

The Research on the Influence of China-US Trade Friction on China's Communication Equipment Export

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Abstract

This study examines the impact of Sino-US trade frictions on high-tech industries such as communication equipment, systematically assessing the direct effects, underlying mechanisms, and structural differences of US tariff increases. Using 2017-2024 HTS-8-digit data and employing methods including two-way fixed effects models, the findings reveal: (1) Tariffs significantly suppress exports, with a 1% tariff rate increase leading to an average export decline of approximately 24.9%; (2) The impact exhibits heterogeneity, where intermediate goods and low-end products are more affected than final products and high-end goods; (3) A "price pass-through" mechanism exists, where exporters absorb part of the cost through strategic price reductions. The research demonstrates that trade frictions generate trade-distorting effects through cost and supply chain channels, providing a basis for industries to address international competition and optimize global layouts.

Keywords

Sino-US Trade Friction; Communication Equipment; Tariff; Heterogeneity Analysis.

1. Introduction

Since 2018, the Trump administration in the United States has unilaterally provoked trade frictions with China, imposing Section 301 tariffs on China, with high-tech industries such as communication equipment becoming the key targets of tariff increases. The first round of the \$34 billion list covered communication products such as base station equipment and optical cables, later expanding to a broader scope. According to customs data, China's communication equipment exports exceeded \$200 billion in 2022, accounting for approximately 30% of the global market share. The strategic intent of the United States is very clear: to curb China's rise in the high-tech sector.

The communication equipment industry serves not only as a cornerstone of China's foreign trade but also as a pivotal sector for technological innovation. The Outline of the 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives Through 2035 designates the electronics and information industry as a core domain for cutting-edge technological breakthroughs, with strengthening its industrial chain development as a key priority. Therefore, a systematic analysis of how Sino-US trade frictions impact China's communication equipment exports holds strategic significance for overcoming technological blockade challenges and optimizing the global value chain structure.

2. Literature Review

Existing literature primarily examines the causes and impacts of Sino-US trade through empirical studies. The motivations behind US actions are twofold: to revitalize domestic manufacturing, address the trade deficit, and protect workers (Zhang Xiaolei et al., 2018)[1]; and to curb China's economic rise and maintain US technological supremacy and global

hegemony (Zhang Shujing and Wen Kairu, 2019)[2]. The impacts are summarized in three aspects.

The tariff shock has brought about deepening comprehensive impacts. From a macro perspective, the mutual tariff increases between China and the US result in a lose-lose situation for both countries, with China suffering greater losses (Tian Kailan et al., 2021; Itakura, 2020)[3]. Lü Yue et al. used the WITS-SMART model to empirically study that the welfare loss caused by trade frictions to China is greater than that to the US, approximately 2.6 times the US welfare loss. At the micro level, Sino-US trade frictions have led to a reduction in the overall export volume of China's electronic information industry, demonstrating trade diversion effects. (Liu Jianjiang and Li Xuesha, 2025)[4] The "trade scale reduction" effect, the "enterprise investment diversion" effect of market regulation, and the "innovation R&D disruption" effect of technological blockade (Wu Fengjiao and Wu Hongliang, 2025)[5] have hindered the value of Chinese enterprises-particularly their innovation chains (Zhang Xiaoyu, 2019)[6], suppressing the sustainability of corporate R&D investment and patent output (Li Haoyang et al., 2021)[7]. Jiang Hui (2019)[8] proposed that US export controls on China not only suppress other countries' exports but also impact the exports of small and medium-sized US industrial chains.

The tariff impact on communication equipment is significant. To curb the development of China's high-tech industry, the United States has imposed major tariff sanctions on electronic information industries such as communication equipment, attempting to block China's high-tech industry from climbing to the top of the global value chain through financial, technological blockades, and market access restrictions (Lei Shaohua, 2019)[9]. In the entity list issued by the United States, China's main entities are in the electronic computer and communication industries (Yang Yutian and Chen Feng, 2018)[10], among which the electronic information industry has been subjected to the most severe sanctions (Zhou Lei et al., 2020)[11]. Compared to communication products with higher export competitiveness, the United States has imposed the most stringent tariff pressures on high-tech industries and products with weaker export competitiveness (Jiang Yeheng, 2021)[12], which has had negative impacts on export scale and talent mobility (Liu Shenhua et al., 2024)[13].

