International Journal of
Supply Chain and Logistics
(IJSCL)

The Role of Trade Tariff Policy on US Supply Chain Imbalance and Trade Deficits Reduction: Evidence from Trend and Univariate Analyses

CARI Journals

International Journal of Supply Chain and Logistics
ISSN 2520-3983 (Online)
Vol. 9, Issue No.5, pp 55 - 73, 2025
www.carijournals.org

The Role of Trade Tariff Policy on US Supply Chain Imbalance and Trade Deficits Reduction: Evidence from Trend and Univariate Analyses

Ejiro ZAYE, MBA
Zyeo Services, Texas, United States
https://orcid.org/0009-0009-0996-1901

Accepted: 1st June, 2025, Received in Revised Form: 17th June, 2025, Published: 30th June, 2025

Abstract

Purpose: Despite the free and lower trade tariff policy, the United States (US) has recorded a persistent trade deficit and trade imbalances in the last four decades ago, therefore, this study empirically investigates the role of trade tariff policy on US supply chain imbalance and trade deficits reduction.

Methodology: The study employs simple random and stratified sampling techniques to analyses the trend and univariate. Secondary data from US Census Bureau of Economic Analysis Department of Commerce on US international trade in goods and services from 1852 to 2024 were analysed to drawn inferences.

Findings: This study finds that US trade tariff policy is not automatic to reduce supply chain imbalances and trade deficits in the United States. The US trade liberalization policy is associated with supply chain imbalance and trade deficits while the U.S. trade protectionism policy accounted for more trade surplus and supply chain balance. Also the study finds that a minimum threshold of 10 percent US weighted trade tariff rate to reduce the US trade supply chain imbalance and trade deficits

Unique Contribution to Theory, Practice and Policy: This study supports the protectionism trade theory over the trade liberalization theory to aggressively promote exports but reduces imports through a number of trade barriers like tariff rate, imports restriction, and currency depreciation (devaluation) to make trading partners imports dependence while protecting country's domestic industry from foreign competition. Recommendations to the current US President, Trump is to set a minimum of 10 percent weighted tariff rates on all goods and services to other trading partners while US should imposes a higher weighted tariff rates above 10 to all goods and services from China to swiftly reduce US trade deficits and supply chain imbalance to be more effective than Trump former US President administration and also President Biden administration.

Keywords: Trade *Tariff Policy, Trade Deficits, Supply Chain Imbalance, Graphical Trend Analysis, Univariate Analysis*

JEL codes: F13, F52, F62, P33

1. INTRODUCTION

The trade liberalization policy has been rooted to Adam Smith's international trade theory in 1776 to achieve supply chain balance and trade surplus in the literature (Kawasaki, 2024). These objectives have continued to motivate the evolving trade policy in the post-World War II among all countries with different international trade agreements, ranging from bilateral, regional, to the multilateral international trade agreements, amid several shocks worldwide. These international trade agreements include Reciprocal Trade Agreements Act (RTAA) in 1934, the General Agreements on Tariffs and Trade (GATT) in 1947, the World Trade Organization (WTO) in 1995; the North American Free Trade Agreement (NAFTA), the Central American Free Trade Agreement (CAFTA), The Uruguay Round Agreements in 1994, among other bilateral and regional trade Agreements, all have agreed to eliminate or reduces tariff rates on all products among trading partners (members) (US Department of Committee, 1934; Irwin, 2020). Surprisingly, the United States (US) has not only been the change agent in terms of members to many international trade agreements, but also an exemplary of a long standing reduction in the average tariff rate from 18.4% in 1934 to 1.3% in 2012, except an occasional sluggish rise in tariff rates from 1.4% in 2013 to 3.0% in 2021 (US Department of Commerce, 2024). Indeed, the world trade has significantly grown from $5.08 trillion in 1995 to about $33.0 trillion in 2024, amounting to a 3.3% annual global trade growth (UNCTAD, 2025).

Worrisomely, the massive world trade growth has marginally contributed to the global GDP growth rate from 3.08% in 1995 to 3.20% in 2024. In contrast, the global employment rate has sharply declined from16% in 2024 to 9% in 2024, in spite of massive world trade growth recorded. Yet, the world trade inflation rate between 1995 and 2024 has been a single-digit and hovers around 5.4% in 2024, imply a stable trade tariff rates among all trading nations worldwide (OECD, 2024). It is evident that these global macroeconomic indicators have performed optimally and contrary to the tenets of the conventional international trade theories.

The recent country's and regional global trade deficit and supply chain imbalance under the trade liberalization policy has continued to gain a momentum attentions in the academia and even among the governments worldwide. Over 36 years ago, the United States (US) has recorded a persistent trade deficit and trade imbalances, since the implementation of trade liberalization policy. While on the hand, China has recorded a persistent trade surplus and supply chain balances (Benigno, 2025). As shown in Figure 1, China remains the highest contributor to US trade deficits between 1999 and 2024.

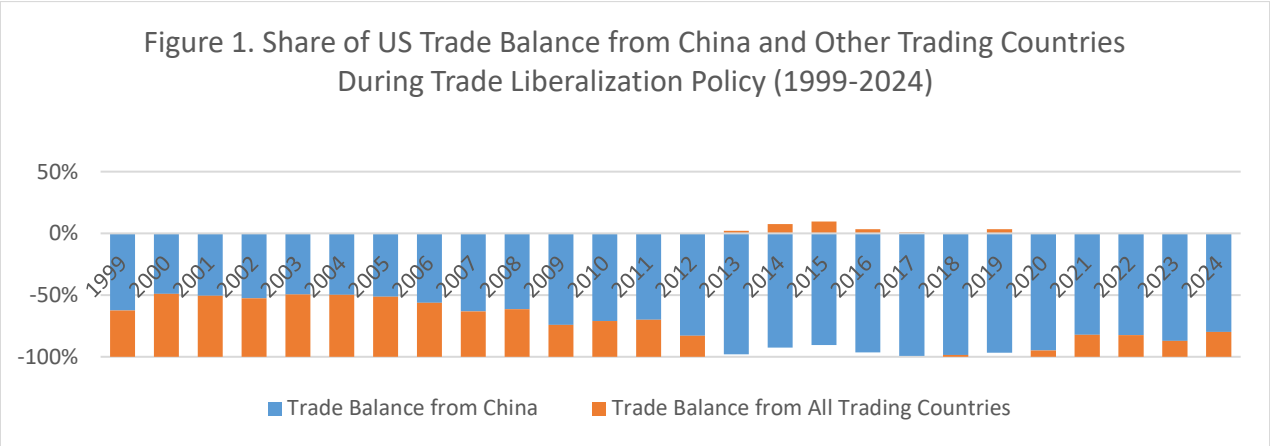

Figure 1. Share of US Trade Balance from China and Other Trading Countries during Trade Liberalization Policy (1999-2024)

Source: Author Chart, 2025

This foregoing issues among governments' worldwide and academia have recently shifted attentions away from trade liberalization policy to trade protectionism/tariff policy. While many studies (Irwin, 2020; Obstfeld, 2025; Santacreu & Peake, 2020; Amiti, Redding & Weinstein, 2019; Freund, Maltoo, Mulabdic & Ruta, 2023; Palazzo, 2022; Gudissa & Mishra, 2014; Delimo, 2025; Furceri, Hannan, Ostry & Rose, 2022) have investigated the effects of trade tariff policy on different dimensions. Furceri, Hannan, Ostry, & Rose (2022), Delimo (2025) and Palazzo (2022) examined the effects of trade tariff on macroeconomic indicators including economic growth. All except Furceri et al. (2022) and Palazzo (2022) are not empirical and none of these studies selected the United States as a study sample. While other studies (Irwin, 2020; Obstfeld, 2025; Santacreu & Peake, 2020; Amiti, Redding, & Weinstein, 2019; Freund, Mattoo, Mulabdic, & Ruta, 2023; Estrada & Koutronas, 2025) have focused their investigations on US trade tariff policy. Yet, none of these studies has empirically compared the US trade tariff policy and the US trade liberalization eras on supply chain imbalances and trade deficits. Therefore, this study is motivated to empirically assess the role of trade tariff policy on US supply chain imbalance and trade deficits reduction between 1852 and 2024.

