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Tone Management and Earnings Management:
Evidence from Manufacturers in Japan

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〈Abstruct〉

This study examines the relationship between earnings management and tone management for Japanese fraudulent and non-fraudulent firms. Non-fraudulent firm managers in Japan do not consider earnings management to be accounting fraud if it is within the scope of generally accepted accounting principles, so they believe that there is no need to mislead investors through tone management to hide earnings management. On the other hand, managers in the U.K. cannot ethically implement earnings management because it is against the principles-based approaches to accounting practices. If they did, they would believe that tone management is necessary to cover it up. Therefore, this study investigates whether Japanese firms that engage in earnings management implement tone management. This study finds that non-fraudulent with earning management do not engage in tone management simultaneously. Fraudulent firm managers fail to honestly disclose falsehoods; that is, they implement tone management to mislead investors to conceal their financial fundamentals.

〈Keywords〉

earnings management; tone management; abnormal accruals; abnormal tone; MD&A.

I. INTRODUCTION

This study examines the relationship between earnings management and tone management for Japanese fraudulent and non-fraudulent firms within the framework of communicative action theory (Habermas 1985). Earnings management is the process by which management, through accounting estimates and judgments and the selection of accounting policies, makes discretionary measurements of current period earnings within the framework of generally accepted accounting principles (GAAP) (Suda 2007). In this study, earnings management is defined as the use of managerial discretion to make accounting choices and estimates and to apply accounting practices that are within the scopes of GAAP; fraudulent accounting is defined as the use of managerial discretion to make accounting choices and estimates and to apply accounting practices that violate GAAP (Dechow and Skinner 2000). Tone management is the choice of tone level in a qualitative text that is inconsistent with its quantitative

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information (Huang, Teoh., and Zhang 2014).

Non-fraudulent firm managers in Japan do not consider earnings management to be accounting fraud if it is within the scope of GAAP. We that they believe that there is no need to mislead investors through tone management to hide earnings management. On the other hand, because the UK managers believe that earnings management is against the principles-based approach, they cannot ethically implement earnings management.[2] They believe that tone management is necessary to cover it up when they implement earnings management (Carlson and Lamti 2015; Kayed and Meqbel 2022). Thus, while Japanese non-fraudulent firm managers are not engaged in tone management. the UK non-fraudulent firm managers implement tone management to hide earnings management. I predict that fraudulent firm managers in Japan fail to honestly disclose falsehoods; that is, they implement tone management to mislead investors to conceal their financial fundamentals. The analysis in this study substantiates these hypotheses.

Annual reports published by public firms contain not only financial information but also textual information. In other words, they are an important means by which managers disclose information to users, including investors. Several studies examine the discretion over financial fundamentals in terms of earnings management and the discretion over textual information in terms of tone management. Research using textual analysis to date relies on impression management theory (Godfrey, Mather, and Ramsay 2003) [3] to test the obfuscation hypothesis that managers use textual information to mislead investors (Tama-Sweet 2010; Davis and Tama-Sweet 2012; Davis, Piger, and Sedar 2012; Arslan-Ayadin, Boudt, and Thewissen 2016; Kayed and Meqbel 2022). However, tone management studies investigate whether managers use textual information to communicate information about financial fundamentals or to strategically mislead investors (Huang et al. 2014; Caserio, Panaro, and Trucco 2020 Yuthas, Rogers, and Dillard 2022; Pattelli and Pedrini 2014; Merkley 2014).

On the other hand, textual studies on fraudulent firms such as Churyk, Lee, and Clinton (2008); Lee, Churyk, and Clinton (2013) and Nakashima, Hirose, and Hirai (2022) adopt the lens of impression management theory. Earnings management research on misrepresentation focus on the detection of managers' manipulation of financial fundamentals (Beasely 1996; Beneish 1999; Skousen, Smith, and Wright. 2009.; Song, Oshiro, and Shuto. 2016; Nakashima 2021). Studies that examine the relationship between financial fundamentals and tone based on both incremental information theory and impression

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[2] According to the chairman of Securities and Exchange Commission, Arthur Levitt in The Numbers Game, a principles-based approach means that the economic reality of the public company should be disclosed following the principle of sincerity (Levitt 1998), comparing it to industry best practice from an investor protection perspective. Former president Bush stated in the President's ten-point plan that "Accounting systems should be compared to Best Practice, not to minimum standards" (Bush 2002).

[3] Godfrey, Mather, and Ramsay (2003, 96) defines impression management as a manager's strategical selection of the information to display and present that information in a manner that is intended to distort readers' perceptions of corporate achievements.

management theory include those by Merkley (2014), Caserio et al. (2020) and Nakashima (2022). Although Nakashima (2022) indicates that the fraudulent firm mislead users with tone and that the textuals disclosures of the fraudulent firm do not satisfy the principles of the communicative action theory, research on detecting fraud based on the relationship between financial fundamentals and textual tone is less mature. There are empirical studies using textual information measured tone as the ratio of negative to positive text (Tama-Sweet 2010; Davis and Tama-Sweet 2012; Davis et al. 2012; Huang et al. 2014). Tone management studies examine the ratio of negative to positive text in a wide range of textual information, such as in the management's discussion and analysis (MD&A) information, chief executive officer (CEO) letters, earnings press releases, and interim management statements (IMSs).

This study provides evidence in Japan by examining whether financial fundamentals are correlated with abnormal tone, and whether there is an association between abnormal accruals and abnormal tone within the framework of communicative action theory to determine whether managers use tone to communicate with investors or mislead them. Although previous studies about textual disclosures apply only impression management theory, the information communication theory and impression management theory should be adopted to consider the consistency of textual disclosures with financial fundamentals in this study. This study elucidates the economic facts of Japanese firms by analyzing the relationship between textual disclosures and financial fundamentals. That is, it examines whether the abnormal tone of MD&A disclosures follows financial fundamentals for non-fraudulent and fraudulent firms, and whether firms in Japan are engaged in earnings management and tone management simultaneously.

This study focuses on MD&A disclosures in annual reports, as all annual reports include MD&A disclosures. The Financial Service Agency (FSA) provides guidelines, including examples of nonfinancial disclosures, for all public firms in Japan. Second, although MD&A disclosures are not required to external auditing, external auditors check whether the content of these disclosures is consistent with the financial fundamentals. Third, MD&A disclosures involve less managers' discretion, compared to CEO letters, as they contain predictions and analyses, to investigate whether the content of MD&A disclosures is consistent with financial fundamentals is appropriate. This study uses the Japanese setting to elucidate whether existing Western theories are universal. By discussing whether tone management, which is found to exist in the UK, exists in Japan, this study can clarify whether managements' manipulation of textual disclosures is universal or unique to Western countries.

