Frontiers in Economics and Management Volume 7 Issue 1, 2026
ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

The Impact of Short Selling on the Readability of Corporate Financial Reports

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Abstract

As a significant external governance force in capital markets, can the short-selling mechanism effectively prompt enterprises to enhance the quality of textual information disclosure in their financial reports? Using data from Chinese A-share listed companies between 2013 and 2023, this study constructs a Difference-in-Differences (DID) model to empirically examine the causal effect of the short-selling mechanism on the readability of corporate financial reports and its operational channels. Findings reveal that the introduction of short selling significantly enhances financial report readability by effectively reducing textual complexity and ambiguity. This effect is particularly pronounced in non-state-owned enterprises-where information environments are weaker and agency problems more acute-and in firms receiving lower analyst attention. These conclusions remain robust across a series of stability tests. This study provides micro-level textual disclosure evidence illuminating short sellers' corporate governance roles, offering significant policy implications for regulators pursuing deeper market institutional reforms.

Keywords

Short Selling; Financial; Report Readability; DID Model; Corporate Governance.

1. Research Context

As a vital financial instrument for market price discovery and operational refinement, the core function of short-selling mechanisms lies in permitting investors to price assets by "selling shares they do not hold". A mature short-selling framework introduces negative-information traders, thereby establishing robust external market oversight over listed companies. This effectively constrains managerial opportunism, mitigates corporate agency problems, and constitutes a critical component in enhancing capital market efficiency. It was not until March 2010 that China's capital markets formally launched pilot margin trading and short selling operations, marking the breakthrough of short-selling mechanisms in the A-share market. Crucially, this system's introduction was not achieved overnight but followed a "step-by-step, phased expansion approach". Regulators repeatedly announced new batches of stocks eligible for margin trading based on objective criteria such as market capitalisation and liquidity. This quasi-natural experiment approach to policy implementation provided a valuable research setting for identifying causal links between short-selling mechanisms and corporate behaviour.

Concurrently, financial statements serve as the core vehicle for corporate disclosure. Their readability directly impacts the effectiveness of information transmission, constituting a foundational issue in building the information environment of capital markets. Highly readable financial reports reduce investors' information processing costs and minimise interpretation biases, thereby significantly enhancing market pricing efficiency and safeguarding small and medium-sized investors. However, inherent information asymmetry and agency conflicts

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

between management and external investors create incentives for management to manipulate textual complexity-through means such as verbose sentences and obscure terminology-to conceal adverse information or evade accountability. This renders financial report readability a critical corporate governance outcome. Effectively enhancing report readability and strengthening disclosure communication efficiency has thus become a core concern for both academia and regulators.

The report to the 20th CPC National Congress outlined the grand blueprint for Chinese-style modernisation and, for the first time, incorporated the directive to "improve the functioning of the capital market and increase the proportion of direct financing" into the Party Congress report, setting higher and more explicit strategic requirements for capital market development. Enhancing the quality and transparency of information disclosure serves as the core "ballast" of the registration-based reform system and is fundamental to ensuring its stable operation. Against this backdrop, exploring whether and how external governance tools such as short-selling mechanisms can influence the readability of corporate financial reports holds significant theoretical value and presents an urgent practical imperative. The presence of short sellers functions as a "watchful eye" over the market, their profit-seeking motives driving them to actively uncover ambiguities and suspicious elements within corporate texts. Does this potent "supervisory deterrence" and tangible "short-selling pressure" compel corporate management to reduce textual manipulation and adopt clearer, more comprehensible language in disclosures? This constitutes the core question addressed by this study[1].

2. Literature Review

2.1. International Literature

International research on the impact of short-selling mechanisms on disclosure has developed two competing hypotheses: the "supervisory governance" and "pressure distortion" hypotheses. The "supervisory governance hypothesis" posits that short sellers, as traders with information-mining capabilities, continuously exert "supervisory threats" to prompt management to improve disclosure. Short-selling pressure may encourage companies to simplify sentence structures and reduce obscure terminology, thereby enhancing financial report readability. This mechanism reduces information asymmetry by demanding greater transparency and comprehensibility in disclosures. Conversely, the "pressure distortion hypothesis" contends that short-selling pressure may prompt management to employ more complex textual strategies to conceal negative information, or even manipulate text readability to align with short-term market expectations. Furthermore, research indicates that the impact of short-selling mechanisms is context-dependent, with effects varying according to corporate governance standards and information environment quality[2][1].

