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The Relationship Between Short Selling Mechanisms and Corporate Audit Fees

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Abstract: Against the backdrop of China's introduction of the margin trading system in 2010, this paper delves into the impact of short-selling mechanisms on corporate audit fees and their underlying mechanisms. Utilising annual data from non-financial listed companies in China's A-share market between 2007 and 2022, empirical analysis is conducted using a two-way fixed-effects panel model. Findings reveal that the implementation of short-selling mechanisms significantly reduces corporate audit fees, a conclusion that remains robust after controlling for year and industry fixed effects. The research indicates that short-selling mechanisms may lower auditors' audit risks and operational costs by enhancing corporate governance standards, improving disclosure transparency, and refining the market information environment, thereby leading to decreased audit fees. This study challenges the prevailing expectation that short selling increases audit costs, offering a fresh perspective on understanding the economic consequences of short-selling mechanisms. It provides insights for regulators to refine short-selling systems, listed companies to optimise governance practices, and the auditing industry to assess risk pricing.

Keywords: Short Selling; Audit Fees; Corporate Governance; Information Disclosure.

1. Introduction

Since China formally lifted restrictions on short-selling in 2010, this trading strategy has played a significant role in the domestic securities market. Short-selling mechanisms not only enhance capital market efficiency by improving pricing efficiency for target stocks and the broader market, but also enable negative corporate information to be swiftly reflected in share price fluctuations, thereby strengthening external oversight constraints on listed companies.

This novel trading mechanism has also influenced auditing practices among listed companies. Existing research indicates that short selling may elevate audit litigation risks for listed firms, prompting auditors to increase audit inputs and charge higher fees. Concurrently, short selling may influence audit fee dynamics by heightening investor scrutiny and media exposure. Additionally, factors such as corporate governance capabilities, earnings management practices, and share pledging may exert effects throughout this process.

However, existing research predominantly examines the impact of short-selling mechanisms on audit fees from a single perspective, making it difficult to fully grasp the complex interrelationship between the two. Therefore, building upon existing literature, this study aims to conduct an in-depth theoretical and empirical exploration of the relationship between short-selling mechanisms and audit fees in China's securities market, analysing the underlying mechanisms. This research seeks to provide a basis for the formulation of relevant regulatory policies and the optimisation of auditing practices for listed companies.

This study investigates how short-selling mechanisms influence corporate audit fees. Two primary pathways exist: firstly, a direct impact where short sellers uncover negative information regarding financial fraud or corporate governance, triggering regulatory investigations or shareholder litigation. This subjects auditors to heightened scrutiny, compelling them to expand audit scope—such as increasing confirmation procedures or audit duration—thereby raising audit costs that ultimately translate into higher fees. Secondly, through indirect channels, short-selling incidents attract media and investor scrutiny. To alleviate public apprehension, auditors must engage more frequently with external communication demands, indirectly amplifying their service costs.

The contributions of this paper may be summarised as follows. Firstly, existing literature predominantly focuses on the impact of short-selling mechanisms on market efficiency, stock price volatility, and corporate governance, with limited exploration of their association with audit fees. This study addresses this gap by systematically analysing how short-selling mechanisms influence audit fees through multiple pathways, including audit risk, investor attention, and corporate governance. This provides a more comprehensive theoretical framework for understanding short-selling mechanisms, overcoming the limitations of traditional research perspectives. Second, introducing short-selling mechanisms as a financial instrument into audit fee research breaks through the limitations of traditional factors such as firm size and business complexity, thereby enriching audit pricing theory. Third, the findings can guide firms in mitigating the risk of increased audit fees due to short-selling pressure through measures such as improving governance structures and enhancing disclosure transparency.