This study contributes to the literature in several ways. First, this fraud detection study adopts the framework of communicative action theory to examine whether managers use tone to communicate with investors or mislead them. Second, the results show that while non-fraudulent firm managers present textual disclosures congruent with fundamentals, fraudulent firm managers fail to present textual disclosures congruent with fundamentals. When MD&A disclosure tones are uncorrelated with financial

fundamentals, the possibilitiy that accounting fraud may exist can be noted. Third, this study is the first to present the relationship between tone management and earnings management for fraudulent firms in the Japanese setting.

The remainder of this study is organized as follows. Section 2 provides a review of previous studies. Section 3 develops the hypotheses. Section 4 describes the research design. Section 5 presents the empirical results. The final section discusses the findings and offers the conclusions.

II. LITERATURE REVIEW

Textual analysis of textual information has been studied separately by the impression management theory, and agency theory or communicative action theory. Communicative action theory provides four principles such as comprehensibility, truthfulness, sincerity, and legitimacy as the norm of the morality Habermas (1984). Table 1 reviews the previous research and presents research framework based on theories. Representative studies exploring disclosure tone based on the agency theory and impression theory include those of Caserio et al. (2020), Huang et al. (2014), and Carlson and Lamti (2015). Huang et al. (2014) examine whether managers are engaged in tone management for informative or strategic purposes, finding that an abnormal positive tone is positively related to the prediction of future earnings and cash flows and to events that managers perceive positively (e.g., future earnings revisions and M&As). Further, an abnormal positive tone is negatively related to events that managers perceive negatively (e.g., stock options). These results are consistent with managers strategically using tone management to mislead investors regarding corporate characteristics.

Carlson and Lamti (2015) find that managers use CEO letters to communicate increased financial performance using a positive tone. In addition, they show that abnormal tone is positively associated with abnormal accruals, suggesting that firms use tone management and earnings management simultaneously to misrepresent firm fundamentals by managing tone in CEO letters. Nakashima (2022) finds a positive correlation between tone and financial fundamentals in non-fraudulent firms and no correlation between tone and fundamentals in fraudulent firms. This result suggests that the textual disclosures in CEO letters of non-fraudulent firms is congruent with true financial fundamentals based on the sincerity principle. On the other hand, for Toshiba, the author finds no significant correlation between tone and financial fundamentals. Essentially, because CEOs express their beliefs and values in CEO letters based on financial fundamentals, the words in CEO letters should correlate with financial fundamentals. However, Nakashima (2022) indicates that as CEOs of fraudulent firms know both the true and window-dressing figures, they cannot communicate textual s based on falsehoods; the letters lack honesty and thus their words may not be consistent with financial fundamentals. Kayed and Meqbel (2022) find that managers who manage earnings to meet or beat the target, use their discretion to speak optimistically during the earnings conference call to mislead investors about earnings management.

TABLE 1
Research Framework Based on Theory

Panel A: Impression Management Studies							
Nonfraudulent Firms				**Fraudulent and Nonfraudulent Firms**			
Li et al. (2008); Hirose et al. (2017)	**U.S./Japan**	**MD&A disclosure and financial performance**	**Length, text complexity**	**Churyk et al. (2008); Lee et al. (2013)**	**U.S.**	**MD&A disclosure**	**Length, text complexity**
Tama-Sweet (2010)	**U.S.**	**Earnings press releases**	**Proportion of total optimistic language**	**Nakashima et al. (2022)**	**Japan**	**MD&A disclosure**	**Length, text complexity**
Davis and Tama-Sweet (2012)	**U.S.**	**Earnings press releases and MD&A**	**Proportion of total optimistic language**				
Davis et al. (2012)	**U.S.**	**Earnings press releases**	**Proportion of total optimistic language**				
Arslan-Ayaydin et al. (2018)	**U.S.**	**Earnings press releases**	**Tone and labor unions**				
Kayed and Meqbel (2022)	**U.K.non financial**	**Earnings press releases**	**Earnings and tone management**				
Panel B: Agency Theory or Habermas's Principles of Communicative Action Studies							
Nonfraudulent Firms				**Fraudulent and Nonfraudulent Firms**			
Yuthas et al. (2002)	**U.S.**	**MD&A and fundamentals**	**Rhetorical characteristics**	**Nakashima (2022)**	**Japan**	**CEO Letter and Fundamentals**	**Tone and fundamentals / critical consistency**
Patelli and Pedrini (2014)	**U.S.**	**CEO letter and fundamentals**	**Rhetorical characteristics**				
Huang et al.(2014)	**U.S.**	**Earnings press releases**	**Abnormal tone**				
Carlson and Lamti (2015)	**U.K**	**CEO letter**	**Abnormal tone and abnormal accruals**				
Caserio et al. (2020)	**U.S. financial institutions**	**MD&A**	**Tone**	**This Study**	**Japan**	**MD&A Disclosure**	**Abnormal tone and abnormal accruals**

III. HYPOTHESIS DEVELOPMENT

Managers should report economic phenomena under the sincerity principle and present figures based on faithful representation.[4] However, managers fail to do so when they intentionally commit accounting fraud. Failure to faithfully rely on financial statement figures to prepare honest textual information is regarded as fraudulent representations. Li (2010) finds a positive association between accounting accruals and tone when managers have incentives to mislead investors. Clatworthy and Jones (2006) find that the accounting textual disclosures of poorly performing firms do not appear fully consistent with their financial results and do not present a balanced and objective view. Nakashima (2022) indicates a positive correlation between tone and financial fundamentals in non-fraudulent firms and no correlation in fraudulent firms. Therefore, this study predicts significant differences between fraudulent and non-fraudulent firms based on the correlation between the abnormal tone of MD&A disclosures and financial fundamentals. Accordingly, this study develops the following hypothesis:

[4] The principle of sincerity, a key GAAP principle, means that accountants should perform and report with basic honesty and accuracy (Corporate Finance Institute 2021). The FASB defines faithful representation as “financial statements prepared with completeness, neutrality, and free from error” (FASB 2010, 17).

H1: No significant difference exists between fraudulent and non-fraudulent firms in the correlation between the abnormal tone of MD&A disclosures and financial fundamentals.

Huang et al. (2014) show that the association between discretionary accruals and abnormal tone is statistically significant and that firms use tone management and earnings management in a complementary manner; that is, tone management and earnings management coexist. Huang et al. (2018) indicate that managers with high abnormal accruals tend to use more positive words in earnings press releases to overstate the reported discretionary numbers. This result suggests that managers use tone to complement earnings management.

