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The Impact of China/US Trade Friction on China's Electronic Product Exports

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Abstract

China and the United States, as leading global powers, have faced ongoing trade disputes. From 2003 to 2005, the U.S. triggered several trade frictions with China, marking a period of significant conflict. In 2018, the Trump administration's trade war reignited tensions, and these frictions have since evolved alongside shifts in international relations. Recently, the U.S. imposed restrictive measures on Chinese exports, affecting China's electronics sector-a vital component of its high-tech industry and economic growth.This study analyzes data on Chinese electronics exports in the context of these trade tensions, using a Difference-in-Differences (DID) model to assess changes over the past decade. The results show a statistically significant positive impact of U.S.-China trade friction on China's electronics exports, despite the challenges posed by restrictive U.S. policies. Ultimately, this study emphasizes that while trade conflicts may strain relations, balanced policies and open communication are essential to avoid further escalation. Both countries could benefit from a cooperative approach, recognizing the advantages of mutual trade development.

Keywords

Trade Friction; Export of Electronic Products; DID.

1. Introduction

China and the United States, as the largest developing and developed countries respectively on a global scale, have maintained long-established trade relations. As far back as the 1780s, during the nascent years of American independence, commerce between China and the United States commenced, fostering a bond that has endured through the ages. Following the formal establishment of diplomatic ties in 1979, bilateral trade between China and the U.S. witnessed rapid and comprehensive expansion, mutually benefiting both nations and marking a pivotal milestone in the global economic landscape.

However, with China's accelerated development, the United States has perceived a perceived threat to its international standing, leading to the emergence of trade frictions between the two countries. Over the past two decades, trade disputes have persisted as a recurring issue in bilateral relations. Commencing in 2003, the U.S. initiated a series of trade frictions with China, casting a considerable shadow over Sino-U.S. trade relations. In the 21st century, these trade conflicts intensified, reaching unprecedented levels of economic and trade friction between China and the United States.

Within the context of U.S.-China economic and trade cooperation, trade relations have emerged as a central area of focus, with disputes fluctuating in response to shifts in the international environment and evolving political orientations of both countries. In 2018, the United States initiated a trade war against China, sparking a fresh wave of trade disputes. Given that product import and export constitute the cornerstone of international trade and serve as direct indicators of its vitality, no nation's economic development in the contemporary era is isolated

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from the realm of foreign trade. Consequently, U.S.-China trade relations remain a subject of intense scrutiny.

Specifically, in the realm of electronics, China's rapid technological advancements have positioned electronic products as a pivotal driver of China's economic and trade development. However, the current state of U.S.-China trade friction poses a significant concern. In recent years, in an attempt to curb China's rapid growth, the United States has implemented a series of restrictive and arguably protectionist measures targeting Chinese exports, including tariff hikes, dissemination of misinformation, and export suppression. This deterioration in trade relations has dealt a substantial blow to the development of China's electronics import and export market.

Therefore, this paper aims to focus on the impact of U.S.-China trade friction on China's electronics export market, examining the intricacies and ramifications of this complex economic dynamic.

