Impact of Sino-US Trade Friction on the Export Trade Behavior of Chinese Apparel and Textile Enterprises

Liqing Wu*

School of International Economics and Politics, Jiangxi University of Finance and Economics, Jiangxi Province, China

Abstract. This study, based on the US customs enterprise-level trade data from 2017 to 2021, employs a fixed effects model to empirically examine the dynamic impact of US tariff policy changes on the export behaviour of Chinese apparel and textile enterprises under the backdrop of Sino-US trade friction. The findings indicate that the US tariff hike policy significantly reduced the frequency of Chinese apparel and textile enterprises' exports to the US, but prompted these enterprises to enhance the weight of single-batch exports by consolidating scattered orders, reflecting a strategic adjustment to spread fixed costs through centralized shipments. The research reveals that driven by external trade pressure, Chinese clothing and textile enterprises achieve cost reduction and efficiency improvement by optimizing the export rhythm and expanding the single - batch scale. At the same time, they need to enhance their risk - resistance capabilities through industrial structure upgrading, market diversification, and global industrial chain layout. This paper makes up for the lack of empirical analysis of the micro - enterprise behavior in the textile and clothing industry in existing research, and provides a basis for the government to formulate industrial policies and for enterprises to optimize trade strategies.

1 Introduction

Since the global financial crisis in 2008, world economic growth has been sluggish, with an intensifying trend of de-globalization and increasingly frequent international trade frictions. As the world's two largest economies, China and the US have a complex and closely intertwined trade relationship, with escalating trade tensions. The US frequently employs tactics such as tariff hikes and trade barriers, impacting the exports of numerous Chinese industries, including the apparel industry, which is a traditional advantage export sector for China [1]. China is a major apparel exporting country, occupying a significant position in the global apparel market. However, Sino-US trade friction has posed numerous challenges for Chinese apparel exporting enterprises, including rising costs and declining market shares. For instance, US tariff hikes have led to increased prices of Chinese apparel in the US, decreased competitiveness, and reduced order volumes. Simultaneously, trade friction has

* Corresponding author: 2202201029@stu.jxufe.edu.cn

also accelerated the transformation and upgrading of the Chinese apparel industry, prompting it to seek new development paths.

Research on Sino-US trade friction spans various aspects of society, including resident welfare, commodity trade, economy, energy, and more. From an industrial perspective, it primarily covers sectors such as high-tech industries, finance, energy, logistics, and forestry. In the realm of resident welfare, it is widely acknowledged that Sino-US trade friction leads to a decline in domestic welfare and a deterioration in income distribution patterns for both China and the US, indirectly causing economic downturns in other countries [2]. Domestic private enterprises also experience a decline in exports to the US and a reduction in labour force [3]. Among core industries in the commercial sector, domestic high-tech industries are most prominently affected by the negative impacts of trade friction [4]. Since 2018, the escalation of Sino-US trade friction has seen multiple rounds of tariff hikes, with the scope of affected product lists expanding to include nine major categories of Chinese competitive manufacturing products, including textiles and apparel, posing significant impacts on Chinese apparel and textile export trade. Existing literature explores the impacts of Sino-US trade friction on Chinese manufacturing, the effects on Chinese textile and apparel trade, and issues related to the export competitiveness of apparel and textile industries in certain provinces [5-8].

In summary, current research on economic uncertainty in China primarily focuses on macroeconomic impacts, with less attention given to the apparel and textile industry. Different industries possess distinct characteristics, hence this study narrows its focus to the apparel and textile sector from the perspective of economic uncertainty. Regarding apparel exports, domestic research mainly revolves around the current status, issues, and countermeasures of Chinese apparel exports, with limited direct empirical analysis. Furthermore, due to the difficulty in obtaining enterprise-level trade data for the apparel and textile industry, in-depth research on the impacts of US tariff policy changes on the export behaviour and coping strategies of Chinese apparel and textile enterprises remains to be enhanced. Accordingly, this study aims to provide policy references for further promoting the high-quality development of the apparel and textile industry by investigating the impacts of US tariff policy changes on the export behaviour of Chinese apparel and textile enterprises to the US and their coping strategies. Specifically, this study utilizes real-time trade data at the enterprise level recorded by US customs from 2017 to 2021, employing a fixed effects model to empirically test the dynamic impact of US tariff policy changes on the export behaviour of apparel and textile enterprises. It explores how enterprises can better respond to shocks and reduce trade losses, providing intellectual support for more precise policy formulation by governments and enterprises.