Carlson and Lamti (2015) find that abnormal accruals are significantly associated with the abnormal tone. Kayed and Meqbel (2022) find that tone management is positively associated with earnings management, suggesting that firms that use earnings management have incentives to manipulate tone of the text to conceal earnings management. Abou-El-Sood and El-Sayed (2022) find that an abnormal tone in textual disclosures is associated with earnings management in an emerging market context. Therefore, this study predicts that Japanese fraudulent firms implement tone management to cover up their earnings management, while non-fraudulent firms are not engaged in tone management because they do not consider earnings management as fraud:

H2: There is no significant difference between fraudulent and non-fraudulent firms in terms of the association between abnormal accruals and abnormal tone.

IV. METHODOLOGY

First, this study confirms whether the firms in the sample of fraudulent firms are fraudulent using text analysis. Second, this study tests the two hypotheses. To test H1, this study verifies whether tone of fraudulent firms is congruent with financial fundamentals. To test H2, this study examines whether fraudulent and non-fraudulent firms are engaged in earnings management and tone management simultaneously.

Textual Analysis

Sample Selection

This study employs inappropriate accounting reporting data from Tokyo Shoko Research (2020). This sample consists of manufacturing firms. Table 2 presents the sample selection process. Of the 178 fraudulent manufacturing firms, this study excludes 70 firms with fraud committed by subsidiaries and affiliates, 31 firms with fraud committed by employees, and 10 firms with fraud committed by executives, resulting in a final sample of 67 firms. As this study focuses on company-wide fraud, fraud committed by subsidiaries, employees, and individual executives is excluded.

TABLE 2
Sample Selection for Textual Analysis

	Number of Firms
Total accounting fraud in manufacturers	178
Fraud in subsidiaries and affiliates	△70
Fraud by employees	△31
Fraud by executives	△10
Final sample: company-wide fraud	67

Fraudulent firms included two firms in chemistry, two in glass and stone, two in rubber products, ten in other manufactured products, two in pulp and paper, three in pharmaceutical, thirteen in machinery, five in metal products, two in food, three in precision instruments, two in fiber products, three in iron and steel, ten in electrical equipment, two in nonferrous metals, and six in transportation equipment.

Textual Analysis

This study implements text analysis using a KH coder. Panel A of Figure 1 shows the results of the co-occurrence analysis. In the co-occurrence network diagram of fraudulent firms, the terms *accounting* and *sales* are not connected; however, in the co-occurrence network diagram of non-fraudulent firms, the terms *accounting* and *sales* are evidently connected. Panel B presents the results of the correspondence analysis. The terms are plotted away from the origin in the correspondence analysis diagram of fraudulent firms, and the terms are plotted closer to the origin in the correspondence analysis diagram of the non-fraudulent firms. The results of this analysis are consistent with those of Nakashima, Nose, Ujiie, and Yoshida (2021) and indicate that that the textual disclosures of fraudulent firms are false reports, and therefore cannot be logically explained because the accumulation of falsehoods leads to a greater deviation from the facts. The results of the correspondence analysis indicate that the fraudulent firms use more characteristic terms, which confirms that the sample of fraudulent firms committed fraud.

Fundamental Analysis

Definition and Calculation of Tone

Tone is calculated by dividing the positive terms minus the negative terms by the sum of the positive and negative terms (Huang et al. 2014). In this study, MD&A disclosure is subjected to text mining analysis using the free software User Local[5] to obtain positive and negative values. Data used are MD&A disclosure from the eol database.

Figure 3 shows the sample selection for the empirical analysis. There are a total of 178

[5] User local is a free software that uses AI to rapidly extract features from large amounts of text. It performs sentiment analysis using deep learning.

