

The Impact of Sino-US Trade Friction on Corporate Financial Risks—Empirical Evidence of Quasi-Natural Experiments of Listed Companies in China

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Abstract. Under the impact of trade frictions, Chinese listed companies face multiple challenges, such as rising tariff costs, hindered technical cooperation, and supply chain disruptions, and it is of great practical significance to accurately assess the changes in their financial risks to ensure enterprise security and market stability. This paper uses China's A-share listed companies from 2015 to 2024 as a research sample and empirically tests the impact of the exogenous event of Sino-US trade friction on the financial risk of listed companies, employing the double difference method (DID). The study finds that the Sino-US trade friction significantly reduces the financial risk of listed companies affected by the friction. Heterogeneity analysis further reveals that this effect is more significant in enterprises with strong profitability and a smaller scale. This study provides new empirical evidence for a deeper understanding of the economic consequences of Sino-US trade friction.

Keywords: Sino-US trade friction, financial risk, Differences-in-Differences (DID)

1. Introduction

Amid growing uncertainties in the global economy and Sino-U.S. trade relations, academic attention has increasingly turned to how firm- and industry-level export behaviors shape trade policy dynamics. Within global value chains, research on trade friction from this perspective has gained prominence [1]. Since 2018, the U.S. has implemented multiple tariff rounds on Chinese exports under the "301 Survey," raising firms' operational costs, disrupting supply chains, dampening investment confidence, and elevating financing costs. In response, China imposed retaliatory tariffs, initiating a series of bilateral trade measures.

This context raises critical questions: How does Sino-U.S. trade friction, as a macro shock, influence the financial risk of Chinese listed firms? And does this effect vary across industries?

Existing literature has extensively studied supply chain restructuring and stock market effects of trade friction, yet empirical evidence on its link with corporate financial risk remains scarce. Using a differences-in-differences approach that leverages trade friction as a quasi-natural experiment, this paper shows that it significantly reduces financial risk among affected firms. Moreover, effect

heterogeneity is observed: larger firms exhibit higher financial risk, while more profitable ones experience greater risk reduction.

This study contributes in three ways: (1) It refocuses the trade friction discourse onto financial risk, extending the evaluation of its economic consequences; (2) It adopts a simplified 0–1 coding method based on policy timing rather than complex product-code matching, emphasizing uncertainty perception over ex-post trade flows; (3) It reveals a counterintuitive "pressure relief valve" effect, offering a novel perspective on trade disputes..

2. Literature review

2.1. Research on the economic consequences of Sino-US trade frictions

Current research on Sino-US trade friction primarily focuses on two dimensions: supply chain adjustments and stock market fluctuations. Regarding supply chains, studies generally indicate that trade friction increases corporate trade costs, undermines supply chain stability, and accelerates global supply chain restructuring [2]. Zhang et al. examine how supply chain uncertainty affects import quality [3]; and Jin et al. document shortening supply chains in Sino-Japanese manufacturing [4].

In financial markets, trade policy uncertainty reduces both external demand expectations and domestic consumption through wealth effects, thereby depressing corporate profits and stock valuations. Guo et al. identify heterogeneous and asymmetric effects of trade news on sectoral stock returns using ChatGPT sentiment analysis [5]. Zhou et al. further show that exchange rate fluctuations had stronger effects on both Chinese and US stock markets during the trade friction period, with RMB depreciation reducing Chinese stock returns [6].

2.2. Research on the influencing factors of financial risk

Existing literature has extensively examined the determinants of financial risk through two primary lenses: social governance and corporate governance structure. In the social governance domain, Kang et al. identify a U-shaped relationship between ESG performance and financial risk in high-tech firms, mediated by enhanced innovation capacity and mitigated investment herding [7]. Regarding corporate governance, studies highlight the role of executive characteristics, ownership structure, and policy reforms. Wei et al. show that CEOs' overseas experience and equity incentives jointly suppress acquirer risk exposure, moderated by incentive intensity [8]. Zhang et al. further indicate that the New Third Board reform enhances firms' market position and innovation capability, thereby strengthening profitability and reducing financial risk [9].