2. Literature References

The Sino-U.S. trade friction has emerged as a focal point of academic research both domestically and internationally. In recent years, numerous scholars at home and abroad have conducted in-depth, multi-angled studies on Sino-U.S. trade friction using diverse research methodologies. The consensus among a majority of scholars is that Sino-U.S. trade friction is a relatively intricate issue. Firstly, the factors influencing Sino-U.S. trade friction encompass a wide array of domains, including but not limited to bilateral relations, economic policies, technological competition, and market access. Many scholars have delved into these influencing factors to explore the root causes and development trends of Sino-U.S. trade friction. Secondly, Sino-U.S. trade friction is often closely intertwined with the economic policies of both parties involved. Numerous studies primarily focus on the policy responses of China and the United States to Sino-U.S. trade friction, encompassing trade policies, industrial policies, investment policies, etc. By analyzing the policy stances and measures adopted by both China and the United States, strategies for addressing trade friction are derived. Trade friction can also spawn or encourage multilateral trade. Articles in this vein conduct in-depth research on Sino-U.S. trade relations, encompassing microeconomic aspects such as trade volumes, trade deficits, and commodity structures, and explore the development trends of Sino-U.S. trade friction. Scholars such as Chen Jie (2024) propose that Sino-U.S. friction is a consequence of conflicts over regional economic interests between China and the United States, and that purely economic means cannot fully mitigate the adverse impacts of trade friction. In addition, China necessitates policy improvements and support. Meanwhile, scholars such as Lin Wenqiang (2024) argue from the perspective of enterprises that Sino-U.S. trade friction is multifaceted and can indirectly impose economic burdens on Chinese enterprises, particularly technology enterprises. Therefore, China must introduce diverse policies to mitigate the impacts of Sino-U.S. trade friction. Overall, Sino-U.S. trade friction poses a significant challenge for China, and averting its escalation is crucial for maintaining Sino-U.S. trade relations. Scholars such as Xie Weimin (2023) further assert that since 2018, the economic conflict between China and the United States has been deemed an unprecedented trade dispute affecting globalization. On the surface, the United States seeks to address imbalances in industrial structures and reduce the massive Sino-U.S. trade deficit, yet its underlying objective is to restrict China's technological development and hinder its economic rise. In fact, the widespread imposition of tariffs and technological blockades by the U.S. government has severely disrupted the international trade order and profoundly impacted the production, operation, and investment decisions of Chinese enterprises. As Sino-U.S. trade friction escalates, Chinese enterprises have increasingly recognized the urgency and importance of enhancing independent innovation capabilities and

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swiftly overcoming bottlenecks in key technological fields. In research on agricultural trade, which is also a form of commodity trade, scholars such as Zhang Yu (2023) have established models based on agricultural trade data released by the Ministry of Commerce to empirically analyze the impact of Sino-U.S. trade friction on China's agricultural trade and future trends. The study found that Sino-U.S. trade friction has led to a substantial decline in the total agricultural trade volume between China and the United States, with imports from the U.S. decreasing more than exports to the U.S. The future trend of Sino-U.S. agricultural trade remains unpredictable. Meanwhile, trade friction has also presented new development opportunities for China's agricultural trade. In summary, the ripple effects of Sino-U.S. trade friction in China are extensive and primarily influence domestic enterprises or industries, further impacting China's economy. This underscores the complexity of trade friction. Based on the comprehensive research status of Sino-U.S. trade friction domestically and internationally, China needs to take action. Firstly, it should facilitate peaceful dialogue between China and the United States to foster a benign trade environment. Secondly, it should actively explore diversified agricultural markets to prevent risks associated with concentrated imports. Thirdly, it should promote the transformation of commodity trade and enhance international competitiveness.

3. Methodology and Data Collection

3.1. Econometric Model and Data

The Sino-US trade frictions exert influences on the development of China's import and export trade through various channels. The Difference-in-Differences (DID) method adopted in this study is a crucial approach in econometrics, frequently used to evaluate policy effects. Its core idea is to measure the intervention effect of a policy by comparing the changes before and after the event between a treatment group and a control group. By eliminating the influences of other factors on the treatment group and the control group before and after the policy intervention, the study calculates the differences in two variables for both groups before and after the intervention, and then further calculates the difference between these two differences. The result after such a second-order differencing represents the net effect of the policy intervention. This article employs the DID model, treating the Sino-US trade frictions as a policy impact, and draws conclusions based on data analysis before and after their occurrence (policy implementation).

The specific mathematical derivation of the difference idea is as follows, and the mathematical derivation formula is given:

$$\mathrm{EXPM}_{it} = \beta_0 + \beta_1 \mathrm{TR}_{it}\mathrm{POST}_{it} + \beta_2 \mathrm{TR}_{it} + \beta_3 \mathrm{POST}_{it} + \beta_4 X_4 + \mu_{it} \tag{1}$$

In the hypothesis, EXPM_{it} refers to the export volume of electronic products, where i and t respectively represent the unit and month, and $\mathrm{TR}_{it}\mathrm{POST}_{it}$ is the core explanatory variables. When the region code i is the United States, TR is assigned a value of 1; when the region code i is for other regions, TR is set to 0. Before the implementation of the policy, POST is set to 0, and after the implementation of the policy, POST is set to 1. Therefore, it can be obtained before the policy is implemented.

