Audit quality following regulatory enforcement against audit firms' exam cheating scandals

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ABSTRACT

This study examines whether regulatory enforcement against audit firms' exam cheating scandals influences audit quality. I find that auditors involved in exam cheating scandals increase their propensity to issue adverse internal control opinions following regulatory enforcement. I also find that these adverse internal control opinions are issued to clients that subsequently restate their fiscal year-end financial statements. Further analysis shows that auditors involved in exam cheating scandals charge higher audit fees due to increased audit effort. Additional evidence suggests that regulatory enforcement against audit firms' exam cheating scandals triggers auditor change among clients with auditors involved in the exam cheating scandals, and this effect is more prominent than clients of other auditors in the same countries or within the same network as the targeted auditors. Finally, I document spillover effects of regulatory enforcement against exam cheating scandals on audit quality of other auditors in the same countries the targeted auditors, but not for other auditors in the same networks the targeted auditors. Overall, the findings suggest that regulatory enforcement disciplines auditors by strengthening the quality and effort in audits.

Keywords: exam cheating scandals; regulatory enforcement; auditor reputation; audit quality; audit fees; nonaudit fees; auditor change

1. Introduction

Professional ethics is the cornerstone of the auditing profession. In recent years, exam cheating scandals that involve the ethical portion of the CPA exams and internal training courses in the accounting firms have led to increased scrutiny about the ethics of the auditing profession. The exam cheating scandals raise concerns over the culture of ethics within the accounting firms as well as the unethical behaviors of the auditing professionals that may pertain to individual audit engagements.

This study examines the effect of regulatory enforcement against audit firms' exam cheating scandals on audit quality.[1] I focus on auditors' internal control opinions as the measure of audit quality for three main reasons. First, Section 404(b) of the Sarbanes-Oxley Act (SOX) requires auditors of accelerated filers to test and opine on the effectiveness of internal control over financial reporting (ICFR). An auditor shall issue an adverse internal control opinion when the auditor identifies one or more material weaknesses in ICFR. An adverse internal control opinion indicates that an auditor is able to discover material weaknesses in ICFR, and is willing to report material weaknesses once the auditor detects them. As such, adverse internal control opinions closely align with the two dimensions of audit quality in DeAngelo (1981)'s framework that are an auditor's ability to detect material weaknesses and willingness to report them. Second, auditors' internal control opinions explicitly reflect auditors' behaviors in identifying and reporting material weaknesses (Lennox et al. 2025). This measure is relevant in the context of this study that allows examining whether auditors' unethical behaviors in the exam cheating scandals pertain to their conduct on audit engagements, and ultimately, to the quality of the audits that they provide.[2] Third, ICFR audits remain a primary concern for the

[1] This study is only able to assess the impact of regulatory enforcement against exam cheating scandals at the audit-firm level. Regulatory fillings generally do not specify the specific offices in which the exam cheating scandals occurred and the identities of audit personnel involved in the exam cheating scandals. However, exam cheating scandals may signal systematic problems to the audit firm. On the other hand, if the analyses on the audit firms do not yield significant results, the expected outcomes could be only prevalent at specific offices or audit personnel involved in the exam cheating scandals.

[2] Audit adjustments can be a conceptually meaningful proxy of audit quality related to auditors' behaviors, which align closely with DeAngelo (1981)'s definition of audit quality. However, the proprietary nature of audit adjustments data constraints their

PCAOB and SEC as ICFR issues are among the most frequent audit deficiencies (PCAOB 2023). The SEC has emphasized that monitoring ICFR is an ongoing priority for the Office of the Chief Accountant (Munter 2023). Former SEC Chief Accountant Wesley Bricker notes, "Adequate internal controls are the first line of defense in detecting and preventing material errors or fraud in financial reporting … when internal control deficiencies are left unaddressed, financial reporting quality can suffer." Furthermore, an analysis of accounting-related securities class action filings and settlements in 2023 finds that allegations of ICFR are among the most frequently mentioned problems, as over 60% of accounting case fillings contain an allegation of internal control weaknesses (Cornerstone Research 2023).