To achieve the purpose of this study, three research questions are raise to be answered. First, which one of the US trade policies, trade tariff or trade liberalization is associated with supply chain imbalance and trade deficits? Second, which one of the US trading partners cause supply chain imbalance and trade deficits? Third, to what extent does US trade tariff policy reduces supply chain imbalance and trade deficits in the United States?

2. LITERATURE REVIEW

2.1 Conceptual Review

This section review trade tariff policy, supply chain imbalance and trade deficits from conceptual, theoretical and empirical.

2.1.1 Trade Tariff Policy

Trade tariff policy is defined as a deliberate change in tariff rates enacted by legislative arms of government or solely determined by the President through a trade agreement at a specific period (Irwin, 2020). A country's trade tariff policies have direct and indirect effects on the country's economy outlook either positively or negatively. Trade tariff policy relates to the trade protectionism theory which disregards the existence of free tariff rate or a lower tariff rate in all forms of international trade agreements from bilateral; regional to multilateral trade agreements (Palazzo, 2022). Importantly, the types of trade tariff policy depends on the purpose and actions of trade tariff policy. The two types of trade tariff policy are protective tariff and prohibitive tariff policy. While the protective tariff is to protect domestic industry, the prohibitive tariff policy is to discourage consumption of certain products from certain countries or not (Gudissa & Mishra, 2014).

Many studies argue that a higher tariff rate policy have more negative direct effects on domestic prices, domestic taxes, inflation rate, job losses, and discourages import, leading to global economic recession. On the other hand, a higher tariff rate policy by the government is motivated to increase government revenue, restrict external risks, the reciprocity of unfair tariff among trading partners, long run export promotion, industrialization drive, import-substitution, and above all, to protect the national interests through attaining supply chain balance and trade surplus in the international trade relations (Irwin, 2020; Gudissa & Mishra, 2014).

2.1.2 Supply Chain Imbalance

The supply chain imbalance is defined as a wide deviation between supply chain exports and supply chain imports on all components of supply chain management. In otherwise, supply chain imbalance according to sustainability (2025), is a state of disequilibrium between demand and supply within a network of providers in materials, sourcing, logistics, and production at a specific period. Technically, the supply chain imbalances relate to supply chain disruptions causing a state of disequilibrium between supply chain imports and supply chain exports (Bateh, 2024).

2.1.3 Trade Deficits

Trade deficits are defined as negative trade relationship between a country and her trading partners at a period. In otherwise, trading deficits is the differences in the total monetary values of exports and imports on goods and services between two or more trading countries at a specific period of time. The trade deficits is the negative outcome of balance of payments that shows the international trading outcomes of a country with the rest of the world, prepared at a periodic time, daily, monthly, quarterly and yearly.

2.2 Theoretical Review

This study is hinged on international trade theories. The two polar of international trade theories are conventional and modern international trade theories. On one hand, the conventional international trade theory is rooted from the trade liberalization policy. The conventional international trade theory advocated for free trade assuring all trading partners will experience a "Win-Win" approach assuming there is absence of shocks globally. The conventional international trade theory is broadly divided into mercantilism, classical, and neoclassical international trade theories. All these conventional international trade theories craved for international trade for external growth but differ in their assumptions.

First, the mercantilism theory in the 16th to 18th centuries recognizes the importance of international trade for the government to maximize wealth. However, the mercantilism theory was criticized for restricting imports through a higher tariff rates but massively encourage exports through lower tariff rates. Despite the benefits of trade surplus and supply chain imbalance international trade ideologist is unfair and not a "win-win" practices that can achieve an even world trade growth (Gudissa & Mishra, 2014). Second, the classical theory of international trade led by the Absolute Advantage by Adam Smith in 1776 as well as the Comparative Advantage by David Ricardo in 1817. These two trade theories assumed difference in factor prices across countries to export products with lower opportunity cost and import goods with higher opportunity cost which guarantees trade surplus through win-win trading principles (Benigno, 2025). However, these classical international theories consider only labor as a factor-endowment, but in the passage of time, there are other factor endowments like capital, technology and skills, led to the emergence of the new classical international trade theory. Third, the neoclassical trade theory pioneered by Heckschen-Ohlin (H-O) in 1933 postulated that international trade is based on factor proportions or differences in factor endowments across countries. Unlike the classical that emphasized on differences in factor prices, due to labor productivity, countries difference in factor endowments like climate, labor, capital, skills and natural resources make nations export products with abundant factor endowments and import products with scarce factor endowments, hence, all trading partners benefit from the free trade or trade agreements with zero or lowered tariff rates (Salvatore, 2004; Gudissa & Mishra, 2014).

Another neo-classical trade theory termed the new trade theory, developed by Paul Krugman in 1980. The new trade theory, unlike earlier trade theories that assumed differences in factor prices and factor endowments, is limited to countries with equal (same) factor prices and factor endowments, yet embraced international trade among similar countries due to economies of scale and consumers' product differentiation preferences (Benigno, 2025). Like earlier trade theories, Krugman trade theory assured that both similar countries benefits from international trade equally, regardless of differences in scale and consumers' products preferences in the similar countries. Further, another neoclassical trade theory, termed the "new" new trade theory developed by Melitz

in 2003. This "new" new trade theory is a build up from the unrealistic assumptions of the Krugman trade theory that economies of scale, and consumers' products preference of similar development-level countries. Unlike Krugman trade theory the "new" new trade theory recognizes difference in efficiency of economies of scale resulting to differences in consumers' products preferences causing similar nations exports and imports not equal. Unlike earlier trade theories, the "new" new trade theory pioneered the criticism for "win-win" approach in the trade liberalization under the conventional trade theories (Benigno, 2025). Indeed, this "new" new trade theory does not provide a great insight to the myths of "win-win" principles of trade liberalization for neither equal–development nor unequal–developmental countries, hence, the exports and imports of goods and services among trading partners are not expected to be equal but lopsided in reality.

On the other hand, the modern international trade theory arises from the reality of the conventional trade theories of lopsided trade benefits. Unlike the conventional trade theory, the modern trade theory recognizes the external shocks reality like global economic recession, wars, COVID-19, and unilateral governments action or policies such as Russia –Ukraine invasion, imports and exports restrictions, and the recent US hike tariff, all affects the "win-win" trade liberalization ideology a proactive and resolution to reduce or eliminate the lopsided trade benefits in the long run. The two prominent modern international trade theories are inter-temporal theory and protectionism theory.