Treatment group:

$$\mathrm{EXPM}_{it} = \beta_0 + \beta_2 + \beta_4 + \mu_{it} \tag{2}$$

Control group:

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$$\mathrm{EXPM}_{\mathrm{it}} = \beta_0 + \beta_4 + \mu_{\mathrm{it}} \tag{3}$$

Policy post-implementation processing group:

$$\mathrm{EXPM}_{\mathrm{it}} = \beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \mu_{\mathrm{it}} \tag{4}$$

Control group after policy implementation:

$$\mathrm{EXPM}_{\mathrm{it}} = \beta_0 + \beta_3 + \beta_4 + \mu_{\mathrm{it}} \tag{5}$$

After the occurrence of Sino-US trade friction, $\beta_3$the change size of electronic products export in the control group can be obtained by subtracting equation (3) from equation (5), and the change size of electronic products export in the treatment group can be obtained by subtracting equation (2) from equation (4). Therefore, the estimate β_1 obtained after differential analysis reflects the net impact of the Sino-US trade friction event on China's electronics exports. This model construction clearly reflects the difference between the treatment group and the control group before and after the Sino-US trade friction.

3.2. Variable Selection

The application of the Difference-in-Differences (DID) model necessitates defining a specific policy implementation timepoint, which serves as a dividing line to separate panel data into pre- and post-policy implementation periods, thereby enabling an accurate assessment of the policy's effects.

To pinpoint the precise policy timepoint (variable DID), this study collected all announcements and references published on government official websites from January 2014 to the present. After comparing and analyzing the export information of selected electronic products, the timing of the implementation of Sino-US trade frictions was pinpointed to 2018. Initially, based on the approximate analysis of China's electronics exports to the US in recent years presented in Figure 3.1 mentioned earlier, it is evident that there was a notable decline in China's electronics exports to the US between 2018 and 2019. Further refinement, based on relevant literature and data reviewed, narrowed down the month of the trade friction policy to July 2018.

To better reflect the export situation of Chinese electronic products, this study, in conjunction with existing research, selected Gross Domestic Product (GDP) and Export Value (EXPV) as control variables. To reduce errors in the empirical process, the data collection dimension was set to monthly data. This study refined the data to a monthly level, compiling new data spanning the past decade, resulting in a panel dataset covering a total of 117 months from January 2014 to September 2023.

Based on this, the difference-difference model is improved:

$$EXPM_{it} = \beta_0 + \beta_1 did_{it} + \mu_i + \mu_t + \beta_2 X_{it} + \varepsilon_{it} \tag{6}$$

In Formula 6, the explained variable $EXPM_{it}$ is the export volume of electronic products, i and t represent the county administrative unit and month respectively, and did. As the core explanatory variable, the estimator β obtained after differential analysis reflects the net impact of Sino-US trade friction policy on the export of electronic products in the processing group. If β is greater than 0, it indicates that the Sino-US trade friction has promoted the region's

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electronics exports, and if β Less than 0, indicating that the Sino-US trade friction has hindered the region's electronics exports. X is the control variable, $\mu_i$is the individual fixed effect, μ_t is the time fixed effect, and ε is the random error term.

