubed DSGE/CGE Model
Methodology	Solves for a new long-run steady state once firms and households finish adjusting.	Simulates year-by-year deviations from the Congressional Budget baseline through 2035. Considers no retaliation vs. mirror retaliation.
GDP	–0.4 % in the long run; deeper losses at higher rates.	–0.6 % by 2026 (no-retaliation) and up to –1.4 % with retaliation.
Employment	–400 000 full-time equivalent jobs.	Lower real wages and employment.
Inflation	Not explicitly modelled.	CPI jumps +0.7 pp in 2025 (+1.6 pp with retaliation) then fades to near zero by 2028.
Customs Revenue	Gross: US\$ 2.17 tn (2025-34). Net with retaliation: US\$ 1.44 tn.	Gross: US\$ 2.5 tn (2025-2035). Net with retaliation: US\$ 1.6 tn.
Most Affected Sector	Capital-intensive sectors are riskier.	Agriculture, mining and durable manufacturing have the most output declines.
Exchange-Rate	Stronger dollar shifts part of the pain from importers to exporters.	Dollar appreciates in solo-tariff case, depreciates when partners strike back.

Table 1: Comparison of the Tax Foundation and PIIE models on the impact of United States tariffs worldwide on the US economy.

Source: Authors creation with models from PIIE and Tax Foundation.

The PIIE model assesses the global economic impact of the Trump administration's tariffs through a G-Cubed (Global General Equilibrium Growth) model. The model blends features from dynamic stochastic general equilibrium (DSGE) models and computable general equilibrium (CGE) models. The strength of the PIIE model lies in its ability to combine detailed sector and trade modeling with realistic macroeconomic dynamics, making it especially useful for analyzing complex and global shocks such as the tariff measures enacted under the Trump administration or major climate policy transitions. It presents results on a year-by-year basis, relative to the

Congressional Budget Office (CBO) baseline, through 2035. The model runs two scenarios: one in which the US acts alone, and another in which all trading partners impose mirror tariffs. In contrast, the Tax Foundation applies a long-run general equilibrium model that solves for a new steady state once households and firms have fully adjusted. The two modeling exercises summarized below reach similar conclusions despite using different frameworks.

Both exercises find that a universal 10% tariff causes a net drag on activity. Tax Foundation projects a 0.4% decline in real GDP once the economy settles into a new steady state, compared to the projections generated by the same model without tariffs. These losses intensify as the tariff rate increases, reaching 0.6% at a 15% tariff rate and 0.8% at a 20% tariff. The G-Cubed model exposes a similar outcome, but presents its results as a time series, showing output to be about 0.6% below the baseline projected for 2026 in the CBO, in the case where the United States acts alone, and 1.4% below baseline if all other countries retaliate at the same tariff rate. This weaker economic growth translates into a contraction of the labor market, affecting employment levels. The Tax Foundation estimates a decrease of roughly 400,000 full-time equivalent jobs at a 10% tariff rate, rising to 755,000 at a 20% rate. PIIE describes the impact on employment in more qualitative ways, mostly focusing on the losses in the sectors of agriculture, mining, and durable manufacturing. The model states most of the labor market pain happens in the first two to three years, as firms restructure their supply chains. The model explains that moving from 10% to 20% nearly quadruples the net loss in government revenue and leads to proportional declines in employment.

Regarding inflation dynamics, the Tax Foundation model does not directly analyze its effects, only the PIIE analysis includes an explicit model of the price shock. It shows a consumer price increase of about 0.7 percentage points in 2025, which nearly doubles if retaliation occurs. However, inflation is projected to return to trend by 2028. The revenue acquired by customs is substantial in both models when analyzed statically. However, both models warn that macroeconomic feedback and retaliation from trading partners erode much of it. Tax Foundation reports gross collections of about US\$2.17 trillion over ten years (2025-2034), which falls to US\$1.72 trillion as slower growth shrinks other tax bases, and to US\$1.44 trillion when trading partners retaliate. G-Cubed records a one-year gain of US\$56 billion in 2026 and a ten-year net figure of US\$1.6 trillion under retaliation, below the US\$2.5 trillion gross estimate without retaliation. Notably, increasing the rate from 15 to 20% lowers net revenue to around US\$800 billion as import volumes contract.

Lastly, the two models offer differing perspectives on the impact of tariff policy on currency exchange rates. The Tax Foundation model projects a stronger dollar, which would partially offset the burden on importers by reducing export competitiveness. However, the PIIE model similarly anticipates a dollar appreciation under non-retaliatory conditions, although this varies when retaliation occurs, as the dollar reverses its course and magnifies import costs.

In macroeconomic theory, the appreciation of the dollar in the case of tariffs comes from a reduced demand for foreign currency, as import volumes decline and capital inflows seeking safety or yield increase. A stronger dollar, in theory, would cushion the impact of tariffs on American consumers, as predicted by the Tax Foundation model. That was the dynamic observed during Trump's first administration. However, recent developments in 2025 suggest the opposite trend: the dollar has depreciated, thereby placing additional pressure on American exporters and failing to serve as a buffer against rising import prices. This depreciation is attributed by analysts to increased uncertainty and a decline in investor confidence regarding US economic and political stability. At the same time, yields on US Treasury bonds have increased, which can put additional pressure on the US economy and its debt servicing costs. However, higher yields on U.S. Treasury bonds may attract investment into the currency and potentially stimulate renewed demand for the dollar, reversing the depreciation trend.

