Determinants of Market Reaction to Disclosure of Accounting Misconduct: Evidence from Japan

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Abstract

This study examines determinants of stock price reaction to accounting misconduct based on disclosed cases in Japan. Prior research shows that the announcement of accounting misconduct resulting in a significantly large negative impact on earnings occasioned substantial negative market reaction. This paper finds other determinants which are also significantly associated with negative returns following the announcement of accounting misconduct, such as fraudulent financial reporting, management fraud, and absence of investigation by a third-party committee. These results suggest that if financial statements look suspicious, investors should examine a firm's credibility by studying the content of accounting misconduct and transparency of investigation.

1   Introduction

A company mitigates information asymmetry (between internal and external information) by disclosing financial statements. The financial report helps investors make decisions. Financial reporting is assumed to be reliable for investors. However, if financial reporting is revealed to have been misstated, they cannot not rely on such assumption. Accounting misconduct is a significant event that causes companies to lose financial reporting credibility, and seriously changes external evaluations.[1]

Prior studies show that accounting misconduct caused a significant decline in stock prices after revelation (Feroz et al. [1991], and others). In addition, several studies have suggested that determinants of the decline include the magnitude of impact on accounting income and involvement of disclosure regulatory investigations (Feroz et al. [1991];

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[1] This paper defines "accounting misconduct" as an intentional misstatement in financial reporting. "Disclosure of accounting misconduct" means that a company announces the fact or possibility that there has been some accounting misconduct. In this paper, "accounting misconduct" is a general term meaning an intentional misstatement, such as "irregularity," "fraudulent accounting" (or "accounting fraud"), "accounting scandal," and "window dressing."

Okumura [2014] and others). On the other hand, Ozeki [2018] reports the actual situation of accounting misconduct disclosure in Japan. Ozeki [2018] suggests that accounting misconduct has various characteristics. First, depending on the type of misconduct (fraudulent financial reporting or misappropriation of assets), the purpose of the perpetrator is clearly different. Second, accounting misconduct includes fraud by head office management, employees, and at subsidiaries. Although these characteristics are related to the impact on earnings, it may be that the misconduct characteristics themselves cause stock price declines through damage to the firm's credibility and future profitability.

Moreover, investigations into fraud are conducted by the company that has committed the act, and transparency of the disclosed results depends on the independence and specialization of investigation which can be monitored through establishment of a third-party committee. It can be said that investigation transparency affects the stock price through investors' perception of the results subsequently disclosed. However, prior studies have not analyzed the characteristics of accounting misconduct and the transparency of disclosure.

In addition, in Japan, details of accounting misconduct tend not to be disclosed at one time. Rather, information about fraud is gradually disclosed through several announcements. Prior studies measured stock price reaction to only the first disclosure of accounting misconduct, and analyzed the association between abnormal return to the first announcement and characteristics which would later be unveiled. It may be that the causal relationship between stock price reaction and misconduct characteristics or transparency is not clear.

In this paper, I analyze determinants of stock price reaction to the disclosure of accounting misconduct in Japan through the characteristics of accounting misconduct and transparency of disclosure information. I use every disclosure of each accounting misconduct case as a disclosure event. The series of disclosures by case cover the period from the first announcement to the announcement of investigation results or restatement.

This study makes several contributions. First, so far, accounting misconduct and disclosure transparency have not been clearly examined as factors of stock price reaction. This examination contributes to present determinants of investor behavior related to accounting misconduct. Second, the determinants empirically examined provide the basis for investors to make decisions when accounting misconduct is revealed in the future. It also has implications for accounting misconduct practice in that investors should consider disclosure transparency and the investigation.

The remainder of this paper is organized as follows. In Section 2, I review prior literature and develops hypotheses. Section 3 presents the research design and sample selection of accounting misconduct cases. Section 4 shows the empirical results and Section 5 summarizes the conclusions and limitations of this study.

2 Review of the Literature and Development of Hypotheses

Prior accounting misconduct studies examined cases investigated and sanctions imposed by disclosure regulators in the US. They show that the revelation of accounting misconduct caused a decline in stock prices (Feroz et al. [1991]; Dechow et al. [1996]; Beneish [1999]; Karpoff et al. [2008]; Beasley et al. [2010]; Karpoff et al. [2017]). Another observable subject that overlaps with accounting misconduct is restatement, which is similarly known to cause a stock price decline in US samples (Palmrose et al. [2004]; Hennes et al. [2008]).[2] Although there is little research on accounting misconduct at Japanese

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[2] "Restatement" is defined as the correction of financial statements for any misstatement stemming from lack or misuse of information available at the time of past financial statement preparation. Restatement

listed companies, a decline in stock price after the revelation of inappropriate accounting practices or restatement has been observed (Aobuchi, [2011]; Okumura [2014]).[3]

Palmrose et al. [2004] and Dechow et al. [2010] provided reasons why a stock price decline is attributed to restatement or accounting misconduct. First, the revelation of accounting misconduct causes the downward revision of past accounting earnings (or past cash flow), leading to a deterioration in the reputation and credibility of the firm concerned, and impaired future performance and growth expectations on the part of investors. Second, a decline in a firm's credibility increases investment risk and cost of capital.[4] As a result of the lowering of earnings forecasts and increase in cost of capital, investors reassess the firm's market value lower.

