Review of Quantitative Finance and Accounting (2022) 58:847–879
https://doi.org/10.1007/s11156-021-01011-1

ORIGINAL RESEARCH

How do auditors respond to accounting restatements? Evidence on audit staff allocation

Wuchun Chi[1] · **Chien-min Kevin Pan**[1]

Accepted: 2 August 2021 / Published online: 15 August 2021

Abstract
We examine how auditors respond to accounting restatements using audit input data from Japan. We find that audit fees, the number of Certified Public Accountant (CPA) licensed staff, and the number of signing partners are higher for firms in the restatement year than in the year prior to the restatement. Our results also reveal that the increase in audit fees and the higher numbers of CPA-licensed staff and signing partners persist after the restatement year. The results are robust after excluding dismissal of auditors subsequent to the occurrence of restatements. We further find that client firms are not able to gain a fee discount but will be audited by greater numbers of partners if they switch auditors after the restatement. We also obtain consistent results using propensity score matching. Overall, our findings suggest that audit firms increase audit inputs (i.e., higher fees and more experienced staff with a CPA license) in response to their own mistakes (i.e., accounting restatements). Taken together, the results suggest that the increased audit fees may reflect the increase in the risks, but not the risks alone.

Keywords Restatement · Misstatement · Audit inputs · Staff allocation

JEL Classification M41 · M42 · M48

1 Introduction

We examine how auditors allocate audit inputs in response to accounting restatements using data obtained from firms listed on the Tokyo Stock Exchange (TSE). Currently, firms listed on the TSE are required to disclose in their audited annual filings the names of the signing partners and the composition of the engaging audit team (e.g., the number of Certified Public Accountant (CPA) licensed and non-licensed staff) along with the amount of

✉ Chien-min Kevin Pan
kevinp@nccu.edu.tw

Wuchun Chi
wchi@nccu.edu.tw

[1] Department of Accounting, National Chengchi University, ZhiNan Rd, NO. 64 Sec. 2 Wenshan District, Taipei City 11605, Taiwan

fees paid for audit and non-audit services.[1] This unique degree of disclosure enables us to measure directly the use of audit inputs by auditors for each audit engagement.[2]

Accounting restatements describe in detail any previous errors by auditors in being unable to detect past misreporting. Consequently, existing studies generally perceive accounting restatements as a leading and publicly observable indicator of low audit quality (Knechel et al. 2012; Christensen et al. 2016). Importantly, once an accounting restatement takes place, it brings about consequences for stakeholders. For example, client firms are likely to face negative market reactions, the misreporting may involve the turnover of management, and auditor firms may face severe pressures to manage client perceptions and avoid client defections or their dismissal. Therefore, understanding accounting restatements is important, as the more we understand accounting restatements, the more we know how to respond to them. For this reason, the US Government Accountability Office (GAO) released a report on restatements in 2002, and subsequently updated this in 2006 and 2007.[3]

For the most part, prior studies focus on the causes or consequences of accounting restatements. Some find that audit fees are higher for firms that disclose material internal control weaknesses, that also often lead to accounting restatements (Raghunandan and Rama 2006; Hogan and Wilkins 2008). These typically argue that restatement is a strong evidence of financial reporting failure that often results in management turnover (Srinivasan 2005; Desai et al. 2006; Wilson 2008), dismissal of current auditors (Abbott et al. 2013; Mande and Son 2013; Hennes et al. 2014), an increase in the estimated cost of capital in both debt and equity (Hribar and Jenkins 2004; Graham et al. 2008; Chava et al. 2010, 2018), and even an increase of audit fees themselves (Feldmann et al. 2009).

Others find that potential investors are less willing to invest in a firm audited by signing partners with a past history of restatements (Lambert et al. 2018) and that firms are more likely to dismiss signing partners unable to detect previous misreporting (Hennes et al. 2014). Finally, all accounting restatements lead to stock market reactions of varying impact (Palmrose et al. 2004; Hennes et al. 2014; Lambert et al. 2018).

There are also some prior studies that focus on different dimensions of restatements. After the names of the signing partners became available in the U.S., Laurion et al. (2017) find that the frequency of restatement discoveries and announcements increases subsequent to the partner rotation. Singer and Zhang (2018) argue that a new auditor can have a fresh view on an audit engagement and find that that audit firms with short tenure are more likely to detect misstatement in a less timely manner.

However, while existing analyses obtain extensive evidence on accounting restatements, owing to data limitations few actually examine how auditors respond. For example, while Lobo and Zhao (2013) and Hribar et al. (2014) find that there is an association between audit efforts and the likelihood of accounting restatement, they only infer these efforts from audit fees. Similarly, Blankley et al. (2014) attempt to establish a relation between restatement and audit report lags, but audit report lags, defined as the number of days between the fiscal year-end and the audit report date, are more likely an *ex post* measure than an *ex ante*

[1] The CPA Act of Japan requires at least one signing partner for assurance services (CPA Act 34–10-4 and CPA Act 34–10-5). However, in practice, audit firms usually assign two or more signing partners to each audit engagement.

[2] We use the terms "auditor" and "audit firm" interchangeably throughout this paper.

[3] GAO uses the term "financial restatement" in its reports. We use "accounting restatement" or "restatement" interchangeably throughout this paper.

measure and may be influenced by many unrelated factors (e.g., time pressure). Using various *ex ante* (e.g., office size and busy season) and *ex post* (e.g., audit fees and audit report lag) measures, Czerney et al. (2020) find that type II subsequent events are associated with greater likelihood of misstated financial statements, and that the misstatement risk can be alleviated only if the financial statements are audited by less resource-constrained auditors. Dikolli et al. (2020) find that when auditors perform more work to respond to a CEO's low behavioral integrity, they can mitigate the risk of restatement; however, the authors admit that their evidence is indirect.

In response, some studies attempt to address these data limitations by using non-US data. For example, Lennox et al. (2016) use Chinese data on audit adjustments, as recorded by the Chinese Institute of Certified Public Accountants, to proxy for audit inputs because these more accurately represent the actual amount of audit activity.

In this paper, and unlike any extant studies, we examine how auditors respond to accounting restatements (i.e., an external event as well as a distinct risk indicator) in terms of the decision to allocate audit inputs (i.e., audit fees, numbers of audit staff with or without a CPA license, and signing partners). We hypothesize and find that auditors increase audit inputs (i.e., audit fees and the number of licensed staff and signing partners) allocated to the engaging audit team for the restatement year. The evidence also indicates that these increased audit inputs persist for at least a year following restatement.

Prior research suggests that restatement could lead to auditor turnover (Abbott et al. 2013; Mande and Son 2013; Hennes et al. 2014). To confirm the robustness of our evidence, we also examine the effect of auditor switching/non-switching and conclude that our main findings remain unchanged. We examine the consequences for client firms that switch audit firms after restating their financial statements. We find that those client firms are not able to obtain a fee discount for switching audit firms. Instead, they are audited by more partners for switching auditors in the context of restating financial statements. We examine the consequences for client firms that stay with the same audit firms because Lai and Gul (2021) find that auditors receive lower audit fees for continuing engagements after an accounting scandal involving the audit firm. We also find that audit fees are higher for the non-switching firms in the case of accounting restatement, consistent with the main results.

For additional analyses, we also use misstatements as a placebo test. The results here suggest that auditors are not generally aware of the occurrence of misstatement until the client firms restate their financial statements. We also perform several other placebo tests and the results support those in the main analysis. We further employ propensity score matching to match non-restatement firms and obtain results similar to the main findings.

In addition, we also examine the firm characteristics using cross-sectional evidence to examine the role that the board plays in the restatement. We find a negative association between audit fee and the board size, but the audit fees still increase regardless of the board size. Taken together, these results suggest that the increased audit fees after restatement actually reflect the change in the risk premium, not the amount of audit inputs. Lastly, we identify no change in audit report lags (i.e., the number of days between the fiscal year end date and the audit report date) surrounding restatement.

Using data on audit inputs, we contribute to the literature in many ways. First, while the existing literature discusses the causes and consequences of accounting restatements, we provide direct evidence on the allocation of staff before and after restatement. We reveal that auditors attempt to remedy previous failures and prevent possible future mistakes by increasing audit inputs following restatement. Second, our results reveal the actual response of auditors to the restatement event in terms of audit input allocation, rather than

a mere association between audit efforts (as measured and inferred by audit fees) and the likelihood of future restatement (e.g., Lobo and Zhao 2013; Hribar et al. 2014), given that the restatement firms in our sample do not restate their financial statement again during our sample period. Third, we find that client firms will not be offered a fee discount if they choose to change audit firms after restatement. Instead, they will be audited by a greater number of partners. Fourth, we also test audit report lags, an existing proxy for audit inputs, and unlike existing findings, we find no relation between these and restatement. Finally, using audit input data (including quantity and quality of audit staff as well as audit fees), our results demonstrate that both audit fees and highly ranked audit staff increase after the restatement; this likely indicates that the increase in audit fees is related to risks but not the risk premium *alone*.

Our findings also confirm the importance of auditor experience and knowledge for audit quality and their acknowledgment by auditors. Hossain et al. (2017) demonstrate that the number of licensed auditors has a positive association with audit quality (but signing partners are left untested) when the client firms are in financial distress. For our part, we show that auditors acknowledge the importance of audit experience and knowledge by increasing the numbers of licensed staff and signing partners (but not staff without an official CPA license) in response to their own responsibilities (i.e., a restatement could result from a previous failed audit).This implies that experienced audit staff (i.e., licensed staff and signing partners) provide quality to the audit, and we clearly identify the role that signing partners play in delivering audit quality.

The remainder of the paper is organized as follows. Section 2 discusses the institutional background of the audit market in Japan and develops the working hypotheses. Section 3 provides the research design and Sect. 4 discusses the main results and findings, and elaborates on their implications. Section 5 details additional analyses of the robustness and placebo tests. The paper concludes in Sect. 6.

2 Institutional background and hypothesis development

2.1 Audit fee pricing and disclosures in Japan

Audit fees in Japan were not disclosed in annual securities filings by firms (*yukashoken hokokusho*) until 2004. Up to then, the Japanese Institute of Certified Public Accountants (JICPA) priced audit fees using a so-called Standard Audit Fee Schedule (*hyojun kansa hyoshu*). Under this schedule, audit firms charged fees to their client firms based on a combination of a fixed rate multiplied by the number of audit staff and the number of days auditors spent auditing the firm.[4] In October 2003, the JICPA released new audit fee pricing guidelines and amended audit fee pricing to the so-called "time charge" method. The new time charge audit fee pricing guidelines require auditors to assess the audit risks and price these risks into audit fees.

[4] According to the Standard Audit Fee Schedule set by the JICPA, audit fees consist of basic fees and working fees. The basic fees are JPY9.95 million for firms listed in the First Section of the TSE, JPY6.85 million for firms listed in the Second Section and JPY5.75 million for all other firms. Working fees are JPY2.48 million per leading auditor. If auditors spend more than 25 days auditing a firm, the additional working fees are JPY0.089 million per day multiplied by the number of leading and supporting auditors.