Value of the USD to Euro

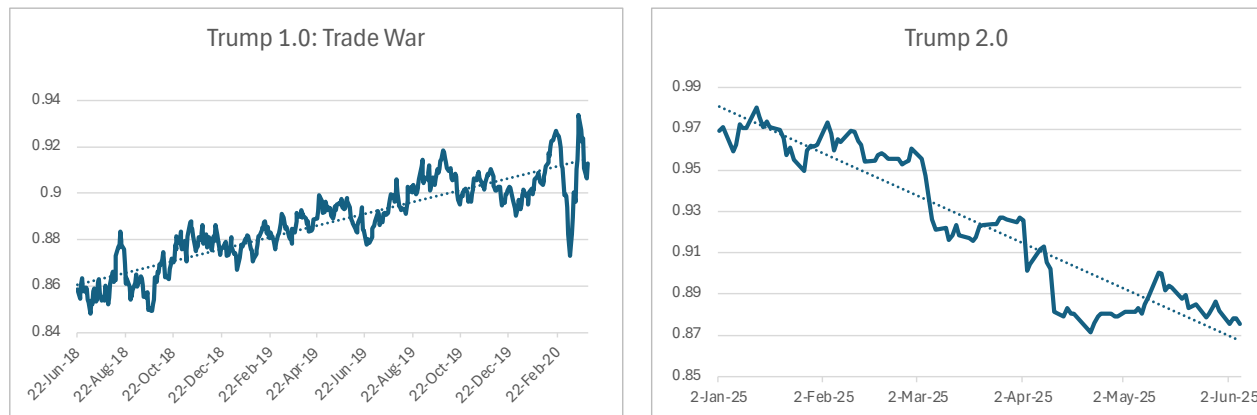


Figure 8: Value of the US dollar relative to the Euro during the US-China trade war on Trump's first term and the current Trump administration.

Source: Author's elaboration with Euro to USD exchange rates from the European Central Bank Data Portal.

In line with the pessimistic economic forecasts projected by several models, equity markets and investors reacted to the announcements of the protectionist measures negatively. With the most significant effects observed in the S&P 500 Index, which dropped by 8% by the beginning of April. The S&P 500 is widely regarded as a key indicator of the health of the US economy and is recognized internationally. This marked the sharpest decline since the COVID-19 pandemic, strongly reflecting investor sentiment regarding the protectionist measures.

The global trade order established after World War II is being challenged by the severity of Trump's protectionist measures. The scenarios analyzed in this paper do not foresee a collapse of GVCs. Instead, firms are expected to absorb the protectionist shock by circumventing trade barriers rather than engaging in full-scale decoupling or fully restructuring international trade.

3. Corporate Strategy

The recent tariff shock has forced firms to treat trade risk as a core design parameter rather than a background assumption. Corporations are reacting to the measures as announcements are made, aiming to mitigate the impact of the measures and building resilience around the challenges faced in international trade.

Strategies like the 'China Plus One' strategy, which emerged and was widely implemented during Trump's first term, have evolved and adapted to today's new challenges. In Trump 2.0, the protectionist environment has become more global and unpredictable, prompting companies to adopt more multi-node, multi-region sourcing strategies. As the US is no longer just targeting China, many firms are moving away from reliance on individual partners to maintain two parallel international options alongside a secure domestic base. These factors have led to a risk mitigation strategy that builds on the logic of China Plus One, but adapts to the newer, broader landscape of uncertainty reshaping into the conceptual strategy of "USA Plus Two". This conceptual strategy involves anchoring one key node of production or sourcing within the United States, while maintaining two additional supply bases in diversified foreign countries that do not share the same trade vulnerabilities and operate under different trade agreements or tariff exposures.

Following the nearshoring trends observed during Trump's first term, firms are now increasingly turning to friendshoring. A friendshoring strategy prioritizes relocating production to politically aligned countries with trusted geopolitical blocs. Whereas earlier strategies emphasize cost efficiency and geographic proximity, today's environment is shaped by rising global tensions and widespread tariff policies. This geopolitical condition has pushed companies to prioritize political alignment and risk diversification. As trade measures now target a broader range of countries beyond China, firms are increasingly directing FDI toward countries considered part of the same geopolitical bloc or strategic alliance. In this context, supply chain design is no longer determined solely by economic rationality; it is shaped by geopolitical considerations, and their reconfiguration is as much about security and alliances as it is about trade.

Firms are adopting diverse cost management strategies. Companies with pricing power can pass on duties to consumers more easily without losing volume, especially compared to firms selling generic or price-sensitive goods such as fast fashion. A significant portion of tariff costs has been transferred to consumers through price increases. Meanwhile, companies facing elastic demand have opted to absorb these costs temporarily or have sought to renegotiate supplier contracts and redesign products to minimize tariff exposure.

Another corporate best practice used to mitigate the effects of uncertainty is the growing use of tariff-risk modules, alongside traditional cost models. Major logistics and procurement software such as SAP, Coupa, or Oracle SCM Cloud, now integrate features that simulate tariff scenarios. These technological tools allow supply chain managers to assign shadow prices to each input, enabling them to estimate different hypothetical "what-if" scenarios before executing operations.

At present, corporate strategies have increasingly shifted their focus to dual-sourcing components. Efforts to maintain at least two shipping routes that avoid the same vulnerable points or regions are being used as key strategies. Apple, for example, aims to produce most of the iPhones it sells in the US at factories in India by 2026, after already shipping US\$2 billion worth of Indian-assembled phones in March 2025 (The Guardian, 2025). At the same time, the cases of GoPro's Mexico and Thailand mix and Stanley's US-Mexico-Malaysia triangle both fit this pattern. These measures allow companies to face the current challenges affecting all US imports and to gain a comparative advantage over competitors, who are forced to raise prices. Additionally, they project a strategic and proactive brand image. As GoPro announced in a press release, it does not expect US consumer pricing or gross margins to be materially affected by the latest tariff measures on goods entering the US, the company's CEO explained: "Over the last few years, we proactively moved our US-bound camera production outside of China, which has significantly reduced the impact of tariffs" (GoPro, 2025). These actions also serve as good publicity, as they promote an image of an organized, professional, and more affordable brand compared to other brands.

Lastly, treasury departments are actively utilizing financial tools such as currency forwards, commodity options, and freight futures to manage cash-flow volatility. These instruments help stabilize costs amid fluctuating exchange rates, shipping prices, and raw material markets. A notable strategy is the use of the first sale rule. This is a recognized customs valuation method that allows companies to report to US Customs the initial transaction price in the supply chain of a good, rather than the final resale value, which reduces the taxable amount on which tariffs are calculated.

In general terms, firms have prioritized adaptation over decoupling, adopting varied strategies to enhance the flexibility of GVCs and mitigate the impact of protectionist policies. The rise of friendshoring illustrates how geopolitical alignment is becoming an increasingly influential factor in corporate planning, involving a preventive restructuring and long-term investment. Overall, the evidence suggests that GVCs are not breaking down; they are adapting, bending, and evolving to remain competitive in an increasingly uncertain world.

