

Impact of Import and Export Trade on Enterprises—A Case Study of High-tech Enterprises

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Abstract. The impact of import and export trade on the development of high-tech enterprises represents a core issue in corporate strategic decision-making within the context of globalization. This is particularly true amid the rise of trade protectionism and the reconstruction of global supply chains, where the underlying mechanisms of such impacts urgently require in-depth exploration. However, existing research predominantly focuses on the effects of macro-level trade policies, with a lack of systematic analysis of heterogeneous responses at the micro-enterprise level, especially among high-tech enterprises. This paper takes as its research objects four typical Chinese high-tech enterprises (BYD, CATL, Lenovo , and Xiaomi), based on the differentiated characteristics of enterprises' international trade dependency. By utilizing corporate stock data and import-export trade data from 2015 to 2024, this study investigates the relationship between China's import-export trade and the stock prices of export-oriented enterprises. The results indicate that trade protectionism has a significant impact on the stock prices of enterprises with export-oriented businesses, exerts a certain influence on traditional hardware enterprises, but has an insignificant impact on emerging enterprises. Through empirical analysis, this research reveals the differentiated impacts of import-export trade on different types of high-tech enterprises, providing a theoretical basis for enterprises to formulate trade strategies in the context of globalization.

Keywords: Goods import and export trade, High-tech enterprises, Stock price volatility

1. Introduction

In the context of economic globalization, goods import and export trade has become an important engine for the economic development of countries [1]. As the world's second-largest economy, China's import and export trade scale continues to expand. In 2024, China's total goods import and export volume reached 43.8 trillion RMB, a 5% year-on-year increase, maintaining its position as the world's largest for several consecutive years. This growth is attributed not only to China's global competitiveness in manufacturing but also to international cooperation mechanisms such as the Belt and Road Initiative and the Regional Comprehensive Economic Partnership (RCEP) [2,3]. Meanwhile, the rapid development of international trade has not only driven economic growth but also had a profound impact on the operations and stock price performance of domestic Chinese enterprises. Especially in the context of increasing global economic uncertainty, researching the impact of import and export trade on enterprises has significant theoretical and practical implications.

High-tech enterprises, as important carriers of technological innovation, are crucial to enhancing national competitiveness and supporting high-quality economic development. However, in the context of deepening global competition, the sustainable development of these enterprises faces severe challenges [4]. For example, the European Union's "New Battery Law" imposes mandatory requirements on supply chain traceability and carbon footprints, directly increasing the compliance costs for Chinese battery management system exports. At the same time, China's automotive electronics industry still relies on imports for key chips and high-end sensors, with the supply of upstream raw materials being significantly affected by international geopolitical fluctuations [5].

Existing literature on the relationship between international trade and corporate stock prices mainly focuses on macro-level studies, exploring the impact of trade policies, tariff barriers, and other factors on the overall economy [6,7]. Some scholars also suggest that the stock price volatility of high-tech enterprises is closely related to factors such as business operations, internal and external governance, and the information environment [8-10].

This paper selects four representative Chinese high-tech enterprises—BYD, CATL, Lenovo Group, and Xiaomi—as the research subjects. By analyzing their stock data from 2015 to 2024, the paper explores the impact of goods import and export trade on the stock prices of enterprises. BYD and CATL, as new energy companies, have export-oriented businesses that are easily affected by international trade; Lenovo Group, as a traditional hardware company, is somewhat influenced by international trade; Xiaomi, as an emerging consumer electronics company, has a large domestic market share and is less affected by international trade. The research results not only help to understand the transmission mechanism of trade policy changes on enterprise value but also provide references for companies to develop international strategies.

2. Research design

2.1. Data sources

(1) Company Data. This paper uses stock price data from 2015 to 2024 for Chinese companies BYD, CATL, Lenovo Group, and Xiaomi, sourced from Yahoo Finance's database.

(2) National Data. The total import and export volume of goods in China is taken from the annual data of relevant years.

2.2. Model and variables

This paper constructs the following model to test the impact of China's goods import and export trade on enterprises:

$$\text{close_price}_{it} = \beta_0 + \beta_1 \bullet \text{total_trade}_t + \varepsilon_{it} \quad (1)$$

In model i represents the i -th enterprise and t represents the year. close_price_{it} is the dependent variable, indicating the stock price of company i in year t . total_trade_t represents the total import and export volume of China in year t (in billions of yuan), β_0 represents the constant term, and β_1 represents the coefficient of the effect of trade volume on stock prices. ε_{it} represents the random error term.

3. Empirical results and analysis

3.1. Regression model

This paper estimates the model using ordinary least squares (OLS). In the benchmark regression, each enterprise (BYD, CATL, Lenovo, Xiaomi) is regressed separately to avoid interference from heterogeneity across enterprises.

3.1.1. BYD company

As shown in Table 1, the regression results are highly significant. From the Stata regression data, the t-statistic performs very well: the t-statistic for $close_price_{it}$ is 4.95, with a p-value of 0.001, indicating that China's import and export trade of goods has a very significant impact on BYD's stock price. The R^2 value is 0.754, meaning that 75.4% of the changes in BYD's stock price can be explained by the import and export volume of goods, while the p-value corresponding to the F-test is 0.013. Therefore, it can be concluded that BYD's stock price is significantly and positively affected by China's trade volume of goods.