Under the new time charge guidelines in place since March 2004, the audit fees are determined as the sum of the required profits of the audit firms plus the direct and indirect audit costs. Audit firms calculate direct audit costs using the charge rate[5] of auditors multiplied by the time needed for the audit, while fixed costs represent most of the indirect audit costs, such as insurance fees. Therefore, the time needed for auditing plays the primary role in pricing audit fees. The JICPA fee guidelines clearly state that the estimation of the time needed for auditing should consider client size, complexity, and audit risk. Therefore, we expect that the pricing of audit fees involves a direct association with the time estimated for auditing.[6]

It was not until 2017 that the names of engagement partners appeared on the annual filings of listed firms in the US.[7] In contrast, the audit reports of Japanese firms have disclosed the names of engagement partners for several decades. For this reason, partners' reputations have long been at stake in Japan. Using the 2006 Kanebo accounting scandal, Skinner and Srinivasan (2012) find that auditor reputation plays an important role in maintaining audit quality in Japan. Moreover, administrative sanctions by the Japanese government regarding accounting fraud usually include revealing the names of individual signing auditors. It is then very clear that even the Japanese public will know the role that individual signing auditors play in any accounting scandal. As an example, the regulating authorities publicly disclosed the names of the seven signing partners sanctioned by the Japanese government for their role in a recent Toshiba accounting scandal.[8]

2.2 Regulation and disclosure of accounting restatements in Japan

In general, the regulations on accounting restatements in Japan are very similar to those in the US. Since the US Public Company Accounting Reform and Investor Protection Act of 2002 (known as the Sarbanes–Oxley Act, hereafter, SOX Act) became effective, Japan has modeled its own JSOX after the US SOX Act, and included it in the Financial Instruments and Exchange Act of Japan, effective April 2008.

The disclosure-related regulations required by the Financial Instruments and Exchange Act of Japan are as follows. First, all listed firms in Japan are required to file accounting restatements if any material errors are found in the annual report (Article No. 24–2, Clause 1), for which the Financial Instruments and Exchange Act of Japan contains provisions for civil liability (Article No. 24–4) and criminal responsibility (Article No. 197, Clause 1). In addition,

[5] Each auditor has their own charge rate according to their rank (e.g., partner, manager, senior and junior) in the audit firm.

[6] Since the establishment of the time charge method in 2004, several studies (e.g., Yazawa 2009; Fukukawa 2011; Yazawa 2012) in Japan, including those by the JICPA itself, have attempted to examine how audit fees are determined under the new pricing scheme. The JICPA has also conducted several studies that attempt to reveal how auditors estimate audit time under the time charge method. The study reports and a follow-up revision (*kansajikan no mistumori ni kansuru kenkyu hokoku*) were released in September 2006 and June 2008, respectively. For details, see https://jicpa.or.jp/specialized_field/post_518.html and https://jicpa.or.jp/specialized_field/18_12.html, respectively (in Japanese).

[7] US Securities and Exchange Commission (Release No. 34–77,787; File No. PCAOB-2016–01), "Public Company Accounting Oversight Board; Order Granting Approval of Proposed Rules to Require Disclosure of Certain Audit Participants on a New PCAOB Form and Related Amendments to Auditing Standards," May 9, 2016. (https://www.sec.gov/rules/pcaob/2016/34-77787.pdf).

[8] Press release for sanctions on the signing partners in the recent Toshiba scandal available at the following URL: https://www.fsa.go.jp/news/27/sonota/20151222-4.html.

there is a requirement for auditing by external auditors of the financial statements prepared by listed firms (Article No. 193–2, Clause 1). If any damages arise from false statements resulting from auditor negligence, the external auditors are liable for compensation (Article No. 22, Article 24–4).

2.3 Hypothesis development

The role of external auditors is primarily to assure the appropriateness of the firm's application of accounting standards and to safeguard the quality of financial statements. Any inability of auditors to detect misreporting will then show as auditor incompetence in providing a quality audit, and so accounting restatements will have consequences for auditors (Knechel et al. 2012; Christensen et al. 2016). For example, Lambert et al. (2018) find that prospective investors are less likely to buy the stock of a firm audited by a signing partner with a past record of restatement. Hennes et al. (2014) also demonstrate that, based on the severity of its restatement, a firm is more likely to dismiss its auditors and that the stock market reacts positively to the replacement of auditors responsible for more severe restatements. Hence, after accounting restatement occurs, auditors must react immediately to the pressures to manage client perceptions and avoid client defections or dismissals.

A number of existing studies also discuss the relation between audit inputs and restatements (Whisenant et al. 2003; Kinney et al. 2004; Blankley et al. 2014; Lobo and Zhao 2013; Hribar et al. 2014). For instance, Whisenant et al. (2003) suggest that audit fees represent the level of service and effort provided by the auditor and, therefore, a higher level of effort, as reflected by a higher audit fee, may reduce the likelihood of restatement. Just as Kinney et al. (2004) identify a positive association between audit fees and restatement, and suggest that this may "…reflect audit firm identification and pricing of *ex ante* misstatement risk or added audit effort for risky contexts," we expect auditors will increase audit inputs after the restatement. However, we do not expect an increase or decrease in audit fees because, for the most part, the pricing of audit fees is based on audit costs (i.e., the quantity and quality of audit staff) and profits (including risk premiums).

For the observable consequences of accounting restatements, Feldmann et al. (2009) identify a 17% increase in audit fees on average following a restatement, presumably due to the increased costs of audit risks associated with the client firms. While prior analyses have provided evidence to suggest that audit fees could be higher for firms that issue restatements, data limitations have prevented them from identifying the reasons for the increased audit fees in the first instance. This is important because unless the data for audit effort and audit fees are jointly available, identifying the relationship between risk and audit inputs is difficult (Houston et al. 1999; Johnstone and Bedard 2001). Consequently, we examine the relationship between audit inputs and restatements by exploiting the allocation of audit inputs using direct audit input data on the number of audit staff. We therefore propose the following hypothesis for this paper:

Hypothesis 1 Compared with the year prior to restatement, audit firms allocate more audit inputs in the restatement year.

3 Research method

3.1 Model and variables

Using past studies (e.g., Gul 2006; Srinidhi and Gul 2007; Hogan and Wilkins 2008; Dechow et al. 2011; Skinner and Srinivasan 2012; Lobo and Zhao 2013; Lobo et al. 2018; Asthana et al. 2019; Huang et al. 2020; Aobdia et al. 2021), we develop the regression model as follows to examine the relation between audit inputs and restatements (for simplicity, we omit the firm and year subscripts).

$$\begin{aligned} &Audit\ Inputs\ (Audit\ Fees, Staff, Licensed\ Staff, Signing\ Partner) \\ &\quad = \beta_0 + \beta_1 REST + \beta_2 PostREST + \beta_3 LnAssets + \beta_4 Leverage \\ &\qquad + \beta_5 ROA + \beta_6 OverseaSales + \beta_7 LnSeg + \beta_8 LnSub \\ &\qquad + \beta_9 DailyReturn + \beta_{10} LnFirmAge + \beta_{11} BigN + \beta_{12} JSOX \\ &\qquad + Fixed - Industry + \varepsilon \end{aligned} \tag{1}$$

In this regression, we specify the restatement year as the reference group, and we compare: (a) the differences between the year prior to the restatement year and the restatement year, and (b) the differences between the restatement year and the year following the restatement year. Specifically, we regress the observations for the year prior to the restatement, the observations for the restatement year, and the year after the restatement year, where the benchmark year for the estimation regression is the restatement year. The variable *REST* is the year of restatement and constitutes a dummy variable set equal to 1 for the fiscal year when the firm files a restatement and 0 otherwise. Similarly, *PostREST* is the year after the restatement year and is a dummy variable set equal to 1 for the fiscal year after the restatement year and 0 otherwise.

This regression enables us to directly reveal the association between the dependent variables and the variables of interest (i.e., *REST* and *PostREST*). The dependent variables are *Audit Inputs*. We use four different metrics, audit fees (*LnAFee*), number of staff (*LnStaff*), licensed staff (*LnLiStaff*) and signing partners (*LnPartner*) as measures of audit inputs. We measure the audit fees in millions of JPY while the remaining three measures are the numbers of persons. All dependent variables are in natural logarithms. We assume a logarithmic transformation for the following reasons: first, a log-linear relation yields a more normally distributed error term, and second, as the size of the client firms varies, it is easier to interpret the economic significance of the coefficients because we obtain the percentage change on the log-transformed dependent variable.

The control variables are consistent with those in prior studies (e.g., Gul 2006; Srinidhi and Gul 2007; Hogan and Wilkins 2008; Dechow et al. 2011; Lobo and Zhao 2013; Lobo et al. 2018; Asthana et al. 2019; Huang et al. 2020; Aobdia et al. 2021) and include the following: *LnAssets*, *Leverage*, *ROA*, *OverseasSales*, *LnSub*, *LnSeg*, *DailyRET*, *LnFirmAge* and *BigN*. These control variables control for size, complexity, risk, and related factors in the regression. *LNAST*, the natural logarithm of total assets, controls for size. To control for complexity, we use *LnSub* (the number of consolidated subsidiary firms), *LnSeg* (the number of business segments) and *OverseasSales* (overseas sales over total sales). Overall, we expect firms that have more consolidated subsidiary firms, extra segments, and increased overseas sales to increase the workload for auditors.

To control for audit risk, we use *Leverage* (total liabilities over total assets) and *ROA* (net income over total assets). *DailyRET* is the firm-level standard deviation of daily stock

returns, *LnFirmAge* is the financial statement reporting date of the corresponding fiscal year minus the firm's date of establishment after natural logarithm, and *BigN* is an indicator variable set equal to 1 if a Big-N audit firm audits the firm, and 0 otherwise. Finally, we include *JSOX*, an indicator variable set equal to 1 if the auditing of the annual filings of the firms is in accordance with *JSOX* requirements, and 0 otherwise. This helps control for any potential variation pre- and post-*JSOX*.[9] Finally, we winsorize all continuous variables at the 1st and 99th percentiles to minimize the effect of extreme values, include industry fixed effects to account for systematic variations in the dependent variable across industries, and cluster the standard errors at the firm level.

3.2 Data sources and sample selection

We obtain our data from publicly available sources. We retrieve the restatement data from the restatement filings documented in the Electronic Disclosure for Investors' NETwork (EDINET), the Japanese equivalent of the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system in the US.[10] We retrieve 13,764 restatement filings from the EDINET for the period from 2005 to 2015 corresponding to the availability of the audit input data. Among the 13,764 filings, we manually identify the restatements of net income and obtain 757 income restatement filings. From these 757 filings, we remove 157 duplicate filings[11] and obtain 640 misstatements and 205 restatement events. The mean of the misstated amount of net income is about 25% downward (i.e., the misstated amounts on net income were overstated).

Given compulsory disclosure of the names of the signing partners and the numbers of people on the audit team in the annual filings, we manually collected the data for audit firms, audit fees, and the composition of engaging audit team by searching for audit team information in the PDF files of the annual filings of listed firms in Japan. The annual filings are also from the EDINET. We commence our sample period in 2005, the year when audit staff information became publicly available.[12]

Listed firms in Japan are required to disclose in their annual filings the names of the signing partners and the composition of the engagement audit team. However, for convenience and given that there is no official format to follow, most firms simply disclose the number of staff with CPA licenses and the other staff in the engagement team. Some firms will further disclose the number of CPA candidates (*kaikeishiho*, regarded as junior CPAs in Hossain et al. 2017),[13] and the numbers of staff that have passed the CPA exam (but not yet accumulated sufficient experience to receive a CPA license) in the audit team.