V. FUTURE DIRECTIONS AND MNE STRATEGY

This section synthesizes institutional forecasts and scenario modeling to assess how current protectionist trends may reshape GVCs. Firstly, the effects on GVCs are analyzed under two scenarios modeled by the IMF. In these scenarios, global trade dynamics take two different paths: an escalation of the current situation, with persistent tariffs and new trade restrictions, the second scenario models a de-escalation of the tensions and a partial reversal. The second part of the sub-section includes a comparative analysis of three economic models, considering the expected macroeconomic impacts as well as the impacts on GVCs.

Secondly, a range of strategies for firms to implement is presented to face uncertainty. Four actions on GVCs resilience are concluded as possible ways to face the uncertainty, and it concludes with a suggestion for a hybrid mixture with at least two of the mentioned actions.

1. Possible Consequences to GVCs

The effects of the changes in the current geopolitical landscape are being widely studied by international institutions. As uncertainty increases, firms need to estimate possible outcomes and to develop readiness. To adapt to the upcoming measures affecting international trade, scenarios are designed to estimate potential effects. The analysis of the empirical scenarios presented by the IMF is focused on how GVCs might respond, depending on future directions of the trade tensions, with one scenario assuming an escalation of the conflict and the other a de-escalation. At the same time, a wider analysis is conducted by comparing three reports published in March and April of this year by the WTO, OECD and UNCTAD. This comparison includes a brief macro-economic estimate on GDP growth and world trade volumes, with all reports presenting declines compared to baseline estimates undertaken as a continuation of current policies and no new global trade frictions.

1.1. *Analysis on Empirical Scenarios from the IMF*

Based on the IMF's Global Integrated Monetary and Fiscal (GIMF) model, two scenarios are simulated considering ten regions, including China, the United States, and the euro area. The GIMF model assesses short-term dynamics, between 1 to 3 years. This section analyzes the effects on GVCs under the two scenarios.

Scenario A presents broad fragmentation through deep global divergences. It considers a renewal of the US Tax Cuts and Jobs Act for ten years, a slowing productivity in the euro area, and a weaker domestic demand in China. These factors combine with a tariff escalation that increases effective tariff rates by around 18 percentage points. This shock also includes a surge in policy uncertainty and tighter financial conditions with higher risk premiums that together depress activity worldwide for the next two years.

These conditions, combined with current tariff escalations persisting alongside new trade restrictions, tighter technology controls, and broader industrial policy interventions the scenario predicts a fracture of global trade into geopolitical blocs. GVCs would undergo deeper fragmentation, with supply chains restructured in geopolitical blocs and firms favoring politically aligned partners, reducing global integration. In this situation, costs would increase, and companies would lose access to the most efficient production sites, reducing productivity. Indirect trade would rise through neutral countries to circumvent direct trade barriers, adding both complexity and cost. While diversification away from hostile jurisdictions may increase political resilience, operational flexibility would suffer as supply chains shorten. Overall, countries and firms would reduce exposure to cross-border risks by reshoring or nearshoring production, reversing decades of globalization.

In scenario B, a de-escalation of the conflict is assumed, leading to a partial reversal. It assumes that the United States enacts a decade-long package of tax and health-care reforms, so that its deficit narrows and public debt falls over the long term; the euro area boosts public investment; and China reduces trade barriers to entry. Tariffs and restrictions are gradually lifted or paused, uncertainty declines, and countries strengthen multilateral mechanisms to resolve trade disputes. These developments support a partial recovery of GVCs, assuming a diplomatic softening after a period of volatility.

The scenario presents a partial recovery of global integration, with some production networks reconnecting, particularly in sectors not considered strategically sensitive. Some companies would retain dual-sourcing or China Plus One strategies to manage risk, but without fully decoupling. The reduced uncertainty would encourage firms to resume cross-border investment (FDI) and re-engage in complex GVCs. Despite the de-escalation of the conflict, the experience of recent years would leave a persistent awareness of geopolitical risk, encouraging more flexible strategies for supply chains. In conclusion, GVCs would adapt rather than regress, with firms still seeking resilience and agility through digital tools and regional hubs, rather than a full retreat from globalization.

The IMF's GIMF simulations present a clear trade-off between two futures for GVCs. Under a broad fragmentation scenario, firms would pay higher costs and lose productivity. By contrast, a de-escalation scenario would only partially restore cross-border integration, leaving companies with a lasting caution rather than a full return to pre-conflict globalization. The real takeaway is that neither pure fragmentation nor unlimited integration will define tomorrow's world. Instead, resilience and agility will become essential to maintain competitiveness.

1.2. General Overview by Multinational Institutions

After delving into the IMF's two-scenario exercise, this section analyzes three reports that quantify how a new wave of protectionism may affect GVCs. Over the past months, the WTO, OECD, and UNCTAD have published major modeling reports that vary the intensity, coverage and timing of

trade barriers. The review of these publications analyzes the macroeconomic variations estimated in comparison to baseline models. The reports also assess the potential impacts of the current geopolitical landscape on GVCs. A summarized analysis is reported in the comparative chart below (Table 2).

The three institutions' analyses line up on the same trend but with different degrees of severity. The WTO projects the steepest GDP reduction, although it shows a slight recovery in 2026. The institution's report highlights how a wider spread of Trade Policy Uncertainty (TPU) could nearly double the GDP loss, to 1.3 percentage points. The UNCTAD report presents the highest decline in world trade volume. However, these data are based on the Q1 predictions for 2025.

Comparison of Institutional Forecasts on Trade Disruptions

Publication	Model	Macroeconomic Variation for 2025			Main Effects on GVCs
WTO - Global Trade Outlook April 2025	Global Trade Model with Trade-Policy-Uncertainty module.	WTO -0.6pp	OECD -0.2pp	UNCTAD -0.5pp	No collapse. Production stages move towards trusted jurisdictions , investment waits for clearer rules, and some low-cost players exploit openings created by big-power tariffs.
OECD - Economic Outlook March 2025	Computable General Equilibrium model on effects of trade volume.	-2.9%	-2.0%		No collapse. More hesitant , cost-loaded and politically filtered (investment considers political risk).
UNCTAD - Trade & Development Foresights April 2025	Tracks US tariff package & heightened uncertainty.			-3.5%*	No collapse. Reconfiguration of GVCs is being sped up . Expects thinner global demand, cost-loaded , and tariffs push production to cluster regionally and multiply partners .