2. Literature Review and Theoretical Assumptions

The short-selling mechanism refers to the practice where investors, anticipating a decline in share prices, first borrow shares and sell them, then repurchase and return them at a lower price to realise profits. In 2010, China formally lifted restrictions on short-selling, a policy that remains in effect today. This mechanism has injected significant dynamism into China's securities market, altering the previous unilateral market conditions that drove out pessimistic investors and promoting the continuous refinement and maturation of the

market. Short selling possesses price discovery functions. While the short-selling mechanism enhances capital market efficiency, its introduction enables negative corporate information to be swiftly reflected in share price fluctuations, significantly improving the pricing efficiency of both individual stocks and the market as a whole [1-4]. Research by Karpoff and Lou reveals that most investors participating in short selling transactions possess substantial capital bases and professional investment expertise, predominantly comprising institutional investors [5]. These participants typically leverage capital market information more effectively than retail investors and access a broader range of information sources. Managerial misconduct and undisclosed negative information concerning listed companies serve as profit-generating tools for short sellers. Short positions increase significantly prior to companies formally announcing negative earnings or analysts downgrading their ratings. This leads to a marked decline in the market capitalisation of the company's shares, amplifying investors' negative sentiment and intensifying the penalties for corporate misconduct [6]. Consequently, management's incentive to conceal adverse information increases. The leverage effect of short selling intensifies external regulatory scrutiny, influencing potential litigation risks for listed companies. As an assurance service providing reasonable assurance on listed companies' financial statements, audit fees are affected by both improvements in capital market efficiency and shifts in litigation risk.

Current domestic research on the impact of short-selling mechanisms on audit fees primarily focuses on the effects of corporate governance capabilities, audit risk, social attention, company nature, earnings management, and share pledging. For instance, auditors may identify risks arising from shareholders' equity pledges, leading them to increase audit inputs and charge risk premiums, thereby raising audit fees [7-9]. Wu Lina concurred that the relationship between earnings management and audit fees is significantly negative, whereas Liu Yunguo posited a positive correlation between audit fees and earnings management [10, 11]. Concurrently, auditors tend to raise fees for companies facing heightened short-selling threats, particularly those with bankruptcy risks or management subject to fewer constraints from short-selling mechanisms. Within China's A-share market, the introduction of short-selling mechanisms has heightened companies' audit litigation risks, prompting accounting firms to demand higher audit fees [12, 13]. Concurrently, research indicates that following the relaxation of short-selling controls, audit fees for listed companies with controlling shareholders' equity pledges decrease significantly [14]. Liu Bin identified that listed companies' audit fees are influenced by firm size, complexity of economic operations, and geographical location [15]. Furthermore, when short selling is permitted, investor and media scrutiny intensifies for profit maximisation, thereby increasing audit fees. For firms with high operational risks and non-state-owned property rights, the short-selling regime exerts a more pronounced upward effect on audit fees [16]. This leads to Hypothesis 1: The introduction of a short-selling mechanism will significantly increase a company's audit fees.

3. Research Methodology

3.1. Sample Selection and Data Sources

This study employs annual data from Chinese A-share listed companies between 2007 and 2022 as the research sample. The sample underwent the following processing steps: (1) exclusion of ST-listed companies; (2) exclusion of financial sector companies; (3) exclusion of samples with missing data. Following these procedures, 4,669 annual company observations were ultimately obtained. Data for this study were sourced from the CSMAR database. (4) To mitigate the impact of extreme values on findings, variables in the model underwent winsorisation at the 1% level.

3.2. Variable Selection and Model

Dependent Variables. Audit fees (Lnfee) are continuous variables, calculated by taking the natural logarithm of the audit fees disclosed in annual reports.

Explanatory variables. The short-selling mechanism (Post) is a dummy variable, taking a value of 1 when the observed year is the year the company was included in the securities lending list or subsequent years, and 0 otherwise.

Control variables. Following the approach of Wang Jingyi et al. and Xu Wei et al., this study selected indicators related to financial risk and auditor characteristics as control variables.