While prior research systematically investigates either trade friction effects or financial risk mechanisms, empirical evidence directly linking Sino-US trade friction to corporate financial risk remains limited. This study fills this gap by examining trade friction as the core explanatory variable and financial risk as the outcome variable.

3. Theoretical analysis and research hypothesis

Financial risk refers to the potential for economic losses arising from unpredictable deviations between actual and expected financial outcomes. This paper posits that Sino-U.S. trade friction may influence corporate financial risk through two contrasting channels.

On one hand, trade frictions can exacerbate financial risks by reducing corporate profits and limiting external financing. Tariff hikes and export restrictions not only cut into operating income

but also raise production costs, compressing profit margins and undermining firms' solvency and cash flow stability. Meanwhile, reduced internal funds and tighter external financing heighten operational pressure, while information asymmetry obscures the causes of profit declines, worsening financing constraints.

On the other hand, trade frictions may push firms to enhance risk management and reduce financial vulnerability. Faced with heightened external uncertainty, managers often adopt more cautious financial policies—such as trimming non-core investments, lowering dividend payouts, and raising cash reserves—to strengthen liquidity and resilience. As Zhang and Zhao note, such strategic adaptations can prompt systematic changes in financial behavior, including optimized financing structures [10].

Based on the above analysis, this paper proposes a set of opposing hypotheses:

H1a: The intensification of Sino-US trade frictions will significantly increase the financial risk level of listed companies

H1b: The intensification of US-China trade frictions will significantly reduce the level of financial risk of listed companies

4. Empirical design

4.1. Samples and data sources

This study selects A-share listed companies from 2015 to 2024 as the research sample, considering the convergence between Chinese Accounting Standards and IFRS following China's adoption of key accounting standards, including CAS 39 in 2014. To ensure data quality, we exclude financial firms, ST/*ST companies, and observations with missing core variables.

Treatment and control groups are classified according to the U.S. Trade Representative's tariff list and China's industry classification standards. The final sample comprises 5,243 listed companies with 52,951 firm-year observations, including 10,136 treatment group and 42,815 control group observations.

4.2. Model setting

In order to evaluate the net effect of the impact of trade friction, this paper uses a double difference model to control for individual differences and time differences before and after the occurrence of the Sino-US trade friction. Based on this, according to the quantitative standards of the experimental group and the data group, the model is set as follows:

$$Zscore_{it} = \beta_0 + \beta_1(Friction_t \times Treat_t) + \gamma \cdot Controls_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

4.2.1. Dependent variables

Corporate financial risk (z-score). This paper draws on the quantitative method of Wang et al. and uses the Z-score model proposed by Altman to measure corporate financial risk.

4.2.2. Core independent variables

Existing studies typically quantify trade friction exposure through HS6-code matching between customs and anti-dumping databases. However, such matching yields insufficient samples for our financial risk analysis. To address this, we construct the treatment variable based on uncertainty

perception, classifying firms directly exposed to U.S. tariff measures (e.g., computers, electronics - Treat=1) against domestically-oriented sectors with minimal trade exposure (Treat=0). Following [11], we set 2018 as the policy shock year (Post=1 for 2018 onward). The DID estimator captures the trade friction effect through the interaction term.

4.2.3. Control variables

Considering the impact of other variables on the financial risk of enterprises, the selected control variables are shown in Table 1.

Table 1. Definitions of variables.1

Variable type	name	symbol	definition
Interpreted variable	Enterprise financial risk	zscore	Z-Score model calculation
Core explanatory variables	Sino-US trade friction	DID	The intersection of Treat and Post
	Enterprise size	Size	The natural logarithm of total assets at the end of the year
	The time of establishment of the enterprise	Age	The total year of establishment of the enterprise
	Asset-liability ratio	Lev	Total assets/total liabilities
Control variables	Return on total assets	LENGT H	Net profit/owner's equity
	Type of enterprise	SOE	SOE=1 state-owned enterprise, SOE=0 non-state-owned enterprise
	Ratio of independent directors	Indep	Number of independent directors/number of boards
	Cash ratio	Cash ratio	Net cash flow from operating activities/total assets