■ GDP ■ World Trade Volume
*UNCTAD prediction is for Q1'25
**Numbers are compared to baseline level.

Table 2: Comparative table of 2025 Reports by the WTO, OECD, and UNCTAD including macroeconomic variations and effects of tariffs on GVCs.

Source: Author's creation based on published reports.

None of the reports suggest a collapse of GVCs or outright de-globalization. Instead, they all foresee supply networks that remain global but move more cautiously. Companies postpone investment, carry higher costs, and run every sourcing choice through a political-risk screen. In conclusion, all the reports analyzed in this paper suggest that the year 2025 will bring less trade and slightly weaker growth. Yet, GVCs will endure by becoming more hesitant, more costly, and politically filtered, rather than collapsing outright.

2. How to Build a Resilient Global Value Chain

Through the research undertaken in this paper, it becomes clear that the central challenge for 21st century supply networks is reconciling efficiency with robustness. The evidence confirms a clear evolution from the lean and just-in-time strategies, optimized for cost and inventory turns, to an agile and resilient paradigm that prices risk alongside efficiency. No single policy can fully insulate a country or firm from supply-chain disruptions; rather, resilience emerges from the cooperative

application of multiple strategies. Balancing cost efficiency with robustness is essential in identifying the most effective long-term strategies to guarantee supply. This paper concludes by outlining a set of complementary policies that should be considered.

First, a key element in GVCs' resilience is the diversification of sources of supply both geographically and across supplier tiers. This action spreads risk and reduces vulnerability to localized disruptions. A diversified portfolio of suppliers includes multiple firms in different countries and relies on secondary suppliers to avoid single-point failures. However, diversification introduces complexity, as managing contracts, assuring quality, and the logistics across multiple jurisdictions increases coordination costs.

Secondly, developing domestic production capacity is an option. It reduces reliance on foreign suppliers and shortens the logistics horizon, mitigating geopolitical and transportation risks. Building or repurposing local facilities for essential goods, however, often requires substantial capital investment and may lead to higher unit costs compared to offshore manufacturing. Governments can incentivize domestic production through subsidies, tax breaks, or partnerships, but must carefully calibrate support to avoid market distortions or inefficient overcapacity.

Thirdly, closely linked to production capacity, flexibility in manufacturing capabilities is key. This enables rapid scaling or repurposing of production lines in response to changing demand for essential goods. Techniques like modular production cells, reconfigurable machinery, and a cross-trained labor force allow firms to pivot quickly.

Fourthly, maintaining strategic stocks serves as a buffer against sudden shocks. Contrary to JIT tendencies in recent years, actions are leading to "Just-in-case" remedies. By holding inventories of critical raw materials, intermediate inputs, or finished products, firms and governments can bridge temporary supply gaps. While buffer stocks entail storage and obsolescence costs and a constraint on working capital, their value becomes evident during crises when immediate availability makes up for marginal cost savings.

In practice, the most effective and cost-efficient approach is a hybrid strategy that combines these actions. For instance, a firm might maintain modest domestic capacity for baseline production, supplement it with agile buffer stocks, contract with a geographically dispersed supplier network, and deploy modular manufacturing cells that can easily shift between product lines. This model reflects the evolution from the traditional lean and JIT paradigms toward agile supply-chain management. By harmonizing efficiency and redundancy, resilient value chains can deliver goods reliably, even under severe stress. Resilience is not just a response to crisis, but a long-term operational shift. The final section synthesizes these insights and reflects on the emerging logic of a politically filtered globalization.

VI. CONCLUSIONS

This thesis has examined the global shift from free trade to protectionism, focusing primarily on the trade policy transformations under the first and second Trump administrations and their impact on GVCs. It analyzes the adaptive strategies firms are implementing in response to growing geopolitical uncertainty and trade volatility and offers recommendations on how to build resilient GVCs in an increasingly uncertain and interdependent context. Despite the complex context of transformation and uncertainty, GVCs are neither collapsing nor fully decoupling. Instead, they aim to circumvent protectionism by applying a varied set of strategies to balance cost efficiency with supply chain security.

The trade policies adopted during the Trump administration, later followed by Biden and intensified under Trump's second term, have underscored that the implications of trade protectionism for GVCs are profound. At the same time, the race for technological and geopolitical leadership is identified as a key driver behind global powers reinforcing protectionism as a long-term strategic tool. The findings of this paper confirm that the global trading environment is undergoing a structural shift. This shift is marked by the increasing use of protectionist measures, evolving geopolitical dynamics, and the erosion of the multilateralism that defined international trade in the post-World War II period. The traditional model of hyper-globalized production is shifting into a more cautious, politically filtered, and risk-aware approach to supply chain management. The observed trends suggest a shift toward trade collaboration with politically aligned partners, rather than regionalization alone. At the same time, a higher premium is placed on flexibility, redundancy, and adaptability in GVCs. This recalibration does not imply a de-globalization in the strict sense, but rather a transition to a new form of globalization, where resilience and national strategic interests coexist with economic efficiency.

From a corporate strategy perspective, this study offers practical insight into emerging trends, highlighting resilience and flexibility as core components required in modern GVCs. Firms are increasingly factoring political alignment into sourcing decisions, as risk analysis is essential in supply chain design. Trump's second term has shifted offshoring strategies from the China Plus One model to a more complex and still developing framework, such as "USA Plus Two". The growing use of digital tools to assess tariff exposure in real time and best practices in the use of financial tools are key strategies in facing uncertainty and trade protectionism policies. Other adaptive responses, such as dual sourcing, friendshoring, and investment into flexible production systems, are becoming indispensable for managing the unpredictability of today's trade environment and reducing exposure to protectionist risks.

The analysis conducted in this study contributes to the growing body of work on GVC resilience and offers practical insight. The paper captures a critical transformation in global trade dynamics, where protectionism is no longer a temporary setback but a structural shift with long-term implications shaping international trade. By bridging institutional economic forecasts with real-

world corporate strategies and analyzing the interplay between economic policy and geopolitical rivalry, the study presents a comprehensive analysis of the ways firms are adapting their supply chains. It also highlights the emergence of other countries as alternative sourcing locations to remain competitive in a fragmented trade environment.