First, the inter-temporal trade theory was developed by Sachs, Svensson and Razin in the 1980s and later by Obstfeld and Rogoff in the 1990s, postulated that county's present and future savings and investment influences the international trade decisions with trading partners towards reducing trade deficits and supply chain imbalances (Ju, Shi, & Wei, 2013). The inter-temporal trade theory recognizes the importance of temporary and permanent shocks on the country's trade deficits (Benigno, 2025). Indeed, the inter-temporal trade theory acknowledged that country's exports and imports are mismatch and unequal, not because of country's development-level differences but due to uncontrollable factors (events) internally and externally.

Second, the protectionism trade theory was develop by Friedrich List in 1841, and designed primarily to protect domestic industries through tariffs and other trade barriers to secure trade surplus and accrued all other international trade objectives. The protectionism trade theory is widely known as the neo-mercantilism trade theory that aggressively promotes exports but reduces imports through a number of trade barriers like tariff rate, imports restriction, and currency depreciation (devaluation) to make trading partners imports dependence while protecting country's domestic industry from foreign competition via other local investment in centuries to achieve supply chains balance surplus trade, and above all, promote stable economic growth and development (Benigno, 2025).

2.3 Empirical Review

The empirical studies are reviewed from two trade tariff policy, the trade protectionism and trade liberalization. First, the US tariff effects on its economy and second, the effects of US tariff effects on other trading partners (countries).

2.3.1 Effects of US Tariff on US Economy

Obstfeld (2016) investigated the effects of the United State raising import tariffs on goods from emerging markets in East Asia. Results of 20 percent increase in US import tariff lower the US GDP by 0.7 percent and 1.3 percent without and with East Asia import retaliatory respectively. Further, Obstfeld (2018) found that US higher import tariff has slightly improved US trade balance in the short term, while the domestic demand also fell. Posen (2018) study on US import tariff increases in 2018 and 2019, found that the US higher import tariffs did not lead to an increase in foreign direct investment in the United States. In contrast, Chahinea et al. (2021) found that US higher import tariffs has caused an increase in US foreign direct investment.

Altig et al. (2018) in their survey study, examined the effects of US higher import tariff on US firms investment. They found that one in five US companies had reassessed their investment plans and about six percent of the US firms had reduced their investments. Similarly, Handley et al. (2019) in their study found that increased US import tariffs have negative impact on the firm's financial performance in the United States.

Fajgelbaum et al. (2019) examined the short-term effects of the US increase import tariffs in 2018 and the effects of other countries' tariff increases on US products. They found that US both exports and imports fell sharply. Also, they found increased lost to US households and businesses, leading to a reduction in GDP by 0.27 percent. In addition, their study found a loss of about 0.04 percent of GDP despite increased import revenues and domestic firms' protection in the United States. Similarly, the study of Grossman et al. (2024) impacted the US higher import tariff on increased suppliers negotiations and search for new suppliers due to US higher import tariff on Chinese goods in 2018 and 2019. Also, their study found a welfare loss of 0.12 percent of GDP due to increasing costs for search and switching suppliers.

In the recent study of Obst et al. (2020) of the proposal of the new elected US President Donald Trump to increase the US import tariffs to 60 percent on all Chinese products and a 10%-20 percent import tariff increase to all other countries. They found a negative short-run impact of US GDP and the US GDP will be lower by 1-1.4 percent in 2025 and 2026. However, their study found that global GDP will be slight lower than US GDP in the short-run but the global GDP will be slightly higher in the long-run. Similarly, McKibbin et al. (2024) in their study examined the effects of higher US import tariffs on all countries without and with tariffs retaliatory. They found that if President Trump raises import tariff by10 percent on all countries product without tariff retaliatory, US GDP will be lower by 0.3-0.4 percent. Also, if other countries raised import tariffs alongside with US tariffs, the US GDP will be lowered by one percent and 0.2 percent in the short-run and long-run respectively.

2.3.2 Effects of US Increase Tariffs on Other Trading Partners

The National Board of Trade (2024) examined the effects of US increase tariffs on the Swedish economy. If US raised 60 percent and 20 percent import tariffs on Chinese goods and other trading partners. His study found that US increase tariffs has a negative effect on Swedish GDP within a medium term of 5-7 years by a 0.02 percent reduction, domestic production fell by 0.1 percent and the Swedish exports to US will sharply fall by 16 percent in the medium term but the Swedish imports will fall slightly higher than exports to United States.

UNCTAD (2019) investigated the effects of US tariffs on China between 2018 and 2019. This study found that US increase import tariff has declined imports from China by 25 percent in the first half of 2019. Further, the US increase in tariffs had benefited Taiwan, Mexico and the European Union, and Vietnam through trade diversion of about $21 billion in the first half of 2019. Also, the US increase tariff had reduced imports of office machinery and communication equipment from China to about $15 billion in the first half of 2019. In addition, the US losses from increase tariff had been higher prices to the consumers while China exports lost had been significant.

In summary, there are having been extensive studies on the effects of US increase import tariff on her economy and her trading partners' economy. Many studies results have found mixed effects of US increase tariffs on short-term, medium, and long-run. However, none of these studies has investigated the effects of US lowered tariff rates and higher tariff rate increases on her economy by China and other US trading partners respectively. In addition, there is little or no study that has investigated the impact of US tariff rates under trade protectionism and liberalization policies impact on US trade deficits and supply chain imbalance in the literature. Therefore, this study is motivated to fill these existing gaps in the literature.

4. METHODOLOGY

This study employs secondary data to evaluate the role of US trade tariff policy on the trade deficits and supply chain imbalance reduction in the United States. The data are categorized into two phases. The first phase of this data is trade protectionism policy while the second phase dataset is the trade liberalization policy. The trade protectionism policy is the period that precedes the implementation of trade liberalization worldwide which is characterized with higher tariff rate and ranges from 1852 to 1989. On the other hand, the trade liberalization policy is the period characterized with free trade and lower tariff rates, ranging from 1990 to 2024. These study phases dataset are analyzed using graphical analysis and univariate analysis.

5. RESULTS AND DISCUSSIONS

5.1 Graphical Trends Results

The graphical trends results show the graphical trends in US exports, imports, and trade balance during trade protectionism policy and trade liberalization policy in the United States.