5. Empirical results

5.1. Descriptive statistics

Table 2. Descriptive statistic.1

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	mean	sd	min	Max
DID	37,156	0.222	0.416	0	1
zscore	37,156	5.138	9.655	-65.21	782.8
size	37,156	9.684	0.577	6.940	12.50
age	37,156	25.51	6.208	7	71
tall	37,156	0.0271	0.204	-29.61	7.446
Indep	37,156	37.92	5.579	0	81.82
cashratio	37,156	0.925	1.722	4.70E-05	38.50
lev	37,156	0.417	0.284	0.00978	28.55
SOE	37,156	0.300	0.458	0	1

The descriptive statistical results of the main variables of this study are reported in Table 2. A total of 3,7156 observations were observed in the whole sample. The mean value of the financial risk z-score of the explained variable was 5.138, and the standard deviation was 9.655, indicating that there were certain differences in the level of financial risk of different enterprises.

5.2. Baseline regression results

The benchmark regression results of model (1) are shown in Table 3.

Table 3. Baseline regression results2

	(1)
	zscore
DID	1.603 *** (0.471)
size	-5.019 ** (2.224)
age	0.000 (.)
lev	-4.202 *** (1.190)
tall	-0.368 (1.636)
Indep	0.014 (0.017)
cashratio	1.351 *** (0.231)
SOE	-0.750 ** (0.381)
_cons	53.588 ** (21.383)
N	37059

Column (1) shows that after controlling for a series of factors such as enterprise size, age, asset-liability ratio, return on total assets, enterprise type, independent director ratio, and cash ratio, the coefficient of the DID crossover term is 1.603, which is significantly positive at the level of 1%. This positive coefficient indicates that trade friction has a "risk inhibition" effect. The benchmark regression results are consistent with hypothesis H 1b.

6. Robustness test and further inspection

6.1. Robustness test

6.1.1. Parallel trend test

To verify the effectiveness of the double difference model (DID), a parallel trend test was conducted. The core premise of this test is that the financial risks of the treatment and control groups should maintain the same trend before the policy shock (i.e., the 2018 Sino-US trade friction).

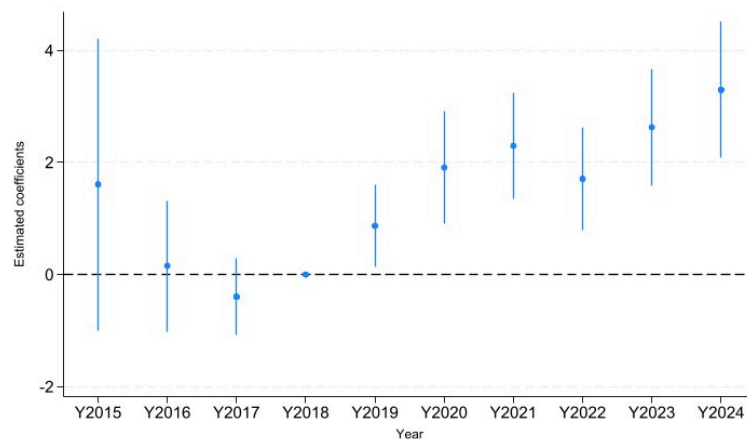


Figure 1. Parallel trend test.1

Figure 1 presents the parallel trends test examining how Sino-U.S. trade friction affects listed companies' financial risk. The pre-treatment period (2015–2017) shows no systematic differences in financial risk between treatment and control groups, with all estimated coefficients near zero and statistically insignificant, supporting the parallel trends assumption. Following the onset of trade friction (2018 onward), coefficients exhibit a marked upward shift and turn positive, indicating a significant improvement in the treatment group's Z-score relative to the control group, i.e., a reduction in financial risk. This dynamic pattern suggests that trade friction effects are not instantaneous but emerge with a time lag and persist—even intensify—in subsequent years.

Overall, these results validate the model specification and reinforce the core finding that observed changes in corporate financial risk are causally attributable to U.S.–China trade friction.