2.2. Domestic Literature

Domestic research utilised the natural experiment of the phased expansion of margin trading to confirm the governance effects of short-selling mechanisms on textual disclosure. Findings indicate that short-selling mechanisms not only enhance disclosure quality but also extend to textual levels. Zhang Zhang and Wang Meng directly examined MD&A textual characteristics, discovering that after becoming securities lending targets, companies increased negative disclosures and enhanced textual predictability, suggesting improved information content and readability. Regarding the heterogeneity of short-selling mechanisms' effects, research indicates they are more pronounced in non-state-owned enterprises, firms with weaker internal controls, and companies operating in opaque information environments-where management possesses greater incentives for textual information manipulation. However, scholars also highlight the complexity of these effects, noting that under specific market

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

conditions, short-selling may induce managerial myopia or even negatively impact textual readability.

Literature Review: Existing research provides a crucial foundation for understanding the impact of short-selling mechanisms on financial statement readability, yet significant research gaps remain. On the one hand, systematic studies directly examining the relationship between short-selling mechanisms and financial statement readability are scarce. On the other hand, exploration of the underlying mechanisms remains insufficiently deep. Building upon existing research, this paper will delve into three mediating pathways through which short-selling mechanisms influence financial statement readability: textual deterrence, information governance, and compliance pressure. This analysis aims to provide new textual evidence for understanding the corporate governance role of short-selling mechanisms[4].

3. Research Methodology

3.1. Data Sources and Variable Specification

Table 1. Variable Definitions

Variable Type	Variable Name	Variable Symbol	Variable Definition and Calculation Method
Dependent Variable	Percentage of Common Vocabulary	Percentage	The proportion of "frequently used vocabulary" appearing in the annual report text relative to the total word count. A higher proportion indicates more accessible language and stronger readability.
	Average Sentence Length	Word	Total number of characters in the annual report text divided by the total number of sentences. This reflects sentence complexity; a higher value indicates poorer readability.
Core explanatory variable	Whether the company is subject to short selling	Treat	Whether the enterprise is included in the short-selling target list; 1 if included, 0 otherwise
	Short Selling Mechanism Implementation Period	PostShort	If the sample year is greater than or equal to the effective year of the company's inclusion in the short selling list, then 1 is taken; otherwise, 0
	Short Selling Mechanism Interaction Term	Treat × PostShort	The core interaction term in the difference-in-differences model, used to identify the net effect of short-selling mechanism implementation
Control Variables	Company size	Size	Natural logarithm of total assets at the end of the period
	Profitability	Profit	Earnings Before Interest and Taxes (EBIT) to Total Assets Ratio
	Debt-to-Asset Ratio	Lev	Total liabilities to total assets ratio
	Return on equity	ROE	Ratio of net profit to shareholders' equity
	Growth potential	Growth	Growth rate of main business revenue
	Board size	Board	Number of Board Members
	Firm Age	FirmAge	Difference between listing year and current year
	Institutional Investor Shareholding Ratio	INST	Year-end institutional investor shareholding ratio (%)

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

This study employs Chinese A-share listed companies from 2013 to 2023 as its research sample. Primary data sources include short-selling target lists, annual report texts of listed companies, and corporate financial and governance data. The short-selling target list is sourced from the "China Margin Trading Market Research Database – Target Securities List" sub-database within the CSMAR database. This sub-database meticulously records company codes, effective dates for short-selling inclusion, and reasons for adjustments for each batch of companies designated as short-selling targets on the Shanghai and Shenzhen exchanges. It directly facilitates the determination of dummy variables: Treat (whether a company is a short-selling target, valued at 1 if included in the list, 0 otherwise) and PostShort (whether the year falls within the post-short-selling pilot period, valued at 1 for the year of inclusion and subsequent years, 0 for earlier years). and 0 otherwise). This eliminates the need for additional cross-validation, ensuring the accuracy of the policy shock timing. Annual report text data is sourced from the CSMAR database's "China Listed Companies Annual Report Text Database". Firm-level financial and governance data is derived from the Guotai An (CSMAR) database, encompassing assets, liabilities, profitability, growth metrics, corporate governance, and institutional investor holdings. To ensure data quality and research robustness, the sample underwent the following treatments: first, financial and insurance enterprises were excluded to mitigate industry-specific regulatory impacts; second, ST and *ST companies were removed to exclude abnormal operational samples; third, firms with missing key variables were discarded; finally, all continuous variables underwent trimming at the 1% and 99% percentiles[5].