In this paper, I focus on the disclosure of accounting misconduct (intentional misstatement) as a significant event for investors, and do not target unintentional misstatements that are included in restatements. The reason is that accounting misconduct represents more strongly the theoretical background to a decline in stock price. Deceiving investors intentionally can damage a firm's credibility more than unintentional errors. Moreover, because the intention of the perpetrator tends to overstate a firm's profits and assets for fictitious accounting and concealment, it is likely to impact downward on accounting earnings. Therefore, rather than focusing on the entire range of misstatements, we examine investor reaction focusing on accounting misconduct.[5]

Then, what kind of information in accounting misconduct disclosure leads to a decline in future earnings and loss of a firm's credibility? The scale of impact of accounting misconduct differs depending on the characteristics, for example, the purpose of the fraud and the position of the perpetrators. They may explain the magnitude of the impact on earnings and the internal control environment for a firm's credibility.[6] In addition, since disclosure of accounting misconduct is announced by the firm that committed the act, in assessing disclosure transparency it is useful to be able to grasp the firm's credibility.

The purpose of fraud can be classified as "fraudulent financial reporting" and "misappropriation of assets."[7] The former is intentional manipulation of earnings or concealment of losses in financial statements and the latter embezzlement or theft of a firm's assets by individuals. In the case of fraudulent financial reporting, the purpose of fraud can be to manipulate financial statements, likely to overstate earnings or assets (Ozeki [2018]). If a prior earnings trend is revealed to be overstated and investors' forecasts are based on such

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includes accounting misconduct, which is an intentional misstatement, and error, which is an unintentional misstatement.

[3] "Inappropriate accounting practice" is equivalent to the misstatement in financial statements subject to restatement and includes both intentional accounting misconduct and unintentional accounting error.

[4] Dechow et al. [2010] suggested another reason, namely the additional costs stemming from sanction as a consequence of regulatory enforcement and litigation. However, in Japan, regulators decide whether to impose sanctions after all disclosures of accounting misconduct. Also, the amount of administrative monetary penalty in Japan is insignificant relative to the drop in market capitalization due to the stock price decline. For these reasons, disclosure of sanction costs is not a subject of this study.

[5] Accounting misconduct has the greater impact on investors than unintentional accounting error. Prior studies show that when restatement is attributed to accounting misconduct, stock price declines are significantly greater than otherwise (Palmrose et al. [2004]; Hennes et al. [2008]; Okumura [2014]).

[6] This paper measures the magnitude of impact on earnings from accounting misconduct as the total of (1) the difference in net assets before restatement and after restatement in the last financial statement before the first announcement of the accounting misconduct (i.e., cumulative restatement in net income) and (2) the change in profit (loss) before income taxes from the accounting misconduct in the first annual financial statement after the revelation. Detailed definitions of variables are given in Table 1.

[7] The classification is based on International Standard on Auditing 240 "The Auditor's Responsibilities Relating to Fraud in an Audit of Financial Statements", and Auditing Standards Committee Statements 240 "The Auditor's Responsibilities Relating to Fraud in an Audit of Financial Statements (in Japanese)" issued by the Japanese Institute of Certified Public Accountants, citing fraud to be considered by auditors.

earnings trend, they will revise their forecasts downward. In contrast, in the case of the misappropriation of assets, fictitious assets and expenses can be recorded to conceal the loss of assets that have occurred before the fraud is revealed. In this case, although the firm's assets have in fact been impaired, the impact has ceased due to the revelation, and will not continue to affect future profitability. Due to this difference, a fraudulent financial report can lead to greater lowering of investor forecasts and decline in stock prices than the misappropriation of assets.

Regarding perpetrators of accounting misconduct, first, they are classified on a company level into the disclosing firm and subsidiary. Second, from a position viewpoint, they are classified into management (manager or director) and employees (including administrative positions) (Ozeki [2018]). Considering the company-wide internal control environment of an entire corporate group, deterioration of the control environment can be limited if fraud has occurred at a subsidiary or if it is at the employee level. On the other hand, if management at the disclosing firm is involved in fraud, the control environment of the entire group might have deteriorated. Thus, it is predicted that stock prices will decline more due to company-wide deterioration occasioned by management involvement than otherwise.

Therefore, this study empirically tests the following hypotheses based on the characteristics of accounting misconduct.

H1: If the accounting misconduct disclosure is classified as fraudulent financial reporting, the decline in stock prices is more than in other cases.

H2: If the accounting misconduct disclosure involves management of the disclosing company, the decline in stock prices is more than in other cases.

Another significant accounting misconduct characteristic is transparency of disclosure. Following accounting misconduct revelation, a fraud investigation is typically conducted at the firm concerned to examine the magnitude and cause of the impact. However, an internal company investigation into fraud cannot perfectly restore the firm's credibility because the credibility of the firm itself is in question. In this regard, "Principles for Dealing with Scandals at Listed Companies" (Japan Exchange Regulation, 2016) states that the establishment of a third-party committee is a useful option for ensuring the independence and expertise of fraud investigations.[8] The establishment of a third-party committee can ensure the independence and expertise of fraud investigation, and lead to mitigate loss of a firm's credibility that results in stock price declines. On the other hand, if the firm concerned does not establish a third-party committee, transparency of the investigation will be open to question. In that case, investor suspicions will remain even after the disclosure of investigation results, leading to a further decline in stock prices.

Therefore, I set the following hypothesis.

H3: If the accounting misconduct disclosure is without a third-party committee, the

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[8] A "third-party committee" is a committee consisting of members who are independent from the client firm, that conducts thorough investigations and examines the causes based on the expertise and experience of members, and suggests, as necessary, specific measures to prevent recurrence when criminal acts, violations of laws and regulations, and fraud or misconduct arise or are suspected to have occurred in a company or organization ("Guidelines for Third-Party Committees in Corporate Misconduct", Japan Federation of Bar Associations, 2010).

decline in stock prices is more than in other cases.

