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A Study of the Relationship between Short-Selling and Audit Quality

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Abstract:

This paper utilizes a least squares method to discover the influence of the short-selling mechanism implementation on audit quality, based on a sample of A-share listed companies from 2010 to 2022. It finds that the implementation of the short-selling mechanism encourages auditors to enhance audit quality. Further analysis reveals that the short-selling mechanism has a stronger impact on improving the audit quality of privately held businesses and those with a lower level of corporate governance. The paper's conclusions offer empirical support for China's full implementation of the shorting mechanism and the improvement of audit quality. The research findings also enrich the research on this topic in the field of auditing.

Keywords: Short Selling; Margin Trading; Audit Quality; Corporate Governance

1. Introduction

Mitigating stock market volatility and improving pricing effectiveness can be achieved by introducing the short-selling mechanism or easing short-selling restrictions[1]. Therefore, stock shorting is permitted on the majority of established capital markets and is also allowed on several new capital markets. China's securities market ended its "one-sided market" era in March 2010 when short sales were allowed to test out. The majority of the study that has already been done on short sales concentrates on how this mechanism affects the capital market[2,3] or corporate behavior[4]. Only a small number of scholars have studied this theme in conjunction with an audit perspective, such as Hope who found that auditors would react to the growing short-selling threats and then increase audit fees[5]. Currently,there is a dearth of research on this subject and the most pertinent research to this paper is the study carried out by Zhang Honghui and Zhang Linyi, which is found that when the audited entity is under short-selling pressure, the auditor's tolerance to listed companies' surplus management behavior decreases due to the mediating effect of increased legal risk, thereby improving audit quality[6]. Zhang's study examines the influencing mechanism; however, they did not consider that the implementation of the mechanism might have different impacts on audit quality for different types of target firms. For this reason, this study not only looks into the connection between short-mechanism and audit quality but identifies some traits that improve audit quality more obviously under the short selling mechanism.

2. Theoretical analysis and research hypothesis

The impact on audit quality is the inevitable result of short selling mechanism. The following is to elaborate the possible path of short selling mechanism affecting audit quality from two perspectives, and present this paper's primary study hypothesis.

1.From the corporate perspective. In the context of the short-selling mechanism, short sellers typically have more reasons to find and disclose unfavorable corporate information. At the same time, to reduce the occurrence of investors shorting companies because of the distrust of financial information, short-selling subject enterprises are more likely to select high-quality auditing firms to deliver encouraging signals to investors[7]. Ordinarily, selecting top-notch auditors to audit and validate financial information helps improve the audit quality for businesses.

2.From the auditors' perspective. Auditors need to implement necessary audit procedures to obtain sufficient audit evidences and then issue an appropriate audit opinion when conducting audit work. Once the auditor fails to fulfill the obligation of diligence, he or she is exposed to the risk of potential lawsuits. The implementation of short-selling mechanism makes it easier for financial scandals to be detected and disclosed, so the auditors may be subjected to actual lawsuits as a result[5]. Zhang Honghui[6] argue that the short-selling mechanism raises the legal risk faced by auditors, reduces auditors' tolerance for corporate misconduct so that they are more likely to improve audit quality to avoid risks.

Hence, hypothesis H1 is put out in this study.

H1:When all other factors are held constant, introducing a short-selling mechanism improves audit quality.

State-owned enterprises have several natural advantages in accessing financial resources in the capital market, with fewer financing constraints[8], and there are some differences in the accounting soundness requirements of financial institutions in the capital market for enterprises with different property rights, and the banks' requirements for SOEs' accounting soundness are relatively lower. Compared with the state-owned enterprises with rich resources and convenient development conditions, private enterprises, out of the survival and development needs, the need to obtain the entrepreneur's personal value and social acceptance[9], have a higher willingness to improve audit quality for gaining investors› trust and obtaining funds from the capital market. Therefore, hypothesis H2 is formulated:

H2: When a short selling mechanism is implemented, audit quality improves higher in private companies than in state-owned companies.