In summary, while existing research provides valuable macro-level insights, it often lacks detailed, product-level analysis. This study addresses that gap by focusing on disaggregated product codes within the communication equipment industry.

3. Model Setting and Data Processing

3.1. Model Specification, Specification of Model

3.1.1. Two-way Fixed Effects Model

This study employs a two-way fixed effects model to evaluate the effects of US sanctions tariffs on China's communication equipment imports. The specific model setup is as follows:

$$\ln(\text{Export})_{it} = \beta_0 + \beta_1 \text{Tariff}_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Here, i stands for the product and t for the year. $\ln(\text{Export})_{it}$ as the dependent variable, it represents the natural logarithm of the amount of the i -th product exported from China to the United States in year t . Tariff_{it} as the core explanatory variable, it represents the actual effective tariff rate imposed by the United States on the i -th product of China in year t . X_{it} as a set of control variables for the price of U.S. exports to China over time, it mainly includes the logarithm of the unit price of the product imported from China by the U.S. μ_i is Fixed effect for the product, used to control time-invariant product-specific factors. λ_t controls for the

shared macroeconomic time trends across all products, while the random disturbance term ε_{it} introduces idiosyncratic variations.

3.1.2. Robustness Test: Dynamic Panel Model

Given the potential inertia in firms' export behavior (where prior-period export volumes may influence current-period performance), this study incorporates the lagged first-period value of the dependent variable in Model (1) to test the robustness of the benchmark regression results, thereby constructing the following dynamic panel model:

$$\ln(\text{Export})_{it} = \beta_0 + \rho \ln(\text{Export})_{i,t-1} + \beta_1 \text{Tariff}_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Here, $\ln(\text{Export})_{i,t-1}$ represents the first lag of the dependent variable, with its coefficient ρ capturing the dynamic continuity of export behavior. This study employs the Anderson–Hsiao Instrumental Variable (IV) method to assess whether the negative impact of tariffs remains significant after controlling for export inertia.

3.2. Variable Definition and Data Source

3.2.1. Explained Variable

This paper selects eight-digit export codes of major communication equipment items (8517,8525,8529) in the U.S. High-Tech Products (HTS) classification as dependent variables. The imposition of additional tariffs will lead to increased export costs, structural adjustments in import markets, and a decline in the competitiveness of China's communication equipment, resulting in trade suppression effects and trade diversion effects.

3.2.2. Key Explanatory Variable

This study correlates the U.S. HTS eight-digit codes with corresponding tariff rates, using data from the USITC DataWwb database. The tariff implementation timeline is segmented by year, with missing values processed through multiple imputation. Following Liu Jianjiang et al.'s (2025)[4] methodology, the policy shock points are set for 2018,2019, and 2020. According to the U.S. Section 301 tariff documents, the four rounds of additional tariffs took effect on July 6, 2018 (27 items, 25%), August 23,2018 (1 item, 25%), 2019 (14 items, 10%), and 2020 (cumulatively 5 items, 25%).

3.2.3. Control Variable

The control variable is the unit price of U.S. imports from China, used to assess its impact on China's export competitiveness. This data is derived from the USITC database, calculated based on import values and the first measurement unit, with missing values handled using the indicator missing method.

3.2.4. Grouping Variables

The classification of final products and intermediate goods is based on the United Nations Broad Economic Classification (BEC), categorizing sample products into final goods (primarily consumer goods and capital goods) and intermediate goods. By comparing the differential export elasticity of these two categories to tariffs, we can determine whether trade frictions impact production or suppress end-demand.

The grouping of high-end and low-end products is determined by price factors to assess technical complexity indicators, which uses price factors to assess technical complexity and constructs a technical hierarchy dummy variable (HighTech_i).

3.2.5. Variable Declaration

This study covers the period from January 2017 to December 2024, primarily involving annual export data of HS-8-digit code communication equipment products from Chinese Customs. All

variables were natural logarithmized to eliminate heteroscedasticity. Specific variable descriptions are presented in Table 1.