6.1.2. Honest-did

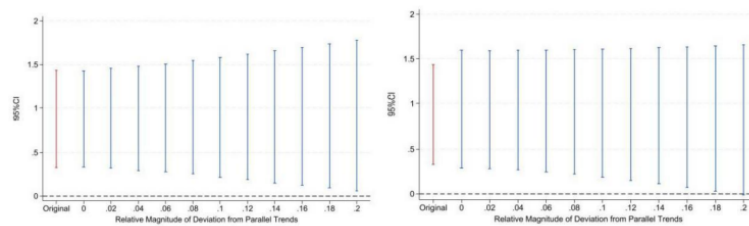


Figure 2. Robustness check: HonestDID analysis. (a) Relative deviation; (b) Absolute deviation.2

To assess the robustness of our benchmark results, we employ the honestdid method for sensitivity analysis of the parallel trends assumption. This approach quantifies potential violations of parallel trends to test the reliability of treatment effect estimates. We examine robustness through two dimensions—relative and absolute deviation—by systematically varying the violation parameter $Mbar$.

As shown in Figure 2 (a), even when the trend difference in the pre-treatment stage expands to 20% of the treatment effect size, the treatment effect remains statistically significant at the 5% significance level. Similarly, Figure 2 (b) indicates that when the introduced absolute deviation does not exceed 10% of the treatment effect standard deviation, the estimation results can still remain stable.

6.1.3. Placebo test

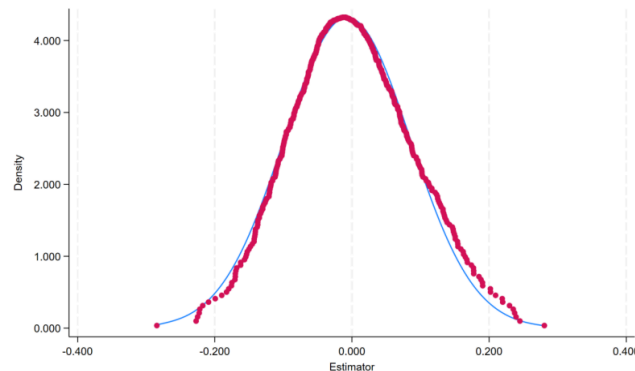


Figure 3. Placebo test.3

To ensure that unobserved variables or spurious associations do not distort the results, this study enhances the robustness of the conclusion through placebo tests, constructing spurious difference-in-differences estimators and repeating the regression 500 times. The results show (Figure 3) that the empirical p-value of the true coefficient is less than 0.01, meaning the probability of randomly obtaining this result is less than 1%, indicating that the main conclusion is not affected by model specification errors or random fluctuations, and further supporting the reliability of the causal inference of the impact of trade frictions.

6.2. Further test - the differential impact of profitability heterogeneity

Corporate profitability acts as a vital safeguard in the face of external disruptions. Companies exhibiting higher profitability typically enjoy larger resource reserves and more consistent cash flows, which enhance their ability to withstand the adverse effects of trade tensions. Such firms are better positioned to absorb shocks by adjusting their product offerings and sustaining robust financial cushions. To investigate this moderating role, we perform a subgroup analysis using return on assets (ROA) as a proxy for profitability, dividing the sample at the median into high- and low-profitability groups. The regression outcomes reported below reveal distinct impacts across these profitability strata.

Table 4. Heterogeneity test: profitability (ROA) subgroups

	(1)	(2)
	Zscore High ROA	Zscore High ROA
DID	1.784 *** (0.609)	0.560 (0.668)
controls	Yes	Yes
_cons	102.483 (70.811)	26.446 *** (7.092)
N	17921	18051

In Column (1) for the high-profitability group, the DID estimate stands at 1.784 and is statistically significant at the 1% level, implying that trade frictions substantially lower financial risk among firms with higher profitability. In contrast, the corresponding coefficient for low-profitability firms is only 0.560 and statistically insignificant, indicating a lack of meaningful effect. Additionally, control variables such as firm size, age, and leverage ratio exhibit heterogeneous influences across the two subgroups.

