

Research Article

Audit Committee Disclosure Tone and Corporate Violations in China: Textual Analysis

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This study employs text analysis to examine the effect of audit committee reporting, measured by the tone of audit committee disclosures, in predicting the likelihood and frequency of violations. In total, 1,349 companies listed on the Chinese Shanghai Stock Exchange were assessed for this paper from 2014 to 2019. The results suggest that the more active the audit committee's disclosure tone, the lower the probability and frequency of violations. In addition, the results are robust after controlling for endogenous issues. The further analysis shows that better readability of the text aggravates the negative relationship between the tone of text disclosure and violations. The path analyses show that audit committees predict corporate violations by affecting internal control quality and auditors' opinions. The results suggest that disclosure of audit committee reporting improves transparency in the activities of audit committees, which plays a positive governance role in indicating corporate violations. Meanwhile, the study provides a reference for further reform of audit committee information disclosure.

1. Introduction

As an important part of corporate governance, the audit committee (AC) is a key institutional arrangement that ensures the quality of financial reports. The AC has the essence of a contractual association consisting of a set of incomplete trading contracts for the right to use an element, which actually forms a contract between shareholders and the AC [1]. However, the worldwide phenomenon of fraud has aroused widespread public doubts about the governance effect of AC. The most important reason is that the disclosure of the AC does not provide enough information for firms' stakeholders and keeps them in the dark about whether and how the AC performs its duties [2]. Subsequently, the United States Securities and Exchange Commission (SEC) issued a concept announcement called "Possible Revisions to Audit Committee Disclosure" to seek public comment regarding AC reporting requirements. Meanwhile, an increasing number of countries and regions have begun to promote disclosure reform of AC transparency, including Britain, Australia, the European Union, and China. Despite the importance of AC disclosure, little

archival evidence exists on this issue. Most existing studies have discussed the impact on the performance of AC from the perspective of the characteristics and factors that influence it [3–5]. Examples include independence [6], professional knowledge and experience [7], scale, diligence [8], and other characteristics of AC. Overall, little attention has been paid to the actual operation process [9], and there is a lack of empirical evidence to support the economic consequences of the disclosure reform of AC.

In November 2013, China's Shanghai Stock Exchange (SHSE) issued guidelines for the operation of AC (GUIDE), which stipulate that listed companies on the Shanghai Stock Exchange must disclose the annual performance of AC as well as the disclosure of the financial report. Mandatory disclosure provided this study with an opportunity to investigate the economic consequences of AC. The AC is mainly composed of independent directors, of whom at least one is an accounting professional. In November 2021, China's first-instance judgment of the securities misrepresentation case of KangMei Pharmaceutical Co. Ltd. was handed down. The five original independent directors of the company, who signed the annual financial report or

semiannual financial report, each assumed 5%–10% of the joint and several liabilities. This incident was the first time that China imposed joint and several economic penalties on independent directors. The KangMei event aroused great concern regarding the violations by the company. Can AC reporting predict a company's violation risk? Has an independent director expressed these concerns in their report? It is worth considering. This study considers the AC report's text information disclosed by A-share listed companies of the SHSE from 2014 to 2019 as the research object, using the company's violation as the starting point to investigate the relationship between the text tone of AC reports and the company's violations.

The possible contributions of this study are as follows: first, this paper provides the economic consequences of the actual performance process of AC, which expands the research in the AC field. Second, this study is the first to investigate the text characteristics of AC reporting in China and expand the application field of text analysis. Third, this study tests the predictive effect of corporate governance structure on corporate violations from an AC perspective, which expands the relevant literature on corporate violations. Therefore, it helps capital market participants understand the relationship between listed companies' information disclosure and corporate violations, providing a useful reference for regulators in formulating information disclosure regulatory policies.

The remainder of this paper is structured as follows: Section 2 summarizes the theoretical analysis and develops the hypotheses. Section 3 describes the study's research method. Section 4 presents the findings. Section 5 provides additional analysis. In Section 6, a summary and conclusions are provided.

2. Theory and Hypotheses

2.1. Theoretical Analysis. According to agency theory, AC is a remedial measure to further alleviate the information asymmetry between shareholders and management. An efficient AC is called "one of the most reliable defenders of public interest" and crucial to audit and financial reporting quality [10, 11]. Previous studies have shown that AC can restrain the degree of earnings management [12, 13], lower the probability of illegal information disclosure [4], and reduce the possibility of restatement of a company's financial reports [14]. Consequently, AC improves the quality of financial reports. In addition, AC can help auditors maintain their independence and improve audit quality [15]. Overall, the literature on the effect of AC mainly focuses on two aspects: the compositional characteristics of AC, for example, independence and professionalism [16–18], personality [19–21], and the scale and diligence of AC [22]. The other is the impact of management power [4, 5, 23].