5.1.1 Graphical Trends in US Exports, Imports, and Trade Balance during Trade Protectionism Policy Results

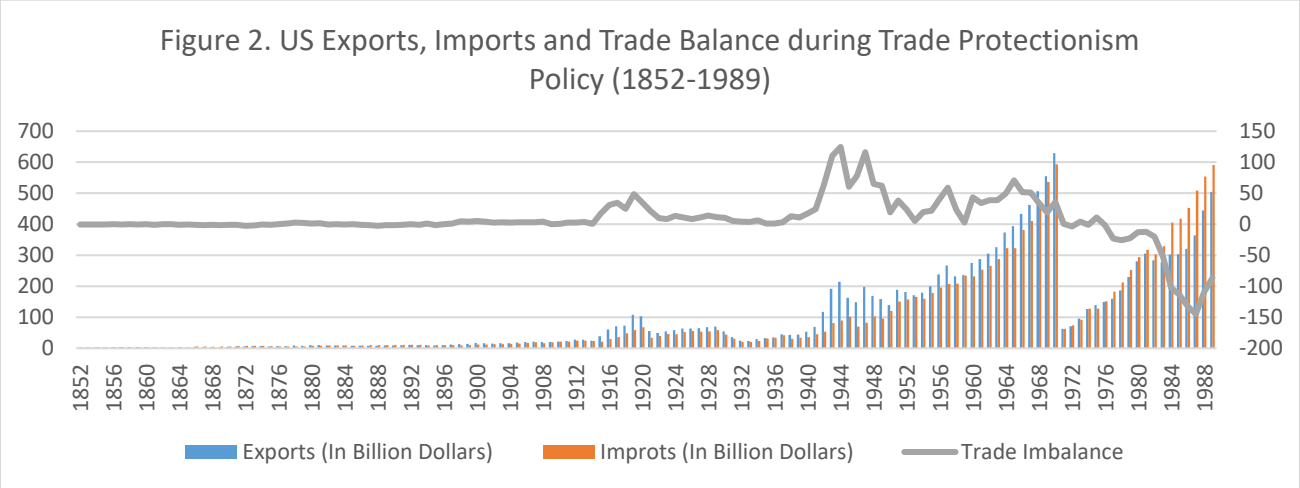

Figure 2. US Exports, Imports, and Trade Balance during Trade Protectionism Policy (1852-1989)

Source: Author Chart, 2025

Figure 2 shows the trends in US exports, imports, and trade balance during the trade protectionism policy between 1852 and 1989. Before 1974, the US exports exceeded imports resulting to a persistent trade surplus while the weighted traffic rates were high during this trade protectionism policy. However, between 1974 and 1989, the US imports had gradually exceeded export, but in 1984, US trade suddenly recorded a sharp trade deficits despite the implementation of trade protectionism policy. This finding revealed that higher tariff rate causes a stable trade surplus but a contemporaneous trade deficit if the import tariff rates is low because the tariff rates before 1974 were higher when compared with post -1974 till 1989. This study is contrary to the finding of Delimo (2025) that higher tariff leads to trade deficit and decreased country's exports.

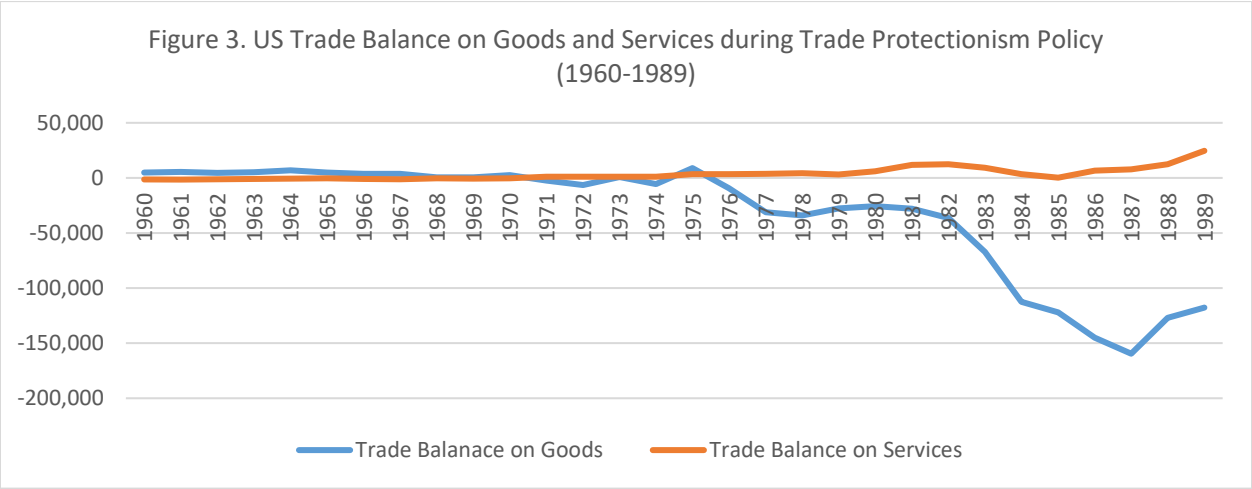

Figure 3. US Trade Balance on Goods and Services during Trade Protectionism Policy (1960-1989)

Source: Author Chart, 2025

Results in Figure 3 shows the US trade balance on goods and services during trade protectionism policy between 1960 and 1989. Figure 5 reveals that US trade balance on goods and services are in opposite direction. Before 1970, the US trade balance on goods and services were positive and surplus when the tariff rates were high. While the Figure 3 shows that since 1972, the US trade balance had recorded a persistent trade deficits on goods while the US trade balance on services had been remained positive and surplus, despite the tariff rates have had a continuous decreasing rates. This finding confirmed that higher tariff rates are significant to guarantee US trade surplus on goods than services.

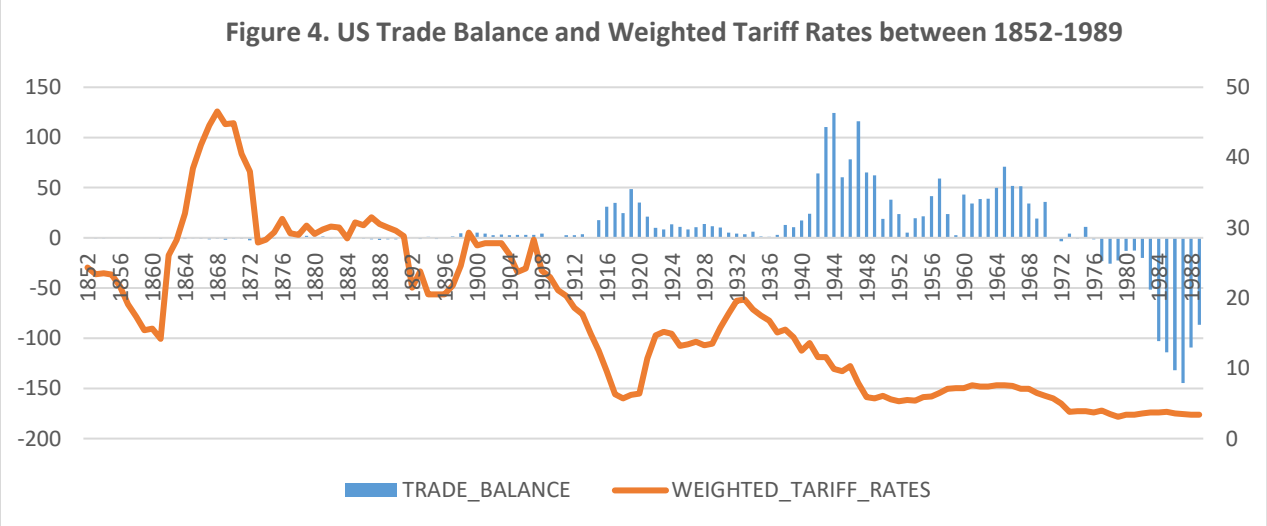

Figure 4. US Trade Balance and Weighted Tariff Rates between 1852 and 1989

Source: Author Chart, 2025

Results in Figure 4 exhibits the US trade balance and weighted tariff rates between 1852 and 1989. Figure 4 shows a mixed trade balance and tariff rates during the trade protectionism policy. Figure 6 shows that US weighted higher tariff rates above 30 percent does not leads to higher trade surplus but a lower US weighted tariff rates between 30 and 10 percent had caused US trade surplus. While US weighted tariff rates below 10 percent have resulted to a perpetual US trade deficits. This results reveal that US higher weighted tariff rates guarantee US trade surplus but US weighted tariff rates below 10 percent caused US trade deficits despite the implementation of trade protectionism policy in this study. This findings aligns with the US President Trump 10 percent flat tariff rate for the first 90-Day on all goods and services to all trading partners except China to achieve a relative US trade surplus.