In addition to these hypotheses, the magnitude of impact on earnings can be the most important information for investors to capture the overall picture of an accounting misconduct case. Investor perception of the magnitude may depend on each characteristic described above. First, in the case of fraudulent financial reporting, the amount of change in forecast earnings depends on the magnitude. Therefore, it is expected that a fraudulent financial report will have a greater impact on stock prices through the magnitude of impact on earnings.

Second, if management is involved, investors will perceive that the firm's credibility has deteriorated. Moreover, if a third-party committee is not established, investors will question the transparency of the investigation. Even after the firm conducts an internal investigation, it can conceal undiscovered fraud without solving the fundamental causes, and it may continue to commit fraud after disclosure. Since investors doubt the firm's credibility, they will evaluate investigation results more negatively, and the decline in stock prices due to the magnitude, which is the most important result of the fraud investigation, will be more serious.

Thus, investor perception of information announcing the magnitude can depend on the characteristics of accounting misconduct. The decline in stock prices through the magnitude is expected to vary based on the characteristics of accounting misconduct. Therefore, the following hypothesis is made.

H4: If the accounting misconduct disclosure is classified as a fraudulent financial report, involves management, or is without a third-party committee, the decline in stock prices due to the impact on earnings is more than in other cases.

3 Research Design and Sample Selection

(1) Measuring stock price reaction to accounting misconduct disclosure

In Japan, disclosure practices of accounting misconduct have some common points. Disclosure cases start from "the first announcement" which announces the fact or possibility of accounting misconduct. After this, an investigation is conducted, the results of which are disclosed at each step, such as interim report and final report. In some cases, firms delay the announcement of financial statements and establish a third-party committee before their internal investigation is completed. Also, after disclosure of the final report, they issue a restatement of their prior financial statements based on the results. It is common to make a series of disclosures starting from outline in the first announcement, and then gradually reveal the overall fraud in investigation reports.

Karpoff et al. [2008] and Karpoff et al. [2017] measure the reaction of stock prices to a series of accounting disclosures following the first announcement in misconduct cases in the US, and show that stock prices declined not only on the date of the first announcement, but also on the dates of following disclosures such as investigation reports. They measure return by case from aggregating returns for each event. If disclosure after the first announcement is not subject to measurement of investor reaction, measurement of stock price reaction may be limited. Thus, for measurement by case, this paper used the aggregated return on the date of the first announcement and date of related disclosure events.

According to accounting misconduct disclosure practice in Japan, as related disclosures I identified a delay in financial statement announcements, establishment of a third-party committee, fraud investigation reports (including interim and final), and restatement of prior financial statements. Considering the theoretical background to stock price reaction to accounting misconducts, the series of disclosures from the first announcement to the final information of the accounting misconduct (specifically the magnitude of impact on earnings presented on the final fraud investigation report or the restatement) are covered to measure. Further disclosures after the final report or restatement are not subject to this analysis because they do not add informative content that affects stock price from a theoretical viewpoint.

Abnormal returns to the disclosure event are the market adjusted daily return on the event date.[9] The market return is the Nikkei All Stock Index, a value-weighted stock index covering all Japanese listed stocks except JASDAQ.[10] Abnormal returns by case are the aggregation of abnormal returns for every disclosure event of the case (Karpoff et al. [2008]).

$$CAR_{ijd}(x,y) \quad = \quad \sum_{t=x}^{y} (R_{ijdt} - R_{mdt}) \tag{1}$$

$$TAR_{ij}(x,y) \quad = \quad \sum_{d=1}^{n_{ij}} CAR_{ijd}(x,y) \tag{2}$$

where, R_{ijdt} is the stock return adjusted ex dividend for firm i, the disclosure event d of accounting misconduct case j on date t. R_{mdt} is the daily market return on the same date with R_{ijdt}. $CAR_{ijd}(x,y)$ is the cumulative abnormal return for the event from date x to date y. $TAR_{ij}(x,y)$ is the total of cumulative abnormal returns on every event (n_{ij} events) in case j of the firm i.

I calculated $CAR_{ijd}(x,y)$ in two ways for robustness. $CAR_{ijd}(0)$ measures on the event day only, and $CAR_{ijd}(0,+1)$ on the event day and next day. The measurement period subject to event day and the next day is consistent with prior research in Japan (Aobuchi [2011] and Okumura [2014]). In addition, according to Japanese stock exchange regulations, if the stock price plunges more than the daily limit range ("daily limit loss"), the reaction over the daily limit carries over to the next day. Therefore, two days ($TAR_{ij}(0,+1)$) can measure investor reaction more comprehensively than one day ($TAR_{ij}(0)$).

(2) Empirical model

To test the hypotheses, I estimated Eq. (3), using the accounting misconduct cases data, by the least squares method.

$$
\begin{aligned}
TAR_{ij}(x,y) = \beta_0 \quad + \quad & \beta_1 FFR_{ij} + \beta_2 MANAGE_{ij} + \beta_3 INS_{ij} + \beta_4 MAG_{ij} \\
+ \quad & \beta_5 ORE_{ij} + \beta_6 SESC_{ij} + \beta_7 RESTATE_{ij} \\
+ \quad & \beta_8 DELAY_{ij} + \beta_9 FREQ_{ij} + \beta_{10} TA_{ij} + \beta_{11} ROA_{ij} \\
+ \quad & \beta_{12} BTM_{ij} + \beta_{13} BIGN_{ij} + \Sigma\beta Year/Industry + \varepsilon_{ij} \tag{3}
\end{aligned}
$$

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[9] If the announcement time is after the closing time of the securities exchange (15:00), I adjusted the event date to the next business day after the disclosure date.