Owing to the late rise of the research method of text analysis using computer language, the literature on the disclosure of text information in AC reports is scarce. Research on textual analysis of corporate disclosures focuses on fiscal reports [24–27]. Several recent auditing literature

focuses on key audit matters in auditors' reports and their information content [28, 29]. Textual analysis of AC reports is, however, limited and at an early stage. Draeger et al. [30] examined the text of AC reports of US firms and found that AC reports typically use a template language that can only provide limited information for supervising external auditors and did not find that AC characteristics were related to the level of disclosure in AC reports [30]. Sahyon and Magnan found that an AC report voluntarily disclosed is merely an impression management tool with no substantive effect [31]. By investigating FTSE 350 index companies in the UK, Habiba and Mahbub found that AC reports are not model reports but changes in language, and the text tone of AC reports is significantly negatively correlated with earnings [32].

The existing literature has studied the characteristics of AC and achieved rich results. However, little is known regarding the operation of AC. Further research is needed to help people gain a deeper understanding of the performance process and consequences of AC [11, 33]. Chen et al. [34] studied the impact of AC report disclosure on the quality of financial reports and management behavior [34]. They find that the mandatory disclosure policy of the SHSE in 2013 significantly improves the quality of a company's financial information, inhibiting management's on-the-job consumption. Based on previous research, this study further analyses AC's actual operation process, using AC disclosure tone as a proxy variable and its economic consequences.

China is considered a high-context communication society. People often try to figure out the intention of the information transmitter through the "implication." Compared with specific professional statements and the accuracy of values, tone information is easier for investors to obtain [35]. Even investors without relevant professional knowledge can receive the emotional attitude information contained in the AC report, which lowers the threshold for information transmission. With an increase in the number of users, AC reports have become important channels for transmitting a company's internal information. This study considers a company's violation as a proxy variable for AC performance efficiency. If the performance efficiency is high, the AC reveals the psychological expectation of performance disclosure. When a company is found to have some degree of violation, the tone of the AC report can predict the possible risks and violations of the company. If the performance efficiency is low, the tone of the AC report cannot accurately predict the risk of violation.

Company violation refers to the unethical behavior in which the management violates a certain contract in order to obtain illegitimate benefits. Companies' violations can be divided into financial information disclosure violations and nonfinancial information disclosure violations. In actual cases of violation punishment, most violations belong to financial information disclosure violations, including fictitious profits and assets, false records, major omissions, false disclosures, and improper general accounting treatment. Nonfinancial information disclosure violations include operating and management violations.

2.2. Hypothesis Development. The text information disclosed by the AC may be the true disclosure of the company's current situation (information supply theory), but it may also be a strategic disclosure influenced by management (information fuzziness theory).

2.2.1. Information Supply Theory. The AC's motivation to perform its duties effectively is mainly affected by independence and reputation mechanisms. The AC is a professional committee, and independence is crucial for the AC to play a supervisory role. AC members cherishing reputational capital urge them to perform financial supervision functions [36]. After mandatory disclosure, the reputation and litigation risks of AC increase. The AC may perform its duties more diligently and provide supervision information fully and in a timely manner. The "Information Supply Theory" holds that the external and internal factors of the company will motivate managers to disclose text information, which will be a useful supplement to the existing information. The tone of the disclosed text reflects the company's situation truthfully. Through the tone of the disclosed text, the AC expresses its attitude towards matters of concern, such as accounting adjustment, revenue recognition, and other specific financial reporting matters. A positive tone is an optimistic expression of the company's compliant operation, whereas a negative tone may express concern about the company's violations. Thus, Hypothesis 1 is proposed.

H1: Under certain conditions, the more active the tone of AC report disclosure, the fewer the company's violations.

2.2.2. Information Fuzziness Theory. The AC's performance motivation may be restricted by its independence and access to information, which may affect performance efficiency. Management interferes with the appointment of AC members through the board of directors, which affects the AC's independence and weakens its monitoring effectiveness [37]. AC is not a company resident institution and mainly acquires information and participates in supervision by meeting communications or listening to reports. Many types of information depend on management. However, management is motivated to conceal information that is unfavorable to them. In general, the amount of information provided to the AC is small, and the quality of information is low, which limits the ability of the AC to perform its duties [38]. The "Information Fuzziness Theory" holds that when the market cannot fully respond to the information disclosed by the company in a timely manner, managers will have the motivation to release fuzzy information to investors to cover up or conceal the company's negative information. Owing to the limitations of independence and information access, the strategic manipulation tone of management affects the tone of disclosure of AC reports. For example, financial fraudulent companies usually use more words for extreme positive emotions and fewer words for negative emotions [39], misleading investors' judgment of the value of the company. Therefore, this study proposes Hypothesis 2.

H2: Under certain conditions, the more active the tone of the AC report, the greater the number of violations.

It should be noted that China's laws and regulations and capital market supervision are still in the stage of continuous improvement, with limited law enforcement resources and insufficient supervision. Not all violations of listed companies can be detected and punished. An audit committee's insufficient performance capability may lead to ambiguous information disclosure but may not lead to increased violations but may weaken the inverse relationship between performance disclosure tone and corporate violations.