In line with Sustainable Development Goal number 9, the thesis provides both academic and practical insights, with a forward-looking framework promoting the creation of strategic inventories and aiming to build resilient infrastructure toward external shocks. This paper contributes academically and can guide policymakers and firms in building resilience and adaptable supply networks in the face of persistent global instability. Looking ahead, an international management framework could be designed to assess the degree of resilience in the chain.

As global trade is more politicized, firms must treat uncertainty as a feature of the global economy rather than a temporary shock. Building resilience will require not only operational flexibility but also strategic foresight. This research underscores that building resilience is not a standard strategy but a dynamic process that has to be tailored to each firm's specific vulnerabilities and geopolitical exposure. The success of future GVC configuration will depend on firms' capacity to anticipate policy shifts, diversify risk, and integrate resilience into operational decision-making, without compromising long-term competitiveness. Achieving this optimal balance is complex; however, this paper offers a solid hybrid strategy that can help firms face this challenge.

1. Thesis statement

This thesis states that the resurgence of trade protectionism, particularly in the United States, is reshaping GVCs. Trade protectionism does not trigger their collapse, but accelerates a structural transition toward more resilient, regionally diversified, and politically filtered supply networks. Protectionism is perceived as a structural shift, not a temporary shock. Geopolitical rivalry is reshaping economic strategy, as a race for global leadership unfolds, especially in strategic technologies. Trade policy is now used as a key tool of geopolitical influence. Resilience is becoming a key priority for firms to face uncertainty and international trade challenges. Resilient strategies must balance cost efficiency with the strategic adoptions of practices like dual sourcing, friendshoring, nearshoring, and modular production to manage political and operational risk.

By analyzing institutional projections and corporate strategies, the scenario-based models confirm a transition to a fragmented but persistent global trade system that is regional, selective, and politically filtered, rather than globally integrated. The building of a resilient GVC requires hybrid strategies integrating at least two of the following pillars: diversification, domestic capacity, flexible production systems, and strategic stockpiling.

- How might changes in global trade affect GVCs in both the short and long run?

The changes in global trade are already reshaping GVCs. In the short run, firms are reacting to tariff shocks and regulatory uncertainty by rerouting trade through neutral countries, engaging in transshipment, and stockpiling critical inputs. These responses aim to mitigate immediate cost increases and disruptions. In the long run, however, GVCs are undergoing a structural transformation. Rather than collapsing, they are becoming more regionalized, politically filtered, and are being strategically diversified. Scenario-based projections confirm that while full decoupling is unlikely, firms will increasingly organize production around politically aligned blocs, incorporating flexibility into supply networks, and reduce dependency on single-source suppliers. This marks a shift from hyper-globalized efficiency models to hybrid systems that balance cost, risk, and resilience.

- How can companies design and implement more resilient and adaptable supply chains in response to these challenges?

To respond effectively to this new trade environment, companies are adopting a range of adaptive strategies. These include dual sourcing, friendshoring, and “USA Plus Two” models, combining domestic anchoring with diversified international nodes. Firms are also leveraging digital tools to model tariff exposure and simulate geopolitical risks in real time. Financial strategies are being used, such as the first sale rule and the use of hedging instruments, further support cost management under uncertainty. Moreover, corporate strategy now places greater emphasis on political alignment, not just logistical or economic efficiency. Building resilience involves a hybrid approach, integrating at least two of the following pillars: diversification of supply sources, domestic capacity building, flexible production systems, and strategic stockpiling.

2. Limitations

This research has been conducted independently, using publicly accessible resources, academic papers available through the University of Barcelona library, and institutional reports available until the end of May. As the research is undertaken over the course of early 2025, the landscape is constantly evolving and still developing as these have been the first few months of Trump’s second term. However, the analysis on historical perspective and Trump’s first administration have helped provide a comprehensive understanding. At the same time, the scenarios modeling published by international institutions are based on estimates that may evolve as global events continue to unfold.

Other limitations include the access to real-world corporate case studies. Although some public cases have been used to illustrate adaptation strategies within GVCs, the analysis is limited by the absence of access to internal data from firms. The examples presented are based on secondary sources such as press releases, public disclosures, and news articles.

Lastly, the focus on large multinational corporations may overlook the distinct ways in which SMEs experience and adapt to protectionist shocks. However, the strategies discussed in this paper are

broadly applicable to firms operating across different levels of internationalization. This limitation highlights an opportunity for further research into the specific impacts of trade protectionism on SMEs and their adaptive capacities in a fragmented trade environment.

VII. Bibliography

- Antràs, P., & Chor, D. (2021). *Global value chains* (NBER Working Paper No. 28549). National Bureau of Economic Research. <https://doi.org/10.3386/w28549>
- Attinasi, M. G., Balatti, M., Mancini, M., & Metelli, L. (2021). Supply chain disruptions and the effects on the global economy. *ECB Economic Bulletin, Issue 8/2021*. European Central Bank. https://www.ecb.europa.eu/press/economic-bulletin/focus/2022/html/ecb.ebbox202108_01~e8ceebe51f.en.html
- Auray, S., & Eyquem, A. (2024, November 19). Guerres commerciales et politique monétaire. *Blog OFCE*. <https://www.ofce.sciences-po.fr/blog/guerres-commerciales/>
- Bai, X., Fernández-Villaverde, J., Li, Y., & Zanetti, F. (2024). *The causal effects of global supply chain disruptions on macroeconomic outcomes: Evidence and theory* (NBER Working Paper No. 32098). National Bureau of Economic Research. <https://www.nber.org/papers/w32098>
- Baldwin, R. (2016). *The great convergence: Information technology and the new globalization*. The Belknap Press of Harvard University Press. <https://www.researchgate.net/publication/335752504>
- Bilinski, E. (2024). *Market shock & responses in automotive components* (Master's thesis). Clemson University. https://open.clemson.edu/all_theses/4442
- Blanco, S., & Carrasco, E. (1999). *The functions of the IMF & the World Bank*. University of Iowa Center for International Finance and Development. https://sir.ac.ir/files/Survey/125241830part_1_2.pdf
- Boer, L., & Rieth, M. (2024, January 19). *The macroeconomic consequences of import tariffs and trade policy uncertainty* (IMF Working Paper No. 2024/013). International Monetary Fund. <https://www.imf.org/en/Publications/WP/Issues/2024/01/19/The-Macroeconomic-Consequences-of-Import-Tariffs-and-Trade-Policy-Uncertainty-543877>
- Bown, C. P. (2022, October 20). Four years into the trade war, are the US and China decoupling? *Peterson Institute for International Economics*. <https://www.piie.com/blogs/realtime-economics/2022/four-years-trade-war-are-us-and-china-decoupling>
- Bureau of Industry and Security. (2016). *Statistical analysis of US trade with China* (Report). US Department of Commerce. <https://www.bis.doc.gov/index.php/country-papers/2073-2016-statistical-analysis-of-us-trade-with-china-pdf/file>