Table 1. Variable Definitions and Data Sources

explained variable	ln_export	China's export volume of communication equipment to the US (taking natural logarithm)	Trade Map database
key explanatory variable	Tariff _{at}	The actual tariff rate imposed by the U.S. on China	USITC DateWwb database
controlled variable	ln_UTprice	The unit price of American imports from China (logarithm)	Calculated based on USITC import values and quantities
Grouping variables	HighTech _i	The product technology level is represented by a dummy variable, where 1 indicates high-tech communication equipment and 0 indicates medium-to-low-tech communication equipment.	Manual coding based on BEC data

4. Empirical Test

4.1. Descriptive Statistical Analysis

4.1.1. Basic Descriptive Statistics

Table 2 presents the descriptive statistics of the primary variables. The study sample comprises 544 observations (product-month), covering the key periods of the Sino-US trade friction from January 2017 to December 2024.

Table 2. Descriptive Statistics of Major Variables

Variable type	mean value	standard deviation	least value,	maximal value	observed value
ln_export	9.726	6.026	0.000	20.760	544
total_tariff	0.153	0.119	0.000	0.266	435
ln_UTprice	1.592	1.885	-2.438	6.777	544
ln_US_Import_Total	13.881	2.973	1.099	20.818	423
HighTech	0.500	0.500	0	1	544

The mean value of the explanatory variable ln_export is 9.726, with a standard deviation of 6.026, and its range is from 0 to 20.760. The sample exhibits certain variability across different periods and time points.

4.1.2. Analysis of the Time Trend of Core Variables

Table 3 precisely illustrates the annual tariff trends of core explanatory variables. Data shows that since the 2018 Sino-US trade war, the average tariff has increased by 0.18 percentage points compared to 2017. After the trade war ended, the average tariff rate declined but remained higher than 2017 levels, indicating the long-term impact of the Sino-US trade tensions.

Table 3. Annual Average Changes in Tariff Rates (total_tariff)

year	2017	2018	2019	2020	2021	2022	2023	2024	Full sample
mean value	0.045	0.226	0.246	0.235	0.236	0.150	0.173	0.171	0.185
standard deviation	0.086	0.138	0.118	0.111	0.108	0.122	0.129	0.128	0.134

4.1.3. Reliminary Correlation Analysis between Variables Preliminary Correlation Analysis between Variables

Prior to conducting regression analysis, a preliminary analysis of the Pearson correlation coefficient matrix among major continuous variables was performed, revealing that tariffs are negatively correlated with exports, with the correlation coefficient between ln_export and total_tariff being -0.412, consistent with the initial hypothesis that rising tariffs would suppress exports; the unit price of imports has a certain impact on China's exports to the United States.

Table 4. Correlation Coefficient Comparison Table

variable	ln_export	total_tariff	ln_UTprice
ln_export	1.000		
total_tariff	-0.412	1.000	
ln_UTprice	0.105	0.032	1.000

4.2. Regression Analysis

This section employs a static panel model to conduct benchmark regression analysis. Model (1) uses ln_export as the dependent variable, with total_tariff as the core independent variable, while controlling for ln_UTprice, HighTech, and two-way fixed effects (product and year). Model (2) provides mixed OLS results for comparison.

As shown in Table 2, column (1) indicates that a 1 percentage point increase in tariffs reduces China's related exports to the US by approximately 24.9%. After controlling for product-specific and macroeconomic factors, US tariffs significantly suppressed exports. Column (2) shows a similarly significant negative coefficient, confirming robustness. These results strongly support the core hypothesis that trade friction caused a significant trade diversion effect for China's communication equipment exports to the US. The reasons include: tariffs eroding price competitiveness; Chinese firms diversifying markets to regions like Southeast Asia and the EU; US importers seeking alternative suppliers to reduce dependence; and prolonged friction lowering reliance on the US market.

For control variables, the positive coefficient of ln_UTprice in the fixed effects model suggests that unit price increases, driven by quality or brand upgrades, accompany higher export volumes. In contrast, the negative coefficient in the mixed model likely reflects a false correlation from unaccounted product heterogeneity, highlighting the importance of controlling for such differences.

In summary, the benchmark regression confirms that Sino-US trade friction through tariffs had a significant negative impact on China's exports, and this trade diversion effect remains robust after controlling for product heterogeneity and time trends.

Table 5. Impact of Tariffs on China's Communication Equipment Exports to the US

	(1)	(2)
	two-way fixed effect	mixed section
total_tariff	-24.858*** (2.123)	-27.457*** (2.017)
ln_UTprice	0.892*** (0.184)	-0.501*** (0.140)
ln_UTprice_missing	-2.045*** (0.506)	-4.708*** (0.616)
constant	13.823*** (0.699)	14.490*** (0.806)
product fixed effect	yes	no
year fixed effect	yes	yes (as a dummy variable)
observed value	544	544
R ²	0.623	0.489

1. The value in parentheses represents the robust standard error. 2.,, respectively indicate significance at the 10%,5%, and 1% levels.