FIGURE 1

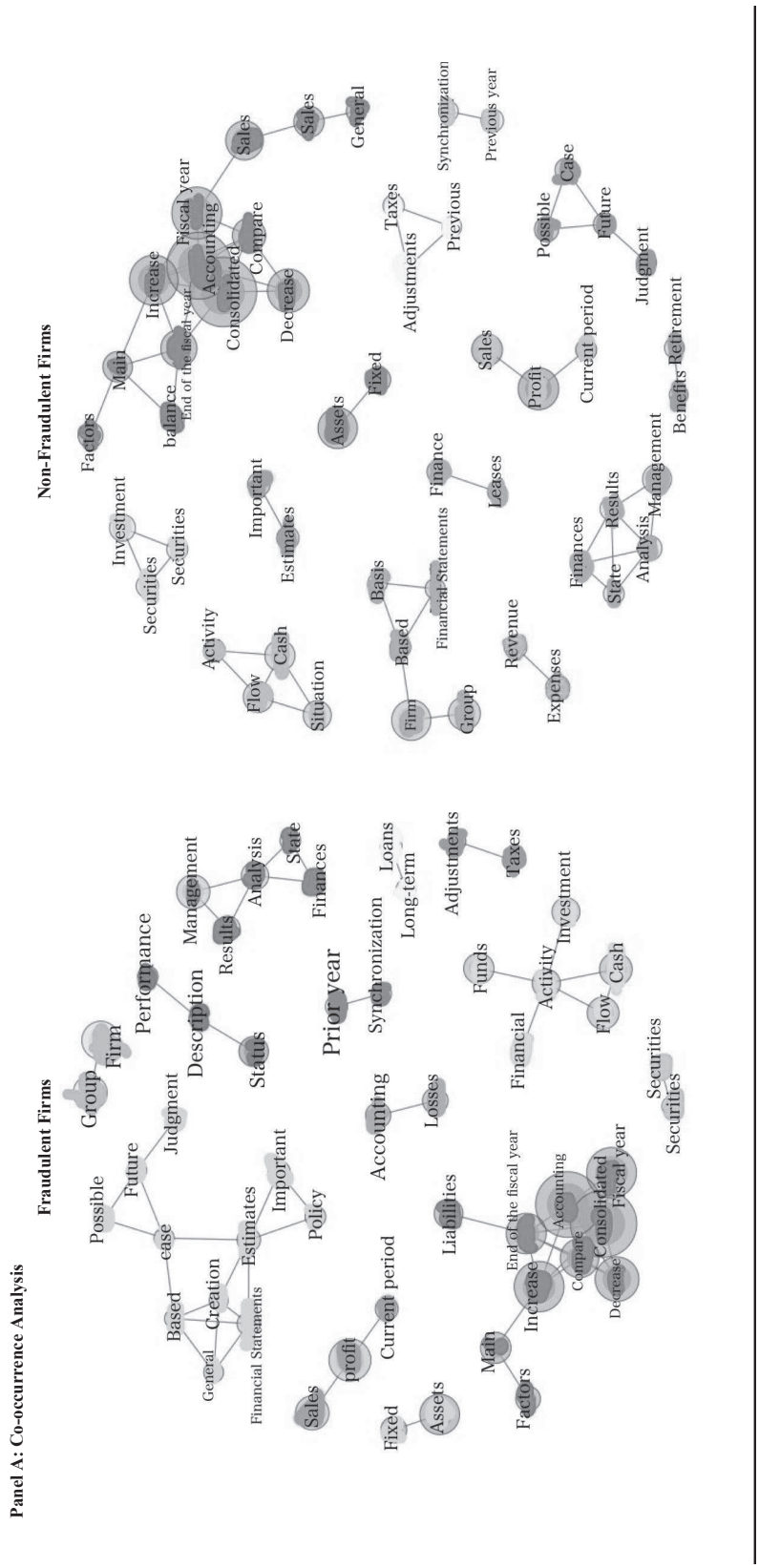
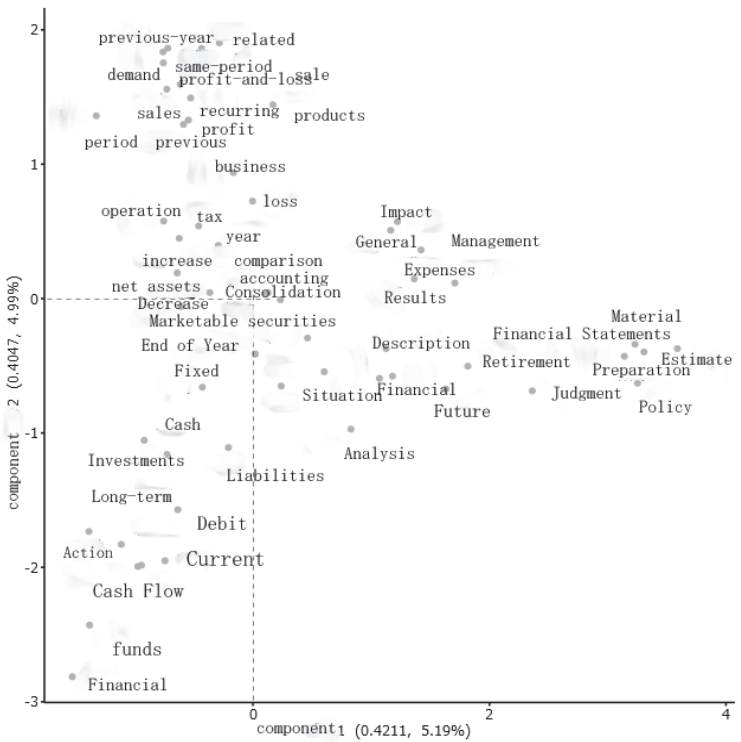
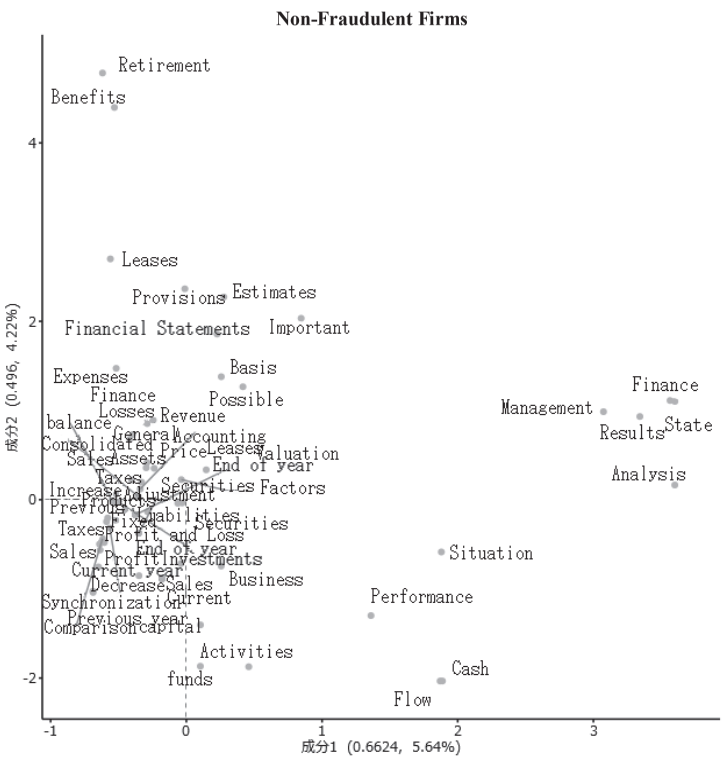

Panel A: Co-occurrence Analysis
Fraudulent Firms
Group
Firm
Performance
Possible
Future
Judgment
Description
Management
Results
Analysis
State
Finances
ease
Based
Creation
Estimates
Important
Policy
Status
Prior year
Synchronization
Loans
Long-term
Accounting
Losses
Adjustments
Taxes
Funds
Financial
Activity
Investment
Flow
Cash
Liabilities
End of the fiscal year
Securities
Securities
Main
Factors
Increase
Accounting
Compare
Consolidated
Decrease
Fiscal year
Sales
profit
Current period
Fixed
Assets
General
Financial Statements
Non-Fraudulent Firms
Factors
Main
Increase
balance
End of the fiscal year
Accounting
Consolidated
Compare
Decrease
Fiscal year
Sales
Sales
General
Investment
Securities
Securities
Important
Estimates
Activity
Flow
Cash
Situation
Assets
Fixed
Adjustments
Taxes
Previous
Synchronization
Previous year
Basis
Based
Firm
Financial Statements
Finance
Leases
Group
Revenue
Expenses
Sales
Profit
Current period
Possible
Case
Future
Judgment
Finances
State
Results
Analysis
Management
Benefits
Retirement

FIGURE 1 (continued)

Panel B: Correspondence Analysis





This figure is based on the text analysis by KH coder.

accounting frauds in the manufacturing industry, of which fraud by subsidiaries and affiliates 70 firms, fraud by employees 31firms, fraud by executives 10 firms, and fraud for which no data were available 41firms are excluded to obtain a final sample of 26 fraudulent firms as company-wide fraudulent firms.

TABLE 3

Sample Selection for an Empirical Analysis

	Number of Firms
Total accounting fraud in manufacturers	178
Fraud in subsidiaries and Affiliates	△70
Fraud by employees	△31
Fraud by executives	△10
Fraud with no available data	△41
Final sample: company-wide fraud	26

The sample includes one firm in chemicals, five in other manufactured products, two in pulp and paper, one in pharmaceuticals, two in machinery, two in metal products, three in precision products, two in fiber products, three in iron and steel, four in electric appliance, one in nonferrous metals, and one in transportation equipment industry.