- Chen, W., & Li, J. (2019, December). *Estimating the scale of relocation of labor-intensive manufacturing from China: Facts and potentials*. Institute of New Structural Economics, Peking University. <https://www.nse.pku.edu.cn/docs/20210804152158674852.pdf>
- Christopher, M., & Peck, H. (2004). Building the resilient supply chain. *The International Journal of Logistics Management*, 15(2), 1–13. <https://doi.org/10.1108/09574090410700275>
- Christopher, M., & Towill, D. R. (2001). An integrated model for the design of agile supply chains. *International Journal of Physical Distribution & Logistics Management*. <https://doi.org/10.1108/09600030110394914>
- Cigna, S., Gunnella, V., & Quaglietti, L. (2022). *Global value chains: Measurement, trends and drivers* (Occasional Paper Series No. 289). European Central Bank. <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op289~95a0e7d24f.en.pdf>
- Congressional Research Service. (2020, December 23). *COVID-19: China medical supply chains and broader trade issues* (CRS Report No. R46304). <https://crsreports.congress.gov/product/pdf/R/R46304>
- Crosignani, M., Han, L., Macchiavelli, M., & Silva, A. F. (2024, April 12). The anatomy of export controls. *Liberty Street Economics*. <https://libertystreeteconomics.newyorkfed.org/2024/04/the-anatomy-of-export-controls/>
- Crosignani, M., Han, L., Macchiavelli, M., & Silva, A. F. (2024, April; revised February 2025). *Securing technological leadership? The cost of export controls on firms* (Staff Report No. 1096). Federal Reserve Bank of New York. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr1096.pdf
- Disdier, A.-C., & Head, K. (2008). The puzzling persistence of the distance effect on bilateral trade. *The Review of Economics and Statistics*, 90(1), 37–48. <http://www.jstor.org/stable/40043123>
- Eichengreen, B. (2008). *Globalizing capital: A history of the international monetary system*. Princeton University Press. <https://delong.typepad.com/files/eichengreen-globalizing.pdf>
- European Central Bank. (2025). *Exchange rates – Euro foreign exchange reference rates*. ECB Statistical Data Warehouse. <https://data.ecb.europa.eu/data/datasets/EXR/EXR.M.USD.EUR.SP00.A>
- European Commission. (2023). *Energy security: EU's response to Russia's invasion of Ukraine*. Retrieved from https://ec.europa.eu/energy/topics/security-of-supply_en
- European Commission. (2025, May 19). The macroeconomic effect of US tariff hikes. In *Spring 2025 economic forecast: Moderate growth amid global economic uncertainty*. <https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/economic->

[forecasts/spring-2025-economic-forecast-moderate-growth-amid-global-economic-uncertainty/macroeconomic-effect-us-tariff-hikes_en](#)

- Fergusson, I. F. (2007, May 9). *The World Trade Organization: Background and issues* (Order Code 98-928). Congressional Research Service.
<https://digital.library.unt.edu/ark:/67531/metadc822629/>
- Finck, D., & Tillmann, P. (2022). *The macroeconomic effects of global supply chain disruptions* (BOFIT Discussion Papers No. 14/2022). Bank of Finland.
<https://ssrn.com/abstract=4349825>
- Frankel, J. A., & Romer, D. (1999). Does trade cause growth? *American Economic Review*, 89(3), 379–399. <https://doi.org/10.1257/aer.89.3.379>
- Gani, A. (2017). The logistics performance effect in international trade. *The Asian Journal of Shipping and Logistics*, 33(4), 279–288. <https://doi.org/10.1016/j.ajsl.2017.12.012>
- Gereffi, G. (2001). Shifting governance structures in global commodity chains, with special reference to the Internet. *American Behavioral Scientist*, 44(10), 1616–1637.
<https://doi.org/10.1177/00027640121958087>
- Ghizoni, S. K. (2013). *Creation of the Bretton Woods system*. Federal Reserve History.
<https://www.federalreservehistory.org/essays/bretton-woods-created>
- Gianoni, N. (2023). *The internationalization process in the container port industry: A panel-data analysis*. University of Genoa. https://iris.unige.it/retrieve/8ca9f198-67b7-408c-a5b4-4c62d1043178/phdunige_S4793108.pdf
- Ginn, W., & Saadaoui, J. (2025). Do supply chain disruptions matter for global economic conditions? *The World Economy*. <https://www.jamelsaadaoui.com/do-supply-chain-disruptions-matter-for-global-economic-conditions-the-world-economy>
- GoPro. (2025, April 10). *GoPro's diversified camera supply chain minimizes tariff impact* [Press release]. <https://investor.gopro.com/press-releases/press-release-details/2025/GoPros-Diversified-Camera-Supply-Chain-Minimizes-Tariff-Impact/default.aspx>
- Gupta, K., Borges, C., & Palazzi, A. L. (2024, July 15). *Collateral damage: The domestic impact of US semiconductor export controls*. Center for Strategic and International Studies.
<https://www.csis.org/analysis/collateral-damage-domestic-impact-us-semiconductor-export-controls>
- International Monetary Fund. (2025). *World economic outlook: Navigating global divergences* (April 2025). <https://www.imf.org/en/Publications/WEO/Issues/2025/04/22/world-economic-outlook-april-2025>