[9] All annual filings dated March 31, 2009 and later are prepared in accordance with JSOX.

[10] Operated by the Financial Services Agency of the Government of Japan.

[11] Some files contain duplicate information. For example, if a firm restates its net income in 2015 for an accounting mistake in 2012, this affects the net income in 2012 and 2013. Firms are required to submit restatement filings for each fiscal year from 2012 to 2015 to the regulatory authorities (i.e., four files for the two years' of restatements will be retrieved from the EDINET).

[12] Audit staff information became available in the annual reports beginning on March 31, 2005.

[13] Before January 1, 2006, those passing the CPA exam in Japan gained the status of CPA candidate (*kaikeishiho*). After three years of practical training, CPA candidates were eligible for the final exam, and after passing, were granted a CPA license. However, from January 1, 2006, there was no granting of CPA candidate status. Instead, those passing the CPA exam are "people who have passed the CPA exam," and after two years of practical training, are granted a CPA license. For more details about the CPA exam system in Japan, see Ch. 4 of the 2004 annual reports of the Certified Public Accountants and Auditing Oversight Board, Japan (http://www.fsa.go.jp/cpaaob/shinsakai/reports/16/honpen/).

Table 1 Sample selection and distribution

Panel A. Sample selection	
Panel A	
No. of listed firms in TSE	27,971
Less 5,025 observations for missing fee or staff data	22,946
Less 5,032 observations for any missing control variables data	17,914
97 restatement / 17,817 non-restatement	
Panel B	
No. of restatements	97
Less 10 observations for missing data in *PreREST* or *PostREST*	87
Less 27 observation for overlapping restatement periods	60
Panel B. Sample distribution by year	
Year	
2005	1
2006	8
2007	16
2008	19
2009	18
2010	20
2011	20
2012	24
2013	24
2014	20
2015	10
Total	180

However, some firms may include these CPA candidates and CPA exam passers as other non-licensed staff. In this analysis, we categorize the composition of the audit team into licensed and non-licensed staff because the number of licensed staff is the most consistent data available and the disclosure will never list a person without a CPA license as licensed staff. As a result, our data contains the numbers of signing partners, licensed staff, and other staff (those without an official CPA license).

Finally, we obtain financial data from the Nikkei NEEDS–Financial Quest database.[14] From 2005 to 2015, we obtain 27,971 observations for nonfinancial firms listed in the First and Second sections of the TSE. We begin our sample selection process with these 27,971 observations. Table 1 summarizes the process. We first exclude 5,025 observations for those with missing audit fee or staff data.[15] We then delete 5,032 observations with missing

[14] Skinner (2008), Kato et al. (2009) and Kato et al. (2017) employ the same data source.

[15] The Cabinet Office of the Government of Japan only requires firms to disclose audit staff-related information in an easily comprehensible way (Cabinet Office Ordinance on the Disclosure of Corporate Affair, Cabinet Office Ordinance No. 34 of March 31, 2005). Without a uniform disclosure format, the audit staff

values for any of the control variables. This yields a sample of 17,914 observations (97 restatement observations and 17,817 other observations).

For the 97 restatement observations, we require that data are available for three consecutive years, i.e., the year prior to the restatement year (*PreREST*), the restatement year (*REST*) and the year after the restatement year (*PostREST*). We impose this requirement, which excludes only 10 observations, to ensure data consistency so that we can obtain clean and comparable results. For the remaining 87 observations, we check for any overlap among variables (i.e., *PreREST* being *PostREST* for other restatements because of multiple restatement filings). Where there is an overlap, we retain the first restatement observation and delete the subsequent observations to eliminate the potential effects from overlapping years. Using this process, we delete 27 overlapping observations, leaving a final sample of 60 restatement observations.

Because we compare the differences between the year prior to the restatement year (*PreREST* = 1), the restatement year (*REST* = 1, i.e., *PreREST* = 0 and *PostREST* = 0), and the year after the restatement year (*PostREST* = 1), there are 180 total observations, comprising 60 observations each for the year prior to the restatement, the restatement year, and the year after restatement. Table 2 Panel A reports the descriptive statistics and Panel B reports the correlation matrix with Pearson correlations below the diagonal and Spearman correlations above the diagonal.

4 Empirical results

4.1 Main results

Table 3 presents the estimation results for regression model (1). Because our main concern is to identify how auditors respond to restatements, we use the restatement year as the benchmark to compare any differences between the pre-restatement (*PreREST*), restatement (*REST*), and post-restatement (*PostREST*) years. The variable *REST* captures the differences between the pre-restatement and restatement years. As shown in Table 3 Panel A, *REST* is positively and significantly associated with *LnAFee, LnLiStaff*, and *LnPartner*. When the dependent variable is *LnAFee*, the estimated coefficient for *PreRS* is 0.1672 ($t = 3.50$, significant at the 1% level), indicating that audit fees in the year prior to restatement are 18.20%[16] higher than in the pre-restatement year.

When the dependent variable is set to *LnLiStaff,* the coefficient for *PreRS* is 0.1444 ($t = 2.37$, significant at the 5% level), revealing that the number of licensed staff in the engaging audit team is 15.53% higher in the restatement year.[17] Furthermore, we find that when setting *LnPartner* as the dependent variable, the coefficient for *REST* is 0.0505 ($t = 1.76$, significant at the 10% level), suggesting that audit firms may assign more signing

Footnote 15 (continued)

disclosures in the annual reports vary from the exact numbers of auditing staff to "the firm is audited by multiple staff.".

[16] In the regression, the amounts of audit fees (in millions of JPY) are in natural logarithms. Therefore, the coefficient for *PreREST* 0.1672 indicates that the audit fees in the year of restatement represent 118.20% of the audit fees in the year prior to the year of restatement, i.e., 18.20% (*exp*[0.1672]).

[17] The coefficient for *REST* is 0.1444, thus *exp*(0.1444) = 1.1553 or 115.53%, indicating an increase of 15.53% from the year prior to the restatement year.

Table 2 Summary statistics

Panel A. Descriptive statistics (N = 180 (60 * 3))					
Variables	Mean	S.D	25%	50%	75%
LnAFee	3.8635	0.8913	3.2189	3.6889	4.2485
LnStaff	2.1340	0.7576	1.6094	2.1972	2.6391
LnLiStaff	1.9904	0.6340	1.6094	1.9459	2.3979
LnPartner	0.8206	0.2561	0.6931	0.6931	1.0986
LnAsset	10.9819	1.7352	9.8856	10.8113	11.8478
Leverage	0.6037	0.1946	0.4511	0.5973	0.7575
ROA	−0.0104	0.1556	−0.0050	0.0144	0.0409
OverseaSales	0.1030	0.1902	0.0000	0.0000	0.1375
LnSeg	1.6292	0.8188	1.7918	1.9459	2.0794
LnSub	2.5406	1.2179	1.6094	2.3979	2.9957
DailyReturn	2.8343	1.4758	1.8033	2.3966	3.4473
LnFirmAge	3.6721	1.4758	3.4702	3.9298	4.2149
BigN	0.7000	0.4595	0.0000	1.0000	1.0000
JSOX	0.7444	0.4374	0.0000	1.0000	1.0000
Raw Variables					
AuditFee	80.8891	138.0696	25	40	70
Staff	11.0444	8.6022	5	9	14
LiStaff	8.0833	7.0970	4	6	10
SigningPartner	2.3444	0.5821	2	2	3
FirmAge	50.3815	28.6102	32.1424	50.898	67.6893

Table 2 (continued)

Panel B. Correlation table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.0000	0.5635*	0.5595*	0.3332*	0.7765*	0.1155	0.0765	0.3320*	0.2017*	0.6890*	0.0335	0.3230*	0.2849*	0.3900*
2	0.6076*	1.0000	0.6063*	0.3022*	0.5504*	0.0999	0.0386	0.3521*	0.1479	0.4674*	−0.0686	0.3479*	0.5226*	0.0998
3	0.6295*	0.5848*	1.0000	0.4444*	0.5363*	0.0826	0.1479	0.0499	0.1906	0.3430*	−0.0554	0.3049*	0.3473*	0.2363*
4	0.3631*	0.2561*	0.4360*	1.0000	0.3442*	0.2042*	−0.0865	0.1838	0.1569	0.1935*	0.0420	0.2294*	0.2118*	−0.0409
5	0.8192*	0.5836*	0.5862*	0.3303*	1.0000	0.0888	0.1635	0.3205*	0.1993*	0.6806*	−0.1273	0.4727*	0.3437*	0.0729
6	0.1980*	0.0628	0.0807	0.1802	0.1365	1.0000	−0.4026*	0.1287	0.2631*	0.1824	0.2816*	0.1711	−0.0492	−0.0400
7	0.1213	0.1688	0.1907	−0.0752	0.3084*	−0.2634*	1.0000	−0.1058	−0.0839	0.0455	−0.3865*	−0.0805	0.0915	−0.0025
8	0.4290*	0.3549*	0.1408	0.2104*	0.4008*	0.0922	−0.0208	1.0000	0.0890	0.5028*	0.1585	0.2452*	0.1095	−0.0052
9	0.1758	0.0502	0.1728	0.1638	0.1832	0.1869	−0.0842	0.0687	1.0000	0.3877*	0.1433	0.0742	0.0693	0.0721
10	0.7931*	0.5178*	0.4595*	0.2487*	0.7807*	0.2343*	0.1215	0.6067*	0.2656*	1.0000	0.0125	0.3387*	0.1881	0.1241
11	0.0393	−0.0764	−0.0463	−0.0128	−0.1587	0.2684*	−0.3906*	0.1301	0.1673	0.0225	1.0000	0.0265	−0.1591	0.1009
12	0.1751	0.3658*	0.2751*	0.1543	0.3954*	0.0418	0.2782*	0.0630	−0.0692	0.1827	−0.1922*	1.0000	0.3017*	−0.0392
13	0.3076*	0.5364*	0.3604*	0.2273*	0.3657*	−0.0712	0.2094*	0.1582	0.0582	0.2370*	−0.1963*	0.3549*	1.0000	−0.0778
14	0.3481*	0.0885	0.2401*	−0.0657	0.0486	−0.0557	−0.0862	0.0181	0.1428	0.1303	0.1879	−0.1551	−0.0778	1.0000

Audit fee, non-audit fee, and assets are in million Japanese Yen before natural logarithm. Audit manpower variables (signing partners, licensed staff, and non-licensed staff) are number of persons before natural logarithm. See Appendix 1 for variable definitions

This panel reports Pearson (below diagonal) and Spearman (above diagonal) correlation coefficients. * indicates significance at the 1% level. The numbers and the corresponding variables are as follows: 1. *LnAFee*, 2. *LnStaff*, 3. *LnLiStaff*, 4. *LnPartner*, 5. *LnAsset*, 6. *Leverage* 7. *ROA*, 8. *OverseaSales*, 9. *LnSeg*, 10 *LnSub*, 11. *DailyReturn*, 12. *LnFirmAge*, 13. *BigN*, 14. *JSOX*. Variable definitions are detailed in Appendix 1