3. Methods

3.1. Samples and Data. The sample for our study consists of 1,349 companies listed on the SHSE of China from 2014 to 2019 (China's Shenzhen Stock Exchange required the disclosure of audit committee performance reports in 2018, but there were only 20 performance reports in 2019, so they were not included in the study). This period was appropriate for the study, as the SHSE issued guidelines for the operation of the AC in December 2013. The actual year of implementation is 2014. Due to the systematic differences between the listed companies on the small- and medium-sized boards, growth enterprises (GEM), main board companies, small- and medium-sized boards, and GEM companies were excluded from the sample. This study also loses a few observations because of missing data for some financial variables. After data processing, 6,210 firm-year observations are obtained. The companies' financial, corporate governance, and violation data are from the China Stock Market & Accounting Research (CSMAR) database, in which the violation data are manually sorted according to the actual violation year, and the top 10 accounting firms (TOP10) are sorted according to the ranking published annually on the website of certified public accountants (CPA). Data on the annual stock conversion rate were taken from the Research & Set (RESSET) database in China. The AC report data were collected from the JUCHAO website (<https://www.cninfo.com>) through the Python crawler process. Text feature data were obtained by computing AC reports using the machine learning and text analysis methods of Python. The metrological analysis software used in this study was Stata 15.0.

3.2. Variables Description. Corporate Violations. There is a time gap between the year in which the company announces the violation punishment and the year of the actual violation. The actual violation year was earlier than the announcement punishment year. This study considered the actual violation year of the listed company as the sample year. A company's violations are measured by two indicators: the probability of occurrence of violations and the number of violations. The probability of violation was set as a dummy variable. If a listed company has violations, the value is 1; otherwise, it is 0. The number of violations was a continuous variable.

Disclosure tone of AC report. Loughran and McDonald developed six lists of words expressing emotions that have become LM dictionaries that currently occupy an important

position in the financial text analysis of the English literature [40, 41]. However, there are great differences between English and Chinese in terms of the language styles of word formation and emotional expression. Therefore, in the field of Chinese text analysis modified by Chinese scholars, there are four commonly used emotion dictionaries. In this study, the HowNet affective dictionary was used to calculate the AC's tone of duty disclosure. The implementation steps were as follows: first, the Jieba thesaurus module of the Python language was used to segment the text. Simultaneously, these data were cleaned according to the stop list to filter out words with low information content, such as punctuation symbols, personal pronouns, and mood connectives. Second, the HowNet dictionary was used to analyze the emotions of the text data. The number of positive and negative emotional information items (scores) was calculated considering the inversion of emotional adjectives and the modification of emotional intensity by adverbs (negativity and degree). Finally, an intonation index was constructed based on emotion scores. This study uses standard values to construct text intonation as follows:

$$\text{TONE}_{i,t} = \frac{(\text{Positive}_{i,t} - \text{Negative}_{i,t})}{(\text{Positive}_{i,t} + \text{Negative}_{i,t})}. \quad (1)$$

A positive value indicates the number of words with a positive mood during the observation period, whereas a negative value indicates the number of words with a negative mood. Text intonation (TONE) represents the net positive tone of an AC. The range of values is $[-1, 1]$. The higher the value, the more positive the disclosure tone.

To minimize the impact of the company's financial characteristics, governance characteristics and other factors affect firms' violations. Referring to previous research results, this study controls variables such as company size, asset-liability ratio, profitability, growth, equity concentration, the integration of the chairman's two duties, the proportion of independent directors, the size of accounting firms, the nature of property rights, and the annual stock turnover rate. It also controls for annual and industry fixed effects. See Table 1 for definitions of the specific variables.

3.3. Empirical Model. Referring to Khanna et al. and Lu and Li [42, 43], this study constructs the following model to test the impact of AC disclosure tone on corporate violations. Model (1) is estimated using the probit model, and model (2) is estimated using the OLS model. If Hypothesis 1 is true, the regression coefficient of model (1) is significantly negative, and the regression coefficient of model (2) is significantly negative.

$$\text{VIOL}_{i,t} = \alpha_0 + \alpha_1 \text{TONE}_{i,t} + \sum \alpha_i \text{Controls} + \sum \text{YEAR} + \sum \text{INDU} + \varepsilon 1_{i,t}, \quad (2)$$

$$\text{VIOLN}_{i,t} = \beta_0 + \beta_1 \text{TONE}_{i,t} + \sum \beta_i \text{Controls} + \sum \text{YEAR} + \sum \text{INDU} + \varepsilon 2_{i,t}. \quad (3)$$

4. Empirical Results

4.1. Descriptive Statistics and Correlations. Table 2 presents the descriptive statistics of the variables in the model. To avoid the influence of extreme values, the continuous variables in the model were winsorized at 1%. The mean value of the violations (VIOL) was 16.9%, and the average number of violations (VIOLN) was 0.321. There is a large difference in the number of violations among companies. The mean value of text intonation is 0.831, which indicates that the tone of AC disclosure is generally positive, with a minimum value of 0.539 and a maximum value of 0.970. There are certain differences in text intonation between companies. In general, the mean and median of the other control variables were similar, and there was no obvious skewed distribution. The descriptive statistical results for the main control variables are consistent with those in the literature.