- Karacaovali, B., & Limão, N. (2008). The clash of liberalizations: Preferential versus multilateral trade liberalization in the European Union. *Journal of International Economics*, 74(2), 299–327. <https://doi.org/10.1016/j.jinteco.2007.07.003>
- Kremic, T., Tukel, O. I., & Rom, W. O. (2006). Outsourcing decision support: A survey of benefits, risks, and decision factors. *Supply Chain Management: An International Journal*, 11(6), 467–482. <https://doi.org/10.1108/13598540610703864>
- Leard, B., & Wu, Y. (2023). *New passenger vehicle demand elasticities: Estimates and policy implications* (Working Paper 23-33). Resources for the Future. <https://www.rff.org/publications/working-papers/new-passenger-vehicle-demand-elasticities-estimates-and-policy-implications/>
- Levinson, M. (2006). *The box: How the shipping container made the world smaller and the world economy bigger*. Princeton University Press.
- Locke, R. M. (2002). *The promise and perils of globalization: The case of Nike* (MIT IPC Working Paper 02-008). Industrial Performance Center, Massachusetts Institute of Technology. <https://doi.org/10.7551/mitpress/4412.003.0009>
- Luo, Y. (2024). Paradigm shift and theoretical implications for the era of global disorder. *Journal of International Business Studies*, 55(2), 127–135. <https://doi.org/10.1057/s41267-023-00659-2>
- Makki, S. S., & Somwaru, A. (2004). Impact of foreign direct investment and trade on economic growth: Evidence from developing countries. *American Journal of Agricultural Economics*, 86(3), 795–801. <https://www.jstor.org/stable/3697825>
- Mathai, K., Gottlieb, G., Hong, G. H., Jung, S. E., Schmittmann, J., & Yu, J. (2016). *China's changing trade and the implications for the CLMV economies* (IMF Asia and Pacific Departmental Paper No. 16/04). International Monetary Fund. ISBN 978-1-51354-499-1. <https://www.imf.org/external/pubs/ft/dp/2016/apd1601.pdf>
- McCue, I. (2020, November 6). Inventory carrying costs: What it is & how to calculate it. *NetSuite*. <https://www.netsuite.com/portal/resource/articles/inventory-management/inventory-carrying-costs.shtml>
- McKibbin, W., & Shuetrim, G. (2025). *The US revenue implications of President Trump's 2025 tariffs* (PIIE Briefing 25-2). Peterson Institute for International Economics. <https://www.piie.com/sites/default/files/2025-04/piieb25-2.pdf>
- Mensah, P., & Merkuryeva, Y. (2014). Developing a resilient supply chain. *Procedia – Social and Behavioral Sciences*, 110, 309–319. <https://doi.org/10.1016/j.sbspro.2013.12.871>

- Ministry of Commerce of the People's Republic of China. (2018, April 2). *Announcement on imposing tariffs on certain U.S. imports in response to the U.S. 232 trade action* [Press release].
http://gss.mof.gov.cn/zhengwuxinxi/zhengcefabu/201804/t20180401_2857769.html
- Ministry of Finance of the People's Republic of China. (2018, June 16). *Announcement on imposing tariffs on certain U.S. imports in response to the U.S. 301 investigation* [Press release].
http://gss.mof.gov.cn/zhengwuxinxi/zhengcefabu/201806/t20180616_2930377.html
- Nilsson, L., & Nolte, S. (2023). The economic impact of the US–China trade dispute. *Journal of Chinese Economic and Foreign Trade Studies*. Advance online publication.
<https://doi.org/10.1007/s10368-023-00574-9>
- OECD. (2013). *Interconnected economies: Benefiting from global value chains*. OECD Publishing. <https://doi.org/10.1787/9789264189560-en>
- OECD. (2025). *Global value and supply chains*. OECD. Retrieved March 3, 2025.
- Office of the United States Trade Representative. (2017, January 23). *The United States officially withdraws from the Trans-Pacific Partnership*. <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2017/january/US-Withdraws-From-TPP>
- Office of the United States Trade Representative. (2018). *\$34 billion trade action (List 1)*. <https://ustr.gov/issue-areas/enforcement/section-301-investigations/section-301-china/34-billion-trade-action>
- Office of the United States Trade Representative. (2018). *2018 Special 301 report*.
<https://ustr.gov/sites/default/files/files/Press/Reports/2018%20Special%20301.pdf>
- Office of the United States Trade Representative. (2003). *United States and Chile sign historic free trade agreement*. <https://ustr.gov/about-us/policy-offices/press-office/press-releases/archives/2003/june/united-states-and-chile-sign-historic-freetr>
- Office of the United States Trade Representative. (2003). *US–Singapore Free Trade Agreement*.
https://ustr.gov/archive/assets/Document_Library/USTR_Deputy_Testimony/2003/asset_upload_file300_6644.pdf
- Office of the United States Trade Representative. (2004). *United States and Australia sign free trade agreement*.
https://ustr.gov/archive/Document_Library/Press_Releases/2004/February/United_States_Australia_Sign_Free_Trade_Agreement.html
- Ohno, T. (1988). *Toyota production system: Beyond large-scale production* (English translation ed.). Portland, Oregon: Productivity Press.