Table 3 Results for restatement

Panel A. Main results for restatement

	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
REST	0.1672***	0.0356	0.1444**	0.0505*
	(3.50)	(0.52)	(2.37)	(1.76)
PostREST	0.1004*	0.0166	0.0529	0.0968**
	(1.88)	(0.20)	(0.69)	(2.48)
LNAsset	0.3097***	0.1435**	0.1929***	0.0671**
	(5.81)	(2.50)	(3.29)	(2.34)
Leverage	0.3912	0.2926	0.3483	0.0091
	(1.52)	(0.88)	(1.12)	(0.05)
ROA	−0.0629	0.0855	0.2397	−0.4125**
	(−0.23)	(0.25)	(1.02)	(−2.58)
OverseaSales	0.0180	0.8462*	−0.2120	0.0091
	(0.06)	(1.83)	(−0.47)	(0.04)
LNSeg	−0.1081*	−0.1005	0.0217	0.0349
	(−1.77)	(−1.52)	(0.32)	(1.01)
LNSub	0.2335***	0.0309	−0.0027	−0.0531
	(3.24)	(0.37)	(−0.04)	(−1.21)
DailyReturn	0.0649***	0.0636**	0.0254	0.0172
	(2.69)	(2.30)	(0.80)	(1.06)
LnFirmAge	−0.0151	0.1233	0.0010	0.0691
	(−0.25)	(1.02)	(0.01)	(1.50)
BigN	0.2241**	0.6573***	0.2606**	0.0762
	(2.61)	(4.37)	(2.02)	(1.18)
JSOX	0.6169***	0.2623**	0.2912**	−0.0939
	(5.66)	(2.32)	(2.42)	(−1.57)
Intercept	−1.0700**	−1.1295*	−0.6379	−0.2652
	(−2.23)	(−1.67)	(−1.09)	(−0.86)
REST – PostREST	0.0669	0.0189	0.0916	−0.0464
	[1.79]	[0.07]	[2.47]	[2.49]
Clustered	Client Firm			
Fixed−Effect	Industry			
N	180 (60 * 3)			
R-squared	0.8813	0.7210	0.6189	0.4035

Panel B. Main Results for Restatement without Control Variables

	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
REST	0.1784***	0.0337	0.1496**	0.0453
	(3.32)	(0.50)	(2.56)	(1.59)
PostREST	0.1995***	0.0133	0.1046	0.0617*
	(2.91)	(0.17)	(1.47)	(1.78)
Intercept	3.4010***	1.4613***	1.7935***	0.6575***
	(94.76)	(33.31)	(45.39)	(34.54)
REST – PostREST	−0.0211	0.0204	0.0450	−0.0163
	[0.14]	[0.12]	[0.75]	[0.39]
R−squared	0.3638	0.4318	0.3643	0.2423

Table 3 (continued)

The dependent variables are *LnAFee*, *LnStaff*, *LnLiStaff*, and *LnPartner* as indicated in the table. Variable definitions are detailed in the appendix. The numbers reported in (parentheses) and [square brackets] are t-statistics and F-statistics, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

partners to the engaging audit teams in the restatement year. Lastly, when the dependent variable is *LnStaff*, the coefficient for *REST* is 0.0356 but is not statistically significant, indicating that audit firms do not increase the number of non-licensed staff for restatements.

In contrast, another variable of interest, *PostREST*, is significantly associated with *LnAFee* and *LnPartner*. Note that the coefficient for *PostREST* in the *LnPartner* regression is higher than *REST*, suggesting the reallocation of more signing partners in the post-restatement year than the pre-restatement year. To verify whether there is any difference between the restatement year and post-restatement year, we test the difference in coefficients between the restatement and post-restatement years (i.e., *REST* – *PostREST*). As shown in Table 3 Panel A, none of the coefficients for *REST* – *PostREST* are statistically significant, indicating that there is no difference between the restatement year and the post-restatement year in terms of audit fee and the number of non-licensed staff, licensed staff, and signing partners being assigned to the engagement.

The R-squared for *LnAFee, LnStaff, LnLiStaff*, and *LnPartner* are 0.8813, 0.7210, 0.6189 and 0.4035, respectively. We also estimate the regressions model without control variables and report the results in Table 3 Panel B. The R-squared for regression estimated without control variables are 0.3638, 0.4318, 0.3643 and 0.2423, respectively, suggesting that control variables significantly increase the explanatory power of regression while the results for the variables of interest are similar.

Taken together, these results suggest that increases in audit fees and the number of licensed staff and signing partners in the restatement year persist for at least one year in subsequent years.[18] Overall, the results in Table 3 suggest that audit firms charge higher audit fees and assign more experienced staff (licensed staff and signing partners) to the engaging audit team in the restatement year. This reveals that auditors resort to increasing inputs in response to a restatement event.

Of course, we could attribute at least part of the increased audit fee to increased audit inputs because more experienced audit staff (licensed staff and signing partners) are being allocated to the restatement assignment. Feldmann et al. (2009) find that audit fees increase following a restatement and argue that this is presumably due to the increased audit risk associated with the client firms. The results in Table 3 reveal that the increased audit fees for restatement are related to the risks but not the risk premium *alone*.

Last, the results in Table 3 also complement those by Hossain et al. (2017), who find that only licensed staff are associated with audit quality, but left the numbers of signing partners untested for the reason of it being a noisy measure. In sum, our results show that when facing external events such as restatements, auditors will resort to increasing the audit inputs by allocating more experienced staff—both licensed staff and signing partners—to restatement engagements, implying that both licensed staff and signing partners play a role in delivering quality audits.

[18] Because *LnStaff*, *LnLiStaff*, and *LnPartner* are discrete values of the number of audit staff, we re-estimate the model using Poisson regression. The results are similar to those using ordinary least squares. We find that audit firms are more likely to allocate more licensed staff and signing partners in the restatement year, and that the increased number of audit staff persists at least for a year in the post-restatement years.

Table 4 Results for analysis controlling for direct audit staff variables

	LnAFee Coefficient	t-statistic
REST	0.1313***	2.75
PostREST	0.0658	1.33
LnStaff	0.0915	1.34
LnLiStaff	0.1324*	1.84
LnPartner	0.2696	1.58
LnAsset	0.2530***	3.97
Leverage	0.3159	1.31
ROA	0.0088	0.04
OverseaSales	−0.0338	−0.11
LnSeg	−0.1112*	−1.89
LnSubs	0.2453***	3.18
DailyReturn	0.0511**	2.26
LnFirmAge	−0.0451	−0.75
BigN	0.1089	1.14
JSOX	0.5797***	4.82
Intercept	−0.8108*	−1.69
		F-statistic
REST—PostREST	0.0655	1.83
Clustered	Client Firm	
Fixed-Effect	Industry	
N	180 (60 * 3)	
R-squared	0.8933	

The dependent variable is *LnAFee*. Variable definitions are detailed in the appendix. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

4.2 Controlling for audit staff

To test the robustness of the main results, we estimate the association between audit fees and the variables of interest while controlling for the direct audit staff variables. Table 4 reports the results. These are consistent with the main results: auditors charge firms lower audit fees in the year prior to the restatement year (the coefficient for *REST* is 0.1313, indicating a 14.03% increase in audit fees, t=-2.75, significant at the 1% level). They also show that the number of licensed staff is also positively associated with audit fees, suggesting that increased audit inputs contribute to increased audit fees, especially in the form of increased efforts by licensed staff. The results also reveal that there is no difference in audit fees between the restatement and post-restatement years (the coefficient for *REST – PostREST* is not statistically significant).

4.3 Accounting for audit firm switching

Prior research (e.g., Abbott et al. 2013; Mande and Son 2013; Hennes et al. 2014) has documented that accounting restatement could result in dismissal of the current audit firm. We perform further analysis to account for the effects of audit firm switching. To check the robustness of the main results, we delete firms that switch audit firms during the restatement period. If a firm changes its audit firm during the year before restatement, the restatement year, or the year after the restatement, we remove this firm from the sample. We delete three observations using this process.

We perform three sets of auditor switch analyses. The first analysis is with the non-switching sample. Panel A in Table 5 reports the regression results when all auditor switch observations are deleted (11 firms and, thus, 33 observations are removed from the sample). We obtain results similar to those for the main analysis. The coefficients for *REST* for audit fees and licensed staff are 0.1336 ($t = 2.44$) and –0.1206 ($t = -2.15$), respectively (both significant at the 5% level). Compared with the results in Table 3, we find that the magnitude of the audit fee increase is significantly smaller for firms that did not switch (coefficient = 0.1672 in Table 3, coefficient = 0.1336 in Table 5). We obtain similar significant results for licensed staff (coefficient = 0.1444 in Table 3, coefficient = 0.1206 in Table 5).

The second switch analysis employs the same sample after removing firms switching between Big-N and non-Big-N audit firms. Panel B of Table 5 reports the regression results (five firms and, thus, 15 observations are removed from the sample). The results in Panel B of Table 5 are identical to those reported in Table 3. That is, the coefficients for *REST* are positively and significantly associated with *LnAFee* (coefficient = 0.1636, $t = 3.17$, significant at 1% level), *LnLiStaff* (coefficient = 0.1457, $t = 2.79$, significant at 1% level), and *LnPartner* (coefficient = 0.0583, $t = 1.84$, significant at 10% level) and insignificantly associated with *LnStaff* (coefficient = 0.0741, $t = 1.06$). Together, the above suggest that our results are robust in this refined sample.

The third analysis is based on the 33 observations that are removed from Panel A for switching auditors. The results are reported in Panel C. Some prior researchers (e.g., Mande and Son 2013; Hennes et al. 2014; Abbott et al. 2013) find that a restatement might lead to audit firm turnover and the client might seek to gain some benefits from switching audit firms (i.e., the so-called lowballing). In Panel C, we do not find that clients are able to gain a fee discount by switching audit firms in the context of restatement. The coefficient for *REST* is positively and significantly associated with *LnAFee* (coefficient = 0.4785, $t = 2.09$, significant at 10% level) and the coefficient increases for *PostREST* (coefficient = 0.5962, $t = 2.35$, significant at 5% level). Furthermore, we find that the coefficients for *REST* are positively and significantly associated with *LnPartner* (coefficient = 0.2670, $t = 1.91$, significant at 10% level) and the coefficients also increase for *PostREST* (coefficient = 0.6535, $t = 2.66$, significant at 5% level). The results suggest that audit firms will not offer a fee discount to an initial client in the context of restatement, and that audit firms even increase the assignment of the highest ranked audit personnel to such initial audit engagements with restated financial statements.