Tables 3 and 4 report the Pearson's correlations for the variables in the main analysis. It can be seen from the table that the tone of the text (TONE) is closely related to financial report data, corporate governance structure, litigation risk variables, and so on. The results show that TONE is negatively associated with VIOL and VIOLN, and the correlation coefficients are significant at the 5% level, which is consistent with Hypothesis 1. The absolute values of the correlation coefficients between all variables were below 0.3, indicating no serious multicollinearity in the model.

4.2. Multivariate Analysis. Table 5 presents the main findings regarding the impact of AC disclosure tone and company violations. This study conducted a regression analysis on models (1) and (2). The results in columns (1) and (3) of Table 5 show that when the industry and year are controlled and no company-level control variables are added; the text tone (TONE) is significantly negatively correlated with company violation (VIOL) and the number of violations (VIOLN) at the 10% and 5% levels, respectively. The results in columns (2) and (4) show that after controlling for the company's characteristic variables, the text tone (TONE) is still negatively correlated with the company's violation (VIOL) and the number of violations (VIOLN), and both are significant at the 1% level. The regression results show that the more positive the AC disclosure tone, the less likely the company to violate the rules and the fewer the number of violations. H1 is supported by empirical evidence. There is a significant negative relationship between AC disclosure tone and company violations. That is, the AC disclosure tone indicates the company's violations and supports the view of "Information Supply."

The regression results of the control variables are consistent with those of previous literature [37, 44]. Company size (SIZE) and profitability (ROA) are significantly negatively correlated with the company's violations (VIOL/VIOLN), indicating that the larger the company size and the stronger the profitability; it may reflect an improvement in the company's governance structure, preventing violations. There is a significant positive correlation between solvency (LEV) and corporate violations (VIOL/VIOLN), indicating

TABLE 1: Variable definition.

Variable	Definition
VIOL	Whether the company breaks the rules (dummy variable that equals 1 if the firm violates, and 0 otherwise)
VIOLN	Total number of violations
TONE	The net positive tone of the AC report ((positive – negative)/(positive + negative))
SIZE	Firm size (natural logarithm of firm’s total assets)
LEV	Systematic risks (ratio of total liabilities divided by total assets)
ROA	Firm profitability (measured using net income before extraordinary item divided by total assets)
GROW	Calculating the annual growth of sales as the change in sales from the previous year scaled by sales at the beginning of the year
TOP1	Ownership concentration (share proportion of the largest shareholder)
DUAL	Combining the position of the chairman (dummy variable that equals 1 if the combination of the general manager and chairman of the board, and 0 otherwise)
INDI	Ratio of independent directors (the percentage of independent directors on the board)
BOARDN	Board size (number of board members)
BIG10	Scale of accounting firm (dummy variable that equals 1 if the company is audited by top 10 accounting firms, and 0 otherwise)
SOE	Nature of property right (dummy variable that equals 1 if the company is a state-owned property right, and 0 otherwise)
TURN	Annual turnover rate of stocks (the total number of shares traded divided by the number of shares outstanding at the end of the year)
INDU	Industry (dummy variable)
YEAR	Year (dummy variable)

TABLE 2: Descriptive statistics.

Variable	<i>N</i>	Mean	Median	SD	Min	Max
VIOL	6,210	0.169	0.000	0.375	0.000	1.000
VIOLN	6,210	0.321	0.000	0.877	0.000	5.000
TONE	6,210	0.831	0.844	0.082	0.539	0.970
SIZE	6,210	22.540	22.380	1.436	19.470	26.660
LEV	6,210	0.467	0.459	0.212	0.071	0.967
ROA	6,210	0.038	0.035	0.064	–0.243	0.214
GROW	6,210	0.112	0.079	0.312	–0.646	1.509
TOP1	6,210	0.370	0.352	0.154	0.084	0.762
DUAL	6,210	0.227	0.000	0.419	0.000	1.000
INDI	6,210	0.375	0.364	0.052	0.333	0.571
BOARDN	6,210	5.754	6.000	1.618	2.000	11.000
BIG10	6,210	0.599	1.000	0.490	0.000	1.000
TURN	6,210	0.582	0.398	0.550	0.035	2.936
SOE	6,210	0.468	0.000	0.499	0.000	1.000

that with an increase in financial leverage, the company has a stronger tendency to violate regulations and more frequent violations under greater debt service pressure. The coefficient of the equity concentration degree (TOP1) is significantly negative, indicating that a higher shareholding ratio of major shareholders can deeply restrain the company from violating rules. The coefficient of board size (BOARDN) is significantly positive, indicating that the more directors there are, the more likely a company is to commit violations. The coefficient of the SOE is significantly negative, indicating that state-owned companies commit fewer violations, which may be related to the fact that state-owned companies pay more attention to constructing internal controls.

