



NEER Index: China's Import and Export Trade and the US-China Trade Conflict

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Abstract. This study focuses on how China's import and export commerce is affected by the Nominal Effective Exchange Rate (NEER) index, especially during the trade spat between the United States and China that began in March 2018. The research tries to comprehend how currency value variations influenced trade dynamics amid heightened tariffs and economic tensions by using empirical analysis of trade data and NEER fluctuations. The main conclusions show that, particularly in price-sensitive industries, a greater NEER, indicating currency appreciation, greatly raised import costs and decreased export competitiveness. In addition, the trade war caused supply chain disruptions and increased market volatility, which put further strain on China's trade volumes. This study's contributions lie in highlighting the nuanced effects of NEER on trade flows and offering insights into economic resilience strategies. Policy recommendations include robust currency management, trade policy adjustments, diversification of export markets, investment in supply chain resilience, and fostering international collaborations. These strategies are vital for policymakers to mitigate adverse effects of currency fluctuations and trade conflicts, ensuring stable economic growth.

Keywords: Trade conflict, NEER, China, US, Export, Import.

1 INTRODUCTION

An important measure of a nation's currency strength in relation to its trading partners is the NEER index. Changes in the NEER index have a significant effect on China's import and export dynamics, as the country is one of the largest economies in the world and a prominent participant in international trade. The timing coincides with the start of the U.S.-China trade war in March 2018, which is particularly noteworthy as it represents a turning point in international economic ties. On March 22, 2018, US President Donald Trump announced tariffs on Chinese goods under Section 301 of the Trade Act of 1974, officially initiating the US-China trade war. Concerns over the US trade deficit with China, allegations of intellectual property theft, and forced technology transfers served as the impetus for this action. The primary occasions in the trade dispute are [1]:

March 22, 2018: In an effort to punish China for alleged unfair trade practices, President Trump imposed duties on \$50 billion worth of Chinese imports, aimed at a variety of commodities.

April 2, 2018: Trade tensions increased when China replied by placing duties on 128 American goods, including fruit and pork.

June 15, 2018: China imports totaling \$34 billion were included in the final list of items the United States decided to impose 25% tariffs on; an additional \$16 billion will be subject to taxes at a later date.

July 6, 2018: The first round of U.S. tariffs on \$34 billion worth of Chinese goods took effect. China immediately responded with tariffs on an equivalent value of U.S. goods, including soybeans, automobiles, and seafood.

August 23, 2018: Both nations imposed their second set of tariffs, aiming to curb imports worth \$16 billion from each other.

September 24, 2018: \$200 billion worth of Chinese imports are subject to 10% initial duties that will rise to 25% by the end of the year, according to U.S. government policy. China imposed duties on \$60 billion worth of American goods in retaliation.

December 1, 2018: During the G20 summit in Buenos Aires, Trump and Chinese President Xi Jinping agreed to a temporary truce, delaying further tariff increases and initiating a 90-day negotiation period.

May 10, 2019: After negotiations failed to yield a resolution, the U.S. increased tariffs on \$200 billion worth of Chinese goods from 10% to 25%. China announced plans to raise tariffs on \$60 billion worth of U.S. imports starting June 1, 2019.

August 1, 2019: On September 1, 2019, Trump declared that an additional \$300 billion in Chinese imports would be subject to a 10% tariff.

August 23, 2019: Trump responded to China's announcement of retaliatory tariffs on \$75 billion worth of American goods by raising the current duties and preparing additional rises.