3.3. Data Sources and Descriptive Statistics

Table 1. Descriptive statistics

Variable	Definition	Size	Mean value	Standard deviation
Code	Area code	1,170	5.500	2.874
Month	Month	1,170	201,845	281.5
GDP	Gross Domestic Product	1,170	42.85	58.25
EXPA	Export volume	1,170	4,871	6,655
EXPV	Export amount	1,170	5,828	8,811

The data sources and descriptive statistics are presented above. The primary data for this study were released by the China Customs and integrated on the EPS DATA platform. The descriptive statistics for the relevant variables are shown in Table 1. This study collected data on the quantity and value of electronics exports from China to ten countries: the United States, Canada, the Netherlands, France, Germany, the United Kingdom, Japan, South Korea, Singapore, and India. These ten countries are represented by numerical codes in the empirical model, with a total of 1,170 observations in the sample. Observations reveal that the mean GDP is approximately $4,285 trillion, with a large standard deviation indicating significant economic disparities among these countries. There are notable gaps between the maximum and minimum values for both export quantity and export value, accompanied by large standard deviations, suggesting substantial variations in China's electronics exports to these countries. In general, the factors influencing China's electronics exports to these trading partners are related to the countries' levels of development and economic conditions, which further underscores the richness of the data and enhances its persuasiveness in the empirical analysis.

4. Empirical Results

4.1. Parallel Trend Test

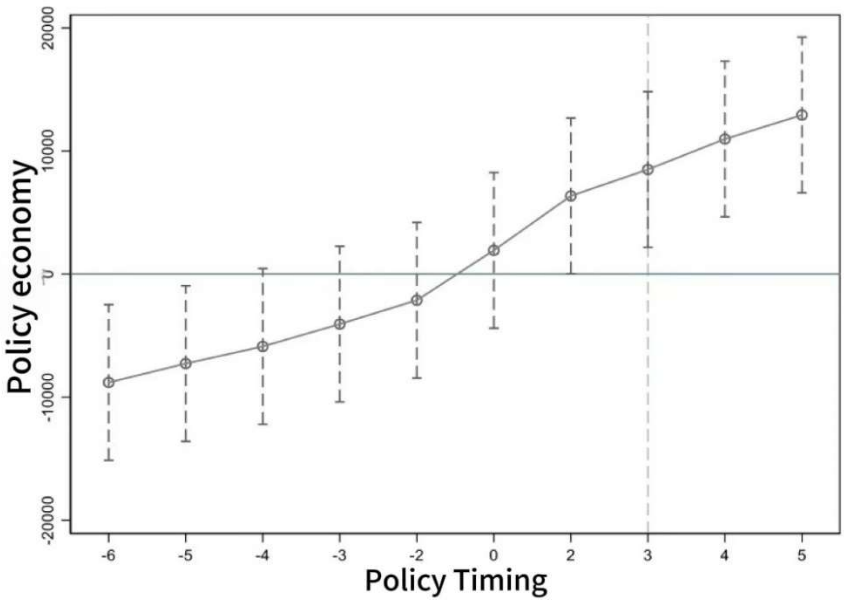

Figure 1. Parallel trend test

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This study analyzes China's exports of electronic products by country, designating nine of the top ten trading partners in 2023 as the treatment group and the United States as the control group, using a multi-period panel dataset. To perform a DID time-fixed effect regression, a parallel trend test is first required to ensure that the values of matched variables between the treatment and control groups exhibit significant differences pre- and post-matching. Both groups have inherent growth trends in electronic exports when unaffected by external factors; however, when these trends differ substantially, the U.S.-China trade friction serves as a policy variable to empirically examine development changes before and after the event. The resulting discrepancies highlight that it cannot be directly concluded that U.S.-China trade friction alone altered China's electronic exports. The parallel trend test is intended to confirm that the treatment and control groups share similar development trajectories, allowing for scientifically valid conclusions.

Table 2. Significant comparison before and after policy implementation

Variable	Result
pre6	-8,766***
	(3,222)
pre5	-7,230**
	(3,222)
pre4	-5,840*
	(3,222)
pre3	-4,022
	(3,221)
pre2	-2,085
	(3,221)
current	1,967
	(3,221)
o.post	-
post1	4,147
	(3,221)
post2	6,390**
	(3,221)
post3	8,538***
	(3,221)
post4	11,012***
	(3,221)
post5	12,962***
	(3,221)

Note * represents 10% significant, ** represents 5% significant, and *** represents 1% significant.