Model and Variables

H2 is tested based on the relationship between abnormal tone and abnormal accruals using multiple regression analysis. The performance variables are *LOSS*, net income attributable to the parent company's shareholders, cash flow from operating activities (*CFO*), and price-earnings ratio (*PER*). Both the Huang et al. (2014) and the Carlson and Lamti (2015) models are used to test H2.

$$TONE_{jt}=\alpha+\beta_0 EARN_{jt}+\beta_1 RET_{jt}+\beta_2 SIZE_{jt}+\beta_3 PER_{jt}+\beta_4 STD\_EARM_{jt}+\beta_5 AGE_{jt}+\beta_6 SEGMENT_{jt}+\beta_7 LOSS_{jt}+\beta_8 \Delta EARN_{jt}+\Sigma INDUSTY+\Sigma YEAR+\varepsilon_{jt} \quad (1)$$

$$TONE_{jt}=\alpha+\beta_0 EARN_{jt}+\beta_1 SIZE_{jt}+\beta_2 PER_{jt}+\beta_3 RET_{jt}+\Sigma INDUSTY+\Sigma YEAR+\varepsilon_{jt} \quad (2)$$

$$ABN\_TONE=\alpha+\beta_0 ABN\_ACC+\beta_1 EARN+\beta_2 LOSS+\beta_3 SIZE+\beta_4 PER+\beta_5 RET+\beta_6 EARN*LOSS+\Sigma INDUSTY+\Sigma YEAR+\varepsilon \quad (3)$$

The multivariate analysis contains the following variables: Variables are defined as follows: *TONE* is calculated by the following formula: (Positive Words - Negative Words) / (Positive Words + Negative Words). *EARN* is net income attributable to owners of the parent company/Total assets at the

end of the period. *RET* is Return on investment, $((P_1-P_0)+\text{dividend})/P_1$, P_1 = stock price at end of period, P_0 = Stock price at beginning of period, dividend = dividend per share. *SIZE* is the logarithmic conversion value of total assets. *STD_EARN* is the standard deviation of net income attributable to owners of the parent company. *AGE* is the logarithmic conversion value of the years when the firm passed since the firm was established). *SEG* is the logarithmic conversion value of the number of segment). *LOSS* is dummy variable that is set to 1 if the net income belonging to the parent company < 0, and 0 if it is greater than 0. *ΔEARN* is the change in net income / total assets at the end of the period. *OCF* is cash flows from operating activities (input from consolidated statements of cash flows). *PER* is price-earnings ratio. ABN_AC is discretionary accruals calculated using cross-sectional modified Jones model. *ABN_TONE* is the residual value calculated using cross-sectional Huang et al. (2014) model.

Descriptive Statistics

Table 4 presents descriptive statistics for both fraudulent and non-fraudulent firms in Japan. The mean (median) values of *TONE* for non-fraudulent firms in Huang et al. (2014) and Carson and Lamti (2015) are 0.0043 (0.0042) and 0.6560 (0.6761), respectively, which are positive. However, the mean (median) of *TONE* for non-fraudulent and fraudulent Japanese firms is -0.145 (-0.108) and -0.063 (0.000), respectively; it is negative for both non-fraudulent and fraudulent firms. This result indicates that Japanese managers tend to use modest expressions even with positive business performance.

The mean (median) of *LOSS* for Japanese fraudulent firms is 0.340 (0.000), and the mean (median) of *LOSS* for the U.K. firms in Carlson and Lamti (2015) is 0.159 (0.000). Hence, the mean of *LOSS* for Japanese fraudulent firms is higher than that for UK non-fraudulent firms. The mean (median) of *LOSS* for the Japanese fraudulent firms is 0.159 (0.000), which is higher than that for the UK non-fraudulent firms. However, the median of *LOSS* is likely to be zero as it includes the time before and after fraudulent firms' discovery of fraud.

The mean (median) of *EARN* for Japanese fraudulent firms is 0.006 (0.017), and the mean (median) of *EARN* for the UK firms in Carlson and Lamti (2015) is 0.048 (0.047). Hence, the mean of *EARN* for the Japanese fraudulent firms is much lower than that for the U.K. non-fraudulent firms, suggesting that the profitability of the Japanese fraudulent firms is low.

TABLE 4

Descriptive Statistics

	Mean		Median		Std.Dev.		Max		Min	
Variables	Non-Fraudulent	Fraudulent	Non-Fraudulent	Fraudulent	Non-Fraudulent	Fraudulent	Non-Fraudulent	Fraudulent	Non-Fraudulent	Fraudulent
TONE	-0.058	-0.153	0.000	-0.134	0.428	0.449	0.577	0.577	-0.980	-0.980
EARN	0.023	0.006	0.025	0.009	0.038	0.036	0.081	0.081	-0.093	-0.093
RET	3.214	3.414	0.966	0.636	5.927	6.176	22.818	22.818	-0.129	-0.129
SIZE	12.292	12.852	11.800	12.544	1.969	2.751	17.040	18.390	9.601	7.960
STD_EARN	0.035	0.034	0.013	0.015	0.052	0.049	0.204	0.204	0.000	0.000
AGE	4.242	4.178	4.331	4.304	0.512	0.699	4.779	4.970	1.946	0.693
SEG	0.903	1.102	1.099	1.099	0.531	0.438	2.079	1.792	0.000	0.000
LOSS	0.143	0.238	0.000	0.000	0.351	0.427	1.000	1.000	0.000	0.000
ΔEARN	0.007	-0.001	0.000	0.000	0.076	0.066	0.605	0.321	-0.207	-0.363
OCF	0.063	0.055	0.057	0.052	0.049	0.042	0.155	0.155	-0.024	-0.024
PER	13.239	12.735	12.100	10.545	11.786	14.536	47.520	47.520	-7.674	-7.674
ABN_AC	-0.002	0.000	-0.001	-0.001	0.034	0.025	0.059	0.059	-0.072	-0.072
ABN_TONE	0.407	0.181	0.129	0.019	0.848	0.733	2.680	2.680	-0.831	-0.831

Variables are defined as follows:

TONE	(Positive Words-Negative Words)/(Positive Words+Negative Words)
EARN	Net income attributable to owners of the parent company / Total assets at the end of the period
RET	Return on investment $((P_1 - P_0) + \text{Dividend})/P_1$ P_1 = Stock price at end of period P_0 = Stock price at beginning of period Dividend = Dividend per share
SIZE	Ln (total assets)
STD_EARN	Standard deviation of net income attributable to owners of the parent
AGE	Log (the years when the firm passed since the firm was established).
SEG	Log (the number of segment)
LOSS	Dummy variable that is set to 1 if the net income belonging to the parent company < 0, and 0 if it is greater than 0.
ΔEARN	change in net income / total assets at the end of the period
OCF	Cash flows from operating activities (input from consolidated statements of cash flows)
PER	price-earnings ratio
ABN_AC	Discretionary accruals calculated using cross-sectional modified Jones model.
ABN_TONE	the residual value calculated using cross-sectional Huang et al.(2014) model

V. HYPOTHESES TESTING

We conduct t-test to compare textual variables and the financial fundamentals between fraudulent and non-fraudulent firms. While significant differences are observed between fraudulent and non-fraudulent firms for *EARN*, *LOSS*, and *ABN_TONE*, no significant differences are observed for *ABN_AC*.