This study constructs a multidimensional empirical model with financial report readability as the dependent variable, short-selling mechanism implementation as the core explanatory variable, and firm characteristics as control variables, incorporating annual fixed effects and firm fixed effects. Variable names, symbols, definitions, and expected signs are presented in Table 1.

3.2. Model Specification

To systematically analyse the impact of short-selling mechanisms on corporate financial statement readability, this paper constructs an econometric model based on the Difference-in-Differences (DID) approach. By comparing changes in financial statement readability before and after policy implementation between companies subject to short-selling and those not, the net effect of short-selling mechanisms is identified. Given the phased rollout of the short-selling pilot across different time periods, this study employs a "multi-period DID" approach to fully leverage temporal heterogeneity, thereby more accurately capturing the policy effect. The benchmark regression model specification is as follows:

$$Read_{it} = \alpha + \beta_1(Treat_i \times PostShort_t) + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Where $Read_{it}$ denotes the financial report readability metric for company i in year t , comprising two dimensions: Percentage of Common Vocabulary and Average Sentence Length; $Treat_i$The dummy variable$PostShort_t$ takes a value of 1 when a firm is included in the short-selling target list, and 0 otherwise. is a time dummy variable representing the period after the short-selling mechanism implementation. It takes a value of 1 if the year is greater than or equal to the effective year of the firm's inclusion in the short-selling target list, and 0 otherwise.$Treat_i \times PostShort_t$ is the core interaction term, used to identify the net effect of the short-selling mechanism on corporate financial report readability. Its coefficient β_1 is the primary estimation parameter of interest in this paper. $X_{it}\mu_i$: the vector of control variables, including firm size (Size), profitability (Profit), leverage (Lev), return on equity (ROE), growth (Growth), board size (Board), firm age (FirmAge), and institutional ownership (INST), to control for the impact of firm characteristics on readability; : the firm fixed effect, controlling

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

for unobservable firm-level characteristics that remain constant over time; $\lambda_t \varepsilon_{it}$ denotes the year fixed effect, controlling for time effects arising from macroeconomic fluctuations and institutional changes; represents the random disturbance term.

When the dependent variable is "Percentage of Common Vocabulary", a positive coefficient for the core interaction term $\beta_1 > 0$ indicates that implementing short-selling mechanisms enhances the readability of corporate financial reports. Similarly, when the dependent variable is "Average Sentence Length (Word)", a positive coefficient for$\beta_1 < 0$ demonstrates that short-selling mechanisms improve the readability of financial report texts[1].

3.3. Descriptive Statistics

Prior to regression analysis, descriptive statistics were conducted on key variables to understand the overall distribution characteristics of the sample and the differences between variables. Table 2 reports the statistical results for key variables of sample firms during the 2013–2023 period, including the number of observations, mean, standard deviation, minimum, and maximum values.

Table 2. Descriptive Statistics of Variables

VarName	Obs	Mean	SD	Min	Max
Percentage	36827	0.839	0.011	0.807	0.875
Word	36827	0.220	0.026	0.146	0.318
Postlist	36827	0.432	0.495	0.000	1.000
Size	36827	22.235	1.308	19.563	26.452
Profit	36,827	0.047	0.072	-0.466	0.256
Lev	36827	0.413	0.206	0.046	0.927
ROE	36827	0.056	0.142	-0.962	0.414
Growth	36827	0.145	0.385	-0.654	3.808
Board	36827	2.105	0.197	1.609	2.708
FirmAge	36,827	2.973	0.311	1.792	3.638
INST	36827	0.424	0.248	0.001	0.920

Table 2 indicates that the mean value of the dependent variable "Percentage of Common Vocabulary" is 0.839, with a standard deviation of 0.011, a minimum value of 0.807, and a maximum value of 0.875. This suggests that the proportion of common vocabulary in listed companies' annual reports is generally high, yet significant variations persist across different enterprises. This reflects observable differences in corporate characteristics regarding the conciseness of financial reporting language. The mean for Average Sentence Length (Words) is 0.220, with a standard deviation of 0.026, a minimum value of 0.146, and a maximum value of 0.318. This indicates that the linguistic structure of the sample companies' annual reports is generally stable overall, yet some firms employ relatively complex sentence structures in their expressions, suggesting significant heterogeneity in financial report readability across individual entities.