In general, companies with sound governance practices naturally seek out high-quality audits, and these companies' sound governance practices usually create favorable conditions for high-quality audits. The audit quality of these companies has been relatively reliable before and after the short-selling mechanism is put in place. They are not as reflective or sensitive to the external factor of the short-selling mechanism adoption as companies with less effective corporate governance structures. In addition, auditors will adjust their auditing behavior based on the results of client risk assessment[10]. While the short-selling mechanism enhances the external regulation of the subject company[11], the possibility of revealing negative information about weakly governed firms increases so that the auditors incline to improve their audit quality to protect their rights and interests. Therefore, this paper proposes hypothesis H3:

H3:The improvement in audit quality resulting from the use of a shorting mechanism is particularly notable in cases where the corporate governance structure is subpar.

3. Empirical Study

3.1 Sample Selection and Data Source

Since the financing and securities financing business in China was formally established in 2010, the number of underlying stocks has grown steadily over time, and as a result, the short-selling mechanism has progressively developed. Subsequently, the research sample for this paper comprises A-share listed businesses between January 2010 and December 2022. To lessen special industries' and businesses' interference with the data analysis, this paper excludes the following samples: (1) Financial industry samples; (2) companies with missing data samples; and (3) samples of ST and *ST enterprises. All continuous variables are Winsorized at the 1% and 99% quantile in order to minimize the effect of outliers; 30665 observations are suitable for this approach. All of the variables' data in this work came from CSMAR.

3.2 Model design and variable description

This research creates the following testing model to study the relationship between the adoption of short-selling mechanism and audit quality:

$$ABSDA = \alpha + \beta_1 \text{ Short } + \beta_2 \text{ Size } + \beta_3 \text{ Lev } + \beta_4 \text{ Roa } + \beta_5 \text{ Loss } + \beta_6 \text{ Cap } + \beta_7 \text{ Dual } + \beta_8 \text{ Ind } + \beta_9 \text{ Big 4} + \beta_{10} \text{ Growth } + \beta_{11} \text{ Shr } + \beta_{12} \sum \text{Industry } + \beta_{13} \sum \text{ Year } + \varepsilon$$

Based on a study by Myers and Omer, one of the audit quality metrics utilized in this paper is ABSDA, or the absolute value of manipulable accruals[12]. Manipulable accruals are positively correlated with the probability of firms being subject to litigation and issuing a non-standard unqualified audit opinion, which is generally regarded as implying higher audit quality in the academic community, i.e., the two are positively correlated, according to Heninger[13]. This paper's explanatory variable, short, indicates whether or not a company's stock is a shorting bid for the current year. Based on existing studies, this paper defines Short as: if the enterprise is a short bid in a certain year, the value is 1, otherwise it is 0. While considering year and industry fixed effects,this article also controls for firm size, financial leverage, profitability, loss, working capital ratio, duality, independence, Big 4, Growth, Shareholding ratio of the first largest shareholder and other corporate financial characteristics and corporate governance characteristics variables, as defined in Table 1.

Table1 Variables Definition

Variable Symbol	Variable Definition
ABSDA	Absolute amount of manipulable accruals determined by the Jones model modification.
Short	If the enterprise is a short bid in a certain year, the value is 1, otherwise it is 0.
Size	Natural logarithm of the enterprise's total assets at the end of the year.
Lev	The enterprise's total liabilities at the end of the year divided by its total assets.
Roa	The enterprise's annual net profit divided by its total assets.
Loss	If the enterprise incurs a loss, the value is 1, otherwise it is 0.
Cap	The enterprise's working capital divided by its total assets.
Dual	If the same individual holds the positions of general manager and chairman, the value is 1, otherwise it is 0.
Ind	Number of independent directors as a percentage of total number of directors.
Big4	If the enterprise is audited by the Big 4, the value is 1, otherwise it is 0.
Growth	The gap between the total assets at the end of the current year and the previous year's total assets, divided by the total assets at the end of the previous year.
Shr	The enterprise's greatest shareholder's share holdings divided by its total share capital.
Industry	Control industry characteristics.
Year	Control year characteristics.