5. Additional Analysis

5.1. Robust Test: The Alternative Period of Violations. Since the annual reports of companies are disclosed before April of the next year and the penalties for violations are announced in the following months or years, this paper further selects the data of the lag period of penalties for

violations. That is, this paper uses the data of announced penalties during 2015–2020. Table 6 presents the findings. The regression coefficient of TONE to VIOL is –0.539, which is significantly negative at the 5% level ($z = -2.25$). The regression coefficient of TONE to VIOLN is –0.526, which is significantly negative at the 1% level ($z = -3.75$). The results of the robustness test show that the main regression conclusion is still valid.

5.2. Robust Test: Method of Propensity Score Matching. As the proportion of the offending company sample to the total sample is relatively small (the mean value is 16.9%), there may be a sample selection bias. To reduce endogeneity, the author uses propensity score matching (PSM). This study selects samples with characteristics similar to offending companies from companies that have no violations for 1:4 nearest-neighbor matching. Finally, 5,837 data points were obtained. Regression was performed using (2) and (3) of the model. Table 7 shows that the regression coefficient of TONE to VIOL is –0.654, which is significantly negative at the 1%

TABLE 3: Pearson correlation of VIOL.

	VIOL	TONE	SIZE	LEV	ROA	GROW	TOP1	DUAL	INDI	BOARDN	BIG10	TURN	SOE
VIOL	1												
TONE	-0.029 **	1											
SIZE	-0.073 ***	-0.085 ***	1										
LEV	0.077 ***	-0.044 ***	0.446 ***	1									
ROA	-0.149 ***	0.025 **	-0.012	-0.437 ***	1								
GROW	-0.029 **	0.005	0.056 ***	0.014	0.240 ***	1							
TOP1	-0.135 ***	-0.061 ***	0.233 ***	-0.025 **	0.171 ***	-0.015	1						
DUAL	0.011	0.015	-0.193 ***	-0.147 ***	0.111 ***	0.014	-0.029 **	1					
INDI	-0.018	-0.066 ***	0.046 ***	0.035 ***	-0.021	0.003	0.043 ***	0.083 ***	1				
BOARDN	0.034 ***	0.033 **	0.164 ***	0.090 ***	-0.035 ***	-0.037 ***	0.004	-0.147 ***	-0.542 ***	1			
BIG10	-0.053 ***	-0.051 ***	0.120 ***	-0.001	0.058 ***	-0.012	0.119 ***	0.012	0.008	0.028 **	1		
TURN	0.021	0.039 ***	-0.356 ***	-0.166 ***	0.070 ***	-0.002	-0.039 ***	0.160 ***	0.000	-0.060 ***	0.010	1	
SOE	-0.065 ***	-0.082 ***	0.330 ***	0.251 ***	-0.165 ***	-0.068 ***	0.231 ***	-0.289 ***	-0.009	0.160 ***	0.013	-0.220 ***	1

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed).

TABLE 4: Pearson correlation of VIOLN.

	VIOLN	TONE	SIZE	LEV	ROA	GROW	TOP1	DUAL	INDI	BOARDN	BIG10	TURN	SOE
VIOLN	1												
TONE	-0.032 **	1											
SIZE	-0.080 ***	-0.085 ***	1										
LEV	0.098 ***	-0.044 ***	0.446 ***	1									
ROA	-0.173 ***	0.025 **	-0.012	-0.437 ***	1								
GROW	-0.040 ***	0.005	0.056 ***	0.014	0.240 ***	1							
TOP1	-0.153 ***	-0.061 ***	0.233 ***	-0.025 **	0.171 ***	-0.015	1						
DUAL	0.024 *	0.015	-0.193 ***	-0.147 ***	0.111 ***	0.014	-0.029 **	1					
INDI	-0.005	-0.066 ***	0.046 ***	0.035 ***	-0.021	0.003	0.043 ***	0.083 ***	1				
BOARDN	0.019	0.033 **	0.164 ***	0.090 ***	-0.035 ***	-0.037 ***	0.004	-0.147 ***	-0.542 ***	1			
BIG10	-0.055 ***	-0.051 ***	0.120 ***	-0.001	0.058 ***	-0.012	0.119 ***	0.012	0.008	0.028 **	1		
TURN	0.015	0.039 ***	-0.356 ***	-0.166 ***	0.070 ***	-0.002	-0.039 ***	0.160 ***	0.000	-0.060 ***	0.010	1	
SOE	-0.083 ***	-0.082 ***	0.330 ***	0.251 ***	-0.165 ***	-0.068 ***	0.231 ***	-0.289 ***	-0.009	0.160 ***	0.013	-0.220 ***	1

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed).

TABLE 5: Audit committee disclosure tone and corporate violations.