Following Beck's (2010) methodology, this study conducts a parallel trend test on samples matched by propensity scores. If the export growth trends for the treatment and control groups were aligned prior to the onset of U.S.-China trade friction, then the use of the DID method satisfies the parallel trend assumption, as illustrated in Figure 1. Figure 1 demonstrates no significant difference in export trends between the groups prior to the trade friction, with differences becoming increasingly apparent within the two months following the onset. The

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curve crosses the zero line, indicating a significant upward trend around the policy implementation, suggesting a notable impact of U.S.-China trade friction on China's electronic exports and validating the DID model's feasibility in this context. The subsequent trend lines show widening gaps in export growth across countries, likely due to economic adjustments or external global economic conditions affecting export structures, suggesting a persistent trend.

In conducting differential estimation and regression, the lower the p-value, the greater the significance. In statistics, a p-value below 0.05 indicates that observed variables reach a significant level of change. Table 2 presents results where "pre" denotes the period before policy initiation, "post" after policy enforcement, and "current" the policy start time. The p-values indicate that export changes before trade friction were not significant (p-value > 0.1), while after the friction, the p-value steadily declines from 0.198 to near zero, suggesting that the impact of trade friction became increasingly significant over time. These results are consistent with the assumptions for using the DID model. In summary, the model has successfully passed the parallel trend test.

4.2. DID Fixed Effect Baseline Regression

Table 3 presents the fixed-effects regression results based on the DID model, examining how U.S.-China trade friction (DID) affects China's electronic product exports, using GDP and export value as fixed-effect controls. From Table 3, the regression coefficient for export value is 0.315, significant at the 1% level, while the GDP coefficient is 15.25, significant at the 10% level. After introducing the trade friction effect, the DID coefficient is 6517, also significant at the 1% level. The positive coefficients of the independent variables (EXPV, GDP, and DID) indicate that increases in these variables have a positive impact on the dependent variable.

This suggests that GDP has a weak positive effect on China's electronic product exports. According to the GDP calculation formula, GDP growth generally accompanies increased domestic consumption and investment demand. This prompts production enterprises to increase output, meeting domestic demand while also generating surplus for export. Additionally, higher GDP implies increased domestic production and productivity, which improves product quality, quantity, and diversity-factors that enhance export competitiveness and support expansion of export scale. As GDP grows, income levels tend to rise, which may increase demand for imported goods, further stimulating the production and sales of export goods. Rising demand for imported goods also promotes domestic supply chain development, allowing more goods to enter the export market. Lastly, higher GDP and per capita income often raise both domestic and foreign demand for investment and consumer goods, stimulating foreign demand for domestic products. In this context, higher GDP positively affects export sales, as a prosperous and growing economy enhances a nation's export capacity and market share, advancing international trade.

The export value also has a significant positive effect on the volume of electronic product exports, as export value directly influences export volume. Although relative exchange rate fluctuations between countries may occasionally introduce discrepancies, export value generally aligns with export volume changes. Furthermore, the coefficient of U.S.-China trade friction, significant at the 1% level, further validates that U.S.-China trade friction has a significantly positive impact on China's electronic product exports. In conclusion, U.S.-China trade friction policies have notably promoted the development of China's electronic exports. This finding aligns with the conclusion that U.S.-China trade friction generally optimizes the export conditions for China's electronic products.

4.3. Placebo Test

To further assess the robustness of the data, this study conducted a placebo test. Under the established model, a country was designated from among China's top 10 trading partners as if

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it were affected by U.S.-China trade friction on China's electronic product exports, while the total sample size remained at 1,170 observations. If the newly designated control group shows no significant positive impact, this would confirm the robustness of the previous findings. This study draws on Fu Jiasha's (2019) methodology, in which all regions are randomly assigned several shocks; if the mean estimated coefficients from the random samples cluster around zero, while the true estimated coefficient significantly deviates from zero, this would suggest that the results are unaffected by other unobserved factors.

In this study, the number of shocks was set to 500. The kernel density distribution of the estimated coefficients is shown in Figure 2. The coefficients estimated from random samples approximate a normal distribution around zero, while the true estimated coefficient significantly deviates from zero, indicating that the results are relatively robust and pass the placebo test.