3.3 Descriptive statistics

The main variables' descriptive statistics are displayed in Table 2. As can be seen in Table 2, the average level of the absolute value of manipulability accruals of the companies listed is 0.067, as indicated by the mean value of ABSDA. The degree of surplus management varies, with the maximum value being 0.400 and the lowest value being 0.001. About 38.1% of the stocks of the companies can be shorted, according to the mean value of short, which is 0.381. Other control variable descriptive statistics demonstrate that the average level of financial leverage of the sample is about 44%; 12.3% of the companies incur losses; the average working capital ratio is 21%; 6.3% of the companies engage the international Big Four accounting firms. Moreover, the first-largest shareholder's share percentage on average is 33.7%.

Table2 Descriptive Statistics

Variable	N	Mean	p50	SD	Min	Max
ABSDA	30665	0.067	0.045	0.072	0.001	0.400
Short	30665	0.381	0.000	0.486	0.000	1.000
Size	30665	22.333	22.150	1.296	19.940	26.370
Lev	30665	0.440	0.435	0.202	0.063	0.900
Roa	30665	0.033	0.034	0.064	-0.273	0.195
Loss	30665	0.123	0.000	0.328	0.000	1.000
Cap	30665	0.210	0.209	0.235	-0.369	0.737
Dual	30665	0.266	0.000	0.442	0.000	1.000
Ind	30665	0.376	0.364	0.053	0.333	0.571
Big4	30665	0.063	0.000	0.243	0.000	1.000
Growth	30665	0.148	0.087	0.279	-0.300	1.745
Shr	30665	0.337	0.313	0.148	0.083	0.740

4. Empirical analysis

4.1 Benchmark regression analysis

After adjusting for the industry and year fixed effects in the regression, the findings of the short-selling mechanism and the audit quality applying least squares regression is showed in Table 3. With control variables like firm size and other conditions remaining unchanged, the results demonstrate that the short-selling mechanism's coefficient is 0.005 and significant at the 1% level. This suggests that the application of the short-selling mechanism improves audit quality, which is consistent with the expectation of hypothesis H1 in the preceding section.

Table3 Main effects analysis

	ABSDA
Short	0,005***
	(0,001)
Size	-0,007***
	(0,000)
Lev	0,033***
	(0,003)
Roa	-0,176***
	(0,009)
Loss	0,021***
	(0,002)
Cap	0,026***
	(0,003)
Dual	0,001
	(0,001)
Ind	0,009
	(0,007)
Big4	0,000
	(0,002)
Growth	0,061***
	(0,001)
Shr	0,001
	(0,003)
_cons	0,193***
	(0,011)
N	30665,000
r2	0,174
r2_a	0,172
Industry	Yes
Year	Yes

4.2 The impact of the nature of the enterprise

Given that the short-selling mechanism's application may improve audit quality to varying degrees for different types of organizations, in order to explore the differences in the improvement effect, group regression is used to classify enterprises as either privately held or state-owned based on their business type (Soe). The results of the regression are displayed in Table 4, where (1) represents the state-owned enterprise when Soe takes a value of 1, and (2) represents the private company when Soe takes a value of 0. It can be found that the results of both sets of regressions are positively correlated, demonstrating that the adoption of the short-selling mechanism facilitates the enhancement of the audit quality, both for state-owned enterprises and for private firms. Furthermore, the use of the short-selling mechanism to raise the audit quality of state-owned businesses is substantial at the 5% level, whereas the audit quality of private businesses is significant at the 1% level, which can verify H2.