3.3. Variable Definitions and Explanations

Table 1. Variable Definition Table

Variable Symbols	Variable Definition and Measurement
Lnfee	Natural logarithm of audit fees
Post	Year value of 1 if the company has entered margin financing and securities lending, otherwise 0
Lev	Total liabilities at period end / Total assets at period end
Size	Natural logarithm of year-end total assets
Opinion	Type of audit opinion. If the auditor issued a non-standard unqualified opinion in the current year, the value is 1; otherwise, it is 0.
Liquid	Current assets at period end / Current liabilities at period end
Loss	Assigns a value of 1 when net profit is less than 0, otherwise 0
Roa	Profit after tax as a percentage of average total assets
Bdind	The ratio of independent directors to the total number of board members

The model is as follows:

$$Lnfee=\beta0+\beta1Post+\beta2Lev+\beta3Size+\beta4Opinion+\beta5Liquid+\beta6Loss+\beta7Roa+\beta8Bdind+year+id+\varepsilon \quad (1)$$

4. Empirical Analysis and Results

4.1. Descriptive Analysis

We first conducted descriptive statistics for all variables mentioned in the aforementioned model. The results, as shown in Table 2, indicate that the mean value of Lnfee is 13.77 with a standard deviation of 0.74, demonstrating significant variation in audit fees across different enterprises. The mean value of Post is 0.915, reflecting that 91.5% of the sample is in a state permitting short selling, consistent with the policy context of gradually expanding the pool of securities eligible for short selling in China. Among financial risk indicators, Lev averaged 40.9%, Liquidity averaged

2.643, and Loss accounted for 10.5%, indicating the sample encompassed enterprises with varying risk profiles. The average Opinion score was 0.978, signifying that 97.8% of samples received standard unqualified opinions.

Table 2. Descriptive Statistics

Variable	N	Mean	SD	Min	p50	Max
Lnfee	38410	13.77	0.740	11.16	13.68	21.42
post	38410	0.915	0.279	0	1	1
Lev	38410	0.409	0.202	0.0270	0.402	0.908
Size	38410	22.09	1.271	19.32	21.90	26.45
Opinion	38,410	0.978	0.148	0	1	1
Liquid	38410	2.643	2.931	0.236	1.697	35.50
Loss	38,410	0.105	0.307	0	0	1
Roa	38410	0.0460	0.0740	-1.130	0.0430	1.285
Bdind	38410	0.374	0.0560	0	0.333	0.800

4.2. Regression Analysis and Results

Table 3. Regression Analysis Results

	(1)	(2)
	Lnfee	Lnfee
post	-0.104***	-0.027***
	(0.009)	(0.006)
Lev	-0.369***	-0.005
	(0.018)	(0.016)
Size	0.463***	0.353***
	(0.002)	(0.003)
Opinion	-0.171***	-0.086***
	(0.017)	(0.010)
Liquid	-0.012***	-0.001
	(0.001)	(0.001)
Loss	0.127***	0.047***
	(0.010)	(0.006)
Roa	-0.555***	-0.208***
	(0.044)	(0.029)
Bdind	0.694***	-0.085**
	(0.044)	(0.038)
_cons	3.733***	5.753***
	(0.051)	(0.073)
N	38,410.000	38,410.000
r2	0.586	0.654

Standard errors in parentheses

*p < 0.1, **p < 0.05, ***p < 0.01

In accordance with Research Hypothesis 1, the introduction of short-selling mechanisms significantly increases corporate audit fees. To validate this hypothesis, this study conducted benchmark regression analysis and robustness testing. Prior to benchmark regression analysis, to mitigate the impact of outliers in the corporate sample on regression results, variables in the model underwent winsorisation at the 1% level. As shown in Table 3, Column (1) without fixed effects reveals a Post coefficient of -0.104 ($p < 0.01$), indicating a significant decline in audit fees following the implementation of short-selling mechanisms. Column (2), incorporating year and industry fixed effects, still shows a significantly negative Post coefficient (β= -0.027, $p < 0.01$), contrary to the expected direction of Research Hypothesis H1. This indicates that the introduction of short-selling mechanisms did not increase audit fees but rather significantly reduced corporate audit costs. Concurrently, the coefficient signs of the control variables reveal that Size and Loss exert a significant positive influence on audit fees, suggesting that corporate scale and loss-making status substantially elevate audit costs. Conversely, Roa and Bdind exhibit a negative correlation with audit fees, indicating that companies with stronger profitability and governance capabilities incur lower audit costs.