- Organization for Economic Co-operation and Development. (2025). *OECD economic outlook: Interim report, March 2025 – Steering through uncertainty*. OECD Publishing.
<https://doi.org/10.1787/89af4857-en>
- Prasad, E. (Ed.). (2004). *China's growth and integration into the world economy: Prospects and challenges*. International Monetary Fund.
<https://www.imf.org/external/pubs/ft/op/232/op232.pdf>
- Ricardo, D. (1817). *On the principles of political economy and taxation*. London: John Murray.
- Roberts, P. (2001). Corporate competence in FM: Current problems and issues. *Facilities*, 19(7/8), 269–275. <https://doi.org/10.1108/02632770110390711>
- Ruiz Estrada, M. A., & Koutronas, E. (2025). International trade closeness: The impact of tariff policies on US-China trade relations. Universiti Kuala Lumpur & Westminster International University in Tashkent. <http://dx.doi.org/10.2139/ssrn.5167487>
- Sibagariang, S. P. (2023). The importance of developing countries joining GATT 94/WTO. *Locus: Jurnal Konsep Ilmu Hukum*, 3(4), 187–194. <https://doi.org/10.56128/jkih.v3i4.298>
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, 70(1), 65–94. <https://doi.org/10.2307/1884513>
- Tam, P. S. (2020). Global impacts of China–US trade tensions. *The Journal of International Trade & Economic Development*, 29(5), 510–545.
<https://doi.org/10.1080/09638199.2019.1703028>
- Tan, K. H. (2025). *The economic implications of US tariff policies: Historical patterns, theoretical frameworks, and empirical evidence*. University of West London. Working paper. Retrieved from ResearchGate.
- The Guardian. (2025, April 15). Apple shifts more iPhone production to India as Trump tariffs hit China trade. <https://www.theguardian.com/us-news/2025/apr/15/iphone-apple-india-tariffs>
- The State Council of the People's Republic of China. (2025, February 7). China remains world's largest trading nation in goods for 8 consecutive years: Official.
https://english.www.gov.cn/archive/statistics/202502/07/content_WS67a5c74dc6d0868f4e8ef714.html
- U.S. House of Representatives. (1993). *H.R. 3450—North American Free Trade Agreement Implementation Act*. 103rd Congress. <https://www.congress.gov/bill/103rd-congress/house-bill/3450>

- United Nations Conference on Trade and Development. (2021). *World investment report 2021: Investing in sustainable recovery*. https://unctad.org/system/files/official-document/wir2021_en.pdf
- United Nations Conference on Trade and Development. (2025). *Trade and development foresights 2025: Under pressure – Uncertainty reshapes global economic prospects*. UNCTAD. <https://unctad.org/publication/trade-and-development-foresights-2025>
- United Nations, Department of Economic and Social Affairs. (2017). *World economic and social survey 2017: Reflecting on seventy years of development policy analysis*. United Nations.
- US Department of Commerce, Bureau of Industry and Security. (2020, July 13). *2019 statistical analysis of US trade with China*. <https://www.bis.doc.gov/index.php/documents/technology-evaluation/ote-data-portal/country-analysis/2575-2019-statistical-analysis-of-u-s-trade-with-china>
- US Trade Representative. (2025). *The President's 2025 trade policy agenda*. Executive Office of the President.
- Woetzel, J., Seong, J., Leung, N., Ngai, J., Manyika, J., Madgavkar, A., Lund, S., & Mironenko, A. (2019, July). *China and the world: Inside the dynamics of a changing relationship*. McKinsey Global Institute. <http://dln.jaipuria.ac.in:8080/jspui/bitstream/123456789/10846/1/MGI-China-and-the-world-Full-Report-Feb-2020.pdf>
- World Bank. (2002). *Globalization, growth, and poverty: Building an inclusive world economy*. Oxford University Press. <https://doi.org/10.1596/0-1952-1605-4>
- World Bank. (2020). *Global economic prospects, June 2020*. <https://www.worldbank.org/en/publication/global-economic-prospects>
- World Bank. (2025, March 12). *Temporary Trade Barriers Database*. The World Bank. <https://www.worldbank.org/en/data/interactives/2025/temporary-trade-barriers-database>
- World Bank. (2020). *World development report 2020: Trading for development in the age of global value chains*. Washington, DC: World Bank. <https://www.worldbank.org/en/publication/wdr2020>
doi:10.1596/978-1-4648-1457-0 (License: Creative Commons Attribution CC BY 3.0 IGO)
- World Bank. *USA trade profile (1991–2022) – Exports*. World Integrated Trade Solution (WITS). <https://wits.worldbank.org/CountryProfile/en/Country/USA/StartYear/1991/EndYear/2022/TradeFlow/Export/Partner/ALL/Indicator/XPRT-TRD-VL#>

- World Trade Organization. (2023). *World trade report 2023: Re-globalization for a secure, inclusive and sustainable future*.
https://www.wto.org/english/res_e/booksp_e/wtr23_e/wtr23_e.pdf
- World Trade Organization. (2025). *Evolution of trade under the WTO: Handy statistics*.
https://www.wto.org/english/res_e/statis_e/trade_evolution_e/evolution_trade_wto_e.htm
- World Trade Organization. (2025). *Global trade outlook and statistics, April 2025*. WTO.
https://www.wto.org/english/res_e/booksp_e/trade_outlook25_e.pdf
- WTO Center Vietnam. (2024). *The US-China trade war: A timeline*. <https://wtocenter.vn/chuyen-de/13504-the-us-china-trade-war-a-timeline>
- Xiao, J. W. (2025). *Three papers on the international political economy of AI: Statistical and game-theoretic analyzes* (Doctoral dissertation, Columbia University).
<https://academiccommons.columbia.edu/doi/10.7916/bdmh-qj68/download>
- Xiao, Y. (2025). Adaptation under constraint: Chinese AI development after US export controls. *Technology Policy Review*, 12(2), 34–56.
- Xing, L., Jiang, S., Yin, S., & Liu, F. (2024). Substitution effect of Asian economies on China's industrial and supply chains: From the perspective of global production network. *Humanities & Social Sciences Communications*, 11(1), Article 1304.
<https://doi.org/10.1057/s41599-024-03797-6>
- Yicai Global. (2019, October 17). Chinese express giant YTO, Vietjet Air pair to make Vietnam logistics hub. <https://www.yicaiglobal.com/news/chinese-express-giant-yto-vietjet-air-pair-to-make-vietnam-logistics-hub>
- York, E., & Durante, A. (2025). Trump tariffs: Tracking the economic impact of the trade war. *Tax Foundation*. <https://taxfoundation.org/research/all/federal/trump-tariffs-trade-war/>
- Zahoor, N., Wu, J., Khan, H., & Khan, Z. (2023). De-globalization, international trade protectionism, and the reconfigurations of global value chains. *Management International Review*, 63(5), 823–859. <https://doi.org/10.1007/s11575-023-00522-4>
- Zahra, G. E., Wakil, I., Liaqat, B. B., & Mustafa, G. (2025). US-China trade war: Economic impact on global politics. *Contemporary Journal of Social Science Review*, 3(1). Government College University, Faisalabad.
<https://contemporaryjournal.com/index.php/14/article/view/276>