[10] The main results are not sensitive to type of market return. The main results are consistent with the results using TOPIX alternatively.

<div align="center">Table 1: Variable Definitions</div>

Variable	Definition
TAR(x,y)	Total of cumulative abnormal returns around time of accounting misconduct disclosure from day *x* to day *y*.
FFR	An indicator variable that equals 1 if the accounting misconduct disclosure case is a fraudulent financial report, and 0 otherwise.
MANAGE	An indicator variable that equals 1 if the accounting misconduct disclosure case is fraud by management (manager or officer) at the head office of the disclosing company, and 0 otherwise.
INS	An indicator variable that equals 1 if the accounting misconduct disclosure case is not investigated by a third-party committee, and 0 otherwise.
MAG	The magnitude of impact on earnings of the accounting misconduct case equals -1 multiplying the sum of restatement of net assets in the last financial statement before the first announcement and prior period adjustments of annual earnings in the first announcement year, scaled by total assets in the last (annual or quarter) financial statement before the first announcement (*MAG*>0 mean earnings were overstated.).
ORE	An indicator variable that equals 1 if the impact on earnings from the accounting misconduct disclosure case affects ordinary profit (loss), and 0 otherwise.
SESC	An indicator variable that equals 1 if the first report of the accounting misconduct disclosure case announced an investigation by the Securities and Exchange Surveillance Commission (SESC), and 0 otherwise.
RESTATE	An indicator variable that equals 1 if the accounting misconduct disclosure case includes a restatement of prior financial statements, and 0 otherwise.
DELAY	An indicator variable that equals 1 if the accounting misconduct disclosure case includes a delay or postponement of announcing financial statements, and 0 otherwise.
FREQ	Frequency of disclosure events by accounting misconduct disclosure case (equal n_{ij} of Eq. (2)).
TA	Natural log of total assets in the last annual financial statement before the first announcement.
ROA	Operating profit (loss) scaled by average total assets in the last financial statement before the first announcement (before restatement).
BTM	The book value of equity in the last financial statements before the first announcement (before restatement) divided by market capitalization at the end of the last year before the first announcement.
BIGN	An indicator variable that equals 1 if the last financial statement before the first announcement had been audited by one of Big4 (includes *Shin-Nihon* (EY), *Tohmatsu* (Deloitte), *Azusa* (KPMG) and *Chuo-Aoyama* (PwC) (until 2006)), and 0 otherwise.
Year	Fixed year effect. Year dummy variables from 2005 to 2016, based on the first announcement year by case.
Industry	Fixed Industry effect. Industry classifications are based on Tokyo Stock Exchange 33 classifications.

Table 1 lists variable definitions of dependent and independent variables in Eq. (3). The dependent variable is the total of cumulative abnormal returns ($TAR_{ij}(x,y)$). For independent variables, I examined the purpose indicator variable of a fraudulent financial report (FFR_{ij}), the perpetrator indicator variable of fraud by management ($MANAGE_{ij}$), and the transparency indicator variable of no investigation by a third-party committee (INS_{ij}).[11] The independence variables are based on hypotheses H1, H2, and H3, and

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[11] I measured INS based on the announcement text by case. I distinguished whether the investigative committee was a third-party committee or not according to the following criteria: (1) the announcement text includes a statement that committee members are selected according to "Guidelines for Third-party Committees on Corporate Misconduct (Japan Federation of Bar Associations, 2010)", or if (1) is not included in the announcement (e.g. before 2010), (2) biographical outlines of committee members are given, referring to "Section 2 (5) Interests" and "Section 5 Guidelines for Members" in Part 2 of the Guidelines. In (2), I required specifically that (2-1) the committee does not include any internal officers, (2-2) the number of outside officers is less than half of the committee and it is stated in the text that

they are predicted to be associated with abnormal returns negatively.

I control for the magnitude of impact on earnings (MAG_{ij}), that is the sum of cumulative restatements of prior net income and prior period adjustments of earnings in the disclosure period, divided by total assets in the last financial statement before revelation, and multiplying -1. MAG_{ij} is predicted as a negative association with abnormal returns.[12] In addition, to test H4, the change of the coefficient of MAG_{ij} through accounting misconduct characteristics is estimated by adding the interaction terms of MAG_{ij} with each characteristic indicator variables of Eq. (3). I set model (3)', adding $MAG_{ij} * FFR_{ij}$, $MAG_{ij} * MANAGAE_{ij}$ and $MAG_{ij} * INS_{ij}$ to Eq. (3) as dependent variables. According to H4, the decline in stock prices through MAG_{ij} is expected to be greater when each characteristic is positive. Thus, I predict that these interaction terms have negative signs.

Moreover, I control the characteristics of accounting misconduct disclosure that are expected to be related to stock prices based on prior studies.[13] First, if the accounting misconduct affects "ordinary profit", which indicates the level of profit from continuing operations, it can affect future profitability and earnings forecasts. Therefore, I include an indicator variable of the impact on ordinary profit (ORE_{ij}).

Second, if an investigation by the Securities and Exchange Surveillance Commission (SESC; SESC is the disclosure regulatory institution in Japan, similar to the US Securities and Exchange Commission) has been conducted since the first announcement, the possibility of sanctions by the regulator is high, and investor suspicions stronger. Thus, I include an indicator variable ($SESC_{ij}$) of regulatory investigations (Palmrose et al. [2004]; Okumura [2014]). Third, since the restatement itself may see a loss in the firm's credibility and a decline in stock price due to the disclosure of restatements observed in prior studies, I control an indicator variable of restatement ($RESTATE_{ij}$).