Table4 Soe grouping regression

	(1)	(2)
	ABSDA	ABSDA
Short	0,004**	0,006***
	(2,432)	(4,184)
Controls[1]	YES	YES
_cons	0,168***	0,194***
	(10,502)	(11,371)
N	11754,000	16312,000
r2	0,155	0,197
r2_a	0,148	0,193

4.3 The impact of corporate governance level

For the purpose of figuring out the impact of differences in corporate governance level on the role of short-selling mechanism to improve audit quality, this paper uses the affiliation between the top ten shareholders to measure the corporate governance level, and the absence of affiliation takes the value of 1, otherwise it is 0. Accordingly, the samples are grouped, and Table 5 presents the regression results. (1) is the group that the top ten stockholders have no connected relationships, i.e., enterprises with good governance structure, and column (2) indicates the group

1 To save space, results for the control variables Size, Lev, Roa, Loss, Cap, Dual, Ind, Big4, Growth, and Shr are omitted from the tables in the latter section and are denoted by Controls. In addition, if not specified, fixed effects by year and industry were taken into account in all regressions.

in which affiliation exists, i.e., poor corporate governance structure. The findings support hypothesis H3 by demonstrating that the short-selling mechanism has a greater impact on improving auditing quality for companies with weaker corporate governance structures. Specifically, the regression coefficient of column (1) is positive but not significant at all, while the coefficient in column (2) is 0.004 and significant at the 1% level.

Table5 Corp group regression

	(1)	(2)
	ABSDA	ABSDA
Short	0,009	0,004***
	(1,447)	(3,066)
Controls	YES	YES
_cons	0,147**	0,151***
	(2,026)	(10,081)
N	894,000	19015,000
r2	0,197	0,186
r2_a	0,117	0,182

5. Robustness Tests

5.1 Replacement of the dependent variable

With reference to the relevant literature, this paper adopts the audit opinion to replace the original dependent variable ABSDA as a proxy indicator of audit quality for regression analysis, and takes the value of 1 if a non-standard audit opinion is received by the enterprise in that year, otherwise it is 0. The regression results show a positive correlation between opinion and short, indicating that the introduction of the short-selling mechanism increases the likelihood of an auditor's non-standard audit opinion, that is, the audit quality gets better. Additionally, the regression coefficient, which is 0.012 and significant at the 1% level, supports the reliability of the aforementioned findings.

Table6 Replacing the dependent variable

	Opin
Short	0,012***
	(0,003)
Controls	YES
_cons	0,342***
	(0,028)
N	30902,000
r2	0,108
r2_a	0,105

5.2 Replacement of independent variable

Regarding the replacement of the independent variable, based on Li Zhisheng's research[14], this paper adopts securities financing balance ratio to outstanding market capitalization (SSPF), i.e., the securities financing balance divided by the annual outstanding market capitalization of individual stocks as the measure of the shorting mechanism, and replaces the original independent variables for the regression analysis. This quantitative variable can better reflect the intensity of the shorting mechanism in the capital market than the replaced qualitative variable Short. The larger the securities financing balance ratio to the circulation market value, the greater the threat of shorting. These two variables still have a positive association, as shown by the regression results. The coefficient is 0.327 and significant at the 1% level, which can prove the previous results are robust.

Table7 Replacement of independent variables

	ABSDA
SSPF	0,327***
	(0,123)
Controls	YES
_cons	0,214***
	(0,019)
N	11,684,000
r2	0,154
r2_a	0,148

6. Conclusion and Implications

This paper takes the financing and securities trading, which has been officially implemented in China since March 2010, as the background of the study. The effect of the shorting mechanism on audit quality is examined by using pertinent data from A-share listed businesses between 2010 and 2022. According to the study, the quality of audits improved when a short-selling mechanism was implemented. Further analysis shows that this impact is more significant on private firms and firms with poorer corporate governance structures.

Since audit results play a crucial part in verifying the veracity and correctness of information disclosed by listed companies and their quality generally affects investors' decisions. Audit quality improvement contributes to the sound growth of China's capital market, so it is advised to keep raising the number of short-selling bid companies and fully liberalize the shorting restriction in due course. At the same time, China's capital market has not yet matured, while the short-selling mechanism in developed countries has achieved certain development. China should draw on the advanced experiences from countries with mature capital markets, formulate supporting measures and sanely direct the short-selling mechanism to contribute to the enhancement of the capital market.

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