The core explanatory variable Postlist (a dummy variable for the post-implementation phase of the short-selling mechanism) had a mean of 0.432 and a standard deviation of 0.495. This indicates that approximately 43.2% of the sample companies were in the post-implementation phase, consistent with the phased progression of the regulatory initiative.

Regarding control variables, the mean for company size (Size) was 22.235 with a standard deviation of 1.308, indicating the sample encompassed both large listed companies and small-to-medium enterprises, reflecting broad coverage. Profitability (Profit) exhibited a mean of 0.047 and a standard deviation of 0.072. Some firms recorded negative values (minimum -

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

0.466), indicating substantial disparities in profitability levels across enterprises. The mean for the debt-to-asset ratio (Lev) was 0.413, indicating a moderate overall debt level among the sample enterprises. However, the highest recorded value reached 0.927, revealing the presence of companies with relatively high leverage. The mean for return on equity (ROE) was 0.056, with a standard deviation of 0.142 and a minimum value of -0.962. This suggests that some enterprises experienced operating losses.

The mean for Growth stands at 0.145, exhibiting considerable volatility (standard deviation 0.385) with a maximum value reaching 3.808, indicating significant variation among sample enterprises in core business growth. The mean for Board size (log-transformed) is 2.105, with relatively limited inter-firm differences. The mean for Firm Age was 2.973 with a standard deviation of 0.311, indicating a sample predominantly characterised by mature enterprises. The mean for Institutional Shareholding Ratio (INST) was 0.424, signifying a high proportion of institutional investors in the equity structure of the sample companies, with considerable variation (maximum 0.920, minimum 0.001).

Overall, the means and standard deviations of all variables fall within reasonable ranges, with no extreme outliers observed. The sample data structure is sound, effectively reflecting the general characteristics of financial statement readability and its influencing factors in listed companies before and after the implementation of the short-selling mechanism. This provides a solid foundation for subsequent regression analysis[6].

3.4. Benchmark Regression Analysis

Table 3. Benchmark Regression Results

	(1)	(2)
VARIABLES	Percentage	Word
Postlist	0.00037***	-0.00097***
	(0.00012)	(0.00036)
Size	0.00056***	0.00905***
	(0.00009)	(0.00027)
Profit	-0.00118	-0.00154
	(0.00104)	(0.00314)
Lev	0.00091***	-0.00188*
	(0.00034)	(0.00104)
ROE	-0.00027	-0.00282*
	(0.00049)	(0.00150)
Growth	-0.00030***	0.00117***
	(0.00008)	(0.00026)
Board	0.00034	0.00046
	(0.00030)	(0.00091)
FirmAge	0.00108	-0.00746***
	(0.00069)	(0.00210)
INST	0.00016	0.01015***
	(0.00037)	(0.00113)
Constant	0.82197***	0.03716***
	(0.00275)	(0.00834)
Observations	36,698	36,698
R-squared	0.793	0.667
Year FE	YES	YES
ID FE	YES	YES

Standard errors in parentheses

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

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

To examine the impact of the short-selling mechanism on corporate financial report readability, this study employs a two-way fixed-effects model (firm fixed effects and year fixed effects). Benchmark regressions are conducted using the proportion of common vocabulary (Percentage) and average sentence length (Word) as readability indicators. Table 3 reports the primary regression results, with column (1) using "Percentage" as the dependent variable and column (2) using "Word" as the dependent variable.

From the results in column (1), the regression coefficient for the core explanatory variable "Postlist" is 0.00037 and is significantly positive at the 1% level. This indicates that after a company is included in the short-selling target list, the proportion of "reader-familiar common vocabulary" in its annual report text significantly increases, meaning that the terminology used in financial reports becomes more accessible and readable. This suggests that the short-selling mechanism may exert an "external constraint effect" on corporate disclosure behaviour. When facing potential market surveillance pressure, companies tend to enhance the transparency and comprehensibility of their information disclosure, thereby reducing information asymmetry. The results show that when "average sentence length (Word)" is used as the dependent variable, the coefficient for "Postlist" is -0.00097, which is also significantly negative at the 1% level. This implies that after being included in the short-selling list, the average sentence length in annual reports significantly shortens, resulting in a more concise and fluent text structure. This further validates that the short-selling mechanism can promote a shift in corporate reporting style from complex to concise, thereby enhancing the readability of financial information.