Variable	VIOL (1)	VIOL (2)	VIOLN (3)	VIOLN (4)
TONE	-0.464 * (-1.94)	-0.654 *** (-2.62)	-0.347 ** (-2.56)	-0.454 *** (-3.43)
SIZE		-0.075 *** (-3.88)		-0.047 *** (-4.58)
LEV		0.529 *** (4.25)		0.455 *** (6.59)
ROA		-2.513 *** (-6.78)		-1.754 *** (-8.47)
GROW		0.029 (0.44)		-0.018 (-0.51)
TOP1		-1.004 *** (-6.64)		-0.573 *** (-7.30)
DUAL		0.059 (1.17)		0.039 (1.42)
INDI		-0.078 (-0.16)		0.216 (0.86)
BOARDN		0.033 ** (2.09)		0.018 ** (2.10)
BIG10		-0.075 * (-1.80)		-0.031 (-1.39)
TURN		-0.051 (-1.17)		-0.036 (-1.62)
SOE		-0.263 *** (-5.43)		-0.173 *** (-6.63)
YEAR	Included	Included	Included	Included
INDU	Included	Included	Included	Included
Intercept	0.249 (0.88)	2.322 *** (4.31)	1.120 *** (6.43)	2.258 *** (7.68)
N	6210	6210	6210	6210
Pseudo R ² /adj R ²	0.025	0.106	0.039	0.098

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed). *t*-values are in parentheses.

TABLE 6: Robust test: the alternative period of violations.

Variable	VIOL	VIOLN
TONE	-0.539 ** (-2.25)	-0.526 *** (-3.75)
Control variable	Included	Included
INDU/YEAR	Included	Included
Intercept	1.613 *** (3.10)	2.027 *** (6.52)
N	6,210	6,210
Pseudo R ² /adj R ²	0.094	0.107

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed). *t*-values are in parentheses. The robustness test only lists the regression results of the main variables and does not report the control variables.

level ($z = -2.62$). The regression coefficient of TONE on VIOLN is equal to -0.454 , which is significantly negative at the 1% level ($z = -3.43$). Controlling for sample selection bias, text intonation still had a significant predictive effect on corporate violations.

TABLE 7: Robust test: propensity score matching method.

Variable	VIOL	VIOLN
TONE	-0.654 *** (-2.62)	-0.454 *** (-3.43)
Control variable	Included	Included
INDU/YEAR	Included	Included
Intercept	2.400 *** (4.31)	2.324 *** (7.74)
N	5,837	5,837
Pseudo R ² /adj R ²	0.107	0.096

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed). *t*-values are in parentheses. The robustness test only lists the regression results of the main variables and does not report the control variables.

5.3. Robust Test: Heckman Two-Stage Model. Companies with a high violation probability may reduce the disclosure of text information or strategic disclosure of text tone to hide bad news, making the company's violation tendency less obvious. This phenomenon is known as the potential self-selection effect. Based on previous studies, this study uses the Heckman two-stage model to reduce this effect. In the first stage, the explanatory variable TONE is used as the indicator variable. When the text tone (TONE) was higher than the average tone, the value was 1; otherwise, it was 0. Probit regression was performed for variables such as corporate financial characteristics, governance characteristics, and audit opinions. Then, the obtained inverse Mills coefficient (IMR) is put into the second-stage regression to control for self-selection bias [45]. The results are presented in Table 8. The regression coefficient of TONE to VIOL was -2.457 , which was significantly negative at the 1% level ($z = -3.88$). The results showed that the regression coefficient of TONE to VIOLN was -3.673 , which was significantly negative at the 1% level ($z = -9.46$). The regression coefficient between the probability of violation (TONE) and the number of violations (VIOLN) is still significantly negative, indicating that the previous findings are not affected by the sample self-selection problem.

5.4. Additional Analysis: Based on Text Readability. Text readability can increase the communication value of information and help users accurately understand information. Improving the readability of the text will increase the transparency of the company, reduce agency problems, reduce information uncertainty, and prevent the company from violating the rules. However, management manipulation reduces the readability of fiscal reports [24]. Text readability indicators are usually measured using the Fog index (the Fog index is calculated as follows: $\text{Fog} = 0.4 \times (\text{average number of words per sentence} + \text{percentage of complex words})$). Complex words are words with more than three syllables). The Fog index was generated in an English environment. Jieba word segmentation is used to obtain the number of sentences and words in the text. Words with more than three syllables were regarded as complex. It is weighted according to the number of complex words and the proportion of total words in the sentence. This index is

TABLE 8: Robust test: the Heckman two-stage model.