The above results indicate that the impact of trade frictions on financial risks varies depending on the profitability of enterprises. High-profit enterprises exhibit a significant risk-mitigating effect when facing external shocks, while low-profit enterprises do not show a significant response. This difference reflects that higher profitability helps enterprises to implement strategic adjustments more flexibly and enhance their risk-resistance capabilities through adequate resource reserves. The research findings provide strong empirical support for the key role that profitability plays in enhancing the resilience of enterprises in response to trade frictions.

6.3. Further test - the differential impact of enterprise scale heterogeneity

Firm size serves as a critical measure of operational capacity, market presence, and resource endowment. Grounded in the Resource-Based View, scale constitutes a fundamental resource for mitigating external risks. Small and medium-sized listed enterprises exhibit particular vulnerability to trade friction shocks due to their limited risk resilience. These firms face heightened financing constraints, while tariff increases and supply chain disruptions create disproportionately severe marginal impacts compared to their larger counterparts.

Enterprises of different sizes have significant differences in business scope and export dependence, which makes their buffer ability against shocks different. Therefore, this paper further tests the financial risks of listed companies affected by trade frictions according to the size of enterprises.

Table 5. Heterogeneity test: firm size subgroups.1

	(1)	(2)
	Zscore Small-scale	Zscore massive
DID	4.513 *** (1.346)	0.345 (0.335)
controls	Yes	Yes
_cons	128.113 * (70.176)	16.507 *** (2.339)
N	18229	18401

In the small-scale group in column (1), the estimated coefficient of DID is 4.513, which is significant at the level of 1%, indicating that the financial risk of small-scale listed companies has shown a significant decline in the context of trade frictions. In the large-scale group in column (2), the estimated coefficient of DID is 0.345, which is not significant, indicating that the financial risk of large-scale listed companies does not show a significant trend under trade frictions.

Contrary to conventional views, trade frictions have notably eased financial risks for small listed firms, underscoring the adaptive strengths of "small-scale" enterprises amid external shocks. Unlike large counterparts burdened with complex structures and high adjustment costs, small enterprises

exhibit superior dynamic responsiveness through streamlined decision-making, operational agility, and efficient resource allocation. When facing trade environment shifts, they swiftly restructure supply chains, pivot across markets, and optimize product mixes—turning external pressures into opportunities to boost efficiency and mitigate risks. In contrast, large enterprises show no significant financial risk fluctuations, with insignificant DID model estimates. This likely stems from delayed strategic adjustments and high transformation costs, which blunt their effectiveness in responding to external policy shocks.

In summary, the heterogeneity analysis not only reveals the uneven impact of trade frictions but also highlights the central role of flexibility and adaptability represented by enterprise size in coping with external shocks.

7. Research conclusions and discussion

7.1. Research conclusions

This study empirically finds Sino-U.S. trade tensions significantly reduce financial risk for exposed Chinese listed firms, with results robust to sensitivity tests. Contrary to traditional views, this risk reduction arises not from reduced exposure but from enhanced managerial awareness driving proactive adjustments and stronger financial resilience amid external disruptions.

Heterogeneity analysis reveals the risk-lowering effect is more pronounced for firms with higher profitability—where superior earnings quality better absorbs trade shocks—and smaller enterprises, whose operational agility and lean structures enable swifter responses to external pressures.

7.2. Revelation

This study yields important practical and policy-relevant insights for both corporate risk governance and public sector decision-making.

Firms, especially those in export-dependent and high-technology industries, are advised to strengthen their capacity for monitoring external risks by instituting structured systems to track evolving trade policies. Enhanced foresight allows for the early implementation of prudent financial strategies, reducing the likelihood of liquidity shortfalls. Highly profitable companies should capitalize on their financial strength by increasing investment in research and development as well as product innovation, while simultaneously bolstering cash holdings and short-term liquidity buffers. In contrast, less profitable firms should concentrate on improving cost efficiency and reinforcing core operations to enhance earnings quality. Small enterprises can exploit their operational agility to expand into domestic markets and shift toward service-based business models, whereas large firms should focus on streamlining supply chains and maintaining a strategic balance between diversification and specialization. Public policy interventions could include dedicated credit programs aimed at facilitating supply chain modernization, as well as expanded access to financial guarantees and hedging tools to mitigate financing difficulties and exposure to currency fluctuations.

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