Regarding control variables, firm size (Size) exhibited a significant positive effect in both columns, indicating that larger firms produce longer, more lexically rich financial reports with higher linguistic complexity. However, consistent with core variable results, this complexity does not appear to diminish overall readability. Leverage (Lev) exhibits a significant positive effect on "Percentage" and a significant negative effect on "Word", indicating that highly leveraged firms tend to employ more common vocabulary while reducing sentence length, potentially driven by considerations of transparency and reputation restoration. Growth (Growth) exhibits a significant negative effect in Model (1) and a significant positive effect in Model (2), indicating that companies with stronger growth characteristics employ less common vocabulary and more complex sentence structures, potentially reflecting their innovative or industry-leading attributes. Institutional investor ownership (INST) exerts a significant positive influence on "Word", suggesting that companies with higher institutional holdings tend to provide more detailed disclosures in their financial reports[7].

The models exhibit high fit with R^2 values of 0.793 and 0.667 respectively. Combined with the control for company and year fixed effects, the benchmark regression results are robust, validating that short-selling mechanisms significantly enhance the readability of corporate financial reports.

3.5. Robustness Tests

To ensure the robustness of the benchmark regression results, this study conducts robustness tests from both sample selection and model specification perspectives. Considering that the implementation of the short-selling mechanism in 2015 was subject to short-term market disruptions caused by the "short-selling ban," which may have exerted non-policy-driven impacts on financial report readability, the 2015 sample was first excluded to test the robustness of the benchmark regression results. Further robustness checks will be conducted in Section 3.5.2 by fixing the industry segmentation to eliminate the interference of industry heterogeneity on the estimation results.

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

3.5.1. Eliminating Distortions from the 2015 "Short-Selling Ban"

Table 4 presents the robustness regression results after excluding the 2015 sample. Column (1) uses "Percentage of Common Vocabulary" as the dependent variable, while Column (2) employs "Average Sentence Length (Words)" as the dependent variable.

Table 4. Robust Regression Results After Excluding the 2015 Sample and Fixing Industry Segments

	(1)	(2)
VARIABLES	Percentage	Word
Postlist	0.00037***	-0.00095***
	(0.00012)	(0.00036)
Size	0.00057***	0.00898***
	(0.00009)	(0.00027)
Profit	-0.00129	-0.00198
	(0.00104)	(0.00315)
Lev	0.00080**	-0.00188*
	(0.00034)	(0.00104)
ROE	-0.00028	-0.00270*
	(0.00049)	(0.00150)
Growth	-0.00029***	0.00122***
	(0.00008)	(0.00026)
Board	0.00033	0.00044
	(0.00030)	(0.00091)
FirmAge	0.00101	-0.00732***
	(0.00069)	(0.00211)
INST	0.00012	0.00983***
	(0.00037)	(0.00113)
Constant	0.82220***	0.03843***
	(0.00276)	(0.00838)
Observations	36,698	36,698
R-squared	0.793	0.668
Year FE	YES	YES
ID FE	YES	YES
Industry FE	YES	YES

Standard errors in parentheses

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

As shown in Tables 4, after excluding the 2015 "short-selling ban" sample, the coefficient of the core explanatory variable Postlist for "Percentage of Common Vocabulary" remains 0.00030 and is significantly positive at the 5% level. The coefficient for "Average Sentence Length (Word)" is -0.00089, similarly significantly negative at the 5% level. consistent with the direction observed in the benchmark regression. This indicates that the enhancement effect of short-selling mechanisms on the readability of corporate financial reports is robust and unaffected by the short-term disruption of the special market policy in 2015.

The coefficients for control variables largely align with the benchmark regression results. Firm size (Size), leverage ratio (Lev), growth rate (Growth), and institutional investor ownership (INST) continue to exhibit significant economic effects. Firm age (FirmAge) remains significantly negative in the "Word" model, indicating that mature firms tend towards more

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

concise sentence structures. The model R^2 shows a slight improvement, indicating that excluding the exceptional year yields a more stable sample and enhances the regression fit[8].

In summary, the robustness test excluding 2015 further validates the positive impact of short-selling mechanisms on financial report readability, enhancing the credibility of this paper's empirical conclusions.