Variable	VIOL	VIOLN
TONE	-2.457 *** (-3.88)	-3.673 *** (-9.46)
IMR	1.523 *** (3.85)	2.278 *** (9.42)
Control variable	Included	Included
INDU/YEAR	Included	Included
Intercept	4.383 *** (5.21)	5.894 *** (11.69)
<i>N</i>	6,210	6,210
Pseudo R^2 /adj R^2	0.107	0.109

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed). *t*-values are in parenthesis. The robustness test only lists the regression results of the main variables and does not report the control variables.

based on the number of bytes in English and better captures the characteristics of complex words in a text structure. However, owing to the differences in word formation between Chinese and English, this setting is not able to match the readability of Chinese text well. This study adopts the readability index constructed by Xu et al. [47] for the Chinese annual report, using the Python language package to calculate the readability [46, 47]. The construction process of the Chinese readability index is as follows: first, Xu et al. [47] calculated the average number of words in each clause (readability1). Second, they considered the proportion of adverbs and conjunctions in each sentence (readability2). The list of adverbs and conjunctions is taken from a Dictionary of Function Words in Modern Chinese and Eight Hundred Words in Modern Chinese. Finally, they weighted the average of the first two indicators (readability3 = (readability1 + readability2) × 0.5). The larger the number of indicators, the more complex the word formation of the text, and the worse the readability. In this paper, the mean (median) readability calculated in this paper was 14.32 (12.96); the minimum value was 9.04; and the maximum value was 28.48. According to the median of readability, readability is divided into high and low sample groups, and then models (1) and (2) are grouped for regression. Panels A and B in Table 9 report the regression results for the dependent variables VIOL and VIOLN, respectively. Panel A shows that in the high readability group, TONE and VIOL were significantly correlated at the 1% level, whereas in the low readability group, TONE's coefficient had no significant correlation. Panel B reports the results using VIOLN as the dependent variable. The results showed that the readability of AC reporting helps convey the true intention of the AC. The higher the readability, the more transparent the information, and the more predictable the company's violations.

5.5. Mediation Effect Test: Internal Control System Quality. This study further explores the mechanism through which the tone of AC disclosure can predict violations. AC tone disclosure reflects efficiency in performing duties. The occurrence of a company's violations indicates the failure of

internal control to a certain extent. This is a breakthrough in the objectives of internal control, which indicates that the company has problems with operating and financial report disclosure. If the company is punished for violating regulations, it shows that the internal control process has not been found and prevents the problems of missing and misstatement of information in time. In this case, the management may override internal control and manipulate the operation and accounting information. As a remedy for agency problems, the AC directly supervises the production process of financial reports, which has different degrees of impact on the quality of internal control [48, 49]. Therefore, internal control may be a feasible internal mechanism for AC to predict a company's violations.

This study uses the intermediary effect test method of Wen et al. [50] to measure the action mechanism and transmission path between internal controls on tone disclosure and corporate violations [50]. The mediation effect test was divided into three steps. First, the author tested the relationship between text tone and the company's violations. Second, the author tested the relationship between text intonation and internal control. Finally, the author tests the joint relevance of internal controls, text tone, and corporate violations. Internal control quality was an intermediary variable. Internal control quality was measured using the Dibo internal control index in China. It is taken from the Dibo database, added by 1, and measured by the natural logarithm. Table 10 presents the findings. The TONE coefficients of VIOL and VIOLN in path A are significantly negative, indicating that the more positive the tone of the text is, the less the violations. The coefficient of internal control in path B is significantly positive, indicating that the positive degree of text intonation changes in proportion to the quality of internal control. The TONE coefficients of VIOL and VIOLN in path C were still significantly negative but less than those of path A. The coefficients of internal control are also significantly negative, and the Sobel *Z* values are statistically significant at the 1% level. The results show that internal control quality has an intermediary effect on the negative relationship between text tone and company violations. Through supervision of the production process of financial reports, the AC has promoted the improvement of the level of internal control, thereby reducing the company's violations.

5.6. Mediation Effect Test: Auditors' Opinion. The AC is mainly composed of independent directors, an institutional arrangement to manage the audit affairs of certified public accountants (CPA) on behalf of shareholders. The purpose is to ensure the independence of CPAs and the quality of audited financial reports, to alleviate information asymmetry between shareholders and management [51]. With the rising control risks of audit clients, CPAs may adopt strategies such as increasing audit fees, issuing nonstandard audit opinions and resigning to reduce audit risks. Therefore, CPAs' audit opinions may act as an external supervision mechanism to prevent a company's illegal disclosure of financial information.

TABLE 9: Further analysis: based on text readability.

Variable	Panel A: VIOL		Panel B: VIOLN	
	High readability	Low readability	High readability	Low readability
TONE	-0.910 *** (-2.62)	-0.399 (-1.06)	-0.617 *** (-3.25)	-0.299 (-1.59)
Control variable	Included	Included	Included	Included
INDU/YEAR	Included	Included	Included	Included
Intercept	2.270 *** (2.89)	2.409 *** (3.04)	2.324 *** (5.29)	2.331 *** (5.78)
<i>P</i> value of group difference	0.080		0.130	
<i>N</i>	3,120	3,090	3,105	3,105
Pseudo <i>R</i> ² /Adj <i>R</i> ²	0.103	0.135	0.105	0.113

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed). *t*-values are in parentheses. The further analysis only lists the regression results of the main variables and does not report the control variables.

TABLE 10: Mediation effect test: internal control system.