5.1.2 Graphical Trends in US Exports, Imports, and Trade Balance during Trade Liberalization

Policy Results

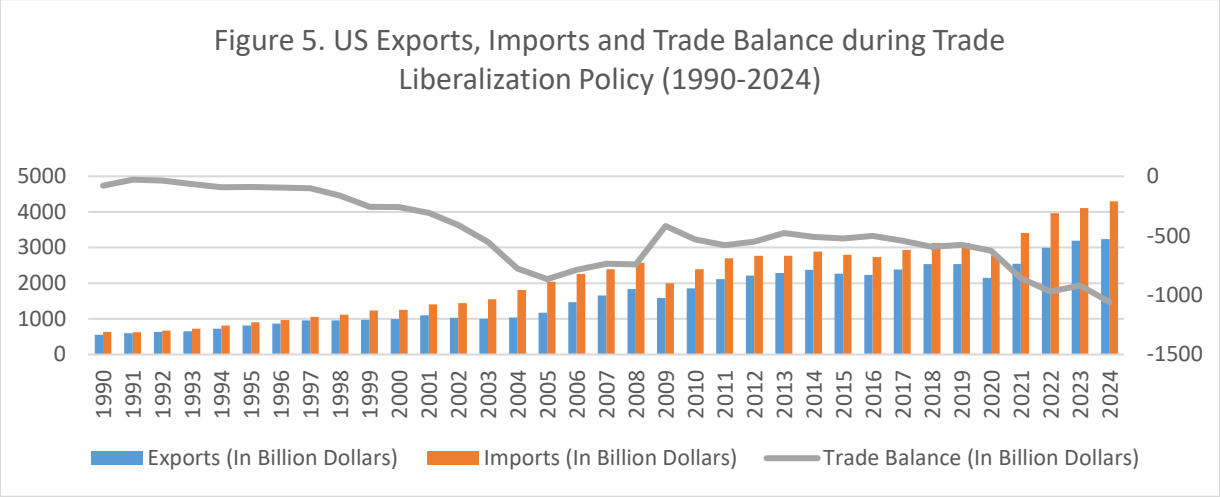

Figure 5. US Exports, Imports, and Trade Balance during Trade Liberalization Policy (1990-2024)

Source: Author Chart, 2025

Figure 5 shows the trends of US exports, imports and trade balance during the trade liberalization policy between 1990 and 2024. The results in Figure 5 finds that US imports has consistently exceeds US exports while the tariff rates are continuously decline throughout the trade liberalization policy. This implies that US had witnessed an increasing trade deficits, despite some increases in the weighted tariff rates in specific products and sectors in the United State. Figure 5 reveals that US marginal increases in tariff rates have not significantly reduce trade deficits nor resulted to US trade surplus within the study periods of trade liberalization policy. Findings of Ingleson (2024) aligns with this study that US had moved from exports to imports during trade liberalization.

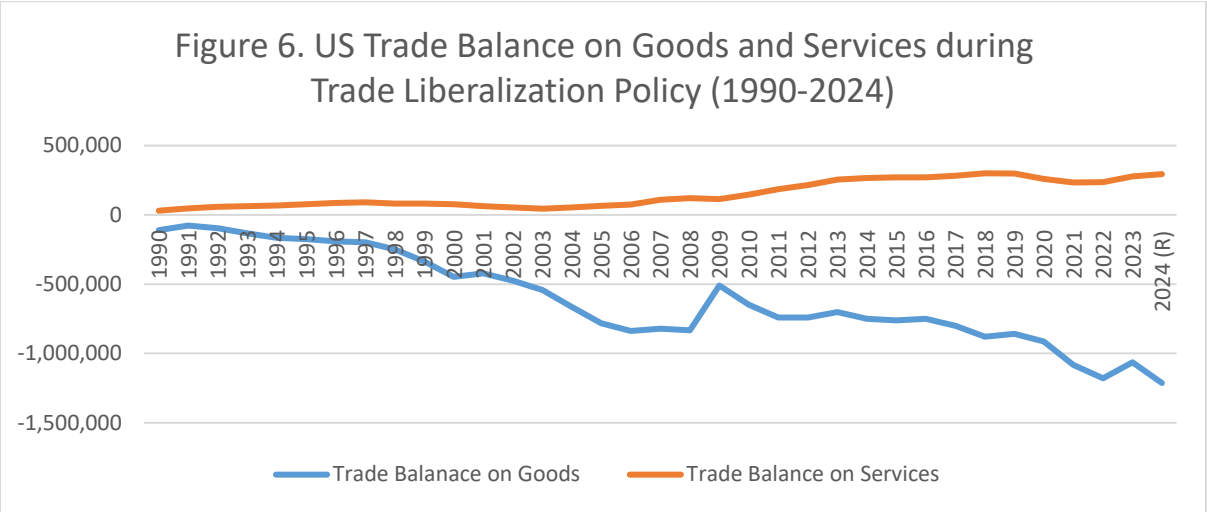

Figure 6. US Trade Balance on Goods and Services during Trade Liberalization Policy (1990-2024)

Source: Author Chart, 2025

Results in Table 6 finds that US trade balance on goods and services are in a direct opposite through trade liberalization policy like the trade protectionism policy. Between 1999 and 2024, US trade balance on services recorded a marginal increasing trade surplus while US trade balance on goods recorded a negative balance and a higher increasing trade deficits throughout the trade liberalization policy. This confirmed that US lower tariff rates promote trade surplus on services but a higher trade deficits on goods in the United States within this study.