2 Methodology

This study adopts the research methodology of Liu Yifang et al., constructing a fixed effects model to investigate the impact of US tariff policy changes on the export behaviour of Chinese apparel and textile enterprises to the US [9].

$$Yitm=\beta 0+\beta 1Tarktm+\beta 2Xcontrol+\lambda i+\lambda k+\lambda m+\epsilon itm$$

Here, the fixed effects model effectively controls for individual heterogeneity, time trends, and other unobservable factors that may influence the dependent variable, thereby providing a more accurate estimation of the causal relationship between the core explanatory variable—US tariff policy changes—and the dependent variable—export behaviour of Chinese apparel and textile enterprises to the US. Additionally, the study selects export frequency and export weight as the dependent variables. Export frequency directly reflects the level of activity of

enterprises' export operations to the US market during different periods, serving as a crucial indicator of export behaviour. The export weight is taken in natural logarithms. By using the natural logarithm, the data can better conform to a normal distribution, facilitating subsequent statistical analysis. Moreover, export weight is also a key factor reflecting the scale of enterprise exports [10]. The variable "*Tar*" serves as the core variable, covering HS8-digit tariff schedules mapped to HS6-digit products. This variable directly reflects the critical change of tariff hikes in US tariff policy, which is essential for exploring the impact of tariff policy on enterprise exports.

During the analysis process, the collected data is first organized and pre-processed to ensure accuracy and completeness. Then, following the setup of the fixed effects model, the data is subjected to regression analysis. This analysis examines how the factor of tariff hike lists specifically affects enterprises' export frequency and export weight, while also assessing the significance of various control variables in the model. Ultimately, conclusions regarding the impact of US tariff policy changes on the export behaviour of Chinese apparel and textile enterprises to the US are drawn based on the regression results. The analytical software used is Stata 17.0.

3 Results

The data on Chinese apparel and textile enterprises' exports to the US are sourced from the General Administration of Customs of China, selecting monthly data on US imports of Chinese apparel and textile products from 2017 to 2021, totalling 565,109 observations. The data on US tariff hikes targeting Chinese apparel and textile products are sourced from the USTR. The meanings of the variables and descriptive statistics are presented in Table 1.

Table 1. Descriptive Statistics of Main Variables

Variable Symbol	Definition	N	Mean	SD	Min	Max
export frequency	Export Frequency	565109	5.588	4.607	1	42
lenexport weight	Export Total (Natural Log)	565109	7.605	2.852	0	16.91
tar	Tariff List Inclusion	565109	0.308	0.462	0	1
exchange rate	U.S.-China Annual Tariff	565109	6.726	0.16	6.45	6.89
lenproduct export	Natural Logarithm of Commodity Exports	565109	17.517	2.467	2.534	23.514
lenarea export	Enterprise Export (Natural Log)	565109	22.107	1.592	12.387	23.847

Following the descriptive analysis, a correlation analysis was conducted, as shown in Table 2. Only if there is a correlation between the explanatory and dependent variables do the research findings hold significance. Therefore, the correlation of the variables was tested. The correlation analysis table indicates that all selected explanatory variables are correlated with the dependent variables. The core explanatory variable (Tar) has a significant negative correlation with the dependent variables (export_frequency, lenexport_weight). All control variables show a positive correlation with the dependent variable (export_frequency). The control variables (lenarea_export, lenproduct_export) exhibit a positive correlation with the dependent variable (lenexport_weight), while the control variable (exchange_rate) shows a negative correlation, aligning with the research expectations.

Table 2. Correlation Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)
export_frequency	1.000					
lenexport_weight	0.148*	1.000				
tar	-0.170*	-0.031*	1.000			
exchange_rate	0.005*	-0.009*	-0.008*	1.000		
lenproduct_export	0.234*	0.393*	-0.351*	0.013*	1.000	
lenarea_export	0.434*	0.154*	0.073*	0.028*	-0.159*	1.000

To further avoid interference from multicollinearity among variables, this study employed the Variance Inflation Factor (VIF) for multicollinearity analysis before conducting the baseline regression. As shown in Table 3, the VIF values for all variables are less than 10, indicating no multicollinearity among the variables.

Table 3. Multicollinearity Analysis

	VIF	1/VIF
export frequency	1.372	0.729
area export	1.325	0.755
tar	1.071	0.933
product export	1.063	0.941
exchange rate	1.005	0.995
Mean VIF	1.167	.

As shown in Table 4, the decrease in export frequency ($\beta = -0.186$) reflects enterprises' reduction of scattered orders and shift towards centralized shipments to spread fixed costs, corroborating Handley's sunk cost theory. The increase in export weight ($\beta = 0.081$) indicates that enterprises enhance single-batch scales by consolidating orders.