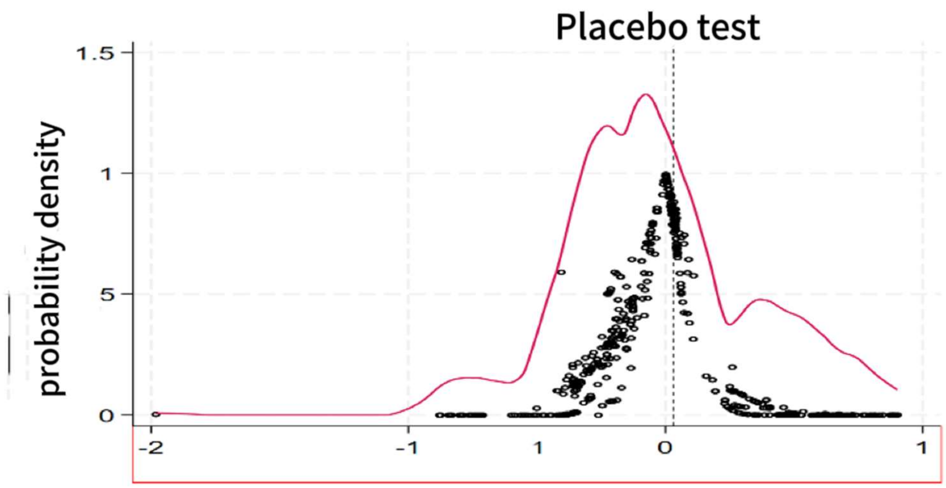

Figure 2. Placebo test

5. Conclusion and Policy Implications

5.1. Conclusion

After conducting theoretical and empirical analyses, this study concludes that, while U.S.-China trade friction has negatively impacted China's exports of electronic products to the U.S., it has, on the whole, stimulated the growth of China’s overall electronic exports. This conclusion aligns with the initial hypothesis.

Externally, the primary causes of this effect likely lie in the economic disparities among China’s top ten export destinations over the past decade. These differences manifest in micro-level fluctuations in relative exchange rates and macro-level adjustments in economic policies, alongside the impact of domestic, unavoidable expenditures affecting control variables like export value and GDP. These factors are especially unpredictable in developing countries. Internally, high tariffs and other trade barriers imposed by the U.S. have led China to reduce exports to the U.S. market and instead focus on expanding exports to domestic and neighboring markets. Evidence supporting this can be seen in the fact that, despite the reduction in China’s U.S. export market due to trade friction, China’s total electronic exports have continued to increase, suggesting strengthened economic cooperation and trade with other partners.

According to the theory of comparative preferences, if electronic products are also consumed domestically, export potential often correlates with domestic demand. Moreover, the closer two countries' demand structures, the greater the trade volume between them. Average income levels, serving as an indicator of demand structure similarity, can further influence trade. With

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China’s accession to international trade organizations and the signing of the Regional Comprehensive Economic Partnership (RCEP), China’s collaboration with ASEAN countries has deepened, narrowing economic disparities and aligning demand structures. Following the trade diversion effect discussed earlier, U.S. import restrictions and raised tariffs on electronic products have increased their relative price domestically. Additional trade barriers in the U.S. prompt imports to shift from high-tariff countries to low-tariff ones, reshaping trade directions and impacting market share distribution. This trade diversion effect is supported by evidence from the study “Export Diversion Effect of U.S.-China Trade Friction: Evidence from Monthly Data 2009–2021,” which shows that as the U.S. raises tariffs and trade barriers, China increases exports to nearby Asian countries while reducing exports to the U.S.

For example, China has reduced electronic exports to the U.S., potentially in response to anti-dumping measures, as similar actions by China might prompt other countries to impose anti-dumping tariffs on Chinese products, thereby decreasing exports. Conversely, as anti-dumping and countervailing actions often target electronics, textiles, chemicals, household goods, and food products, China has increased exports to nearby developing countries, such as India, that lack the capacity to initiate anti-dumping measures against Chinese products. Facing U.S.-initiated trade frictions involving local procurement and subsidies, China has also expanded exports to countries such as Japan, Germany, and the Netherlands. In response to U.S. discriminatory procurement policies and trade subsidies, China’s exports have shifted towards relatively friendly developed nations, further diversifying export markets.