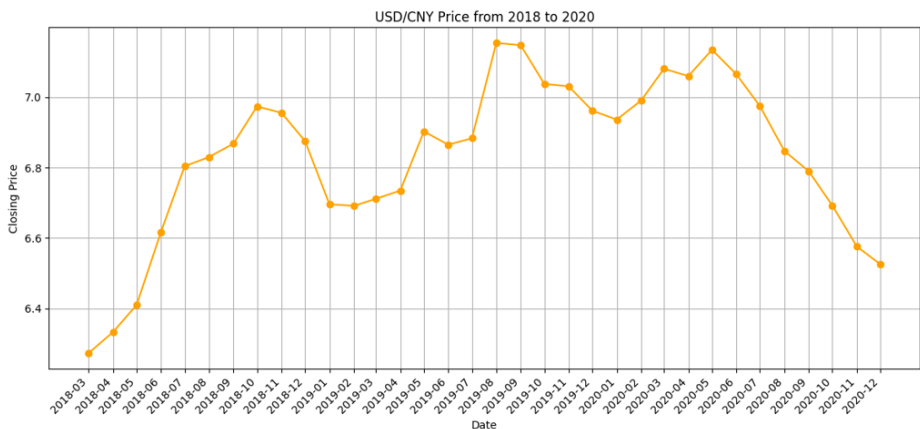


Fig. 1. USD/CNY

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This study aims to explore the relationship between China's NEER index and its import and export trade volumes, especially in the context of this trade war (see Figure 1). By analyzing how changes in the NEER index influence trade flows during this contentious period, the research seeks to provide insights into the economic repercussions and strategic responses adopted by China. Understanding these dynamics is crucial for policymakers and economists to formulate strategies that mitigate adverse effects and leverage opportunities arising from currency fluctuations and trade tensions.

The paper is organized as follows: it starts with a thorough literature analysis to lay the theoretical groundwork for understanding how the NEER index affects trade dynamics. The methodology part then goes into detail on the data sources and analytical methods used, and it is followed by discussions on the observed impacts and empirical findings. Key conclusions, policymakers' ramifications, and directions for further research are outlined in the paper's conclusion.

2 LITERATURE REVIEW

NEER offers a wider view than bilateral exchange rates by taking into account a number of trading partners, capturing overall currency movements that impact trade flows and economic stability. The relationship between variations in the NEER index and the dynamics of international trade has been the subject of numerous research. According to research, a country's export competitiveness is typically lowered by a stronger NEER, which reflects currency appreciation and raises the price of its goods for outside consumers. On the other hand, a weaker NEER may raise import costs while increasing exports. The impacts of NEER on trade balances and economic performance are complex and vary depending on trade structure, sectoral composition, and economic policy. The onset of the U.S.-China trade war in 2018 significantly altered global trade patterns and economic dynamics, particularly affecting China, the world's largest exporter. Studies examining this period underscore the trade war's multifaceted impact on China's import and export sectors. These impacts include disrupted supply chains, tariff escalations, retaliatory measures, and shifts in market access, all influencing trade volumes, prices, and economic strategies. The NEER index, amidst these developments, becomes pivotal in understanding how currency fluctuations intersect with trade policy dynamics and economic outcomes.

Short-term changes in the relative prices of goods can have a direct impact on international trade due to variations in the NEER index. For example, a sharp increase in value of the currency might reduce the competitiveness of exports to foreign markets while driving down the cost of imports, thus increasing the trade imbalance. Empirical data is frequently used to study short-term effects, monitoring how trade volumes are affected by sudden changes in exchange rates. The Council on Foreign Relations claims that once the United States imposed tariffs in March 2018, China immediately retaliated, impacting short-term trade balances and raising uncertainty in international markets. [2].

Over the medium term, NEER fluctuations can lead to adjustments in production and consumption patterns. Businesses may shift their supply chains or seek alternative markets to mitigate the effects of adverse currency movements. Empirical studies often use panel data to analyze these adjustments, showing how sectors adapt to changing competitive pressures. The J-curve effect is a theoretical concept that explains how a country's trade balance initially deteriorates following a depreciation but improves over time as exports become more competitive and import volumes adjust. Livingston International highlights that the trade war caused companies to diversify their supply chains, moving production to countries like Vietnam to avoid tariffs, illustrating medium-term adjustments in trade strategies [3].

In the long term, sustained changes in the NEER index can lead to structural shifts in the economy. Persistent currency appreciation might lead to deindustrialization, as manufacturing sectors struggle to compete internationally. Conversely, a consistently weaker currency could foster export-led growth. Long-term studies incorporate both empirical and theoretical approaches, such as computable general equilibrium (CGE) models, to predict how sustained exchange rate trends impact economic structure, trade policies, and overall economic growth. The Peterson Institute for International Economics (PIIE) points out that over the five years of the trade war, there has been a gradual decoupling of U.S.-China trade, with China seeking to reduce its reliance on U.S. exports and strengthening economic ties with other regions [4].