Table 5 Results for restatement after controlling for auditor switch

Panel A. Results for Deleting All Auditor Switching Observations				
	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
REST	0.1336**	0.0610	0.1206**	0.0410
	(2.44)	(0.82)	(2.15)	(1.20)
PostREST	0.0955	−0.0024	0.0593	0.0755*
	(1.66)	(−0.03)	(0.77)	(1.82)
LnAsset	0.3192***	0.1375**	0.2092***	0.0774***
	(5.57)	(2.40)	(4.28)	(2.94)
Leverage	0.2283	0.3807	−0.0052	−0.0471
	(0.69)	(0.80)	(−0.01)	(-0.29)
ROA	−0.3717	0.1626	−0.1271	−0.5513**
	(−1.55)	(0.30)	(−0.49)	(−2.45)
OverseaSales	−0.2529	1.1157*	−0.6349	−0.0831
	(−0.89)	(1.98)	(−1.21)	(−0.37)
LnSeg	−0.0433	−0.0975	0.1046*	0.0251
	(−0.77)	(−1.04)	(1.84)	(0.60)
LnSub	0.2648***	0.0259	0.0042	−0.0555
	(3.43)	(0.28)	(0.05)	(−1.24)
DailyReturn	0.0726***	0.0821**	0.0384	0.0298*
	(2.84)	(2.56)	(1.23)	(1.81)
LnFirmAge	0.0006	0.1541	−0.0078	0.0720
	(0.01)	(1.17)	(−0.09)	(1.56)
BigN	0.1493	0.7186***	0.2503**	0.0422
	(1.58)	(4.38)	(2.44)	(0.56)
JSOX	0.6182***	0.2488*	0.2101*	−0.1045*
	(5.53)	(1.80)	(1.85)	(−1.78)
Intercept	−1.0588**	−0.7795	−0.6440	0.0524
	(−2.09)	(−0.78)	(−1.14)	(0.12)
REST—PostREST	0.0380	0.0634	0.0613	−0.0345
	[0.63]	[0.70]	[1.28]	[1.33]
Clustered	Firm			
Fixed-Effect	Industry			
N	147 (49 * 3)			
R-squared	0.9031	0.7414	0.7173	0.4808
Panel B. Results for deleting auditor switching between Non-BigN and BigN				
	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
REST	0.1636***	0.0741	0.1457***	0.0583*
	(3.17)	(1.06)	(2.79)	(1.84)
PostREST	0.1058*	0.0004	0.0671	0.1125***
	(1.93)	(0.01)	(0.94)	(2.75)
LnAsset	0.3205***	0.1405**	0.2066***	0.0788***
	(5.80)	(2.47)	(4.16)	(2.88)
Leverage	0.2911	0.2028	0.0999	−0.0713
	(1.06)	(0.57)	(0.38)	(−0.43)

Table 5 (continued)

Panel B. Results for deleting auditor switching between Non-BigN and BigN				
	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
ROA	−0.1137	0.1148	0.1102	−0.4201**
	(−0.38)	(0.32)	(0.45)	(−2.29)
OverseaSales	−0.1666	0.8376	−0.3731	0.0041
	(−0.59)	(1.67)	(−0.88)	(0.02)
LnSeg	−0.0743	−0.1302	0.1146**	0.0228
	(−1.10)	(−1.66)	(2.14)	(0.56)
LnSub	0.2568***	0.0440	0.0281	−0.0561
	(3.50)	(0.51)	(0.38)	(−1.26)
DailyReturn	0.0678***	0.0737**	0.0340	0.0284*
	(2.74)	(2.54)	(1.08)	(1.87)
LnFirmAge	−0.0069	0.1311	−0.0009	0.0790*
	(−0.13)	(1.13)	(−0.01)	(1.78)
BigN	0.1908*	0.7175***	0.2512**	0.0575
	(1.98)	(4.51)	(2.36)	(0.77)
JSOX	0.5776***	0.2496**	0.1520	−0.1262**
	(5.41)	(2.14)	(1.38)	(−2.15)
Intercept	−1.2273**	−1.1468*	−0.7104	−0.4103
	(−2.49)	(−1.73)	(−1.32)	(−1.35)
REST—PostREST	0.0577	0.0736	0.0786	−0.0542
	[1.31]	[1.19]	[2.37]	[3.06]
Clustered	Firm			
Fixed-Effect	Industry			
N	165 (55 * 3)			
R-squared	0.8862	0.7477	0.7036	0.4330

Panel C. Results for auditor switching observations deleted in panel A				
	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
REST	0.4785*	−0.1548	0.5191	0.2670*
	(2.09)	(−0.37)	(1.02)	(1.92)
PostREST	0.5962**	−0.4348	0.3379	0.6535**
	(2.35)	(−0.83)	(0.57)	(2.66)
LnAsset	1.4097*	0.1912	1.2157	0.6664*
	(1.81)	(0.27)	(1.46)	(1.83)
Leverage	2.3069	-3.9222*	-3.4538	-0.2922
	(1.48)	(-2.04)	(-1.71)	(-0.28)
ROA	−0.6304	0.7770	−0.0299	−0.8835**
	(−1.27)	(0.99)	(−0.03)	(−2.47)
OverseaSales	5.2707	−2.0573	−18.9696*	−3.7278
	(1.48)	(−0.21)	(−2.05)	(−1.15)
LnSeg	−1.3030	1.4400	−0.3547	−0.5124
	(−1.60)	(1.69)	(−0.35)	(−1.00)
LnSub	−1.2098	1.5895*	−0.6125	−0.7392
	(−1.03)	(1.88)	(−0.66)	(−1.25)

Table 5 (continued)

Panel C. Results for auditor switching observations deleted in panel A				
	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
DailyReturn	0.0052	0.0330	0.0414	−0.0210
	(0.08)	(0.21)	(0.38)	(−0.29)
LnFirmAge	−2.9166	0.2026	−3.4585	−2.0967*
	(−1.41)	(0.09)	(−1.28)	(−1.82)
BigN	0.4545**	−0.0048	−0.0391	0.4118**
	(3.07)	(−0.01)	(−0.06)	(2.72)
JSOX	0.3986*	0.8792**	0.1832	−0.2627
	(1.96)	(2.36)	(0.37)	(−1.39)
Intercept	2.5171	−3.8937	6.8361	4.6273*
	(0.72)	(−0.81)	(1.31)	(1.92)
REST—PostREST	−0.1177	0.2800	0.1812	−0.3865*
	[0.33]	[0.70]	[1.26]	[4.11]
Clustered	Firm			
Fixed-Effect	Industry			
N	33 (11 * 3)			
R-squared	0.9155	0.8366	0.6751	0.8020

The dependent variables are *LnAFee*, *LnStaff*, *LnLiStaff*, and *LnPartner* as indicated in the table. Variable definitions are detailed in the appendix. The numbers reported in (parentheses) and [square brackets] are t-statistics and F-statistics, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

5 Additional robustness testing

5.1 Using the misstatement sample as a placebo test

In this section, we discuss the analyses using the misstatement sample. As Kinney et al. (2004) mention that the positive association between audit fees and restatement may "…reflect audit firm identification and pricing of *ex ante* misstatement risk or added audit effort for risky contexts," we use the regression model as follows to estimate the relation between audit inputs and misstatements (firm and year subscripts are omitted for simplicity).

$$\begin{aligned} &Audit\ Inputs\ (Audit\ Fee, Staff, Licensed\ Staff, Signing\ Partner) \\ &\quad = \beta_0 + \beta_1 MISS + \beta_2 PostMISS + \beta_3 LnAssets + \beta_4 Leverage \\ &\qquad + \beta_5 ROA + \beta_6 OverseaSales + \beta_7 LnSeg + \beta_8 LnSub \\ &\qquad + \beta_9 DailyReturn + \beta_{10} LnFirmAge + \beta_{11} BigN + \beta_{12} JSOX \\ &\qquad + Fixed - Industry + \varepsilon \end{aligned} \tag{2}$$

This model is similar to regression model (1) in which we estimate the relation between audit inputs and restatement, and the model specifications applied to regression model (1) apply to regression model (2). In regression model (2), we replace *REST* and *PostREST*

with *MISS* and *PostMISS*, respectively. Here, *MISS* is an indicator variable set equal to 1 if the fiscal year is the year of the misstatement and 0 otherwise, and *PostMISS* is set equal to 1 if the fiscal year is one year after the misstatement and 0 otherwise.

The sample selection process is similar to that for our misstatement analysis. After deleting variables with missing values during the 2005–2015 fiscal years, we begin our selection process with 285 misstatement observations. We require that the misstatement observations have data available for three consecutive years, i.e., the year prior to the misstatement year (i.e., *PreMISS* = 1), the misstatement year (i.e., *MISS* = 1, *PreMISS* = 0 and *PostMISS* = 0) and the year after the misstatement year (i.e., *PostMISS* = 1). This requirement leaves us with 72 misstatement observations.

We further check for any overlap among variables (e.g., *PreMISS* being *PostMISS* for other misstatement observations). Unlike restatements, misstatements are *ex post* events not defined until the filing of a restatement. Therefore, we could identify some misstatements and restatements in the same fiscal year. With such a short time lag between misstatement and restatement, it would be difficult to identify separately the effects of misstatements from those of restatements. We, therefore, remove a further 63 misstatement observations with restatements within two fiscal years of a misstatement year. As a result, our final sample consists of 9 misstatement observations with data available for three consecutive fiscal years (the year prior to a misstatement, the misstatement year and the year after the misstatement year) without overlap with another misstatement or restatement.[19]

Table 6 summarizes the statistics and results for the misstatements. First, Panel A reports the descriptive statistics for the misstatement firms. We divide the sample into pre-misstatement, misstatement, and post-misstatement groups and perform t-tests and analysis of variance (ANOVA) on the four audit input variables (i.e., *LnAFee*, *LnStaff*, *LiStaff*, and *LnPartner*). The results are reported in Panel B.

We perform t-tests to compare the differences between the pre-misstatement and misstatement samples, the differences between the misstatement and post-misstatement samples, and the differences between the pre-misstatement and post-misstatement samples. We find no significant differences from t-tests for the four audit input variables between each group. We further perform one-way ANOVA analysis and also find no significant differences among the group for the four audit input variables; the *F*-statistics obtained from one-way ANOVA analysis are 0.37 for *LnAFee*, 0.06 for *LnStaff*, 0.67 for *LiStaff*, and 0.60 for *LnPartner*, respectively.

Next, we report the results for regression (2) in Panel C. As shown, the estimated coefficients for *MISS* across all regressions are negative, but none of the coefficients for *MISS* nor *PostMISS* are statistically significant. These results imply that audit firms may not be aware of any *ex ante* misstatement risk until the actual restatement.

5.2 Propensity score matching placebo tests

We first replicate our main analysis using a propensity score matched non-restatement firm sample to check the sensitivity of our results. We examine matched non-restatement firms that are in the same industry and have the same fiscal year as the restatement firms. As a result, variables of propensity score matched non-restatement firms have no significant

[19] As in our treatments of restatements, we compare: (a) the differences between the year prior to a misstatement and the misstatement year, and (b) the misstatement year and the year after a misstatement. Therefore, there will be 27 observations in the regression analysis (i.e., nine each for the year prior to the misstatement, the misstatement year, and the year after restatement).