TABLE 5

t-test

	Fraudulent Firms		Non-Fraudulent Firms			
	Mean	Std.Dev.	Mean	Std.Dev.	t-statistics	p-value
TONE	-0.153	0.449	-0.058	0.428	1.939	0.053
EARN	0.006	0.036	0.023	0.038	4.064	0.000 ***
RET	3.414	6.176	3.214	5.927	-0.293	0.770
SIZE	12.852	2.751	12.292	1.969	-2.116	0.035
STD_EARN	0.034	0.049	0.035	0.052	0.156	0.876
AGE	4.178	0.699	4.242	0.512	0.937	0.349
SEG	1.102	0.438	0.903	0.531	-3.650	0.000 ***
LOSS	0.238	0.427	0.143	0.351	-2.193	0.029 ***
ΔEARN	-0.001	0.066	0.007	0.076	0.999	0.318
OCF	0.055	0.042	0.063	0.049	1.597	0.111
PER	12.735	14.536	13.239	11.786	0.332	0.740
ABN_AC	0.000	0.025	-0.002	0.034	-0.566	0.572
ABN_TONE	0.181	0.733	0.407	0.848	2.549	0.011 ***

As for variable definitions, see Table 4.

Test Results for H1: ABN_TONE and Financial Fundamentals

To test H1, Pearson and Spearman correlation coefficients are calculated. Table 6, Panel A and Panel B show the Person and Spearman correlation analysis respectively. The results of the Pearson correlation analysis for non-fraudulent firms in the Panel A show that *ABN_AC* is significantly correlated with *EARN*, *STD_EARN*, *LOSS*, *ΔEARN*, *OCF* and *PER*, suggesting that managers of non-fraudulent firms manage earnings focusing on *EARN* and *LOSS*. The Pearson correlation results in the Panel A indicate that *ABN_TONE* is significantly correlated with *RET*, *STD_EARN*, and *LOSS* for non-fraudulent firms. These results suggest that managers of non-fraudulent firms rely on the principle of sincerity to disclose *EARN*, *RET*, *STD_EARN*, and *LOSS* since *ABN_TONE* is consistent with fundamentals such as *LOSS* and *STD_EARN*.

On the other hand, the Pearson correlation results for fraudulent firms in the Panel B show that *ABN_AC* is significantly correlated with financial fundamentals such as *EARN* and *ΔEARN*, suggesting that managers of fraudulent firms manage earnings focusing on *EARN*. Focusing on the Spearman correlation of the fraudulent firms, these is no significant correlation between *ABN_TONE* and fundamentals. This result suggests that managers of fraudulent firms cannot present explanatory materials consistent with their fundamentals.

TABLE 6
Correlations

Panel A: Non-Fraudulent Firms

	TONE	*EARN*	*RET*	*SIZE*	*STD_EARN*	*AGE*	*SEG*	*LOSS*	*ΔEARN*	*OCF*	*PER*	*ABN_AC*	*ABN_TONE*
TONE	1	0.003	.179*	-0.025	0.105	0.023	0.016	-0.055	-0.009	-0.111	0.118	0.000	0.126
		0.971	0.028	0.761	0.400	0.779	0.847	0.502	0.910	0.172	0.156	0.996	0.119
EARN	-0.021	1	-0.086	-0.148	.403**	0.119	-0.023	-.702**	.384**	0.125	.170*	.178*	0.151
	0.798		0.290	0.066	0.001	0.142	0.775	0.000	0.000	0.123	0.040	0.028	0.062
RET	-0.055	0.069	1	.346**	.307*	.230**	.343**	0.103	0.067	-.210**	-0.010	0.011	-.212**
	0.497	0.401		0.000	0.012	0.004	0.000	0.204	0.414	0.009	0.902	0.893	0.009
SIZE	0.034	-0.143	.262**	1	0.014	-0.060	-0.030	0.108	-0.014	-0.118	0.040	0.018	-0.084
	0.679	0.076	0.001		0.911	0.460	0.708	0.182	0.867	0.145	0.627	0.822	0.299
STD_EARN	-0.050	.287*	0.098	-0.150	1	0.134	0.213	0.086	.442**	0.186	-0.145	-0.118	-.484**
	0.691	0.020	0.431	0.228		0.285	0.086	0.494	0.000	0.134	0.248	0.346	0.000
AGE	-.171*	.241**	.423**	-.194*	0.154	1	-0.084	-0.068	0.031	0.004	.208*	0.012	-.204*
	0.034	0.003	0.000	0.016	0.218		0.300	0.405	0.707	0.964	0.011	0.882	0.011
SEG	-0.095	-0.015	.393**	0.092	0.204	.240**	1	0.027	0.121	-0.144	-0.065	-0.015	.168*
	0.242	0.857	0.000	0.255	0.101	0.003		0.744	0.135	0.075	0.436	0.858	0.037
LOSS	-0.092	-.606**	0.063	0.072	.302*	-0.093	0.078	1	-.220**	-0.028	-.410**	-.190*	-.205*
	0.256	0.000	0.443	0.372	0.014	0.252	0.334		0.006	0.731	0.000	0.018	0.011
ΔEARN	-0.031	.364**	-0.028	-0.045	.305*	0.096	0.145	-.280**	1	0.113	-0.048	-.270**	-0.033
	0.702	0.000	0.734	0.577	0.013	0.238	0.073	0.000		0.162	0.566	0.001	0.682
OCF	-.171*	.251**	-0.151	-0.087	0.225	-0.142	-.177*	-0.043	0.120	1	-.202*	-.420**	-0.073
	0.034	0.002	0.063	0.285	0.070	0.078	0.028	0.600	0.140		0.014	0.000	0.369
PER	0.116	.171*	0.158	0.098	-.300*	.233**	-0.046	-.480**	0.032	-.205*	1	.276**	0.112
	0.161	0.038	0.056	0.238	0.015	0.005	0.582	0.000	0.700	0.013		0.001	0.178
ABN_AC	0.044	0.090	-0.009	0.017	-0.021	0.025	-0.015	-.200*	-0.158	-.364**	.228**	1	0.032
	0.584	0.269	0.912	0.835	0.869	0.756	0.857	0.013	0.051	0.000	0.006		0.691
ABN_TONE	.204*	0.128	-0.079	0.096	-.448**	-.198*	.170*	-.200*	0.070	-0.073	0.149	-0.014	1
	0.011	0.114	0.334	0.239	0.000	0.014	0.035	0.013	0.387	0.366	0.071	0.865	