Consequently, while U.S.-China trade friction has reduced electronic exports to the U.S., trade redirection has increased exports to other countries, maintaining the overall upward trend in electronic exports and optimizing China’s total export structure. This outcome is consistent with the empirical model’s findings.

In conclusion, trade diversion mitigates the effects of U.S.-China trade friction and has even enhanced the structural environment for China’s electronic exports. Overall, U.S.-China trade friction has motivated China to pursue increased cooperation with neighboring countries, creating new markets and opportunities.

5.2. Further Thinking

The impact of U.S.-China trade friction on China’s trade development is profound and lasting. Since the 1980s, the U.S., leveraging its international influence, has imposed various restrictions on trade exchanges with China, a trend that has intensified in the 21st century. Nevertheless, China has consistently transformed challenges into opportunities, with its import and export trade steadily accelerating. A significant factor is China's proactive approach in seeking broader markets and fostering trade relationships globally.

To date, China has joined the World Trade Organization (WTO) and signed economic agreements with Southeast Asian nations, bolstering its international standing and reducing the impact of trade friction. This approach has made a substantial contribution to China’s trade growth by expanding markets. Building new trade partnerships and strengthening existing ones is essential for reducing import concentration and managing unexpected risks.

With the globalization of the economy, international trade regulation has improved, increasing transparency and reducing trade biases and barriers. This trend offers an opportunity for Chinese electronic products to reach a global audience, creating a larger market and a favorable environment for growth. Promoting online trade and reinforcing ties with allied economies is a strong response to trade friction. Additionally, China must diversify its markets to mitigate the risks of over-concentration in imports and exports.

Both countries should recognize that trade friction harms their economies. Promoting peaceful dialogue and building a constructive trade environment is fundamental to sustaining a positive U.S.-China trade relationship. While a trade deficit exists, the high trade volume between the

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U.S. and China attests to their mutual dependence. Sustainable and peaceful development is the correct path, as China's trade growth remains closely tied to the substantial volume of U.S.-China trade.

References

[1] J.X. Lv, S.H. Zhang, C.X. Qiu: Research on the Export Deflection Effect of US-China Trade Frictions: Evidence from Monthly Data from 2009 to 2021 [J]. Economic Science, 2023, (05): 55-78.

[2] Y.X. Wang, Z.X. Zheng, Y.F. Zhang: Research on the Impact of Sino-US Trade Frictions on China's Mechanical and Electrical Products Exports [J]. China Circulation Economics, 2023, (15): 48-51.

[3] Y.J. Yang, C.X. Zhang, X.H. Hou: The Dynamic Impact of Tariff Shocks in Trade Frictions [J]. Scientific Decision Making, 2023, (08): 174-188.

[4] C.Y. Hang: An Empirical Study on Technical Trade Barriers to China's Electronic Information Products Exports [D]. Shanghai International Studies University, 2021.

[5] L. Chen, H.J. Wu: Research Status and Potential Problems of the Difference-in-Differences Method in China [J]. The Journal of Quantitative & Technical Economics, 2015, 32(7): 133-148.

[6] J.G. Xie, X. Wang: The Trade Consequences of the Sino-US Trade Conflict: Based on Data from Segmented Products in Sino-US Trade [J]. Journal of Finance and Economics, 2021, 42(1): 86-93.

[7] Y. Hu, X.X. Liu: Prospects and Coping Strategies for Sino-US Aquatic Product Trade in the Context of Trade Frictions [J]. Practice in Foreign Economic Relations and Trade, 2020(7): 45-48.

[8] Y.H. Li, X.R. Wang, Y. Zhang: The Impact of Sino-US Trade Frictions on China's Agricultural Trade [J]. Journal of Anhui Agricultural Sciences, 2024, 52(03): 212-217.