4.3. Robustness Test

To ensure the reliability of the baseline regression results, this section conducts robustness tests from four dimensions: eliminating interference from special periods, adjusting the standard error clustering method, considering dynamic effects, and performing placebo tests.

4.3.1. Placebo Test

To further validate that the benchmark regression results are not accidental, this study conducted a placebo test. While maintaining the model setup, control variables, and fixed effects unchanged, the actual tariff variable was replaced with a "pseudo-tariff" variable randomly generated from a uniform distribution. The regression process was repeated 500 times, with the coefficient estimates of the virtual tariff recorded in each iteration.

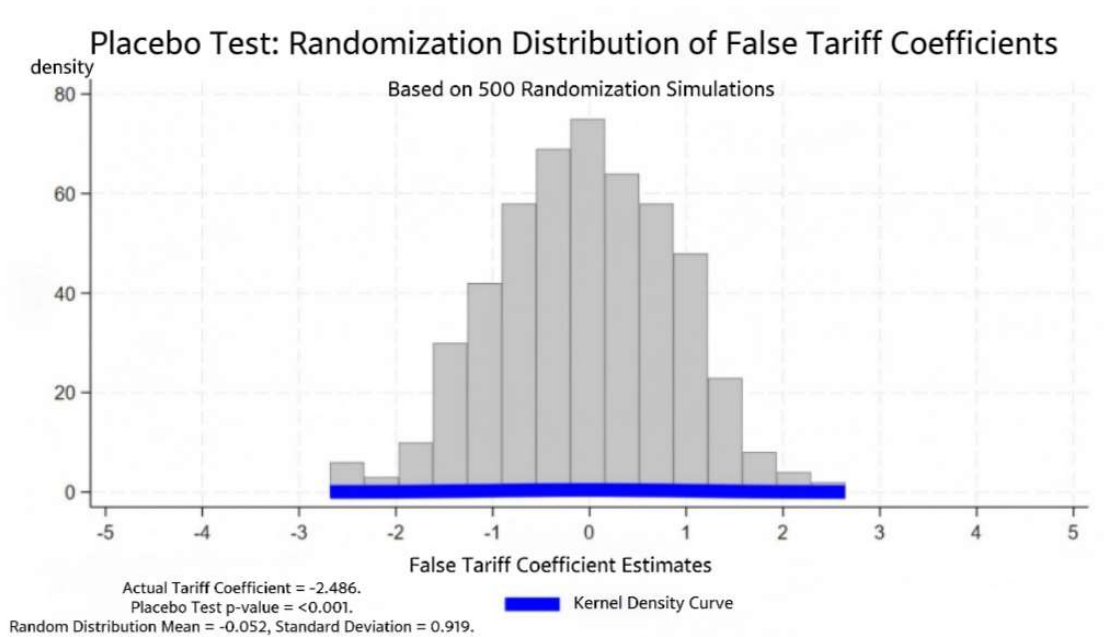


Figure 1. Placebo test – Pseudo-tariff coefficient distribution plot

The test results are illustrated in Figure 1. The pseudo-tariff coefficients generated through 500 random simulations closely clustered around zero, with a mean of -0.052 and standard deviation of 0.919 on their kernel density curves, exhibiting a near-normal distribution centered at zero. In contrast, the true tariff coefficient of -24.858 in the benchmark regression significantly deviated from this random distribution, lying outside its extreme tail. Statistically, no simulated coefficient ever approached the absolute value of the true coefficient, and the placebo test showed an extremely small p-value, indicating that the probability of observing negative effects like those in the benchmark regression under randomization conditions was exceedingly low.

This test result strongly supports the core hypothesis of this paper: the additional tariffs imposed by the United States indeed have a significant inhibitory effect on the export of China's communication equipment to the United States, and this conclusion is highly robust in the absence of observed confounding factors.