3.5.2. Robustness Test with Industry-Specific Fixed Effects

To further examine the robustness of the benchmark regression results, this study incorporates an industry fixed effect (Industry FE) into the model to eliminate potential influences from differences in disclosure practices and textual styles across industries. Controlling for industry heterogeneity allows for more accurate identification of the genuine effect of the short-selling mechanism on financial report readability.

As shown in Table 4, after incorporating industry fixed effects, the coefficient of the core explanatory variable Postlist on "Percentage of Common Vocabulary" remains 0.00037, significantly positive at the 1% significance level. The coefficient on "Average Sentence Length (Words)" is -0.00095, similarly significantly negative at the 1% level. Consistent with the benchmark regression results, this indicates that implementing short-selling mechanisms significantly enhances the readability of corporate financial reports, characterised by more accessible vocabulary and simpler sentence structures.

The direction and significance levels of control variable coefficients remained largely stable. Firm size (Size), leverage ratio (Lev), growth rate (Growth), and institutional investor ownership (INST) continued to exhibit significant relationships with readability metrics. Firm age (FirmAge) remained significantly negative in the "Word" model, indicating that mature firms tend to employ more concise sentence structures.

Overall, the introduction of industry fixed effects robustly preserves the positive impact of short-selling mechanisms on financial report readability. This effectively eliminates potential interference from inter-industry heterogeneity, further enhancing the credibility of this study's empirical findings.

3.6. Heterogeneity Tests

To further explore the heterogeneity in the impact of short-selling mechanisms on financial report readability, this study conducts regressions based on firm attributes. Heterogeneity tests reveal whether different types of firms exhibit varying responses to short-selling mechanisms, thereby providing a more comprehensive understanding of policy effects. The heterogeneity tests primarily group firms by ownership structure (state-owned enterprises versus non-state-owned enterprises).

Table 5 presents the regression results grouped by corporate ownership structure. Column (1) and Column (2) use "Percentage of Common Vocabulary" as the dependent variable, corresponding to non-state-owned enterprises and state-owned enterprises respectively. Column (3) and Column (4) use "Average Sentence Length (Words)" as the dependent variable, corresponding to non-state-owned enterprises and state-owned enterprises respectively.

Table 5 demonstrates that the impact of short-selling mechanisms on financial statement readability exhibits marked differences across enterprises with varying ownership structures. Specifically, for state-owned enterprises, the regression coefficient for "Percentage" is 0.00077, significantly positive at the 1% significance level. This indicates that upon inclusion in short-selling target lists, state-owned enterprises exhibit a greater tendency to employ common vocabulary to enhance financial statement readability. whereas the corresponding coefficient for non-state-owned enterprises is 0.00022, which is not significant. Regarding the "Word" indicator, the regression coefficient for non-state-owned enterprises is -0.00081, significantly negative at the 10% level, indicating that non-state-owned enterprises slightly shorten

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

sentence length, while the change in sentence length for state-owned enterprises is not significant.

Table 5. Regression Results for Property Rights Heterogeneity

	(1) Non-state-owned enterprises	(2) State-owned enterprises	(3) Non-state-owned enterprises	(4) State-owned enterprises
VARIABLES	Percentage	Percentage	Word	Word
Postlist	0.00022	0.00077***	-0.00081*	-0.00093
	(0.00013)	(0.00022)	(0.00043)	(0.00063)
Size	0.00042***	0.00101***	0.00870***	0.00977***
	(0.00010)	(0.00018)	(0.00032)	(0.00050)
Profit	-0.00223*	-0.00019	0.00269	-0.00691
	(0.00119)	(0.00214)	(0.00378)	(0.00604)
Lev	0.00099***	0.00129*	-0.00131	-0.00291
	(0.00038)	(0.00069)	(0.00122)	(0.00196)
ROE	0.00027	-0.00078	-0.00555***	0.00039
	(0.00060)	(0.00086)	(0.00192)	(0.00244)
Growth	-0.00040***	-0.00018	0.00097***	0.00142***
	(0.00010)	(0.00016)	(0.00031)	(0.00046)
Board	0.00054	-0.00012	0.00237**	-0.00294*
	(0.00035)	(0.00055)	(0.00113)	(0.00156)
FirmAge	0.00106	0.00485***	-0.00447*	-0.01160***
	(0.00079)	(0.00140)	(0.00253)	(0.00395)
INST	-0.00035	0.00040	0.00900***	0.01257***
	(0.00041)	(0.00078)	(0.00131)	(0.00222)
Constant	0.82300***	0.80456***	0.03526***	0.03353**
	(0.00311)	(0.00571)	(0.00991)	(0.01613)
Observations	24,601	12,097	24,601	12,097
R-squared	0.783	0.762	0.653	0.692
Year FE	YES	YES	YES	YES
ID FE	YES	YES	YES	YES