Fourth, I control the characteristic of the disclosure environment of accounting misconduct. In many cases, accounting misconduct is discovered in the account closing process, resulting in a delay in the announcement of financial statements. Such delay would intensify suspicion of a serious impact on financial statements and bring into question a firm's investigative ability.[14] As a result, investors would be disappointed with the firm's future performance and credibility. Therefore, I include an indicator variable for a delay in announcing financial statements ($DELAY_{ij}$). Fifth, the number of disclosure events differs by case. The more frequent disclosure a fraud firm announces, the more often investor perceive uncertain information before the investigation is completed. Since the difference in the number of disclosure events is expected to be related to information uncertainty causing a negative return, I control the frequency of disclosure events ($FREQ_{ij}$).

Finally, I control a typical firm's characteristics. Specifically, I include firm size (TA_{ij}), performance (ROA_{ij}), ratio of book value to market value (BTM_{ij}), which are measured on the last financial statement before the first announcement. In addition, I control for size of auditor ($BIGN_{ij}$), which has been shown to be related to the revelation of accounting

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the independence of the committee would not be impaired, (2-3) the chairman of the committee is not an outside officer, and (2-4) the firm's legal counsel is not included in the committee (Nagashima, Ohno, Tsunematsu Law Office, and KPMG AZSA, 2010, pp.95-97).

[12] Palmrose et al. [2004] and Okumura [2014], which analyzed restatement cases, use the cumulative amount of restatements of prior net income. Since this study also included cases without restatement, I added the prior period adjustments on earnings and other effects stemming from the accounting misconduct after the first announcement. The sign of MAG_{ij} is adjusted by multiplying by -1. MAG_{ij} is a positive value when the restated earnings are lower than earnings before restatement, that is earnings had been overstated.

[13] Coefficient signs for the following control variables are predicted to be negative.

[14] Begley and Fischer [1998] show that when earnings announcement is delayed, earnings are likely to be lower than analysts expected. This is consistent with a delay intensifying investor suspicions.

Table 2: **Sample Selection**

		Event (d)	Case (j)	Firm (i)
(1)	Accounting misconduct disclosure cases that firms announced via timely disclosures.	1,296	446	394
(2)	Not included in (1), cases that were sanctioned by SESC (accusation or administrative monetary penalty).	99	24	22
(3)	Not included in (1) and (2), cases investigated by third-party committee.	62	16	11
	Accounting misconduct disclosure cases from announcement on timely disclosure	1,457	486	427
(−)	Cases from financial industry (bank, securities, insurance)	-37	-25	-15
(−)	Cases of insufficient financial data from NEEDS-FQ	-6	-2	-2
(−)	Cases of insufficient stock return data from NPM	-17	-6	-6
(−)	Did not announce amount of impact of accounting misconduct on earnings	-18	-9	-9
	Number of final samples =	1,379	444	395

misconduct (Lennox and Pittman [2010]).

(3) Sample data

I obtained accounting misconduct cases for all Japanese listed firms from "Timely Disclosure Browsing Service (TDBS)". When listed firms experience significant events which would be of concern to investors, they are required to make timely disclosure via TDBS. Such events include accounting misconduct that may impact prior financial statements. Some timely disclosure services provided by exchanges in Japan were integrated in 2005 into "TDnet (Timely Disclosure network)" which is TDBS online. I thus obtained the accounting misconduct sample for the period from 2005 to September 2016. The way of collecting accounting misconduct cases from TDBS was as follows. First, I searched announcements that might be accounting misconduct via timely disclosure subjects using keywords related to accounting misconduct. Second, I required samples to include timely disclosure text indicating that the firm confessed to committing accounting misconduct.[15] Third, in cases where the facts pertaining to fraud are not clearly stated in timely disclosure, I regarded a case having an independent investigator from the fraud firm (SESC, a third-party committee) as an accounting misconduct case (Hennes et al. [2008]). As a result of this process, I collected 486 accounting misconduct cases.

I excluded cases by firms of financial industries (finance, securities, insurance) as they comply with different regulations and also firms where necessary data was not available. The final sample of accounting misconduct disclosure cases is 444. Table 2 shows the

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[15] In the collecting process of accounting misconduct cases, I searched for subjects of TDBS by keyword. This method is similar to Song et al. [2016] and Inaba [2017], who collected accounting misconduct cases from TDBS in Japan. The keywords are words and phrases in Japanese related to accounting misconduct cases, such as "*Futekisetu-na-kaikei-syori* (inappropriate accounting practices)," "*Chi-en* (delay)" or "*En-ki* (postponement)" of announcement of financial statements, "*Chou-sa* (investigations)," "*Dai-san-sya iin-kai* (a third-party committee)," "*Tei-sei* (restatement)" of prior financial statements, "*Ka-chou-kin* (administrative monetary penalty)" and "*Tai-ho* (arrest)" of officer or employee. Moreover, the process of distinguishing accounting misconduct from disclosure content and independence of investigators is based on Hennes et al. [2008]. I distinguished whether timely disclosure in each case included words and phrases meaning intentional misstatement revealed. For example, (in English) "*fu-sei* (fraud; misconduct)," "*gi-sou* (camouflage)," "*mokuhyou-tassei* (beating or meeting targets)," "*ou-ryou* (embezzlement)," and "*in-pei* (concealment)." I identified them by reading through all related timely disclosures of the firms concerned.