4.3.2. Dynamic Panel Model: Instrumental Variable Method (Anderson-Hsiao IV)

This study employs a short panel data structure with a sample time dimension $T=8$. Research by Judson and Owen (1999) and Bun and Windmeijer (2010) indicates that when $T < 10$, traditional system GMM and difference GMM methods may exhibit significant small-sample bias. Roodman (2009) notes that GMM approaches are prone to instrumental variable over-inflation under finite samples, which can invalidate over-identification tests. Therefore, the Anderson-Hsiao IV method is more appropriate for this study. To address this, we apply intra-individual decentralization to eliminate fixed effects and use the second-order lag term ($L2_ln_export$) of the dependent variable as an instrumental variable for the first-order lag term (L_ln_export). The results are presented in Column (1) of Table 6.

The coefficient of the first lag term of export value is 0.579, which is significantly positive at the 1% level. This indicates that China's communication equipment exports to the US exhibit a significant positive forward-looking dependence, where larger previous export volumes lead to a stronger current export foundation. The coefficient of total tariffs is -3.220, which is significantly negative at the 1% level. After controlling for the dynamic inertia of exports, the additional US tariffs still exert an independent and significant inhibitory effect on China's exports to the US. The dynamic model separates long-term equilibrium from short-term dynamics, resulting in its coefficient absolute value of -3.220 being smaller than that of the baseline static model (-24.8). The static model estimates the total effect including long-term adjustments, while the coefficients in the dynamic model reflect the marginal effect after controlling for previous export levels. The impact of tariff shocks is partially absorbed by the decline in previous exports, hence the estimated current marginal effect is smaller.

The F-statistic of the first stage regression of the instrumental variable is 378.15, which is far beyond the empirical threshold of 10. It strongly rejects the null hypothesis of "weak instrumental variable", proves that the selected first and second lag terms are highly correlated, satisfies the correlation requirement of the instrumental variable effectiveness, and the estimation results are credible.

4.3.3. Exclusion of COVID-19 Affected Years for this Study

The 2020-2021 global COVID-19 pandemic not only caused turbulence in international markets but may have obscured the true impact of tariffs. After excluding the 2020 and 2021 samples, the regression analysis was repeated. As shown in Column (1) of Table 6, the total tariff coefficient remained highly significant at the 1% level, with a negative value of -24.947, closely matching the baseline regression result of -24.858. This indicates that the tariff disruption effect identified in the baseline regression was not driven by the pandemic as a specific exogenous shock, demonstrating robustness of the conclusions.

4.3.4. Adjusting the Standard Error Clustering Method

To address potential inference bias caused by model autocorrelation or heteroscedasticity, we implemented two standard error clustering adjustments. Column (2) of Table 6 clusters standard errors at the product level to control for potential correlations in disturbance terms across different periods of the same product. Column (3) clusters standard errors at the year level to account for common macroeconomic shocks affecting different products during the same period. After these adjustments, the coefficient estimates for total tariffs remain consistent with the benchmark model at -9.29, with significance levels between 1% and 5%. This robust evidence demonstrates that the benchmark regression results are consistent across different error structure assumptions, and the significance of estimated effects is not compromised by incorrect standard errors.

Table 6. Robustness test results

variable	(1) Anderson-Hsiao IV	(2) Excluding the pandemic	(3) Product level clustering	(4) Year-level clustering
L.ln_export	0.579* (0.077)			
total_tariff	-3.220*** (0.640)	-24.947*** (2.425)	-24.858*** (2.675)	-24.858*** (3.579)
ln_UTprice	1.238* (0.200)	0.872*** (0.243)	0.892*** (0.302)	0.892*** (0.202)
UTprice_missing	-0.264 (0.231)	-2.572*** (0.728)	-2.045** (0.918)	-2.045*** (0.514)
constant term	-0.019 (0.198)	13.795*** (0.900)	13.823*** (1.031)	13.823*** (0.939)
F-statistic for the first stage	378.15			
N	1,833	408	544	544
r2

Standard errors in parentheses* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

After robustness tests such as dynamic panel analysis, placebo testing, exclusion of special periods, and modified standard error clustering, the core conclusions of the benchmark regression remain solid. The study's main finding that "Sino-US trade friction (tariffs) significantly suppresses China's communication equipment exports to the US" is robust and reliable.