[9] J.L. Wang, Y.X. Ma, Y.R. Xin, et al: The Impact of Tariff Measures on Agricultural Energy Use and Carbon Emissions: Taking Sino-US Trade Frictions as an Example [J]. Ecological Economy, 2024, 40(02): 124-132.

[10] G.Z. Wu, S. Deng: An Empirical Study on the Impact of Sino-US Trade Frictions on China's Sporting Goods Export Trade [C]//China Sport Science Society. Proceedings of the 13th National Congress on Sport Science of China--Poster Presentation (Sport Industry Branch). School of Sports Science, Southwestern University of Finance and Economics; 2023: 4.

[11] F.H. Sun, J.L. Xiong, X. Gao, X.P. Lai, X.J. Zhang: Research on Ecological Compensation Based on Ecosystem Service Value: A Case Study of Yangzhou City in the East Route of the South-to-North Water Diversion Project [J]. Resources & Industries, 2021, 23(03): 38-49.

[12] J.X. Yan, H.Q. Qiao, X. Kang, M.H. Zhang, D.Y. Sun: Research on the Ecological Effects of Land Use Change in Ganzhou District Based on Ecosystem Service Value [J]. Resources & Industries, 2020, 22(05): 48-54.

[13] Q.B. Jiang, Q.M. Tan: The Impact of High-tech Industry Agglomeration and Environmental Regulation on Ecological Efficiency: Evidence from Regional Development in China [J]. East China Economic Management, 2021, 35(03): 86-92.

[14] S. Chen, D.C. Ren, T. Xia, J.M. Li, G.Y. Du, D. Wang, Q.X. Wang, T. Zhang: Ecosystem Service Assessment under the Theoretical Framework of Marine Ecological Capital [J]. Acta Ecologica Sinica, 2013, 33(19): 6254-6263.

[15] Q.B. Di, L.X. Xu: Spatio-temporal Differences in the Innovative Development of China's Marine Economy [J]. Resources & Industries, 2020, 22(03): 65-73.

[16] S. Lu, J. Xiong: Does the Establishment of Ecological Civilization Pilot Zones Improve Agricultural Green Efficiency? Based on the Empirical Data of Hunan Province [J]. Journal of Central South University (Social Science Edition), 2020, 26(03): 90-101.

[17] F. Ding, G.Y. Zhuang: Does the Establishment of National Key Ecological Function Zones Promote Economic Development? Policy Effect Evaluation Based on the Difference-in-Differences Method [J]. China Population, Resources and Environment, 2021, 31(10): 19-28.

ISSN: 2710-0723

[18] C. Qu, G.H. Liu, W.J. Wu, J.N. Wang: Environmental Efficiency Evaluation of Ecological Compensation in National Key Ecological Function Zones along the Yangtze River Economic Belt [J]. Research of Environmental Sciences, 2020, 33(02): 471-477.

[19] M. Dong, C.F. Li: The Net Carbon Reduction Effect of Low-carbon Province Pilot Policies [J]. China Population, Resources and Environment, 2020, 30(11): 63-74

[20] Bown, C. P. Crowley, M. A: 2010,"China's Export Growth and the China Safeguard: Threats to the World Trading System" [J],Canadian Journal of Economics,Vol. 43,No. 4: 1353-1388.

[21] Bown,C. P. ,Crowley,M. A.:2007,"Trade Deflection and Trade Depression" [J],Journal of International Economics,Vol. 72,No. 1: 176-201.

[22] Chandra,P. ,2016,"Impact of Temporary Trade Barriers: Evidence from China" [J],China Economic Review,Vol. 38: 24-48.

[23] Cheng,L. ,Mi,Z. ,Coffman,D. ,Meng,J. ,Chang,D. ,2021,"Destruction and Deflection: Evidence from American Antidumping Actions Against China"[J],Structural Change and Economic Dynamics,Vol. 57: 203-213.

[24] Fajgelbaum,P. D. ,Goldberg,P. K,Kennedy,P. J. ,Khandelwal,A. K. ,2020,"The Return to Protectionism"[J], The Quarterly Journal of Economics,Vol. 135,No. 1: 1-55.