Table 3: **Sample Description**

Variable	Obs.	Mean	sd	p1	p25	p50	p75	p99
TAR(0)	444	-0.074	0.160	-0.811	-0.110	-0.026	0.004	0.249
TAR(0,+1)	444	-0.112	0.240	-1.209	-0.144	-0.037	0.005	0.247
FFR	444	0.491	0.500	0	0	0	1	1
MANAGE	444	0.223	0.417	0	0	0	0	1
INS	444	0.577	0.495	0	0	1	1	1
MAG	444	0.039	0.113	-0.009	0	0.004	0.021	0.797
ORE	444	0.514	0.500	0	0	1	1	1
SESC	444	0.027	0.162	0	0	0	0	1
RESTATE	444	0.570	0.496	0	0	1	1	1
DELAY	444	0.331	0.471	0	0	0	1	1
FREQ	444	3.106	1.738	1	2	3	4	8
TA	444	10.450	2.111	5.684	9.036	10.292	11.755	15.800
ROA	444	0.012	0.121	-0.583	0.007	0.031	0.058	0.257
BTM	444	1.046	0.811	-0.562	0.465	0.931	1.473	4.031
BIGN	444	0.678	0.468	0	0	1	1	1

All continuous variables are displayed in decimal notation. Continuous variables except *TA*
(*TAR* , *MAG* , *ROA* , *BTM*) are winsorized at the bottom and top 1 percentile.

process of sample selection.[16]

I used "eol database services" provided by Pronexus Inc. for searching timely disclosures. From the SESC website I collected cases where SESC accused a firm of fraud or recommended for administrative monetary penalty to the Financial Services Agency (https://www.fsa.go.jp/sesc/houdou/index.htm; https://www.fsa.go.jp/sesc/english/news/false_disclosure_statement.htm). I collected financial data and stock index data from "Nikkei NEEDS Financial QUEST (NEEDS-FQ)" provided by NIKKEI Inc. For the data of external auditors I used "*Kansa-houjin, kansa-Iken data* (audit firm and audit opinion data)" in "NEEDS *Kigyou-kihon data* (corporate basic characteristics data)" provided by NIKKEI Inc. Stock price data was collected from "*Ni-hon Jou-jou Kabu-shiki Nichi-ji* return (NPM; daily return on stocks listed in Japan)" provided by Financial Data Solutions Inc. I identified all timely disclosures related to accounting misconduct by the firm concerned for each case and compiled an original database based on the subject and text of content on timely disclosures. Although NEEDS-FQ has been revised for restated financial statements, I replaced from the restated data on NEEDS-FQ to the initial financial statement data. The reason for this replacement is that the information known by investors is the initial financial statement at the time of the first announcement of accounting misconduct disclosure, thus, investor reactions actually correspond to the initial data.

Table 4: **Univariate Analysis**

Sample group	obs	TAR(0) Mean (t-stat)	TAR(0) Median (z-stat)	TAR(0,+1) Mean (t-stat)	TAR(0,+1) Median (z-stat)	MAG Mean (t-stat)	MAG Median (z-stat)
FFR=1	218	-0.104	-0.056	-0.157	-0.069	0.050	0.007
FFR=0	226	-0.046	-0.016	-0.068	-0.017	0.028	0.001
diff-test		(-3.79) ***	(-4.49) ***	(-3.79) ***	(-4.29) ***	(2.04) **	(5.40) ***
MANAGE=1	99	-0.155	-0.100	-0.253	-0.147	0.097	0.008
MANAGE=0	345	-0.051	-0.020	-0.071	-0.029	0.022	0.003
diff-test		(-5.80) ***	(-4.45) ***	(-6.76) ***	(-5.23) ***	(5.99) ***	(1.59)
INS=1	256	-0.059	-0.015	-0.087	-0.024	0.023	0.002
INS=0	188	-0.096	-0.055	-0.145	-0.067	0.061	0.011
diff-test		(2.15) **	(3.86) ***	(2.16) **	(3.18) ***	(-3.46) ***	(-4.63) ***

** and *** denote significance at the 5 percent and 1 percent level, respectively, based on two-tailed tests. Detailed definitions of the variables are summarized in Table 1. The t-stat is a t-test statistic with a null hypothesis that the difference in mean value between the sample groups of each indicator variable is zero. The z-stat is the test statistic of Wilcoxon's signed rank sum test with the null hypothesis that the difference in median between the sample groups of each indicator variable is zero.

4   Empirical Results

Table 3 reports the descriptive statistics.[17]   In Table 3, the mean of $TAR(0)$ is -0.074 and the mean of $TAR(0,+1)$ is -0.112, indicating that a series of accounting misconduct disclosures from the first announcement led to a significant decline in stock prices.[18] [19] Among the variables indicating the characteristics and disclosure environment of accounting misconduct, $SESC$ is 2.7 percent. Other variables are distributed evenly, suggesting the sample population includes a wide range of accounting misconduct cases.

Table 4 shows the univariate analysis of the associations between testing variables (FFR, $MANAGE$, INS), abnormal returns (TAR), and magnitude of accounting misconduct (MAG). Cases of fraudulent financial reporting ($FFR = 1$) or management fraud ($MANAGE = 1$) have a significantly greater negative TAR than other misconduct cases. The results are consistent with hypotheses H1 and H2.

On the other hand, in cases without a third-party committee ($INS = 1$), TAR is significantly more positive than in cases with. The result does not support hypothesis H3. However, it can be seen that MAG without a third-party committee is significantly small, as shown in the right column in Table 3. Prior studies show that the greater the impact on earnings the greater the decline in stock prices (Feroz et al. [1991]; Palmrose et al. [2004]; Okumura [2014]). Cases without a third-party committee may have small MAG.