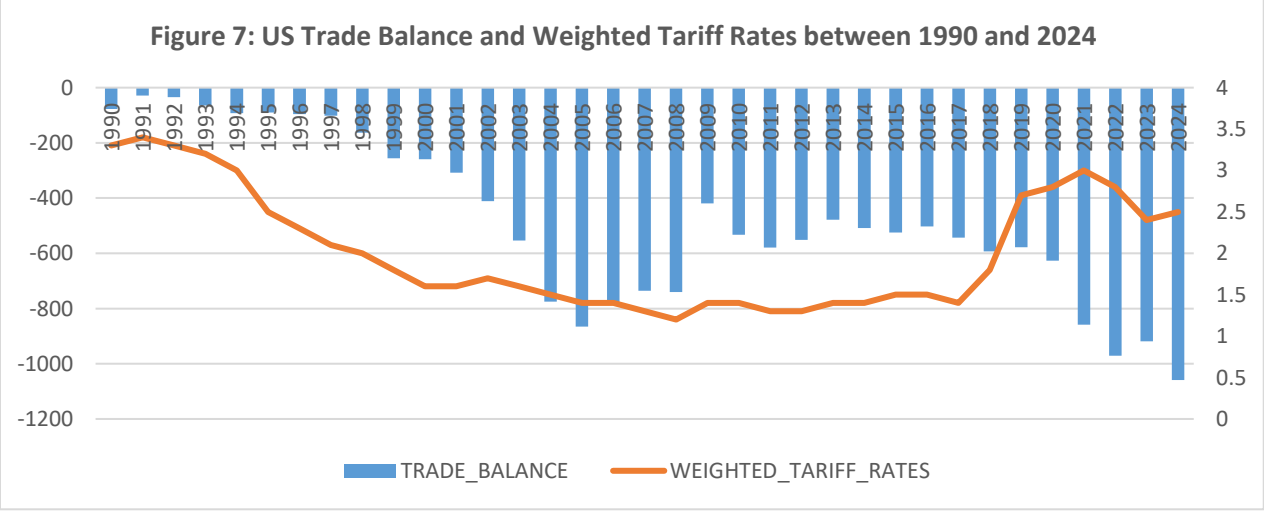

Figure 7: US Trade Balance and Weighted Tariff Rates between 1990 and 2024

Source: Author Chart, 2025

Figure 7 depicts the US trade balance and weighted tariff rates between 1990 and 2024. Figure 9 reveals that as the US weighted tariff rates declines, the US trade deficits increases from 1994 to 2018. Furthermore, between 2019 and 2024, a sharp rise in US weighted tariff rates have farther increases US trade deficits during trade liberalization. This confirmed that the US lowered weighted tariff rate decreases and increases have not resulted to US surplus throughout the trade liberalization policy. This findings aligns with the current President Trump 2025 proposal of a higher tariff rates across all goods and services than the past US Presidents.

5.1.3 Graphical Trends in US Trade Partners on Exports, Imports, and Trade Balance During Trade Liberalization Policy Results

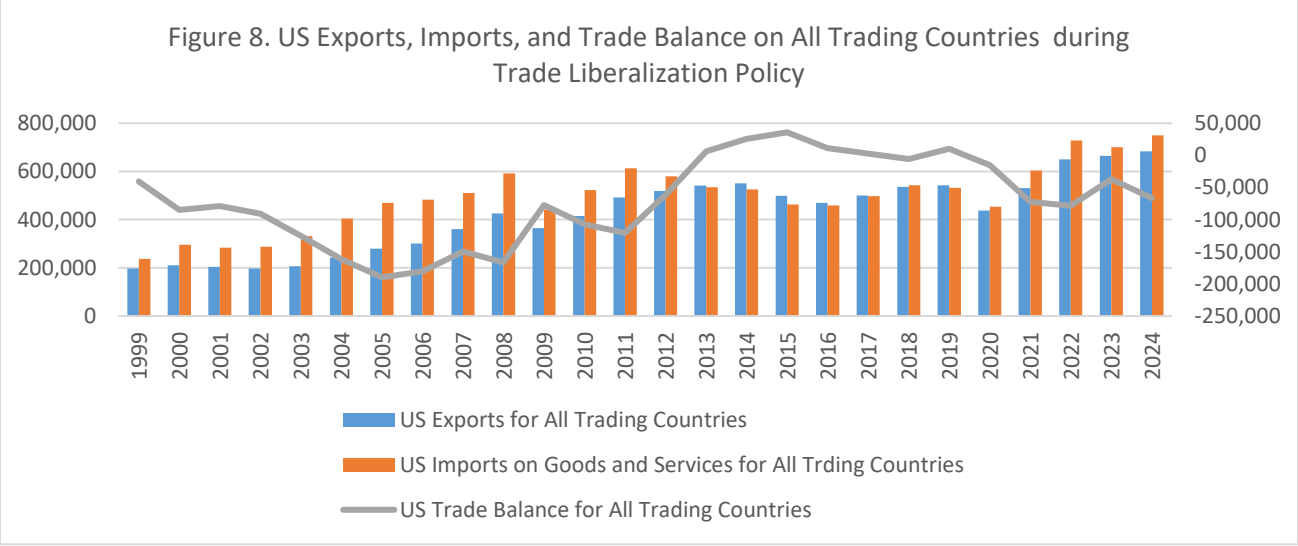

Figure 8. US All Trade Partners Exports, Imports and Trade Balance during Trade Liberalization Policy (1999-2024)

Source: Author Chart, 2025

Figure 8 shows US trading partners on exports, imports, and trade balance during trade liberalization policy between 1999 and 2024. Results in Figure 18 reveals that the US trading partners' imports exceeds exports, resulting to a persistent and fluctuating US trade deficits from all trading partners. Between 2013 and 2019, the US trading partners witnessed a sharp trade surplus due to sharp rise in tariff rates. Also, Figure 8 reveals that since 2014, the gap between US trading partners' exports and imports has continued to reduce due to late increases in tariff rates by the past five US Presidents till the current President Trump administration in 2025.

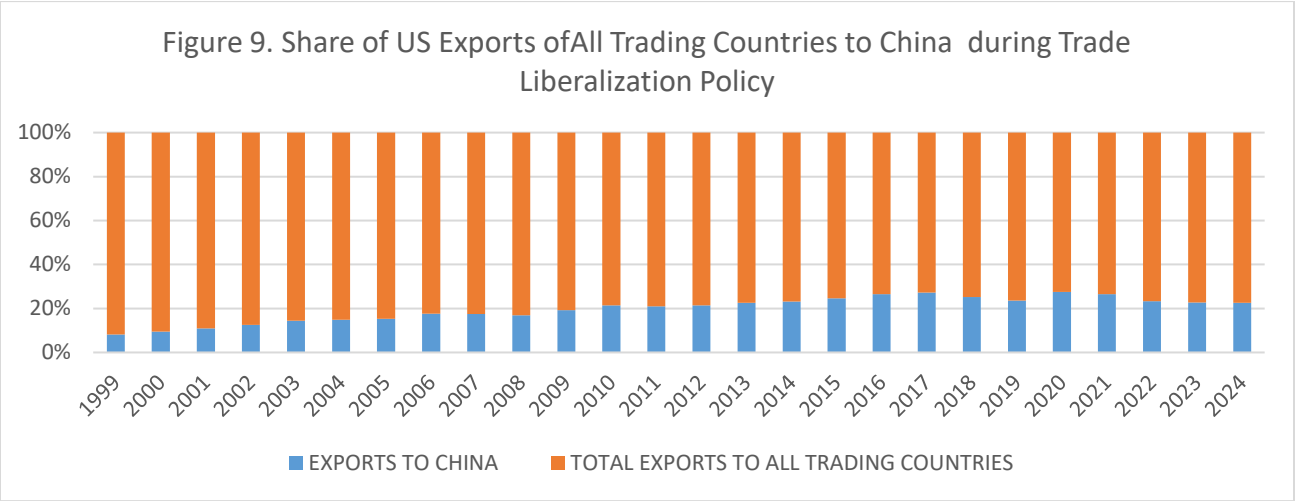

Figure 9. Share of US All Trade Partners Exports to China during Trade Liberalization Policy (1999-2024)

Source: Author Chart, 2025

Figure 9 shows US exports share to china and other trading countries between 1999 and 2024. Results in Figure 19 finds that US exports to china proportion is very low when compared to US exports to other trading countries. Figure 17 reveals that US exports to china exhibited increasing proportions through the trade liberalization policy. Of all the study periods, year 2020 and 2021 have the highest US exports to China due to sudden high import tariff rates from $2.8 to $3.0 respectively. Also, Figure 9 finds that US exports to China in the last three years from 2022 to 2024 had decreased and remained constant while US exports to other trading countries exhibited increased. The Figure 7 results confirm that US exports to other trading countries constitutes at most 75 percent that is far above the US exports to China of less than 30 percent.