3 THEORETICAL FRAMEWORK

3.1 The NEER Index Influences Import and Export Trade Through Several Theoretical Mechanisms

Price Competitiveness. A higher NEER, indicating currency appreciation, typically leads to increased import prices and reduced export competitiveness. This effect is particularly pronounced in price-sensitive industries where foreign demand is elastic. The appreciation of the currency makes domestic goods more expensive for foreign buyers, thereby reducing their attractiveness in international markets. This phenomenon is supported by research showing that countries with stronger currencies often experience a decline in export volumes as their goods become less competitive abroad [5].

Cost of Inputs. For import-dependent sectors, a stronger NEER increases the cost of imported inputs, potentially squeezing profit margins or necessitating price adjustments that affect export competitiveness [4]. When the domestic currency appreciates, the cost of imported raw materials and intermediate goods rises, which can increase the overall production costs for export-oriented industries. This can lead to higher prices for final goods, making them less competitive in global markets.

Income Effects. Changes in NEER can impact domestic income levels, affecting consumer demand for both domestic and imported goods. A stronger NEER may

reduce domestic purchasing power for imported goods, altering consumption patterns and trade balances. For instance, consumers may shift their preferences towards domestically produced goods when the domestic currency appreciates, as imported goods become relatively more expensive.

Policy Responses. Government responses to NEER fluctuations, such as monetary policy adjustments or trade policy interventions, can further influence trade dynamics by directly affecting currency values or trade barriers. Central banks might engage in currency interventions to stabilize the exchange rate, or governments may implement tariffs and subsidies to protect domestic industries from the adverse effects of currency appreciation. An illustrative example of a policy response to NEER fluctuations is Japan's approach to yen appreciation during the 1990s. Following the Plaza Accord in 1985, the Japanese yen experienced significant appreciation against the U.S. dollar, which severely impacted Japan's export competitiveness. In response, the Japanese government and the Bank of Japan (BOJ) implemented several measures to mitigate the adverse effects on the economy.

Monetary Policy Adjustments: The BOJ lowered interest rates to stimulate domestic demand and offset the negative impact on exports. By making borrowing cheaper, the BOJ aimed to encourage investment and consumption within the country, thereby supporting overall economic growth.

Currency Interventions: The BOJ conducted multiple interventions in the foreign exchange market to prevent excessive yen appreciation. These interventions involved selling yen and buying foreign currencies to stabilize the exchange rate and protect Japan's export sector.

Fiscal Stimulus: The Japanese government implemented fiscal stimulus programs to increase economic activity. These packages featured public works projects and subsidies targeted at reviving industries hit by the strong yen.

Trade Policy Interventions: Japan also adjusted its trade policies by negotiating trade agreements and seeking to diversify its export markets. This strategy aimed to reduce dependency on any single market and spread the risk associated with currency fluctuations.

These combined policy responses helped Japan navigate the challenges posed by a strong yen, demonstrating how coordinated monetary, fiscal, and trade policies can mitigate the adverse effects of NEER fluctuations on an economy.

3.2 Expected Impact of the U.S.-China Trade War on NEER Index

Market Sentiment and Risk Perception. Heightened trade tensions can increase market volatility and risk aversion, leading to capital flows that influence currency valuations, including the NEER index. The uncertainty surrounding trade policies and potential retaliatory measures can result in significant capital outflows from China, affecting the NEER index. Research by Hua and Zeng [6] highlights how trade tensions contribute to increased risk perceptions, thereby influencing currency values. Trade conflicts create uncertainty in the market as businesses and investors are unsure

about future trade policies, tariffs, and regulations. This uncertainty can lead to volatility in financial markets as investors react to news and speculation about potential economic impacts. For example, during the U.S.-China trade conflict, frequent announcements of new tariffs and retaliations led to fluctuating stock and currency markets. Increased risk perceptions often result in capital outflows from the countries involved in the trade tension. Investors seek to move their assets to safer havens, such as stable foreign currencies or gold, to protect their investments from potential losses. This shift in capital can cause the affected country's currency to depreciate due to reduced demand. Negative sentiment among investors regarding the economic outlook of a country involved in trade tensions can lead to decreased investment in that country's assets. For example, during the U.S.-China trade war, concerns about the Chinese economy's stability and growth prospects led to reduced foreign direct investment (FDI) and portfolio investments in China, putting downward pressure on the yuan.

Tariffs and Trade Balances. Direct tariffs and trade obstacles established during the trade war affect pricing competitiveness and trade volume, influencing demand for Chinese exports and imports. This, in turn, influences the NEER index. The introduction of tariffs by the United States on Chinese imports raises their prices in the US market, lowering demand. Simultaneously, China's retaliatory tariffs on US goods affect import prices and volumes, which further influence the NEER index. [7].