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[16] Some samples are multiple cases at one firm. The sample comprises 42 cases for the 2nd case and 7 cases for the 3rd of the one firm. If such firm sees subsequent cases, the first announcement of the subsequent case occurs after 999 days (mean) from the end of the previous case, after 73 days at least. Neither previous nor subsequent case overlap in terms of timeline. Therefore, I included both cases in the sample.

[17] In order to mitigate the effect of outliers, I winsorized continuous variables other than natural logs at the bottom or top one percentile (TAR, MAG, ROA, BTM). The main results are not sensitive to whether with or without the outlier exclusion.

[18] The mean of abnormal return to the first announcement only (CAR_{ij1}) is -0.048 on the event day ($CAR_{ij1}(0)$) and -0.065 on the event day and the following day ($CAR_{ij1}(0,+1)$). The decline from only the first announcement is smaller than the total decline from the series of disclosures. This indicates that investor reactions are underestimated if the subsequent disclosures related to accounting misconduct are not measured.

[19] Although $TAR(0,+1)$ includes samples observed under -1.0 for a simple sum of negative returns (see p1 column in Table 3), the main results are not sensitive even if I set the limit bottom of TAR to -1.0.

Variable	pred. sign	(3) TAR(0) coef	(3) TAR(0) (t-stat)	(3) TAR(0,+1) coef	(3) TAR(0,+1) (t-stat)	(3)' TAR(0) coef	(3)' TAR(0) (t-stat)	(3)' TAR(0,+1) coef	(3)' TAR(0,+1) (t-stat)
FFR	(−)	-0.030*	(-1.86)	-0.043*	(-1.72)	-0.021	(-1.33)	-0.013	(-0.54)
MANAGE	(−)	-0.036*	(-1.76)	-0.057*	(-1.91)	-0.039*	(-1.76)	-0.058*	(-1.96)
INS	(−)	-0.028*	(-1.92)	-0.047**	(-2.08)	-0.015	(-0.99)	-0.027	(-1.23)
MAG	(−)	-0.332**	(-2.50)	-0.729***	(-3.73)	-0.204	(-0.76)	-0.326	(-0.76)
MAG*FFR	(−)					-0.150	(-0.63)	-0.579*	(-1.82)
MAG*MANAGE	(−)					0.108	(0.46)	0.159	(0.41)
MAG*INS	(−)					-0.388*	(-1.69)	-0.567*	(-1.70)
ORE	(−)	-0.007	(-0.43)	-0.033	(-1.35)	-0.007	(-0.38)	-0.035	(-1.45)
SESC	(−)	-0.278***	(0.15)	-0.328**	(-2.54)	-0.283***	(-4.23)	-0.351***	(-3.10)
RESTATE	(−)	0.003	(0.15)	0.034	(1.21)	0.003	(0.17)	0.035	(1.26)
DELAY	(−)	-0.066***	(-3.40)	-0.129***	(-4.63)	-0.063***	(-3.25)	-0.127***	(-4.66)
FREQ	(−)	-0.014*	(-1.71)	-0.017*	(-1.72)	-0.014*	(-1.70)	-0.018*	(-1.82)
TA		-0.006	(-1.55)	-0.007	(-1.29)	-0.007*	(-1.87)	-0.009*	(-1.82)
ROA		-0.147*	(-1.68)	-0.195	(-1.41)	-0.102	(-1.24)	-0.117	(-1.02)
BTM		0.014	(1.46)	0.025*	(1.92)	0.011	(1.17)	0.020	(1.62)
BIGN		0.020	(1.22)	0.038	(1.57)	0.021	(1.23)	0.040*	(1.70)
Constant		-0.064	(-1.13)	-0.220***	(-2.88)	-0.061	(-1.06)	-0.231***	(-3.16)
Year		Yes		Yes		Yes		Yes	
Industry		Yes		Yes		Yes		Yes	
Observations		444		444		444		444	
Adjusted R-squared		0.310		0.322		0.323		0.451	

*,**, and *** denote significance at the 10 percent, 5 percent, and 1 percent level, respectively, based on two-tailed tests. Detailed definitions of the variables are summarized in Table 1. The t-statistic in parentheses is adjusted using White's robust standard error for heteroscedasticity.

It may be that the more negative returns in cases without a third-party committee can be attributed to the smaller MAG than cases with a third-party committee. However, this confounding by MAG could also apply to hypotheses H1 and H2, where MAG is significantly greater for positive FFR and $MANAGE$. Therefore, I pursued multivariate analysis as it controls the correlation with other variables including MAG.

In Table 5, I show the results of the estimation of model (3) where each of the dependent variable is $TAR(0)$ or $TAR(0,+1)$.[20] Also, Table 5 shows the estimation result of model (3)' where the interaction terms ($MAG*FFR$, $MAG*MANAGE$, $MAG*INS$) are added to model (3).[21] Columns (3) in Table 5 show that FFR and $MANAGE$ have significant negative coefficients with TAR. Even after controlling the association TAR and MAG, the characteristics of accounting misconduct, such as fraudulent financial reporting and the involvement of management, are correlated to investor reactions. The results indicate that the characteristics of accounting misconduct are informative for investors. These results support H1 and H2. And then, in contrast to univariate analysis, INS has a

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[20] The VIF (variance inflation factor) of each independent variable is calculated for model (3) and model (3)'. Maximum VIF value is 2.3 for $FREQ$, which is below a multicollinearity problem level (10).