Panel B: Fraudulent Firms

	TONE	*EARN*	*RET*	*SIZE*	*STD_EARN*	*AGE*	*SEG*	*LOSS*	*ΔEARN*	*OCF*	*PER*	*ABN_AC*	*ABN_TONE*
TONE	1	0.040	.303**	0.044	0.083	0.065	.274**	0.053	0.052	.202**	-.328**	0.005	0.147
		0.603	0.000	0.569	0.488	0.406	0.000	0.496	0.507	0.009	0.000	0.945	0.057
EARN	0.045	1	0.082	0.139	-.326**	.200**	-0.101	-.728**	.429**	.377**	.340**	.238**	0.034
	0.560		0.292	0.073	0.005	0.009	0.193	0.000	0.000	0.000	0.000	0.002	0.658
RET	0.084	.252**	1	.270**	-0.172	.391**	.214**	-0.092	-0.025	0.147	0.011	0.006	-.168*
	0.280	0.001		0.000	0.147	0.000	0.006	0.236	0.753	0.058	0.893	0.942	0.031
SIZE	0.054	-0.035	.273**	1	-.543**	.193*	-0.105	-.220**	-0.005	.192*	.256**	0.036	0.123
	0.490	0.649	0.000		0.000	0.012	0.175	0.004	0.954	0.013	0.001	0.646	0.112
STD_EARN	0.131	-0.108	-.297*	-.622**	1	-.355**	0.116	.306**	-0.183	-.233*	-0.240	-0.004	-0.115
	0.271	0.367	0.011	0.000		0.002	0.333	0.009	0.124	0.049	0.052	0.974	0.336
AGE	0.139	0.097	.531**	.242**	-.339**	1	-0.027	-.189*	-0.085	0.112	0.133	0.020	-.248**
	0.072	0.211	0.000	0.002	0.004		0.725	0.014	0.276	0.147	0.097	0.797	0.001
SEG	.329**	-0.042	0.123	-0.052	0.230	0.121	1	0.126	0.050	-0.122	-0.024	-0.020	-0.071
	0.000	0.587	0.117	0.505	0.052	0.119		0.105	0.524	0.115	0.769	0.793	0.364
LOSS	0.056	-.738**	-.253**	-.200**	.338**	-0.138	0.100	1	-.231**	-.316**	-.593**	-0.151	0.073
	0.470	0.000	0.001	0.009	0.004	0.073	0.199		0.003	0.000	0.000	0.050	0.345
ΔEARN	0.010	.360**	-0.047	0.125	-0.209	-0.012	0.029	-.277**	1	0.065	0.069	.242**	0.145
	0.900	0.000	0.548	0.108	0.078	0.881	0.710	0.000		0.405	0.393	0.002	0.061
OCF	.172*	.398**	.222**	.200**	-0.145	0.056	-.162*	-.307**	.186*	1	0.064	-.200**	-0.105
	0.026	0.000	0.004	0.009	0.225	0.471	0.036	0.000	0.016		0.430	0.009	0.175
PER	-.391**	.359**	.311**	.304**	-0.214	0.128	-0.071	-.684**	0.043	0.114	1	.175*	-0.128
	0.000	0.000	0.000	0.000	0.084	0.110	0.382	0.000	0.597	0.155		0.029	0.111
ABN_AC	0.015	0.085	0.003	0.018	-0.068	-0.004	-0.034	-0.108	0.034	-.247**	0.141	1	0.014
	0.847	0.275	0.974	0.815	0.571	0.957	0.661	0.165	0.664	0.001	0.078		0.855
ABN_TONE	.234**	-0.011	-.243**	0.009	-0.113	-.277**	0.002	0.118	.157*	0.009	-.296**	0.049	1
	0.002	0.883	0.002	0.904	0.345	0.000	0.980	0.126	0.042	0.907	0.000	0.527	

The upper right shows the Pearson coefficient and the lower left shows the Spearman coefficient.*, ** indicate P<0.5, P<0.01, respectively. See Table 4 for variable definitions.

MD&A disclosures are explanatory information provided by management based on financial data. The fraudulent firms could rely on window-dressed fundamental data to prepare them, which should be consistent with false earnings and sales data. This is expected because management knows both the window-dressed fundamentals and the original financial fundamentals and cannot honestly prepare MD&A disclosures with false fundamentals.

Table 7 presents the cross-section multivariate regressions from the Huang et al. (2014) model. For non-fraudulent firms, *ABN_AC* is significantly associated with *EARN*, *ΔEARN* and *OCF*; *ABN_TONE* is significantly and negatively associated with *STD_EARN*. This result suggests that managers of non-fraudulent firms with negative earnings changes, negative cash flows are engaged in earnings management ant that managers of non-fraudulent firms with decreases in earnings seems to have tone management.

On the other hand, for the fraudulent firms, *ABN_AC* is significantly associated with *EARN* and *OCF* while *ABN_TONE* is significantly and positively associated with *EARN* and *LOSS*. This finding indicates that managers of fraudulent firms with earnings and negative cash flows are engaged in earnings management. The Panel B shows that *ABN_TONE* is significantly and positively associated *EARN* and *LOSS*, suggesting that managers of fraudulent firms with negative earnings are engaged in tone management.

TABLE 7

Multivariate Analysis Based on the Huang et al.(2014) Model

Panel A: Non-Fraudulent Firms

	TONE			ABN_AC			ABN_TONE		
	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
(Intercept)	0.323	0.400	0.691	0.032	0.701	0.487	-0.609	-0.467	0.642
EARN	0.707	0.263	0.793	0.350	2.293	0.026 **	5.391	1.247	0.218
RET	0.019	1.784	0.080 *	0.000	-0.386	0.701	-0.028	-1.604	0.114
SIZE	-0.035	-0.982	0.331	-0.001	-0.395	0.694	0.017	0.292	0.771
PER	0.005	0.827	0.412	0.000	-0.260	0.796	-0.009	-0.939	0.352
STD_EARN	0.486	0.336	0.738	0.016	0.192	0.849	-10.369	-4.456	0.000 ***
AGE	-0.003	-0.023	0.982	0.002	0.237	0.814	0.127	0.585	0.561
SEG	-0.072	-0.519	0.606	-0.009	-1.192	0.239	0.836	3.752	0.000 ***
LOSS	0.069	0.216	0.829	0.019	1.069	0.290	0.316	0.615	0.541
ΔEARN	0.156	0.189	0.851	-0.107	-2.297	0.025 **	-0.782	-0.590	0.557
OCF	-1.869	-1.332	0.188	-0.464	-5.818	0.000 ***	0.398	0.176	0.861
Adjusted R^2		0.148			0.489			0.442	