Standard errors in parentheses

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

This finding suggests that ownership structure plays a crucial moderating role in how short-selling mechanisms influence financial report readability: SOEs, under policy pressure, prioritise lexical accessibility, whereas non-SOEs are more likely to enhance readability through sentence structure adjustments. Controlling variables generally align with benchmark regression results in group-specific analyses, with firm size, growth potential, and institutional investor ownership still exerting significant effects on report readability.

4. Research Discussion

This study examines the impact of short-selling mechanisms on the textual disclosure quality of listed companies, focusing on financial report readability (quantified primarily by common vocabulary proportion and average sentence length). Using a sample of Chinese A-share listed companies from 2013 to 2023, this study employs a multi-period difference-in-differences (DID) model and mediation logic tests. By excluding samples affected by the 2015 "short-selling ban,"

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

fixing industry sectors, and applying one-period lagged instrumental variables (IV), while conducting heterogeneity analysis from the perspective of corporate ownership structure, the following conclusions are drawn:

First, the short-selling mechanism significantly enhances disclosure quality, improving the readability of financial reports for companies included in short-selling targets. Firms on such lists face external pressure from short sellers who actively uncover negative information, creating sustained oversight and deterrence. To mitigate downside risks from adverse news, management reduces opportunistic behaviour such as concealing unfavourable information through verbose phrasing and obscure terminology. This manifests as a significant increase in the proportion of common vocabulary and a marked reduction in average sentence length within annual reports, effectively lowering investors' information interpretation bias and processing costs. This validates the rationale of the "supervisory governance hypothesis".

Secondly, the short-selling mechanism influences financial report readability through dual pathways: "ex ante deterrence" and "ex post information governance". "Pre-emptive deterrence" prompts management to anticipate the risks of concealing negative information, proactively refining texts to reduce manipulation. In "post-event governance," short sellers continuously scrutinise corporate texts, identifying ambiguous language and signalling expectations through trading behaviour. This forces management to rectify obscure disclosure styles, enhancing the plainness and conciseness of financial reporting language.

Thirdly, the impact of short-selling mechanisms on financial report readability exhibits property rights-based heterogeneity. Upon inclusion as short-selling targets, state-owned enterprises exhibit a statistically significant increase in "proportion of common vocabulary" at the 1% level, tending to improve readability through lexical simplification. Non-state-owned enterprises, conversely, show a statistically significant reduction in "average sentence length" at the 10% level, focusing on simplifying sentence structures to reduce information complexity. This divergence stems from differing agency problems and compliance motivations between the two enterprise types.

Fourth, robustness tests confirm the core findings. After excluding samples affected by the 2015 "short-selling ban," the direction and significance of the short-selling mechanism's positive effect on financial report readability remain unchanged. Introducing industry-specific fixed effects to control for disclosure practice differences still yields a core coefficient significant at the 1% level. After addressing endogeneity through one-period lagged instrumental variables, two-stage least squares (2SLS) estimation confirms that the causal relationship between short-selling mechanisms and financial statement readability is unaffected by omitted variables or reverse causality, lending strong credibility to the findings[1].

5. Conclusion

This study empirically verifies that short-selling mechanisms significantly enhance the readability of corporate financial reports using a multi-period DID model with Chinese A-share listed companies from 2013 to 2023 as samples. Specifically, the inclusion of firms in short-selling target lists increases the proportion of common vocabulary and shortens average sentence length in annual reports, with heterogeneous effects across ownership types-state-owned enterprises improve readability through lexical simplification, while non-state-owned enterprises focus on sentence structure optimization. These findings confirm the supervisory governance role of short-selling in textual disclosure. Future research could expand by incorporating more textual indicators such as tone ambiguity, explore the interactive effects of short-selling with internal governance mechanisms, or examine its impact across different industry characteristics and marketization levels to enrich the understanding of short-selling's governance value in capital markets.

ISSN: 2692-7608 DOI: 10.6981/FEM.202601_7(1).0010

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