Supply Chain Disruptions. Changes in global supply chains as a result of tariff modifications and relocations have an impact on production costs and export competitiveness, which indirectly influences the NEER index. The trade war has forced many businesses to rethink and relocate their supply chains in order to avoid tariffs, resulting in higher production costs and trade flow changes. The Carnegie Endowment for International Peace explains how the trade war has caused considerable disruptions in global supply chains and altered industrial tactics [8].

Policy Responses and Economic Strategies. China's monetary policy responses and economic adjustments in reaction to the trade war can influence the NEER index as authorities seek to mitigate economic impacts and stabilize trade flows. The Chinese government has employed various strategies, including currency devaluation and fiscal stimulus, to counteract the adverse effects of the trade war on its economy.

Currency Devaluation: As an illustration, the People's Bank of China (PBOC) permitted the yuan to weaken in reaction to the trade war in order to counteract the effects of US tariffs. For example, in August 2019, the yuan fell for the first time in more than ten years, breaking below the psychologically important 7-per-dollar mark. Chinese goods became more affordable and competitive on the international market as a result of this depreciation, somewhat offsetting the negative effects of US tariffs. [9].

Monetary Easing: Example: The PBOC implemented a series of monetary easing measures to support the economy. This included cutting the reserve requirement ratio (RRR) multiple times to increase liquidity in the banking system, making more funds

available for lending and investment. For instance, in September 2019, the PBOC cut the RRR for all banks by 50 basis points, with an additional 100 basis points reduction for some smaller lenders. These measures aimed to lower borrowing costs and stimulate economic activity.

Fiscal Stimulus: The Chinese government launched several fiscal stimulus packages to boost domestic demand and counteract the economic slowdown. This included increased spending on infrastructure projects, tax cuts, and incentives for consumer spending. In early 2019, China announced a large-scale fiscal package that included a reduction in the value-added tax (VAT) for manufacturing, transportation, and construction sectors, as well as increased investment in railway construction and other infrastructure projects.

Trade Diversification: To reduce dependency on the U.S. market, China sought to diversify its trade partners and expand its economic ties with other countries. This included strengthening trade relationships within Asia, Europe, and Africa. For instance, China increased its engagement with the Belt and Road Initiative (BRI) partners, promoting infrastructure investments and trade agreements to open new markets for Chinese goods [10].

4 CONCLUSION

4.1 Findings

This study's empirical analysis reveals several important conclusions about the connection between the NEER index, the dynamics of China's import and export trade, and the effects of the trade war between the United States and China. Findings indicate that fluctuations in the NEER index significantly influence China's import trade volumes. A stronger NEER tends to increase import costs, impacting the volume and composition of imports across sectors. Specifically, when the NEER index rises, indicating an appreciation of the Chinese yuan, the cost of imported goods becomes relatively higher. This can lead to a reduction in the quantity of imports as businesses and consumers seek cost-effective alternatives. This observation aligns with studies showing how currency appreciation can alter import behaviors and overall trade balances.

Empirical evidence suggests that variations in the NEER index also affect China's export trade volumes. A stronger NEER typically reduces export competitiveness, particularly in price-sensitive markets, affecting export revenues and sectoral performance. As the Chinese yuan appreciates, Chinese goods become more expensive for foreign buyers, reducing demand in international markets. This is particularly problematic for industries where price competition is fierce. Studies corroborate these findings, indicating that currency appreciation can lead to significant declines in export volumes.

The U.S.-China trade war has intensified market volatility and disrupted global supply chains, influencing NEER movements. Tariff escalations and policy uncertainties have heightened economic risks, impacting both import costs and export demand. The trade war has not only led to direct economic impacts through tariffs but also indirect effects through increased uncertainty and risk aversion among investors. This

situation has caused fluctuations in the NEER index, reflecting changes in market sentiment and trade dynamics. The comprehensive analysis of the trade war period provides insights into how such conflicts can have far-reaching effects on currency values and trade flows.

4.2 Policy Suggestions

Currency Management: Implement robust currency management strategies to mitigate excessive volatility in the NEER index. This includes enhancing transparency in exchange rate policies and proactive interventions to stabilize currency movements. By managing currency stability, policymakers can reduce uncertainty and support consistent trade growth.