Table 6 Results for using misstatement sample as a placebo test

Panel A. Descriptive statistics (N = 27 (9 * 3))

Variables	Mean	S.D	25%	50%	75%
LnAFee	3.5770	0.6273	3.2189	3.5835	4.0775
LnStaff	1.8944	0.5529	1.6094	1.9459	2.3979
LnLiStaff	1.6695	0.4835	1.6094	1.7918	1.9459
LnPartner	0.7833	0.1718	0.6931	0.6931	0.6931
LnAsset	10.9326	1.0693	10.4066	10.8431	11.5527
Leverage	0.5076	0.1700	0.4167	0.5387	0.6059
ROA	0.0042	0.0462	−0.0018	0.0150	0.0282
OverseaSales	0.0644	0.1241	0.0000	0.0000	0.0000
LnSeg	1.1666	0.9154	0.0000	1.7918	1.7918
LnSub	2.3256	0.6828	1.9459	2.1972	2.5649
DailyReturn	2.1876	0.8217	1.4610	2.1079	2.7736
LnFirmAge	3.9153	0.2848	3.7268	3.8907	4.1235
BigN	0.8148	0.3958	1.0000	1.0000	1.0000
JSOX	0.4444	0.5064	0.0000	0.0000	1.0000

Panel B. Differences between dependent variable means (*t*-tests and ANOVA)

Variables	PreMiss/Miss	Miss/PostMiss	Pre/Post	ANOVA
Differences				
LnAFee	−0.0428	−0.2023	−0.2451	[0.37]
	(−0.16)	(−0.064)	(−0.77)	
LnStaff	0.0396	0.0554	0.0950	[0.06]
	(0.14)	(0.23)	(0.32)	
LnLiStaff	−0.1968	−0.0585	−0.2553	[0.67]
	(−0.78)	(−0.29)	(−1.07)	
LnPartner	−0.0901	0.0451	−0.0451	[0.60]
	(−1.11)	(0.50)	(−0.60)	

Panel C. Regression Results

	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
MISS	−0.0693	0.2192	0.2199	0.1757
	(−0.42)	(0.48)	(0.70)	(0.88)
PostMISS	0.2377	0.2070	0.0999	0.1736
	(0.87)	(0.34)	(0.18)	(0.76)
LnAsset	0.2143	−0.6342	−0.0534	−0.0826
	(1.23)	(−1.71)	(−0.21)	(−0.52)
Leverage	−2.0818	0.0915	0.2271	−1.3494
	(−1.11)	(0.04)	(0.08)	(−1.03)
ROA	−2.0941	−0.2882	1.1267	0.3858
	(−1.66)	(−0.12)	(0.85)	(0.25)
OverseaSales	−2.7364	−1.0844	9.5068*	0.9073
	(−0.78)	(−0.21)*	(2.06)	(0.40)
LnSeg	−0.0001	0.0221	−0.2781***	0.0010
	(−0.00)	(0.17)	(−3.41)	(0.01)

Table 6 (continued)

Panel C. Regression Results

	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
LnSub	0.3831	−0.9817	−0.0907	−0.1433
	(0.64)	(−0.91)	(−0.13)	(−0.30)
DailyReturn	−0.0081	0.1092	0.0340	−0.0526
	(−0.10)	(0.58)	(0.21)	(−0.68)
LnFirmAge	−1.5007	−0.7693	0.6295	0.2906
	(−1.78)	(−1.65)	(1.07)	(0.77)
BigN	0.0474	0.4115	−0.2666	0.1378
	(0.21)	(1.43)	(−1.08)	(0.44)
JSOX	0.5334	0.1666	−0.0635	−0.1040
	(1.08)	(0.24)	(−0.11)	(−0.41)
Intercept	7.3684*	13.7792*	−0.3154	1.2035
	(2.26)	(2.10)	(−0.04)	(0.50)
MISS—PostMISS	−0.3069	0.0122	0.1200	0.0021
	[1.87]	[0.00]	[0.17]	[0.00]
Clustered	Firm			
Fixed−Effect	Industry			
N	27 (9 * 3)			
R−squared	0.9736	0.8951	0.9547	0.7448

Audit fee, non-audit fee, and assets are in million Japanese Yen before natural logarithm. Audit manpower variables (signing partners, licensed staff, and non-licensed staff) are number of persons before natural logarithm. See appendix for variable definitions

The numbers are the differences of variable means for each group. The numbers reported in (parentheses) are the are *t*-statistics. The numbers reported in [square brackets] under the ANOVA column are the ANOVA *F*- statistics.

The dependent variables are *LnAFee*, *LnStaff*, *LnLiStaff*, and *LnPartner* as indicated in the table. Variable definitions are detailed in the appendix. The numbers reported in (parentheses) and [square brackets] are t-statistics and F-statistics, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

differences from the restatement firms.[20] The empirical treatments for the placebo tests are identical to those in the main analysis.

Panels A and B in Table 7 summarize the results for the restatements with propensity score matched non-restatement firms. As in the main analysis, we regress the observations for matched non-restatement firms with the observations in the year prior to the restatement year and the year after the restatement year. Therefore, there are 180 observations in the regression analysis for restatements (i.e., 60 observations each for the year prior to the restatement, the restatement year, and the year after a restatement).

Panel A reports the results of the placebo test based on Table 3 using propensity score matched non-restatements. As expected, there is no significant association between *REST* (and *PostREST*) and audit inputs (i.e., audit fees, staff, licensed staff, and signing partners).

[20] We perform a *t*-test to check the differences of variables for propensity score matched firms and our sample firms, and find no significant difference.

Table 7 Additional robust tests using propensity score matching

Panel A. Results for placebo tests with psm-matched non-restatement firm sample

	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
REST	0.0245	0.0708	−0.0752	0.0114
	(0.57)	(1.02)	(−1.35)	(0.41)
PostREST	0.0415	0.0906	0.0137	−0.0363
	(0.93)	(1.07)	(0.21)	(−1.16)
LnAsset	0.4029***	0.2109***	0.0839**	0.0577***
	(8.31)	(2.92)	(2.19)	(3.35)
Leverage	0.0124	−0.8122	−0.4137	−0.0811
	(0.04)	(−1.66)	(−1.31)	(−0.59)
ROA	−0.4519	−0.1097	−0.2677	−0.2800
	(−0.62)	(−0.11)	(−0.35)	(−0.74)
OverseaSales	0.9926	1.1427	0.6839	0.0488
	(1.42)	(1.50)	(1.67)	(0.33)
LnSeg	0.0236	−0.0593	−0.1311**	0.0128
	(0.29)	(−0.77)	(−2.16)	(0.45)
LnSub	0.1810**	−0.0350	0.1730**	0.0317
	(2.03)	(−0.30)	(2.64)	(0.89)
DailyReturn	0.0736***	−0.0035	−0.0049	0.0328**
	(3.06)	(−0.10)	(−0.16)	(2.58)
LnFirmAge	-0.2135***	−0.2222**	−0.0296	−0.0646**
	(−2.81)	(−2.07)	(−0.61)	(−2.24)
BigN	0.1749	0.1340	0.0549	0.0201
	(1.30)	(0.58)	(0.42)	(0.49)
JSOX	0.1626	−0.0901	0.2637***	0.1215*
	(1.17)	(−0.50)	(2.75)	(1.92)
Intercept	−1.3689**	1.0436	0.9269*	0.4652***
	(−2.44)	(1.45)	(1.94)	(2.83)
REST—PostREST	−0.0171	−0.0198	−0.0889*	0.0478**
	[0.18]	[0.08]	[3.56]	[4.09]
Clustered	Firm			
Fixed-Effect	Industry			
N	180 (60 * 3)			
R-squared	0.8538	0.4383	0.5284	0.4860

Panel B. Results for placebo tests with psm-matched non-restatement firm sample controlling for direct audit staff variables

	LnAFee	
	Coefficient	t-statistic
REST	0.0168	0.38
PostREST	0.0361	0.80
LnStaff	0.1268**	2.25
LnLiStaff	0.0456	0.39
LnPartner	0.1845	0.89
LnAsset	0.3617***	7.11

Table 7 (continued)

Panel B. Results for placebo tests with psm-matched non-restatement firm sample controlling for direct audit staff variables

	LnAFee	
	Coefficient	t-statistic
Leverage	0.1492	0.44
ROA	−0.3741	−0.53
OverseaSales	0.8075	1.36
LnSeg	0.0348	0.43
LnSub	0.1717*	1.95
DailyReturn	0.0682**	2.61
LnFirmAge	−0.1721**	−2.30
BigN	0.1517	1.18
JSOX	0.1396	0.99
Intercept	−1.6293***	−2.82
		F-statistic
REST—PostREST	−0.0193	0.21
Clustered	Firm	
Fixed-Effect	Industry	
N	180 (60 * 3)	
R-squared	0.8616	

Panel C. Results for sample combined restatement firms and psm-matched non-restatement firm and controlling for direct audit staff variables

	LnAFee	
	Coefficient	t-statistic
REST	0.1450**	2.61
PostREST	0.0616**	2.06
LnStaff	0.1435***	3.20
LnLiStaff	0.0581	0.79
LnPartner	0.2177*	1.88
LnAsset	0.3171***	8.15
Leverage	0.2186	1.35
ROA	−0.0958	−0.41
OverseaSales	0.1393	0.42
LnSeg	−0.0378	−0.75
LnSub	0.2082***	4.22
DailyReturn	0.0781***	4.42
FirmAge	−0.0881***	−2.63
BigN	0.1235	1.51
JSOX	0.3472***	3.55
Intercept	−1.3688***	−3.17
		F-statistic
REST—PostREST	0.0834	2.66
Clustered	Firm	
Fixed-Effect	Industry	

Table 7 (continued)

Panel C. Results for sample combined restatement firms and psm-matched non-restatement firm and controlling for direct audit staff variables

	LnAFee	
	Coefficient	t-statistic
N	360	
R-squared	0.8479	

The dependent variables are *LnAFee*, *LnStaff*, *LnLiStaff*, and *LnPartner* as indicated in the table. Variable definitions are detailed in the appendix. The numbers reported in (parentheses) and [square brackets] are t-statistics and F-statistics, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

Panel B reports the results for the placebo test using the propensity score matched non-restatement sample while controlling for audit staff variables based on Table 4. Again, we find no significant association between audit fees and *REST* (and *PostREST*).

Next, we combine the restatement firms and the propensity score matched non-restatement firms and repeat the analysis we conduct in Table 4. There are 360 observations for this analysis (i.e., 180 observations each for restatement firms and 180 observations for propensity score matched firms) and we report the results in Panel C. The results for the combine sample are similar to the results reported in Table 4. The coefficient for *REST* is 0.1450 ($t=2.61$), indicating that audit fees are higher after the restatement. The results are consistent with previous analyses.

5.3 Cross-sectional analysis using board size with full sample

To further support the main results, we provide some cross-sectional evidence on the characteristics of the firms using board size. The potential issue surrounding board size is that the decision-making for larger boards requires more compromises to reach consensus, i.e., the agency problem. Cheng (2008) provides empirical evidence that larger boards have lower variability of corporate performance. Nakano and Nguyen (2012) and Wiersema and Bird (1993) indicate that the boards of directors of Japanese firms are populated with insiders and are remarkably homogeneous. Also, according to the Japanese Corporation Act, boards of directors in Japan are responsible for making operating decisions. Finally, the board size of Japanese firms is relatively larger than their US counterparts (the maximum number of board members in Cheng (2008) is 21 but the maximum number of board members in our sample is 37). The results for the board size in Table 8 draw on the full sample. The use of the full sample provides the following advantages. First, as the main interest of this paper is to examine the differences before and after the restatement, the full sample enables us to examine how the changes in the number of audit staff affect the changes in the audit fees before and after the restatement. The full sample provides more test power than the small sample size. The full sample also complements the results reported with the small sample, given that we obtain results that are consistent with those for the small sample.