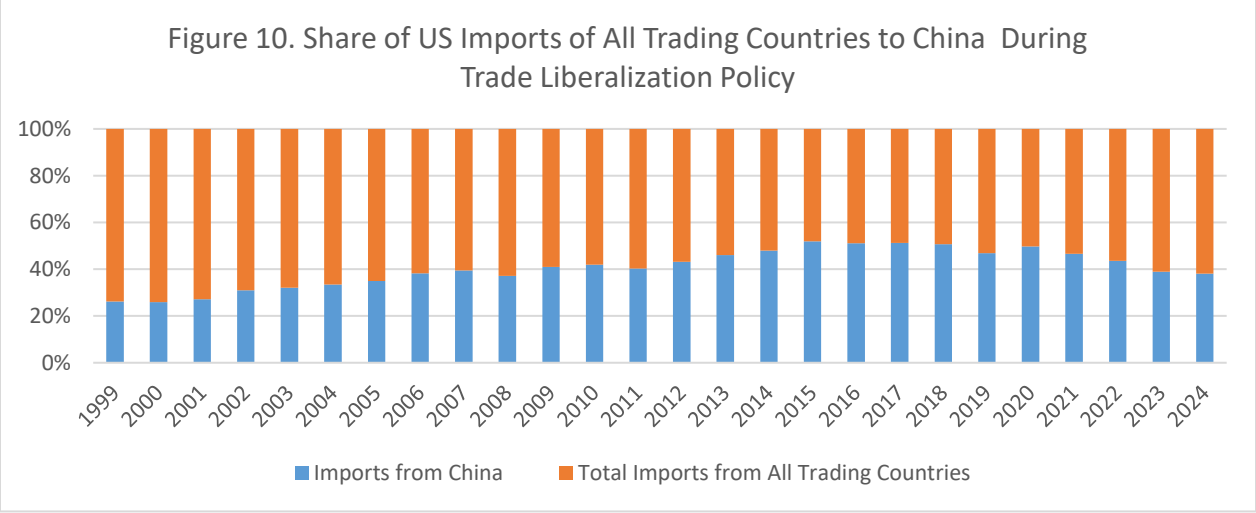

Figure 10. Share of US All Trade Partners Imports to China during Trade Liberalization Policy (1999-2024)

Source: Author Chart, 2025

Figure 10 results show the proportion of US imports from China and other trading countries between 1999 and 2024. Figure 10 reveals that US imports from China exhibited a persistent increasing trend, except the last three years from 2021 to 2024. These recent decreases in US imports from China have been attributed to imposition of higher tariff rates than other US trading partners. Importantly, Figure 10 reveals that US imports from China accounts to about 50 percent or less when compared to US other trading countries, indicating a high dependence from China. Furthermore, Figure 8 finds that US higher tariff rates have not significantly reduced US imports during President Obama between 2017 and 2019 because the US imports from China proportions increased from 39 percent in 2009 to about 50 percent in 2017 but the President Trump US imports from China with a higher tariff rates imposition witnessed a marginal and persistent decreases in the US imports from China, except 2018. Also, Figure 18 confirms that US imports from China further decreased during President Biden administration with a higher tariff rates on China than other US trading countries.

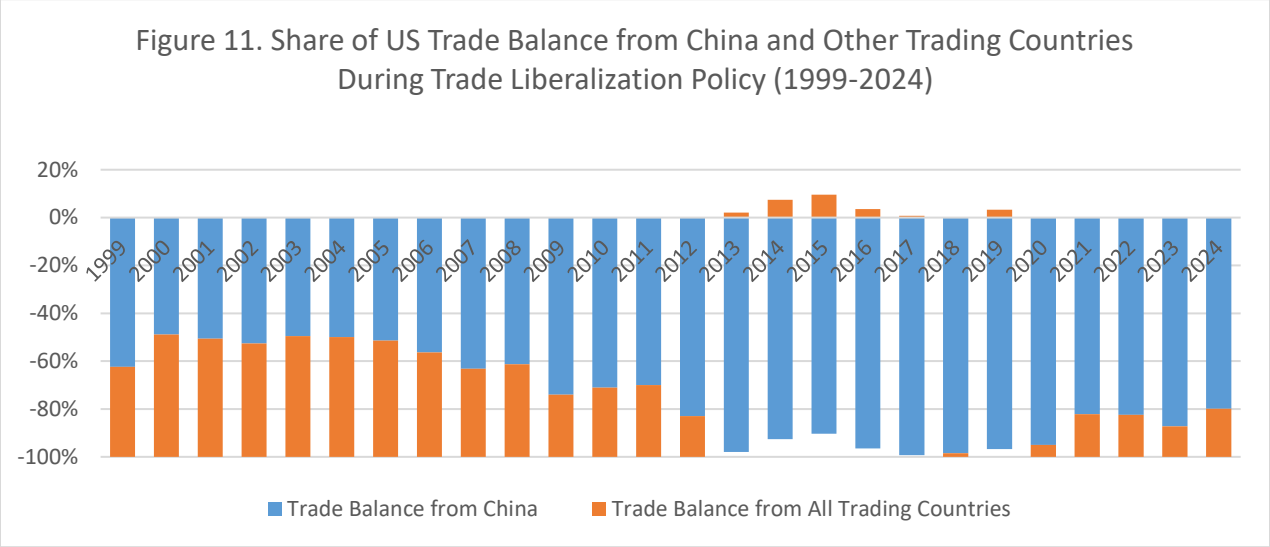

Figure 11. Share of US Trade Balance from China and Other Trading Countries during Trade Liberalization Policy (1999-2024)

Source: Author Chart, 2025

Results in Figure 11 shows the share of US trade balance from China and other trading countries between 1999 and 2024. Figure 11 finds that US trade balance share from China has accounted for at most 98 percent US trade deficits over US other trading countries throughout the trade liberalization policy of study. Furthermore, Figure 11 reveals that US marginally trade surplus of

less than 5 percent have been accounted only by other trading countries during the trade liberalization policy. Also, Figure 11 finds that US trade deficits from China have witnessed an increasing trade deficits proportion to other trading countries while the US trade deficits from other trading countries had been at decreasing trade deficits proportion to China. Importantly, Figure 11 finds that the highest proportions of the US trade deficits from China were experienced during President Obama from 2013 to 2017, despite the US marginal trade surplus from other trading countries. While Figure 19 reveals that since 2020 to 2024 during President Trump and Biden administrations, the US trade deficits from China have been marginally reduced for other trading partners but the US trade surplus from both China and other trading countries were completely absent.

5.2 Descriptive Analyses Results

The descriptive analyses results show the univariate summary of the US tariff rates, exports, imports and trade balance during trade protectionism and trade liberalization policies in this study.

5.2.1 Univariate statistics of US tariff rates, exports, imports, and trade balance during trade protectionism policy (1852-1989)

Table 1: Univariate Analysis of US Tariff Rates, Exports, Imports, and Trade Balance during Trade

Protectionism Policy (1852-1989)

Variable	Mean	Min.	Max.	Std	Sk	JB	N
Exports	106.32	2.32	628.7	137.95	1.60	81.59 (0.00)	138
Imports	99.18	2.65	593.07	142.96	1.84	116.68(0.00)	138
Trade Balance	7.13	-144.77	124.52	36.56	-0.89	0201.44(0.00)	138
Tariff Rate	17.21	3.10	46.56	11.16	0.56	8.81 (0.01)	138

Note: Min and Max represent minimum and maximum values; STD SK, JB, and N represent standard deviation, skewness, , Jarque-Bera and number of observations. Bracket represents the t-statistic value.