Trade Policy Adjustments: Adapt trade policies to mitigate adverse impacts of NEER fluctuations on import costs and export competitiveness. Consider targeted tariff adjustments and trade facilitation measures to support export-oriented industries. These adjustments can help buffer industries against the negative effects of currency appreciation and support their competitiveness in global markets.

Diversification Strategies: Encourage diversification in export markets and product portfolios to lessen reliance on individual trading partners while mitigating risks linked with NEER swings and trade disputes. China's vulnerability to economic shocks from specific areas or industries can be reduced by diversifying trade links.

Investment in Resilience: Promote investments in technological innovation and supply chain resilience to navigate uncertainties stemming from the U.S.-China trade war and global economic shifts. Investing in resilient supply chains and technological advancements can help industries adapt to changing economic conditions and maintain their competitiveness.

International Collaboration: Strengthen international partnerships and multilateral trade agreements to improve market access, lower trade barriers, and maintain stable economic linkages in the face of geopolitical tensions. Collaborative efforts can contribute to a more predictable trading environment and lessen the negative impacts of trade wars.

4.3 Future Directions for Research

Explore Sectoral Impacts: Further investigate how NEER fluctuations specifically affect different sectors within China's economy, considering varying degrees of import dependency and export competitiveness. Detailed sectoral analyses can provide more nuanced insights into the diverse impacts of currency fluctuations.

Long-term Effects: Examine how the U.S.-China trade war will affect NEER dynamics and economic resilience in the long run while taking changing geopolitical and economic environments into account. Planning for long-term policy can benefit from longitudinal research, which can highlight the long-lasting effects of trade disputes.

Policy Effectiveness: Assess how well the adopted policy solutions have managed NEER volatility and aided in the expansion of sustainable economic growth. Evaluat-

ing the results of policy can aid in the improvement of tactics and increase their ability to stabilize trade and economic conditions.

Dynamic Modeling: Create dynamic models that incorporate adaptive techniques and real-time data to more correctly forecast NEER movements and their economic implications. Proactive policy interventions and increased prediction precision are two benefits of advanced modeling techniques.

Future studies in these fields may advance our knowledge of the intricate relationships that exist between trade dynamics, exchange rates, and economic policies, which will ultimately help us make better and more informed decisions.

REFERENCES

1. Kapustina, L., Lipková, E., Silin, Y., & Drevalov, A. (2020). US-China trade war: Causes and outcomes. In SHS Web of Conferences (Vol. 73, p. 01012). EDP Sciences.
2. Chong, T. T. L., & Li, X. (2019). Understanding the China–US trade war: causes, economic impact, and the worst-case scenario. *Economic and Political Studies*, 7(2), 185–202.
3. U.S.-CHINA TRADE DISPUTE: Understanding the Conflict - Livingston International. (2018). Retrieved from Livingston International website: <https://www.livingstonintl.com/us-china-trade-dispute/>
4. Bhowmik, D. (2020). Determinants of Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) of Chinese Renminbi (RMB). *London Journal of Research in Humanities and Social Sciences*, 20(15), 47–64.
5. Fajgelbaum, P., & Khandelwal, A. (2021). The Economic Impacts of the US-China Trade War *. National Bureau of Economic Research, 14(29315).
6. Hua, S., & Zeng, K. (2022). The US–China Trade War: Economic Statecraft, Multinational Corporations, and Public Opinion. *Business and Politics*, 24(4), 1–13.
7. Huang, Y. (2021, September 16). The U.S.-China Trade War Has Become a Cold War. Retrieved from carnegieendowment.org website: <https://carnegieendowment.org/posts/2021/09/the-us-china-trade-war-has-become-a-cold-war?lang=en>
8. Žemaitytė, S., & Urbšienė, L. (2020). Macroeconomic Effects of Trade Tariffs: A Case Study of the U.S.-China Trade War Effects on the Economy of the United States. *Organizations and Markets in Emerging Economies*, 11(2), 305–326.
9. Kapustina, L., Lipková, E., Silin, Y., & Drevalov, A. (2020). US-China trade war: Causes and outcomes. In SHS Web of Conferences (Vol. 73, p. 01012). EDP Sciences.
10. Liu, T., & Woo, W. T. (2018). Understanding the U.S.-China Trade War. *China Economic Journal*, 11(3), 319–340.

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