Panel B: Fraudulent Firms

	TONE			ABN_AC			ABN_TONE		
Variables	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
(Intercept)	-1.143	-2.298	0.025 ***	0.039	1.159	0.252	0.005	0.006	0.995
EARN	0.391	0.148	0.883	0.328	1.822	0.074 *	16.766	3.610	0.001 ***
RET	0.013	1.628	0.109	0.000	0.362	0.719	-0.028	-1.906	0.062 *
SIZE	0.004	0.227	0.821	-0.001	-0.766	0.447	0.072	2.101	0.040 *
PER	-0.007	-2.104	0.040 *	0.000	0.545	0.588	-0.009	-1.550	0.127
STD_EARN	1.654	1.361	0.179	0.028	0.335	0.739	-1.599	-0.746	0.459
AGE	0.131	1.635	0.108	-0.002	-0.369	0.713	-0.204	-1.444	0.154
SEG	0.266	2.539	0.014 ***	-0.013	-1.820	0.074 *	0.107	0.579	0.565
LOSS	0.149	0.844	0.402	-0.006	-0.476	0.636	0.823	2.644	0.011 **
ΔEARN	0.318	0.317	0.753	-0.102	-1.482	0.144	-2.555	-1.443	0.155
OCF	2.194	1.962	0.055 *	-0.159	-2.078	0.042 *	-0.910	-0.461	0.646
Adjusted R^2		0.399			0.201			0.400	

*, **, *** indicate P<0.1, P<0.5, P<0.01, respectively. See Table 4 for variable definitions.

Test Results for H2 (Multivariate Analysis): ABN_AC and ABN_TONE

To test H2, this study performs a multiple regression analysis with *TONE*, *ABN_AC* and *ABN_TONE* as explained variables to examine the relationship between abnormal accruals and abnormal tone. Table 8 presents the results of the multiple regression analysis using the model of Carlson and Lamti (2015). Table 8, Panel A shows that there is no significant association can be observed between *ABN_TONE* and *ABN_AC* for non-fraudulent firms. Table 8, Panel B presents that a significant association can be observed between *ABN_TONE* and *ABN_AC* for fraudulent firms. This result indicates that although non-fraudulent firms are not engaged in earnings and tone management, fraudulent firms are engaged in earnings management and tone management simultaneously.

TABLE 8

Multivariate Analysis Based on the Carlson and Lamti (2015) Model

Panel A: Non-Fraudulent Firms

	TONE			ABN_AC			ABN_TONE		
	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
(Intercept)	0.823	3.379	0.001 ***	-0.011	-0.455	0.650	1.110	1.538	0.127
EARN	-1.911	-1.806	0.074	0.010	0.075	0.941	-4.443	-1.076	0.285
SIZE	-0.072	-3.759	0.000 ***	0.000	0.058	0.954	-0.048	-0.924	0.358
PER	0.006	1.846	0.068 *	0.000	0.288	0.774	0.003	0.330	0.742
RET	0.022	2.982	0.004 ***	0.001	0.964	0.337	-0.016	-0.826	0.411
YEAR	-0.012	-0.883	0.379	0.001	1.320	0.190	0.044	1.276	0.205
LOSS				0.013	0.696	0.488	-0.149	-0.270	0.788
EARN_LOSS				0.731	2.406	0.018 **	15.590	1.659	0.100
ABN_AC							-0.252	-0.085	0.932
Adjusted R^2		0.173			0.139			0.082	

Panel B: Fraudulent Firms

	TONE			ABN_AC			ABN_TONE		
	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
(Intercept)	0.229	1.321	0.191	-0.002	-0.129	0.898	0.013	0.035	0.973
EARN	1.721	1.520	0.133	0.192	1.036	0.303	2.010	0.544	0.588
SIZE	-0.027	-2.174	0.033 **	-0.001	-0.663	0.510	0.012	0.470	0.640
PER	-0.006	-1.969	0.053	0.000	0.883	0.380	-0.007	-1.344	0.183
RET	0.036	5.456	0.000 ***	0.000	-0.258	0.797	-0.011	-1.021	0.311
YEAR	0.007	0.491	0.625	0.003	2.099	0.039 **	-0.030	-1.229	0.223
LOSS				-0.007	-0.434	0.665	0.081	0.264	0.793
EARN_LOSS				0.043	0.157	0.876	-7.239	-1.328	0.188
ABN_AC							4.303	1.870	0.066 *
Adjusted R^2		0.416			0.205			0.156	

*, **, *** indicate P<0.1, P<0.5, P<0.01, respectively. See Table 4 for variable definitions.

VI CONCLUSIONS

This study examines whether tone of non-fraudulent and fraudulent firms conforms to financial fundamentals and whether Japanese firms are engaged in earnings and tone management simultaneously. The findings are as follows. First, there are significant differences between fraudulent and non-fraudulent firms with respect to abnormal tone. Second, the correlation results indicated that managers of non-

fraudulent firms pay attention to earnings and loss in earnings management. In addition, managers of non-fraudulent firms rely on the principle of sincerity to disclose earnings and loss, since abnormal tone is consistent with fundamentals such as loss and earnings. On the other hand, for fraudulent firms, these is no significant correlation between abnormal tone and fundamentals such as earnings or loss. This finding suggests that managers of fraudulent firms cannot present explanatory materials consistent with the firm's fundamentals. MD&A disclosures are explanatory information provided by management based on financial data. Fraudulent firms would rely on window-dressed fundamental data to prepare them, which should be consistent with false earnings and sales data. This is expected because management knows both the actual and window-dressed fundamentals and cannot honestly prepare MD&A disclosures with false fundamentals.

Abnormal tone for non-fraudulent firms is correlated with fundamentals, but abnormal tone for fraudulent firms is not correlated with fundamentals. Non-fraudulent firm managers make disclosures consistent with fundamentals, while fraudulent firm managers do not. Non-fraudulent firm managers attempt to accurately communicate the truth to investors, indicating a purpose for the communication of information. On the other hand, managers of fraudulent firms conceal falsehoods and mislead investors. Thus, this study finds that Japanese non-fraudulent firms fulfil communicative action theory for the purpose of communicating information, while fraudulent firm managers use tone management for the purpose of misleading investors.

Third, we observe a significant association between abnormal tone and abnormal accruals for fraudulent firms. This result indicates that fraudulent firm managers in Japan implement earnings management and tone management simultaneously, suggesting that fraudulent firm managers need to manage tone to conceal earnings management. The fraudulent firm managers manage tone to mislead investors, indicating that this does not meet the communicative action theory and this is based on strategic actions. Japanese non-fraudulent firm management does not consider earnings management to be accounting fraud if it is within the scope of GAAP, so they consider that there is no need to mislead investors by tone management to conceal earnings management. Therefore, firms that manage tone of financial reporting have a high probability of being involved in accounting fraud, and it is possible to detect fraud through tone management.

This study does not analyze the results for all industries of Japanese firms. Future analysis could include firms of all industries to increase the robustness of the results. In addition, this study examines the relationship between positive and negative tone and firm performance in the same fiscal year. Future research should examine whether tone can predict future financial performance.

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