Table 1 results show the univariate analysis for US tariff rates, exports, imports, and trade balance during trade protectionism policy between 1852 and 1989. Results in Table 1 finds that exports has the highest average value of $106.32 billion while the lowest average is trade balance of $17.21 billion. This confirmed that United States was export driven economy during trade protectionism periods. The standard deviations values reveals that all variables witnessed changes and the Jarque Bera test confirmed that all variables distributions are not normally distributed during trade

protectionism. This implies that there were evidence of supply chain imbalance but the trade balance was surplus with a negative skewed distribution.

Table 2: Univariate Analysis of US Tariff Rates, Exports, Imports, and Trade Balance during Trade

Liberalization Policy (1990-2024)

Variable	Mean	Min.	Max.	Std	Sk	JB	N
Exports	1644..17	551.87	3238.7	810.04	0.33	2.54 (0.28)	36
Imports	2120.90	623.54	4297.28	1057.23	0.23	1.53 (0.44)	36
Trade Balance	-476.75	-1058.5	-28.61	297.75	-0.73	1.50 (0.47)	36
Tariff Rate	2.02	1.20	3.40	0.714	0.634	46/07 (0.13)	36

Note: Min and Max represent minimum and maximum values; STD SK, JB, and N represent standard deviation, skewness, Jarque-Bera and number of observations. Bracket represents the t-statistic value.

Table 2 results show the univariate analysis for US tariff rates, exports, imports, and trade balance during trade liberalization policy between 1990 and 2024. Results in Table 2 finds that imports has the highest average value of $2120.90 billion while the lowest average is trade balance of $-476.75 billion. This results confirmed that United States is an import dependent economy during trade liberalization periods. All the standard deviation values are different from zero but the US imports and tariff rate have the highest and lowest variability respectively. Also, Table 2 shows that all variables exhibited normal distributions, implying that the data pattern distribution is relatively stable and unchanged throughout the trade liberalization periods in this study.

6. CONCLUSIONS AND RECOMMENDATIONS

The study empirically examined the role of trade tariff policy on US supply chain imbalance and trade deficits reduction between 1852 and 2024. Using the graphical trend and univariate analyses, this study concluded that US trade tariff policy is not automatic to reduce supply chain imbalances and trade deficits in the United States. Also, the study concludes that US trade liberalization policy is associated with supply chain imbalance and trade deficits in the United States. Further, the study also concludes that China is the most trading country that causes US supply chain imbalance and trade deficits. Also, the study concludes that a minimum threshold of 10 percent US weighted trade tariff rate determines the extent to reduce the US trade supply chain imbalance and trade deficits as evidence in Figure 4.

Based on these conclusions, the recommendations for this study are as follows. First, the study want the current US President, Trump to set a minimum of 10 percent weighted tariff rates on all goods and services to reverse the long trajectory of US trade deficits and supply chain imbalance to US trade surplus and supply chain balance. Second, the current US President should imposes a higher weighted tariff rates above 10 percent on China than other trading countries to reduce US trade deficits and supply chain imbalance from China and consider other trading countries that are more profitable in the international trade. Lastly, the US government including the current President Trump should embraces trade protectionism policy and disregards the US lowered tariff rate under trade liberalization policy to secure a persistent US trade surplus and supply chain balance.

References

Altig, D., Bloom, N., Davis, S.J., Meyer, B., & Parker, N. (2018). Are tariffs worries cutting into business investment? Federal Reserves

Amiti, M., Redding, S.J. & Weinstein, D. E. (2019). The impact of the 2018 tariffs on prices and welfare. *Journal of Economics Perspectives, 33*(4), 187-210.

Bateh, D. (2024). Supply chain disruptions and their effect on suppliers and consumers in the market place. *Forum for Economic and Financial Studies, 2*(11), 2(11), 343-350.

Benigno, G. (2025). Background note in trade and trade imbalances.

Chahinea, A., Gopinath, G., Neiman, B., & Tang, J. (2021). Tariff pass-through at the border and at the store: evidence from US trade policy. *American Economic Review Insights, 3*(1), 19-34.

Constantinescu, C., Matto, A. & Ruta, M. (2016). Trade development in 2015 World Bank, 1-30.

Delimo, H. (2025). Macroeconomic effects of increased import tariffs. Sveriges Risks bank, 1-23.

Estrada, M.A.R. & Kourtronas, E. (2023). International trade closeness: the impact of tariff policies in U.S. China trade relations.

Fajgelbaum, P.D., & Khandelwal, A.K. (2022). The economic impacts of the US-China trade war. *Annual Review of Economics.*

Freund, C., Matto, A., Mulabdic, A. & Ruta, M. (2023). IS US trade policy reshaping global supply chains? Policy Research Working Paper No. 10593. 1-28.

Furceri, D., Hannan, S.A., Ostry, J.D. & Rose, A. K. (2022). The macroeconomy after tariffs. *The World Bank Economic Review, 38*(2), 361-381.

Grossman, G.M., Helpman, E., & Redding, S.J. (2024). When tariffs disrupt global supply chains. *American Economic Review, 114*(4), 988-1029.

Gudissa, L. & Mishra, D.K. (2014). The role of customs tariff: a historical, theoretical and empirical review. *Journal of Economics and Sustainable Development, 5*(11), 94-102.

Handley, K., Kamal, F., & Monarch, R. (2019). Rising import tariffs, failing export growth: when modern supply chains meet old-style protectionism. NISER Working Paper 26611.

Ingleson, E. O. (2024). When US–China interests converges to transform global trade. Harvard University Press, 1-352.

Irwin, D.A. (2020). Trade policy in American economic history. *Annual Review Economics*, 12, 23-44

Kawasaki, K. (2024). Supply-side impact of trade liberalization and disruption. GRIPS Discussion Paper 24-4.

McKibbin, W., Hogan, M., & Holland, M. (2024). The international economics implications of a second trump presidency. Peterson Institute for International Economics, Working Paper 24-20.

Obst, T., Matthes, J. & Sultan, S. (2024). What if Trump is re-elected. IW Report 14/2024, Institut der deutschen Wirtschaft.

Obstfeld, M. (2016). Tariffs do more harm than good at home. International Monetary Fund (IMF).

Obstfeld, M. (2025). The U.S. trade deficits myths and realities. Brookings Papers on Economic Activity (BPEA) Conference Draft, 1-66.

Palazzo, C.A. (2022). Panel data analysis of import tariff policy on economic growth and industrial output in developing countries. Bryant University, 1-12.

Santacreu, A.M. & Peake, M. (2020). The economic effects of the 20198 U.S. trade policy: a state-level analysis. Federal Reserve Bank of St. Louis Review, 4th quarter, 385-412.

U.S. Department of Commerce (2025). Census Bureau of Economic Analysis (BEA) on U.S. international trade in goods and services.

U.S. Department of Commerce (1934). U.S. trade policy since 1934. Chapter 3, 59-123.

United Nations Conference on Trade and Development (UNCTAD) (2019). Trade and trade diversion effects of United States tariffs on China. UNCTAD Research Paper No. 37