[21] Furthermore, I added the other possible interaction terms, $FFR * MANAGE$, to model (3). This additional result is similar to Table 5, but the single terms FFR and $MANAGE$ are correlated insignificantly, and $FFR*MANAGE$ is significantly negative. This additional result indicates that accounting misconduct cases involving both fraudulent financial reports and management fraud cause a substantial decline in stock prices.

significantly negative coefficient with TAR. After controlling other variables, INS is negatively related to abnormal returns. This indicates that low disclosure transparency leads to negative investor reaction. This result is consistent with H3.

As columns (3)' of Table 5 show, I added the interaction terms of MAG and other testing variables to test H4. The interaction terms with each FFR and INS are significantly negative. However, it should be noted that the single terms for FFR and INS are insignificant in columns (3)'. Although the single terms are insignificant, the interaction terms are significant. These results mean that, FFR and INS significantly increase negative returns from the impact on earnings in cases where the impact on earnings is high. In contrast, FFR and INS are not related significantly in investor reactions in cases where the impact on earnings is low. This implies that investor perceptions depend on the purpose and transparency.

The result of H1 have shown that fraudulent financial reporting is associated with investors' negative reactions. In this regard, the results of H4 (FFR, $MAG * FFR$) suggest that the effect of fraudulent financial reporting to investors is mediated through MAG. This results explains the impact of fraudulent financial reporting in more detail. Similarly, the result of H3 have shown that no third-party committee is associated with negative abnormal returns. The results of H4 (INS, $MAG * INS$) means more specific association that no third-party committee is the deteriorating factor of a stock price decline through MAG. In other words, even if the impact on earnings was disclosed as the result of the fraud investigation, in the case investigated without a third-party committee, investors would not evaluate the impact at face value for the reason that the investigation is doubtful. This result indicates that investors response more negatively considering the potential risk of accounting misconduct in the cases with low transparency. These results of columns (3)' support consistently H1, H3 and H4 in the sense that the characteristics and the transparency are related with negative returns.

The result of H1 has shown that fraudulent financial reporting is associated with negative investor reactions. In this regard, the results of H4 (FFR, $MAG*FFR$) suggest that the effect of fraudulent financial reporting on investors is mediated through MAG. This result explains the impact of fraudulent financial reporting in more detail. Similarly, the result of H3 has shown that no third-party committee is associated with negative abnormal returns. The results of H4 (INS, $MAG * INS$) mean specific association that no third-party committee is the deteriorating factor of a stock price decline through MAG. In other words, even if the impact on earnings was disclosed as the result of investigation, in cases investigated without a third-party committee, investors would not evaluate the impact at face value because the investigation is doubtful. This result indicates that investor response considers more negatively the potential risk of accounting misconduct in cases with low transparency. These results of model (3)' consistently support H1, H3 and H4 in the sense that characteristics and transparency are related with negative returns.

In columns (3)' of Table 5, $MAG*MANAGE$ is not significant and $MANAGE$ has a significant coefficient. This can be explained by that management involvement is a direct factor of negative returns regardless of the impact on earnings.

5 Conclusion

This paper examines the determinants of market reaction to accounting misconduct disclosure. I measured abnormal returns to the first announcement and subsequent series of disclosures related to accounting misconduct cases at Japanese listed companies. I analyzed the determinants focusing on the characteristics of accounting misconduct and

transparency of investigation.

Prior literature shows that negative returns to accounting misconduct disclosure are mainly determined by the impact of accounting misconduct on earnings and investigation by the regulatory authorities. The findings of this paper offer other significant determinants of negative investor reaction to accounting misconduct disclosure: the purpose (fraudulent financial reporting), the position of the perpetrator (management fraud), and transparency (no investigation by a third-party committee). The characteristics of accounting misconduct and investigation transparency are also informative for investors through the effects of earnings forecasts and a firm's credibility. These determinants are considered in the investor decision-making process.

Moreover, I found that fraudulent financial reporting and no third-party committee are associated with negative returns depending on the impact on earnings. Fraudulent financial reporting cases with a greater impact on earnings especially have a greater impact on future profitability. Also, if a third-party committee is not established, investors will doubt the sufficiency of information relating to the impact on earnings as investigated by the firm. Thus, the characteristics of accounting misconduct and investigation transparency affect the stock price decline from the impact on earnings.

This paper offers some contributions to current empirical research and disclosure practices. First, I found new determinants that explained investor reaction to the disclosure of accounting misconduct. Second, the result of the transparency of disclosure proxied by a third-party committee provides additional perspective of the relationship between stock prices and a firm's credibility (or corporate reputation) in capital market research. Third, this paper provides decision-making material for investors in a firm revealed to have engaged in fraud. Although the stock market may panic after the revelation of accounting misconduct, this paper supports investors' prediction based on the information of accounting misconduct as empirical results. Also, this paper suggests benefits from establishing a third-party committee to investigate fraud in the disclosure practice.

This paper is subject to some limitations. First, although I collected accounting misconduct disclosure cases from timely disclosures as primary source information, I did not collect disclosure events from external press information as secondary information due to data availability. Second, this paper does not take into account other announcements from a firm committing fraud on the accounting misconduct disclosure event day. Other information is not related with accounting misconduct, such as the announcement of financial statements or revision of earnings forecasts.

For future research, the decline in a firm's credibility due to the revelation of accounting misconduct should not be limited to the short term. The revelation of accounting misconduct may have a long-term reputational loss leading to significant effects on business performance and corporate governance. Further studies are required for the long-term economic consequences of accounting misconduct disclosure.

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