Path A (no mediation factor test)		
Variable	VIOL	VIOLN
TONE	-0.673 *** (-2.60)	-0.483 *** (-3.40)
<i>N</i>	5,757	5,757
Pseudo <i>R</i> ² /adj <i>R</i> ²	0.110	0.103
Path B (mediation factor test)		
Variable	Internal control	Internal control
TONE	1.442 *** (6.03)	1.442 *** (6.03)
<i>N</i>	5,757	5,757
Adj <i>R</i> ²	0.197	0.197
Path C (includes mediation factor test)		
Variable	VIOL	VIOLN
TONE	-0.502 * (-1.92)	-0.341 ** (-2.49)
Internal control	-0.090 *** (-7.14)	-0.091 *** (-11.74)
<i>N</i>	5,757	5,757
Pseudo <i>R</i> ² /adj <i>R</i> ²	0.120	0.124
Sobel <i>Z</i>	-0.042 ***	-0.139 ***
<i>P</i> value of Sobel <i>Z</i>	(0.001)	(0.001)

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed). *t*-values are in parentheses. The robustness test only lists the regression results of the main variables and does not report the control variables.

To test the above influence mechanism, this study uses Wen et al.'s [50] intermediary effect test method to test whether there is an intermediary transmission mechanism between the tone of the text and the company's violations in the audit opinion of CPA (OPIN) [50]. The results are shown in Table 11. The TONE coefficients of VIOL and VIOLN in path A are significantly negative, indicating that the more positive the AC disclosure tone is, the fewer violations there will be. The coefficient of OPIN in path B is significantly positive, indicating that the positive degree of text tone changes in proportion to audit opinion. The TONE coefficients of VIOL and VIOLN in path C are still significantly

TABLE 11: Mediation effect test: auditors' opinion.

Path A (no mediation factor test)		
Variable	VIOL	VIOLN
TONE	-0.654 *** (-2.62)	-0.454 *** (-3.43)
<i>N</i>	6,210	6,210
Pseudo <i>R</i> ² /adj <i>R</i> ²	0.106	0.098
Path B (mediation factor test)		
Variable	OPIN	OPIN
TONE	1.081 ** (2.42)	1.081 ** (2.42)
<i>N</i>	5,426	5,426
Pseudo <i>R</i> ²	0.381	0.381
Path C (includes mediation factor test)		
Variable	VIOL	VIOLN
TONE	-0.600 ** (-2.40)	-0.397 *** (-3.02)
OPIN	-0.358 *** (-3.93)	-0.534 *** (-9.59)
<i>N</i>	6,210	6,210
Pseudo <i>R</i> ² /Adj <i>R</i> ²	0.109	0.111
Sobel <i>Z</i>	-0.016 ***	-0.064 ***
<i>P</i> value of Sobel <i>Z</i>	(0.001)	(0.001)

Notes: *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively (two-tailed). *t*-values are in parentheses. The robustness test only lists the regression results of the main variables and does not report the control variables.

negative but smaller than those of path A. The coefficients of OPIN are also significantly negative, and the Sobel *Z* test values are -0.016 and -0.064, respectively, which are significant at the 1% level. The results indicate that CPA's audit opinions have a mediation effect on the negative relationship between text tone and company violations. Therefore, AC restrains the company's violations by effective communication with external auditors.

6. Summary and Conclusions

Audit committees are a major topic in audit theory and corporate governance research. AC efficiency has been questioned because of the frequent occurrence of corporate

violations. The development of information technology and artificial intelligence may help people enter the performance procedures of the AC and further analyze the rich connotations and impact of its performance text. This paper takes the mandatory disclosure of AC reported by the SHSE in 2013 to study the economic consequences of the disclosure tone of the AC from the perspective of corporate violations. This study found that the more active the disclosure tone, the lower the possibility and frequency of violations. The further analysis shows that the higher the readability of the text, the more significant the predictive effect of the text tone on the company's violations. In addition, AC restrains corporate violations by improving the quality of internal controls and obtaining better audit opinions.

This study's results have several practical implications. First, it proves the usefulness and incremental information content of the AC reporting from the perspective of supervision and supports the "Information Supply" hypothesis. This not only confirms that the performance report of the AC reflects the actual situation of the company to a large extent but also has objectivity and reference value, which can provide a reference for the relevant regulatory authorities to make a preliminary judgment on the possibility of the company's violation. Second, the fuller the tone of the text disclosed by the AC, the more helpful it is for external users to predict a company's violation risk and alleviate the information asymmetry problems. In terms of text length and jargon, the tone of AC disclosure has a lower threshold than that of other disclosures. That is, external investors or users can perceive a company's violation risk from the overall disclosure tone, which can reduce the cost of information processing and improve the usefulness of informed decision-making. Therefore, it promotes healthy capital market development.

Regarding the limitations of this study, it can be stated that there is a lack of AC reporting content classification such as major accounting and auditing problems, fraud, and major accounting misstatements. However, only a few companies have disclosed such matters. Therefore, this study does not classify text information. This study motivates future research to explore which parts of AC reports are more accurate.

Data Availability

The labeled data sets used to support the findings of this study are available from the author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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