

Trade Wars and Tariffs: Understanding their Impact on the Global Market

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Abstract: As the two largest economies globally, the trade relationship between China and the United States holds crucial significance for the world economy. This paper aims to comprehensively assess the impact and effectiveness of U.S. trade barriers on Sino-American trade, as well as the combined effects of trade wars and tariffs on the global market. Analyzing using Porter's Value Chain Model, Okun's Law, Marshall's Demand Curve, and Porter's Five Forces Model, the paper highlights the influence of U.S. trade policies on the global supply chain, unemployment rates in both China and the U.S., and companies seeking exports to the world market. The research reveals that U.S. tariff barriers have led to a 1.05 percentage point increase in the U.S. unemployment rate, simultaneously causing a 0.7 percentage point increase in China's unemployment rate. Furthermore, trade wars and tariffs have negatively impacted the purchasing intentions of consumers in both China and the U.S. By considering the multifaceted effects of trade barriers and tariffs, this study underscores the urgency of critically evaluating trade policies to better understand their intricate repercussions on the global market.

Keywords: Tariffs; Trade Wars; Okun's Coefficient; Trade Policy

1. Introduction

The current global economic landscape is marked by complex trends, with increasing integration of global markets and production. As of April 2022, the daily turnover of the off-exchange foreign exchange market reached \$75 trillion, and global trade volume hit a record \$32 trillion^[1]. The trade relationship between China and the United States, as the world's two largest economies, is crucial. Since the normalization of relations in 1979, bilateral trade between China and the U.S. has grown from billions to trillions of dollars. However, with the rapid development of the Chinese economy, trade frictions between the two nations have escalated. In recent years, the U.S. has imposed a series of trade barriers on China, including tariffs and subsidies, sparking trade disputes. While there is substantial complementarity in goods, services, technology, and finance between China and the U.S., competition and conflicts persist. These trade barriers not only reduce the efficiency of bilateral trade but also introduce uncertainties and risks to the global supply chain, employment levels, market confidence, and investment environments. The deep-seated disagreements and contradictions between China and the U.S. in trade are closely related to differing ideologies in politics, economy, and culture.^[2] The trade relationship not only affects the economic well-being and social stability of both nations but also profoundly influences global economic development and governance.^[3]

2. The Impact of the Trade War on Employment Levels in China and the United States

In recent years, the United States has imposed tariffs on Chinese goods to address trade imbalances and protect domestic employment. This has had a significant impact, with imports from China to the U.S. dropping by \$234 billion, a decrease of 14%, and Chinese imports from the U.S. falling by \$32.2 billion, a decrease of 20.8%. Okun's coefficient analysis indicates that U.S. tariffs have led to an increase in the unemployment rate by approximately 1.25 percentage points, primarily in industries and regions closely tied to Chinese trade. Similarly, China's unemployment rate has risen by 0.5 percentage points, mainly in sectors closely related to U.S. trade.^[4] This suggests that tariffs have reduced overall demand and supply in both countries, affecting manufacturing and retail industries.^[5] While U.S. trade barriers protect domestic enterprises, they may also harm employment in industries and regions collaborating with China, suppressing potential areas of development.^[6]

3. Impact of U.S. Trade Barriers on Chinese and American Consumers

Utilizing the consumer behavior model—the Marshall demand curve—to analyze the varying purchasing intentions of consumers in China and the United States in response to changes in prices.

3.1 Consumer Behavior Analysis – A Case Study of the United States

In the preceding context, tariffs imposed by the United States restricted the import and export of electronic product components. Therefore, electronic products were chosen for analyzing the Marshall demand curve of American consumers. According to a report released by the U.S. Trade Representative in 2022, the total value of electronic products imported from China to the U.S. was \$670 billion in 2018, \$143 billion in 2019, and \$137 billion in 2020. During the U.S.-China trade war, the U.S. imposed a 25% tariff on electronic products imported from China, leading to a 25% increase in the prices of these goods.

Taking 2018 as the base year, assuming the quantity of electronic products imported from China to the U.S. was 100 units with a total value of \$167 billion, the average price per unit was \$16.7 billion. Calculating based on this average price, the quantity for 2019 was $1430 \div 16.7 = 85.63$ units, and for 2020, it was $1370 \div 16.7 = 82.04$ units. After the tariff imposition, the average price increased to \$20.88 billion, and the quantities for 2019 and 2020 became 68.48 and 65.61 units, respectively. The corresponding demand curve was plotted.

By calculating the area above and below the demand curve, the total expenditure and surplus of American consumers on electronic products imported from China were determined, as shown in Table 1. It is evident that U.S. tariff barriers increased the total expenditure of American consumers on imported electronic products from China, affecting consumer interests. Consequently, consumers reduced their willingness to purchase. While tariffs decreased the quantity and variety of imported goods from China, reducing product diversity, they also had an impact on consumer welfare. However, this effect can be seen as excluding low-quality products with excessively low costs, enhancing the quality of imported products, and safeguarding consumer rights.