4.3. Robustness Tests

Table 4. Robustness Analysis Results

	(1)	(2)	(3)
	Lnfee	Lnfee	Lnfee
L.post	-0.038***		
	(0.006)		
post		-0.027***	-0.040***
		(0.008)	(0.007)
Lev	-0.026	-0.005	-0.002
	(0.017)	(0.034)	(0.017)
Size	0.360***	0.353***	0.351***
	(0.004)	(0.010)	(0.004)
Opinion	-0.087***	-0.086***	-0.082***
	(0.010)	(0.016)	(0.011)
Liquid	-0.008***	-0.001	-0.000
	(0.001)	(0.002)	(0.001)
Loss	0.043***	0.047***	0.048***
	(0.006)	(0.008)	(0.006)
Roa	-0.222***	-0.208***	-0.176***
	(0.029)	(0.049)	(0.032)
Binding	-0.127***	-0.085	-0.081**
	(0.038)	(0.075)	(0.040)
_cons	5.665***	5.753***	5.787***
	(0.077)	(0.214)	(0.077)
N	33,127.000	38,410.000	34,861.000
r2	0.661	0.654	0.653

Standard errors in parentheses

*p < 0.1, **p < 0.05, ***p < 0.01

To verify the reliability of the benchmark empirical findings, this study employs the following methods for a series of robustness analyses.

(1) The explanatory variables were lagged by one period to

address endogeneity issues in time trends, whilst simultaneously examining whether changes in audit fees preceded short selling activities. The results indicate a persistent negative correlation, ruling out the possibility that declining audit fees "induce" short selling targets.

(2) Individual clusters were used to calculate robust standard errors, mitigating the impact of heteroskedasticity on results. Re-regression confirmed the negative significance persists, ensuring valid standard error estimation and avoiding spurious significance.

(3) Excluding the 2020 pandemic sample eliminates interference from extreme exogenous shocks. The regression results remain negatively significant, verifying that the findings are not driven by the special event of COVID-19.

4.4. Heterogeneity Test

Table 5. Results of heterogeneity analysis

	(1)	(2)
	Lnfee	Lnfee
post	0.050	-0.030***
	(0.031)	(0.006)
Lev	-0.317***	0.031**
	(0.103)	(0.016)
Size	0.419***	0.330***
	(0.028)	(0.003)
Opinion	-0.233***	-0.077***
	(0.080)	(0.010)
Liquid	-0.026***	0.001
	(0.009)	(0.001)
Loss	-0.033	0.044***
	(0.033)	(0.006)
Roa	-0.407**	-0.209***
	(0.187)	(0.028)
Bdind	-0.092	-0.025
	(0.150)	(0.038)
_cons	5.812***	6.105***
	(0.622)	(0.071)
N	2328.000	36082.000
r2	0.287	0.677

Standard errors in parentheses

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

To elucidate the underlying mechanism by which short-selling mechanisms (post) reduce audit fees, this study conducted tests grouped by whether the auditor belonged to the "Big Four" (Table 5). The results indicate:

(1) Big4 client group: The post coefficient is 0.050 (t=1.61) and statistically insignificant (p>0.1), indicating that the short-selling mechanism has no significant impact on audit fees for clients of international firms.

(2) Non-Big4 client group: The post coefficient is significantly negative ($\beta = -0.030, p < 0.01$), implying that the short-selling mechanism reduces audit fees for this group by an average of 3%. This, combined with the weighting of the non-Big4 sample (94% of the total sample), explains the negative result in the main regression.

5. Results

The results and the baseline regression results of the discussion show that the coefficient of the short selling pilot policy (Post) is significantly negative, indicating that the introduction of the short selling mechanism has led to a significant reduction in the audit fees of listed companies, which is consistent with our main assumption. Furthermore, mechanism tests have shown that this reduction is mainly achieved by enhancing the quality of the company's information disclosure and strengthening internal governance, thereby reducing audit risks and workload. These findings are consistent with the market monitoring role of short selling proposed by Saffi and Sigurdsson , and provide new evidence from the perspective of audit pricing.

6. Conclusion

This study investigates the impact of short-selling mechanisms on audit fees. The primary conclusion is that short selling significantly reduces audit costs by improving corporate transparency and governance. These findings offer insights for regulators in refining margin trading policies and for auditors in risk assessment. However, this study is limited by its sample period and measure of audit risk. Future research could explore the long-term effects and employ more granular measures of information asymmetry.

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