4.4. Heterogeneity Analysis

4.4.1. Value Chain Heterogeneity

Intermediate goods are more severely impacted than final products. The absolute value of the total tariff coefficient is -28.581 for intermediate goods and -11.355 for final products, representing 2.5 times the absolute value of intermediate goods and being statistically significant at the 1% level. The Sino-US trade friction has increased cross-border production costs through tariff hikes, severely impacting intermediate goods trade. While final product exports also face negative effects compared to intermediate goods, they demonstrate greater resilience. This is because final products typically have higher added value, making supply chain adjustments and finding alternative suppliers more challenging. Complete substitutes are

hard to find in the short term, and their demand price elasticity may be lower. Therefore, the price increases caused by tariffs have a relatively smaller impact on demand volume.

4.4.2. Technical Heterogeneity

Low-end product exports are more vulnerable to tariff impacts. As shown in columns (3) and (4), the elasticity of tariff suppression on low-end exports (-28.183) is significantly higher than that on high-end products (-18.149). This indicates asymmetric effects of trade frictions targeting low-end products. The low-end market operates under near-perfect competition, where razor-thin profit margins cannot absorb sudden tariff surges, causing orders to rapidly shift to low-cost countries. In contrast, high-end products-enriched by technological barriers, performance advantages, or brand value-provide exporters with cost-pass-through capacity or profit buffers, making it difficult for buyers to switch suppliers in the short term.

4.4.3. The Intergroup Differences in Control Variables Provide Supplementary Evidence

ln_UTprice shows statistically significant positivity only in the final product category, consistent with consumer behavior theory where higher pricing may signal superior quality or brand value. However, price variables remain insignificant in intermediate goods and technology-based market segments, further confirming that these markets prioritize cost control, technical specification compliance, and supply stability over mere price signals.

Table 7. Results of Heterogeneity Analysis

variable	(1)end-product	(2)intermediate goods	(3)high-end product	(4)low-end product
total_tariff	-11.355*** (4.231)	-28.581*** (3.537)	-18.149*** (3.459)	-28.183*** (3.810)
ln_UTprice	2.175*** (0.473)	0.194 (0.168)	0.330 (0.304)	0.163 (0.222)
UTprice_missing	2.838* (1.673)	-1.917*** (0.504)	-5.193*** (1.390)	-1.504*** (0.497)
_cons	7.915*** (2.017)	16.195*** (0.775)	14.081*** (1.285)	17.340*** (0.829)
N	128	320	208	240
r2	0.352	0.421	0.387	0.439

Standard errors in parentheses* p < 0.10, ** p < 0.05, *** p < 0.01

4.5. Mechanism Test

The U.S. tariffs directly increased the sales costs of China's communication equipment products in the U.S., suppressing terminal demand. However, the trade-distorting effect of tariffs not only suppresses demand but also leads exporters to adopt strategic pricing to partially offset the cost increase, thereby maintaining market share and competitiveness. This paper proposes a "price transmission mechanism": U.S. tariffs would force Chinese exporters to lower prices to maintain their market share in the U.S. To test this mechanism, referencing relevant studies, this paper sets up the following empirical testing approach, examining it through a three-step regression method:

Step 1(General Effect): Testing the Total Effect of Tariff on Export.

$$\ln \cdot ex_{\{it\}} = \alpha_0 + \alpha_1 Tariff_{\{it\}} + \Gamma_{X_{\{it\}}} + \phi_i + \theta_t + \epsilon_{\{it\}}$$

Step 2 (Mechanism Effect): Testing the Impact of Tariff on the Mechanism Variable (Export Unit Price)

$$\ln_{UT} T price_{it} = \beta_0 + \beta_1 Tariff_{it} + X_{it} + \phi_i + \theta_t + \epsilon_{it}$$

Step 3 (Indirect Effect): After controlling for the mechanism variables, observe the coefficient changes of the impact of tariffs on export volume.

$$\ln_{export_{it}} = \gamma_0 + \gamma_1 Tariff_{it} + \gamma_2 \ln_{UTprice_{it}} + \Gamma_{X_{it}} + \phi_i + \theta_t + \epsilon_{it}$$

The core mechanism variable, $\ln_{UTprice}_{it}$, measures the logarithm of the unit price of exports to the U.S., capturing firms' pricing strategies. All other variables are defined as in the benchmark model.