Table 1: The regression model results of BYD

close_price	Coefficient	Std. err.	t	P> t	95% conf.	interval
total_trade	.0011603	.0002344	4.95	0.001	.0006198	.0017007
_cons	-255.067	80.63332	-3.16	0.013	-441.0078	-69.12626

3.1.2. CATL company

As shown in Table 2, the regression results are marginally significant. From the Stata regression data, the t-statistic for $close_price_{it}$ is 2.25, with a p-value of 0.075, indicating that China's import and export trade of goods has a certain impact on CATL's stock price. The R^2 value is approximately 0.502, meaning that 50.2% of the changes in CATL's stock price can be explained by the import and export volume of goods, while the p-value corresponding to the F-test is approximately 0.075. Therefore, it can be concluded that CATL's stock price is weakly affected by China's trade volume of goods, only marginally significant.

Table 2: The regression model results of CATL

close_price	Coefficient	Std. err.	t	P> t	95% conf.	interval
total_trade	.0012513	.0005572	2.25	0.075	-.0001811	.0026837
_cons	-293.2241	209.2164	-1.40	0.220	-831.0319	244.5837

3.1.3. Lenovo company

As shown in Table 3, the regression results are highly significant. From the Stata regression data, the coefficient of $total_trade_t$ is 0.0000311, and the t-statistic for $close_price_{it}$ is 4.44 with a p-value of 0.002, indicating that China's import and export trade of goods affects Lenovo's stock price. The R^2 value is approximately 0.711, meaning that 71.1% of the changes in Lenovo's stock price can be explained by the import and export volume of goods, while the p-value corresponding to the F-test is

approximately 0.002. Therefore, it can be concluded that Lenovo's stock price is significantly and positively affected by China's trade volume of goods, though the impact is weak.

Table 3: The regression model results of Lenovo

close_price	Coefficient	Std. err.	t	P> t	95% conf.	interval
total_trade	.0000311	7.01e-06	4.44	0.002	0.000015	.0000437
_cons	-4.505044	2.412752	-1.87	0.099	-10.06886	1.058772

3.1.4. Xiaomi company

As shown in Table 4, the regression results are not significant. From the Stata regression data, the t-statistic for $close_price_{it}$ is 0.46 with a p-value of 0.662, indicating that China's import and export trade of goods has no significant impact on Xiaomi's stock price. The R^2 value is approximately 0.041, meaning that 4.1% of the changes in Xiaomi's stock price can be explained by the import and export volume of goods, while the p-value corresponding to the F-test is approximately 0.621. Therefore, it can be concluded that there is no significant association between Xiaomi's stock price and China's trade volume of goods, which may be dominated by other factors.

Table 4: The regression model results of Xiaomi Company

close_price	Coefficient	Std. err.	t	P> t	95% conf.	interval
total_trade	.0000368	.0000795	0.46	0.662	-.0001674	.0002411
_cons	5.848918	29.83236	0.20	0.852	-70.83759	82.53543

3.2. Heteroscedasticity test

To detect whether the residual variance of the regression model is constant (i.e., whether heteroscedasticity exists), the Breusch-Pagan test was used, with the null hypothesis H_0 that the residual variance is constant (homoscedasticity). The p-values for all enterprises were greater than 0.05, so the null hypothesis H_0 could not be rejected. Therefore, the model satisfies the homoscedasticity assumption, and the OLS results are reliable.

3.3. Model specification test

To test whether the model omits important variables or has nonlinear relationships, the RESET test was used, with the null hypothesis H_0 that the model has no omitted variables. The p-values for all enterprises were greater than 0.05, so the null hypothesis H_0 could not be rejected. Therefore, the model specification is reasonable, and no higher-order terms or additional variables need to be introduced.

3.4. Residual normality test

To test whether the residuals follow a normal distribution, the Shapiro-Wilk test was used, with the null hypothesis H_0 that the residuals are normally distributed. The p-values for all enterprises were greater than 0.05, so the null hypothesis H_0 could not be rejected. Therefore, residual normality holds, supporting the statistical inferences of the t-test and F-test.

4. Conclusions

4.1. Research conclusions

Based on the analysis of data from four Chinese high-tech enterprises from 2015 to 2024, the following conclusions were drawn:

Export-oriented enterprises are significantly affected by international trade; traditional hardware enterprises show limited sensitivity; and domestic market-dominated enterprises have strong resilience. For new energy enterprises represented by BYD, their stock prices have a highly significant positive correlation with China's total import and export volume of goods. This result verifies the close link between the operating performance of export-dependent enterprises and the international trade environment. As a traditional hardware enterprise with a balanced global supply chain layout, Lenovo Group's stock price is significantly correlated with total trade volume, but the impact coefficient is significantly smaller than that of new energy enterprises. This indicates that mature multinational enterprises can partially offset the risks caused by changes in trade policies of a single country through diversified market layouts and localized production. Xiaomi's regression results show no statistically significant association between its stock price and total trade volume. Its international business is mainly concentrated in developing country markets, making it less affected by trade protectionism in developed countries. Although CATL belongs to the new energy industry, due to strong domestic demand for power batteries, it also shows weak trade sensitivity.

4.2. Research prospects

This study has the following limitations, which can be used as future research directions:

First, the sample is limited to four large high-tech enterprises with limited stock data; future research can expand to more high-tech enterprises. Second, it mainly focuses on goods trade and does not consider the impact of service trade and digital trade. Third, the analysis of the impact mechanism can be further deepened, such as examining the role of corporate innovation investment in the transmission of trade impacts. With the acceleration of global value chain restructuring, the interaction between trade policies and corporate internationalization deserves continued attention.

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