Table 4. Impact of U.S. Tariff Policies on the Export Behavior of Chinese Apparel and Textile Enterprises to the United States

	Export Frequency	Export Weight
tar	-0.186*** (-4.72)	0.081*** (7.58)
lenarea_ export	0.265*** (37.02)	0.093*** (18.20)
lenproduct_export	0.073*** (51.85)	0.095*** (20.45)
_cons	-5.428*** (-30.42)	-1.727*** (-9.30)
N	565109	565109

t statistics in parentheses* p<0.1, ** p<0.05, *** p<0.01

This study conducted a series of robustness tests to ensure the accuracy of the results. The Poisson Pseudo-Maximum Likelihood (PPML) estimation method was used to replace OLS for estimation. The regression results, as shown in Table 5, confirm that the conclusions remain robust.

Table 5. Robustness Analysis

	Export Frequency	Export Weight
tar	-0.975*** (-4.72)	0.681*** (7.58)
lenarea_export	0.262** (2.71)	0.253*** (2.96)
lenproduct_export	0.506*** (5.56)	0.564*** (31.02)

_cons	-8.760** (-2.70)	-8.080*** (-4.11)
N	565109	565109

t statistics in parentheses* p<0.1, ** p<0.05, *** p<0.01

4 Discussion

Following the US tariff hikes, the decline in export frequency among Chinese apparel and textile enterprises intuitively reflects their proactive adjustment of export strategies in response to external environmental changes. By reducing scattered orders and shifting to centralized shipments, enterprises effectively spread fixed costs. During the Sino-US trade friction, the 25% additional tariffs imposed by the US on Chinese goods forced enterprises to reevaluate and reconstruct their export rhythms. Concurrently, the increase in export weight by Chinese apparel and textile enterprises post-tariff hikes is also a strategic adjustment based on cost-benefit considerations. Enterprises consolidated previously dispersed orders into large container shipments, significantly enhancing single-batch scales. This consolidation not only effectively reduced unit weight shipping costs but also significantly optimized container space utilization.

Facing Sino-US trade friction, Chinese apparel and textile enterprises need to adopt a multifaceted approach to achieve sustainable development. In terms of industrial structure reform, although China maintains an advantage in apparel processing exports due to its industrial foundation, rising labour costs have surpassed those in South Asian countries. Enterprises should closely monitor new textile materials and innovative technologies, increase investment in brand design, such as registering patents and protecting intellectual property rights, transforming trade friction into an opportunity for industrial upgrading. In market expansion, while the US is the largest market for Chinese textile and apparel exports, ongoing trade friction impacts imports and exports. Enterprises should leverage the "Belt and Road" initiative to expand markets in countries along the route, diversify risks, and tap into domestic market potential. Foreign investment layout is also crucial. With a solid foundation and mature technology in the textile and apparel industry, China can invest in "Belt and Road" countries in Asia and Africa with lower production costs, drive trade, optimize global production chain configurations, and enhance its position in the global value chain. Additionally, the government and industry associations need to play an active role. The government should formulate preferential policies to support enterprise innovation, transformation, and industrial upgrading, while industry associations assist in establishing intellectual property risk warning mechanisms and provide support in trade dispute responses, collaboratively helping enterprises address challenges.

5 Conclusion

This paper explores the impact of US tariff changes on the export behaviour of Chinese apparel and textile enterprises and their coping measures from 2017 to 2021. The results indicate that following US tariff hikes, Chinese apparel and textile enterprises experienced a decrease in export frequency and an increase in export weight. Enterprises may reduce export frequency to decrease customs clearance frequency, as each export involves processes such as customs declaration and inspection, which can increase time costs and compliance risks. Centralized exports can simplify processes and enhance efficiency. Additionally, the uncertainty of tariff policies, such as temporary hikes, may lead enterprises to lock in current tax rates through large batch exports to avoid subsequent cost increases. The decrease in export frequency and increase in export weight by Chinese apparel and textile enterprises also reflect strategic adjustments based on cost-benefit considerations.

In summary, the adjustment of export strategies by enterprises under external pressures such as Sino-US trade friction is a complex dynamic process. Finding the optimal balance between cost reduction, efficiency enhancement, and risk control will be a crucial topic for enterprises to explore continuously. Furthermore, due to the vastness and difficulty in obtaining customs data, current research remains relatively superficial. Future research aims to utilize the difference-in-differences (DID) method to further analyse enterprise heterogeneity and product heterogeneity, discussing the export behaviour of heterogeneous enterprises under Sino-US trade friction and identifying which apparel and textile products exhibit greater resilience in exports.

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