The results in Table 8 also draw on the analysis in Table 4. The following is the model for the analysis performed in Table 8 (firm and year subscripts are omitted for simplicity).

Table 8 Results for Full sample Cross-sectional analysis using board size

	LnAFee Coefficient	t-statistic
REST	0.1387***	3.17
PostREST	0.0562	1.61
BoardSize	−0.0476***	-2.48
REST×*BoardSize*	0.3066***	2.83
PostREST×*BoardSize*	0.3325***	3.49
LnStaff	0.1476***	15.22
LnLiStaff	0.1095***	9.47
LnPartner	0.1810***	6.30
LnAsset	0.2641***	30.23
Leverage	0.1138***	3.22
ROA	−0.4934***	−5.55
OverseaSales	−0.0003***	−0.01
LnSeg	0.0225***	3.15
LnSub	0.1488***	14.16
DailyReturn	0.0340***	7.90
LnFirmAge	−0.0710***	−6.18
BigN	0.0525***	2.96
JSOX	0.5461***	55.11
Intercept	−0.4947***	−5.23
		F-statistic
REST—PostREST	0.0825*	3.11
Clustered	Firm	
Fixed-Effect	Industry	
N	17,088	
R-squared	0.7980	

The dependent variable is *LnAFee*. Variable definitions in the original forms are detailed in the appendix. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

$$\begin{aligned} LnAFee =& \beta_0 + \beta_1 REST + \beta_2 PostREST + \beta_3 BoardSize \\ &+ \beta_4 RESTBoardSize + \beta_5 PostRESTBoardSize \\ &+ \beta_6 LnStaff + \beta_7 LnStaff + \beta_8 LnPartner \\ &+ \beta_9 LnAssets + \beta_{10} Leverage + \beta_{11} ROA + \beta_{12} OverseaSales \\ &+ \beta_{13} LnSeg + \beta_{14} LnSub + \beta_{15} Daily\text{Return} + \beta_{16} LnFirmAge \\ &+ \beta_{17} BigN + \beta_{18} JSOX + Fixed - Industry + \varepsilon \end{aligned} \tag{3}$$

The regression model (3) estimated with the full sample enables us to further explore the association between audit fees and board size after the restatement. We further use *REST*

Table 9 Results for reporting lags

Panel A. Results for restatement by setting reporting lags as dependent variables		
	Ln(ReLags)	
	(1)	(2)
REST	−0.0063	−0.0038
	(−1.05)	(−0.57)
PostREST	−0.0085	−0.0026
	(−0.83)	(−0.25)
LnStaff		−0.0145
		(−1.44)
LnLiStaff		0.0085
		(0.99)
LnPartner		−0.0633***
		(−2.92)
LnAsset	0.0068	0.0115
	(0.93)	(1.46)
Leverage	0.0029	0.0048
	(0.08)	(0.15)
ROA	−0.0226	−0.0495**
	(−0.94)	(−2.01)
OverseaSales	0.0167	0.0314
	(0.43)	(1.07)
LnSeg	0.0021	0.0027
	(0.25)	(0.33)
LnSub	−0.0102	−0.0131
	(−1.10)	(−1.39)
DailyReturn	−0.0006	0.0012
	(−0.17)	(0.30)
LnFirmAge	0.0109	0.0170**
	(1.29)	(2.41)
BigN	−0.0277	−0.0155
	(−1.64)	(−0.93)
JSOX	−0.0062	−0.0108
	(−0.41)	(−0.82)
Intercept	4.3443***	4.3165***
	(55.94)	(56.22)
REST—PostREST	0.0022	−0.0013
	[0.06]	[0.02]
Clustered	Firm	
Fixed-Effect	Industry	
N	180 (60 * 3)	
R-squared	0.3321	0.3890

Table 9 (continued)

Panel B. Results for restatement firm by controlling for reporting lag

	LnAFee	*LnStaff*	*LnLiStaff*	*LnPartner*
REST	0.1656***	0.0293	0.1415**	0.0430
	(3.46)	(0.42)	(2.29)	(1.48)
PostREST	0.0981*	0.0082	0.0489	0.0868**
	(1.79)	(0.10)	(0.63)	(2.32)
LnAsset	0.3116***	0.1503**	0.1962***	0.0752***
	(5.83)	(2.63)	(3.34)	(2.75)
Leverage	0.3920	0.2955	0.3497	0.0125
	(1.53)	(0.90)	(1.13)	(0.08)
ROA	−0.0689	0.0630	0.2290	−0.4392***
	(−0.26)	(0.19)	(0.97)	(−2.78)
OverseaSales	0.0224	0.8629*	−0.2042	0.0288
	(0.08)	(1.91)	(−0.45)	(0.15)
LnSeg	−0.1076*	−0.0984	0.0227	0.0374
	(−1.72)	(−1.49)	(0.33)	(1.10)
LnSub	0.2308***	0.0207	−0.0075	−0.0652
	(3.18)	(0.25)	(−0.10)	(−1.48)
DailyReturn	0.0648**	0.0629**	0.0251	0.0165
	(2.63)	(2.31)	(0.80)	(1.01)
LnFirmAge	−0.0122	0.1341	0.0061	0.0820*
	(−0.20)	(1.11)	(0.06)	(1.86)
BigN	0.2167**	0.6297***	0.2475*	0.0435
	(2.42)	(3.93)	(1.92)	(0.77)
JSOX	0.6153***	0.2561**	0.2883**	−0.1011*
	(5.73)	(2.19)	(2.37)	(−1.93)
Ln(ReLags)	−0.2654	−0.9966	−0.4719	−1.1812***
	(−0.42)	(−0.94)	(−0.55)	(−3.38)
Intercept	0.0827	3.2002	1.4120	4.8663***
	(0.03)	(0.70)	(0.38)	(3.05)
REST—PostREST	0.0674	0.0211	0.0926	−0.0438
	[1.79]	[0.08]	[2.45]	[2.16]
Clustered	Firm			
Fixed-Effect	Industry			
N	180 (60 * 3)			
R-squared	0.8815	0.7243	0.6200	0.4436

The dependent variables are *LnAFee*, *LnStaff*, *LnLiStaff*, *LnPartner*, and *Ln(ReLags)* as indicated in the table. Variable definitions are detailed in the appendix. The numbers reported in (parentheses) and [square brackets] are t-statistics and F-statistics, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

and *PostREST* to interact with *BoardSize* (i.e., *REST*×*BoardSize* and *PostREST*×*BoardSize*) in Table 8.[21]

First, we find that the coefficient for *REST* is positive and statistically significant, indicating that audit fees increase in the restatement year. This is consistent with the results in Tables 3, 4. Second, the coefficient for *BoardSize* is negative and statistically significant (coefficient = −0.0476, $t = -2.48$, significant at the 1% level); the larger the board size, the lower the audit fees will be, implying that a firm with a large board is considered as low risk.

Next, we use the interaction variables to examine the changes after the restatement. We find that both interaction variables, *REST*×*BoardSize* (coefficient = 0.3066, $t = 2.83$) and *PostREST*×*BoardSize* (coefficient = 0.3325, $t = 3.49$), are positive and statistically significant at the 1% level.

While the use of the full sample could easily give statistically significant results, we consider that the small sample is much more sensitive and, at least in this paper, generates meaningful results. Therefore, as we already obtained consistent results with the small sample, we consider the results obtained from the full sample to be an addition to the paper.

5.4 Audit report lags

Finally, we use audit report lags as the final additional tests, given that prior studies use such lags as a proxy for audit inputs (e.g., Knechel and Payne 2001; Ettredge et al. 2006; Knechel et al. 2009; Blankley et al. 2014). The results for the analyses are in Table 9. We define the audit report lags as the days between the fiscal year-end date and the audit report date, in natural logarithms as *Ln(ReLags)* in regression. For audit report lags, we perform two sets of analyses. First, we set *Ln(ReportingLags)* as the dependent variable and report the results in Panel A of Table 9. The results reveal that *REST* and *PostREST* are statistically insignificant, indicating that restatement events do not affect the length of the audit report lags. Second, we set *Ln(ReLags)* as a control variable and re-estimate regression (1). The results in Panel B are similar to those in Table 3, suggesting that the results remain the same after controlling for audit report lags.

6 Concluding remarks

We examine the allocation of audit inputs in the year prior to restatement, the year of restatement, and the year after restatement in an effort to identify how auditors respond to accounting restatements. We find that audit fees, the number of CPA-licensed staff, and the number of signing partners increase in the restatement year. We further find that these increases in audit inputs persist following restatement. Furthermore, we find that restating client firms that try to seek market benefits by switching auditors will not obtain a fee discount but, instead, will be audited by more partners. Finally, we also confirm that none of the restatement firms restate again during our sample period.

[21] Since the number of member of the board of director will never be zero; when *REST* interacts with *BoardSize*, *REST* and *PostREST* will lose economic meaning. Hence, we measure *BoardSize* as the deviation from the corresponding industry-year mean.

Overall, the evidence we provide suggests that compared with the year prior to restatement, auditors allocate more experienced staff to firms that restate their financial statements, that audit fees are higher for these restating firms, and that audit staff and fees remain at the same level for at least a year after the accounting restatement. We also obtain results supporting our main analysis using placebo tests. Finally, we find that while audit fees and the number of licensed staff both increase following the restatement, they are unrelated. Taken together, it is possible that the changes in audit fees are related to the risks but not the risk premium *alone*.

Of course, our analysis involves some limitations. First, we have sacrificed sample size to obtain a clean restatement sample. While this yields results unaffected by overlapping misstatement events, we have to be cautious in interpreting our findings given the smaller sample size. Second, we are also aware that the number of audit staff assigned to an engaging audit team cannot completely proxy audit efforts and the quality delivered to the engagement. Finally, the data we use are only from Japanese firms and the audit and restatement data are hand-collected from company filings. While Japan is certainly a major financial market, it does not imply that our findings are generalizable to other institutional settings. For example, Lai and Gul (2021) provide evidence and argue that failed auditors in Hong Kong, in the context of an accounting scandal, suffer from fee reduction but manage to maintain the same level of audit quality.

As fruitful directions for future research, we argue that we could usefully exploit what happens immediately before the discovery of misstatement. We find no signs to suggest that auditors are aware of the occurrence of misstatement until the restatement announcement. A future study could consider this from a managerial perspective and search for possible ways of detecting misstatements in advance. In addition, in this paper we find that the number of signing partners increases after the restatement, implying that signing partners play a role after an issue has arisen. The role audit partners play in handling accounting restatements demands further investigation.

Finally, we believe that the relationship between audit inputs and restatement deserves continued exploration. We also believe that to help better understand restatement, researchers should take advantage of other non-US data, for instance, the audit adjustment data by Lennox et al. (2016).