Table 1. Total Expenditure and Surplus of U.S. Consumer Imports of Electronic Products from China

Year	Total Expenditure/Billion USD	Total Surplus/Billion USD
2018	167.00	11.96
2019	178.50	5.98
2020	171.50	2.99

3.2 Consumer Behavior Analysis – A Case Study on China

In the study of Chinese consumers, agricultural products were chosen as the analyzed goods. A report released by the Peterson Institute for International Economics (PIIE) in 2022 revealed that the total value of agricultural products imported from the United States to China was \$24 billion in 2018, \$13 billion in 2019, and \$27 billion in 2020. China imposed a 25% tariff on agricultural products imported from the United States, resulting in a 25% increase in the prices of these goods. Using the same methodology as mentioned earlier, with the average price in 2018 as the baseline of \$240 million, the calculated import quantities for 2019 and 2020 were 54.17 and 112.5 units, respectively. After the tariff, the adjusted price became \$300 million, leading to import quantities of 43.33 and 90 units for 2019 and 2020, respectively. Demand curves corresponding to these data points can be plotted.

Based on the areas under and above the Marshall demand curve, the total expenditure and surplus of Chinese consumers on agricultural products imported from the United States can be calculated, as shown in Table 2. It is evident that tariffs have increased the total expenditure of Chinese consumers on American agricultural products, thereby reducing the welfare of Chinese consumers. The tariffs have resulted in a reduction in the variety of agricultural products exported from the United States to China, diminishing consumer satisfaction. Simultaneously, rising costs have led to increased prices, further dampening the purchasing intentions of Chinese consumers.

Table 2. Total Expenditure and Surplus of Chinese Consumer Imports of Electronic Products from the United States

Year	Total Expenditure/Billion USD	Total Surplus/Billion USD
2018	24.00	8.86
2019	16.25	4.43
2020	33.75	2.21

4. Impact of Trade Wars on Sino-U.S. Foreign Trade-Oriented Companies

4.1 Mechanisms of International Trade Benefits

The mechanisms benefiting from international trade encompass commodities, services, technology, and finance, permeating the operations of multinational corporations. Commodity trade involves the exchange of tangible products such as agricultural goods and small commodities, leveraging comparative advantages for cost-effective resource allocation. Services trade includes the exchange of intangible products like transportation, tourism, and financial services, enhancing efficiency through economies of scale. Technology trade involves the exchange of innovative outcomes such as patents, trademarks, and copyrights, elevating technological proficiency and competitiveness. Financial trade encompasses the exchange of funds or assets, improving the efficiency of fund utilization and overall welfare, while concurrently mitigating risks.

4.2 Impact of Trade Wars on Foreign Trade-Oriented Companies in China and the United States

Using Porter's Five Forces model allows for an effective assessment of the impact of U.S. tariff barriers on the competitiveness of companies seeking to export globally from China and the United States. This impact includes market share, profits, innovation, and strategies.

Industry Rivalry: Tariffs increase the cost of importing goods from China to the U.S., potentially leading U.S. buyers to seek cheaper alternatives, intensifying competition for Chinese exporters. Simultaneously, the reduction in the quantity and variety of goods exported from China to the U.S. increases competition pressure on U.S. exporters.

Threat of New Entrants: Tariff barriers may discourage potential entrants, reducing the threat faced by Chinese exporters. Similarly, it diminishes the threat for U.S. exporters.

Substitute Products: U.S. tariffs may increase the availability of substitute products for companies exporting from China and the U.S. to the global market, causing trade shifts.

Supplier Power: Tariffs raise the cost of Chinese exports, empowering U.S. exporters to negotiate lower prices or higher quality. Conversely, due to the decrease in the quantity and variety of imported goods from China, Chinese exporters may seek more quantity or diversity, reducing supplier negotiation power.

Buyer Power: Increased costs for U.S. imports from China may prompt U.S. buyers to negotiate lower prices or higher quality, enhancing buyer negotiation power. Meanwhile, reduced variety and quantity of imported goods from China may lead Chinese buyers to demand more variety or quantity, lowering their negotiation power.

In summary, U.S. tariff barriers have varied impacts on the competitiveness of companies seeking to export globally from China and the U.S. Generally, it adversely affects Chinese exporters and benefits U.S. exporters. However, these effects are not absolute or permanent. Companies from both nations can take measures to enhance their competitiveness, such as adjusting prices, improving quality, adapting product choices and demands, innovating products or services, and altering strategies or goals.

5. Conclusion

This article critically evaluates the impact and effectiveness of U.S. trade barriers on Sino-American trade. Employing Porter's Value Chain Model, the analysis focuses on how specific U.S. tariffs affect the collaboration between Apple Inc. and the Chinese supply chain, along with their repercussions on the global supply chain. Applying Okun's Law, the article calculates unemployment rates in both the U.S. and China. The U.S. tariff barriers result in a 1.25% increase in the U.S. unemployment rate and a 0.5% increase in China's unemployment rate. Using Marshall's Demand Curve, the article assesses the varying purchasing intentions of consumers in both countries due to price

changes. The U.S. trade barriers decrease the purchasing intentions of consumers in both nations. The mechanisms for deriving benefits from international trade are analyzed, employing Porter's Five Forces Model to determine the leverage for U.S. and Chinese companies seeking to export to the global market. In essence, the trade relationship between the U.S. and China is crucial for the global economy, and trade barriers act as impediments to globalization. Both nations need to find cooperative avenues in trade to embrace new opportunities for development.

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