This paper adopts the price transmission effect for testing. Column (1) is the benchmark regression, showing that the tariff total_tariff has a significant inhibitory effect on the export value \ln_{export} , with a coefficient of -36.130. Column (2) uses the export unit price $\ln_{UTprice}$ as the dependent variable, and the results indicate that the tariff coefficient is significantly negative at the 1% level. This suggests that to cope with the cost disadvantage caused by tariff barriers, China's communication equipment exporters actively reduce their export unit prices to mitigate the impact of tariffs and maintain the price competitiveness of their products in the U.S. market. Column (3) adds the export unit price and its missing dummy variable as control variables in the benchmark regression. The results show that the export unit price has a significant positive impact on the export value; after controlling for price factors, the direct negative impact coefficient of tariffs on the export value is reduced by approximately 31.2%. This confirms that price changes serve as an effective transmission channel for tariffs to affect exports, playing a significant partial mediating role.

Table 8. Mechanism Test of Price Transmission Effect

variable	(1) value of export	(2) export unit price	(3) amount of exports
total_tariff	-36.130* (2.110)	-8.033* (0.597)	-24.858* (2.123)
ln_UTprice			0.892* (0.184)
UTprice_missing			-2.045* (0.506)
_cons	16.323*** (0.365)	3.058*** (0.118)	13.823*** (0.699)
sample number N	544	544	544
product fixed effect	yes	yes	yes
year fixed effect	yes	yes	yes
standard error	robust standard error	robust standard error	robust standard error

Note: The values in parentheses represent robust standard errors, with asterisks (**) indicating significance at the 1%, 5%, and 10% levels, respectively.

5. Conclusion and Policy Recommendations

5.1. Research Conclusion

This paper conducts a systematic empirical study on the impact of Sino-US trade friction on China's communication equipment exports to the US. The main findings can be summarized into the following three points: The tariffs imposed by the US have a significant trade suppression effect on China's communication equipment exports. After excluding the interference of product characteristics and macroeconomic trends, the data show that the higher the tariff level, the lower China's exports to the US. This conclusion has undergone multiple robustness tests, with stable and reliable results, confirming that tariffs are the direct cause of the decline in export volume.

The impact of tariff shocks exhibits significant structural variations. In terms of product categories, intermediate goods used in production and assembly are hit harder than end products directly marketed to consumers, which aligns with our research hypothesis. Compared to high-tech products, less technologically advanced goods with intense market competition show steeper export declines than high-end products with higher technical barriers. Possessing unique technological advantages is key to mitigating external risks.

Chinese enterprises have a high dependence on the United States, and they generally choose to "reduce prices" to cope with the cost increases caused by tariffs. Many China exporters have proactively lowered product prices in an attempt to retain market share. This strategy of trading price for U.S. market share has roughly offset one-third of the negative impact of tariffs, but its long-term sustainability is a cause for concern.

5.2. Policy Proposal

Based on the above conclusions, to help China's communication equipment industry better cope with challenges, enhance its independence, and seize the opportunities of global industrial chain adjustments, the following targeted strategies are proposed for enterprises and governments:

5.2.1. At the Government Level

First, the government should expand its partners and actively promote trade agreements with Belt and Road countries, RCEP member states, and other emerging markets to diversify export channels for China's products. Second, it should firmly adhere to an innovation-driven development strategy to enhance the core competitiveness of industries. Core technologies and brand value are the greatest strengths, and continuous investment in research and development in key "weak links" such as chips and software is essential to build irreplaceable product competitiveness. Third, differentiated support should be provided. For severely affected intermediate and low-end product enterprises, assistance should be offered to upgrade their technologies or shift to emerging markets. For high-end product enterprises with advantages, efforts should focus on helping them break through technical barriers, strengthen brand building, and further consolidate and expand their position in the global high-end market. Through refined and targeted policies, the stability and upgrading of the entire industrial chain can be achieved.

5.2.2. At the Corporate Level

First, enterprises should expand into diversified markets to reduce operational risks. Actively explore the "Belt and Road", RCEP regions, and emerging markets, and expand cooperation with other countries that have deep market demand, reducing reliance on the U.S. market and building a more balanced global market landscape. Second, increase innovation investment to master core technologies. Enterprises need to continuously increase R&D investment, conduct in-depth research on low-tech products, and break through weak links such as key materials

and core components, thereby gaining more sustainable market competitiveness and pricing power in the international market. Third, implement differentiated competition to build comprehensive advantages. Facing external pressure, enterprises should avoid low-level price competition and instead focus on strengthening brand building and quality management, constructing irreplaceable competitive advantages from multiple dimensions such as technology, service, and sustainability.

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