Appendix

Variable Definitions

Variable	Definition
LnAFee	Audit fee, in natural logarithms;
LnStaff	Number of auditing staff, in natural logarithms;
LnLiStaff	Number of staff with a CPA license, in natural logarithms;
LnPartner	Number of signing partners, in natural logarithms;
REST	An indicator variable set equal to 1 if the financial statement is restated in the corresponding fiscal year, 0 otherwise;
PostREST	An indicator variable set equal to 1 if the fiscal year is one year *after* restatement year, 0 otherwise;

Variable	Definition
MISS	An indicator variable set equal to 1 if the financial statement is misstated in the corresponding fiscal year, 0 otherwise;
PostMISS	An indicator variable set equal to 1 if the fiscal year is one year *after* misstatement year, 0 otherwise;
LnAsset	Natural logarithm of total assets;
Leverage	Total liabilities over total assets;
ROA	Net income over lagged total assets;
OverseaSales	Overseas sales over total sales;
LnSeg	Natural logarithm of the number of operating segments plus 1;
LnSub	Natural logarithm of the number of subsidiary companies plus 1;
DailyReturn	Firm-level standard deviation of daily stock returns;
LnFirmAge	Firm age, measured as the financial statement reporting date minus firm establishment date, in natural logarithms;
BigN	An indicator variable that equals 1 if the firm's auditor is a Big-N auditor, 0 otherwise;
JSOX	An indicator variable that equals 1 if the firm's annual report is filed in accordance with JSOX requirements, 0 otherwise;
Ln(ReLags)	Audit report lags, measured as the days between fiscal year-end date and the audit report date, in natural logarithms;
BoardSize	Number of members on the board of directors, in natural logarithms

Acknowledgements We are grateful for the insightful comments and guidance from Professor Cheng-Few Lee (editor) and the anonymous reviewer. We also thank Roberta Barra, Jeff Zeyun Chen, Chris Hogan, Ling Lei Lisic, Shivaram Rajgopal, Aki Yamauchi, and conference participants at the 8th Conference of the World Accounting Frontiers Series (WAFS 2019) at the University of Macau and the Hawaii Accounting Research Conference 2020 (HARC 2020) for constructive comments and suggestions. Chien-min Kevin Pan acknowledges financial support from the Ministry of Science and Technology of Taiwan for [MOST105-2410-H-004-049-]. The editing assistance by Richard Subber is gratefully acknowledged. All remaining errors are our own.

Data Availability The data used in this paper are from publicly available sources as referenced.

References

Abbott LJ, Gunny KA, Zhang TC (2013) When the PCAOB talks, who listens? Evidence from stakeholder reaction to GAAP-deficient PCAOB inspection reports of small auditor. Audit J Pract Theory 32(2):1–31

Aobdia D, Srivastava EL, A, (2021) Changes in Big N auditors' client selection and retention strategies over time. Rev Quant Finance Account 56(2):715–754

Asthana S, Khurana I, Raman KK (2019) Fee competition among Big 4 auditors and audit quality. Rev Quant Financ Account 52(2):403–438

Bell TB, Doogar R, Solomon I (2008) Audit labor usage and fees under business risk auditing. J Account Res 46(4):729–960

Blankley AI, Hurtt DN, MacGregor JE (2012) Abnormal audit fees and restatements. Audit J Pract Theory 31(1):79–96

Blankley AI, Hurtt DN, MacGregor JE (2014) The relationship between audit report lags and future restatements. Audit J Pract Theory 33(2):27–57

Chava S, Cheng CSA, Huang HH, Lobo GJ (2010) Implications of securities class actions for cost of equity capital. Int J Law Manage 52(2):144–161

Chava S, Huang K, Johnson SA (2018) The dynamics of borrower reputation following financial misreporting. Manage Sci 64(10):4775–4797
Cheng S (2008) Board size and the variability of corporate performance. J Financ Econ 87(1):157–176
Christensen B, Glover SM, Omer TC, Shelley MK (2016) Understanding audit quality: Insights from audit professionals and investors. Contemp Account Res 33(4):1648–1684
Czerney K, Schmidt JJ, Thompson AM, Zhu W (2020) Do type II subsequent events impair financial reporting quality? Account Rev 95(6):97–123
Dechow PM, Ge W, Larson CR, Sloan RG (2011) Predicting material accounting misstatements. Contemp Account Res 28(1):17–82
Desai H, Hogan CE, Wilkins MS (2006) The reputational penalty for aggressive accounting: Earnings restatements and management turnover. Account Rev 81(1):83–112
Dikolli S, Keusch T, Mayew WJ, Steffen TD (2020) CEO behavioral integrity, auditor responses, and firm outcomes. Account Rev 95(2):61–88
Ettredge ML, Li C, Sun L (2006) The impact of SOX Section 404 Internal Control Quality Assessment on audit delay in the SOX era. Audit J Pract Theory 25(2):1–23
Feldmann DA, Read WJ, Abdolmohammadi MJ (2009) Financial restatements, audit fees, and the moderating effect of CFO turnover. Audit J Pract Theory 28(1):205–223
Fukukawa H (2011) Audit pricing and cost strategies of Japanese Big 3 firms. Int J Audit 15(2):109–126
GAO. 2002. Financial Statement Restatements: Trends, Market Impacts, Regulatory Responses, and Remaining Challenges. GAO-03–138. Washington, DC: GAO.
GAO. 2007. Financial Restatements: Update of Public Company Trends, Market Impacts, and Regulatory Enforcement Activities. GAO-06–678. Washington, DC: GAO.
Graham JR, Li S, Qiu J (2008) Corporate misreporting and bank loan contracting. J Financ Econ 89(1):44–61
Gul FA (2006) Auditors' response to political connections and cronyism in Malaysia. J Account Res 44(5):931–963
Hennes KM, Leone AJ, Miller BP (2014) Determinants and market consequences of auditor dismissals after accounting restatements. Account Rev 89(3):1051–1082
Hogan CE, Wilkins MS (2008) Evidence on the audit risk model: do auditors increase audit fees in the presence of internal control deficiencies? Contemp Account Res 25(1):219–242
Hossain S, Yazawa K, Monroe GS (2017) The relationship between audit team composition, audit fees, and quality. Audit J Pract Theory 36(3):115–135
Houston RW, Peters MF, Pratt JH (1999) The audit risk model, business risk and audit planning decisions. Account Rev 74(3):281–298
Hribar P, Jenkins N (2004) The effect of accounting restatements on earnings revisions and the estimated cost of capital. Rev Account Stud 9(2–3):337–356
Hribar P, Kravet T, Wilson R (2014) A new measure of accounting quality. Rev Account Stud 19(1):506–538
Huang P, Wen Y-C, Zhang Y (2020) Does the monitoring effect of Big 4 audit firms really prevail? Evidence from managerial expropriation of cash assets. Rev Quant Finance Account 55(2):739–768
Johnstone KM, Bedard JC (2001) Engagement planning, bid pricing, and client response in the market for initial attest engagements. Account Rev 76(2):199–220
Kato K, Skinner DJ, Kunimura M (2009) Management forecasts in Japan: An empirical study of forecasts that are effectively. Account Rev 84(5):1575–1606
Kato K, Li M, Skinner DJ (2017) Is Japan really a "buy"? the corporate governance, cash holdings, and economic performance of Japanese companies. J Bus Finance Account 44(3–4):480–523
Kinney WR, Palmrose ZV, Scholz S (2004) Auditor independence, non-audit services, and restatements: was the U.S. government right? J Account Res 42(3): 561–588.
Knechel WR, Payne JL (2001) Additional evidence on audit report lag. Audit J Pract Theory 20(1):137–146
Knechel WR, Rouse P, Schelleman C (2009) A modified audit production framework: evaluating the relative efficiency of audit engagements. Account Rev 84(5):1607–1638
Knechel WR, Krishnan G, Pevzner M, Shefchik L, Velury U (2012) Audit quality: insights from academic literature. Audit J Pract Theory 32(1):385–421
Lai KW, Gul FA (2021) Do failed auditors receive lower audit fees from continuing engagements? Rev Quant Finance Account 56(3):1159–1190
Lambert T, Luippold B, Stefaniak C (2018) Audit partner disclosure: an experimental exploration of accounting information contagion. Behav Res Account 30(1):27–38
Laurion, H, Lawrence A, Ryans JP (2017) U.S. audit partner rotations. Account Rev 92(3):209–237.
Lennox C, Wu X, Zhang T (2016) The effect of audit adjustments on earnings quality: evidence from China. J of Account Econ 61(2–3):545–562

Lobo GJ, Zhao Y (2013) Relation between audit effort and financial report misstatements: evidence from quarterly and annual restatements. Account Rev 88(4):1385–1412
Lobo GJ, Xie Y, Zhang JH (2018) Innovation, financial reporting quality and audit quality. Rev Quant Financ Account 51(3):719–749
Mande V, Son M (2013) Do financial restatements lead to auditor changes? Audit J Pract Theory 32(2):119–145
Nakano M, Nguyen P (2012) Board size and corporate risk taking: further evidence from Japan. Corp Govern: an Int Rev 20(4):369–387
Palmrose ZV, Richardson VJ, Scholz S (2004) Determinants of market reactions to restatement announcements. J Account Econ 37(1):59–89
Pratt J, Stice JD (1994) The effects of client characteristics on auditor litigation risk judgments, required audit evidence, and recommended audit fees. Account Rev 69(4):639–656
Raghunandan K, Rama DV (2006) SOX section 404 material weakness disclosures and audit fees. Audit J Pract Theory 25(1):99–114
Singer Z, Zhang J (2018) Auditor tenure and the timeliness of misstatement discovery. Account Rev 93(2):315–338
Skinner DJ (2008) The rise of deferred tax assets in Japan: the case of the major Japanese banks. J Account Econ 46(2–3):218–239
Skinner DJ, Srinivasan S (2012) Audit quality and auditor reputation: evidence from Japan. Account Rev 87(5):1737–1765
Srinidhi BN, Gul FA (2007) The differential effects of auditors' non-audit and audit fees on accrual quality. Contemp Account Res 24(2):595–629
Srinivasan S (2005) Consequences of financial reporting failure for outside directors: evidence from accounting restatements and audit committee members. J Account Res 43(2):291–334
Whisenant S, Sankaraguruswamy S, Raghunandan K (2003) Evidence on the joint determination of audit and non-audit fees. J Account Res 41(4):721–744
Wiersema K, Bird A (1993) Organizational demography in Japanese firms: group heterogeneity, individual dissimilarity, and top management turnover. Acad Manage J 36(5):996–1025
Wilson W (2008) An empirical analysis of the decline in the information content of earnings following restatements. Account Rev 83(2):519–548
Yazawa K (2009) The study on audit pricing model: evidence from Japan (*kansa hoshu hyoka model no kenkyu*). Aoyama J of Bus (Aoyama Keiei Ronshu) 44(3):227–256 **(in Japanese)**
Yazawa K (2012) A study on the audit pricing model II: focus on the internal control audit (*kansa hyoshu hyoka model no kenkyu II: naibu tosei kansa no donyu ni shoten wo atete*). Aoyama J of Bus (Aoyama Keiei Ronshu) 47(1):79–97 **(in Japanese)**