Given that audits are credence goods for which audit quality is not directly observable, clients and users of financial statements often rely on the information about auditors' reputation to form their trust in the quality of audits (Causholli and Knechel 2012). The exam cheating scandals, which expose unethical behaviors of the audit personnel, may threaten the affected audit firms' reputation and prompt the clients and users of financial statements to question the trustworthiness of the affected audit firms. Previous studies document adverse reputational effects on auditors, including the loss of market share and drop in the client base, following audit firms' involvement in accounting scandals, disciplinary actions, or financial misreporting (Weber et al. 2008; Skinner and Srinivasan 2012; Nagy 2014; Swanquist and Whited 2015; Aobdia 2018). On the other hand, drawing on the organizational learning theory, audit firms involved in the misconducts and sanctioned by the oversight bodies may learn from these experiences by enhancing personnel training, implementing rigorous monitoring, and introducing superior quality control procedures (Lennox and Li 2014; Lamoreau et al. 2023). As such, auditors have strong incentives to provide high-quality audits in the aftermath of

availability. Going-concern opinions may indicate auditors' reporting behaviors, but they do not capture many critical audit procedures such as internal control testing or substantive testing (Lennox et al. 2025). Instead, going concern opinions narrowly capture auditors' response to client distress rather than the broader quality of the financial statement audit (Lennox et al. 2025).

regulatory enforcement against exam cheating scandals.

However, audit firms may not increase their issuance of adverse audit opinions after the regulatory enforcement against exam cheating scandals. First, exam cheating scandals may not explicitly expose severe issues in audit procedures. As such, the extent to which audit firms are incentivized to improve quality of audits hinges on how clients perceive exam cheating scandals as informative signals about audit quality. Prior research finds that unfavorable inspection reports do not lead to decline in market shares of the affected U.S. auditors, indicating that clients do not view the inspection reports as particularly informative about audit quality (Lennox and Pittman 2010). Auditors may also be reluctant to issue adverse internal control opinions which increase the likelihood of clients' dismissal (Ettredge et al., 2011; Newton et al., 2016). In this context, auditors may forgo the remediation costs if clients are unwilling to pay high audit fees (Johnson et al. 2019).

To investigate the influence of regulatory enforcement against audit firms' exam cheating scandals on audit quality, I estimate a generalized difference-in-differences design on a sample of U.S. listed firms to exploit audit firms' staggered exposure to regulatory enforcement against exam cheating scandals over the period from 2004 to 2023. I identify eight cases of regulatory enforcement against exam cheating scandals by reviewing official fillings from the websites of the PCAOB, the SEC, and the professional accounting bodies CPAB and CPA Ontario. If the audit quality improves after regulatory enforcement against exam cheating scandals, I expect auditors' propensity to issue adverse internal control opinions in the following years. Consistent with this, I find that auditors involved in the exam cheating scandals increase the issuance of adverse internal control opinions following the regulatory enforcement. I also find that auditors are more likely to report detected material weaknesses in internal audits for clients that subsequently restate their fiscal year-end financial statements, rather than become conservative in issuing adverse internal control opinions in the aftermaths

of regulatory enforcement.

In additional analyses, I find that auditors involved in the exam cheating scandals charge high audit fees in the aftermath of regulatory enforcement due to increased remediation efforts to improve audits of internal controls. Furthermore, I find that clients are more likely to switch auditors who are involved in the exam cheating scandals in the aftermath of regulatory enforcement, which is more pronounced compared to clients of other auditors in the same countries and within the same network as the targeted auditors. Finally, I document that regulatory enforcement against audit firms' exam cheating scandals have spillover effects on the audit quality of other auditors in the same countries as the targeted auditors, but not for other auditors within the same networks at the targeted auditors.

This study makes several contributions. First, this study adds to the literature on regulatory oversight of auditors. Most studies focus on audit firms' reputational impairments arising from inspection reports or audit failures related to client-level accounting scandals, and document negative consequences including loss of clients and market shares (Wilson and Grimlund 1990; Weber et al. 2008; Skinner and Srinivasan 2012; Boone et al.2015). Negative inspection outcomes and accounting scandals often implicate the issues of the quality of audit engagements, and at times the reliability of clients' financial reporting. In contrast, exam cheating scandals primarily concern the issues in audit firm's internal functions and culture and may not be inherently related to violations of Generally Accepted Accounting Principles (GAAP) or Generally Accepted Auditing Standards (GAAS). The results indicate that regulatory enforcement in this context have a disciplinary effect as the audit quality significantly improves for clients of auditors that are involved in the exam cheating scandals.

Second, this study contributes to the literature on auditors' internal control opinions. Prior research provides mixed evidence regarding auditors' incentives to issue internal control opinions. On the one hand, auditors may be reluctant to report material weaknesses to avoid

losing existing clients and hindering acquisition of new clients (Cowle and Rowe 2022). On the other hand, auditors have the professional responsibility to inform investors and regulators if a material weakness exists in internal controls. Failure to identify and report material weaknesses may increase auditors' exposure to litigation risks. In particular, the SEC and PCAOB continue to express concern over audit deficiencies related to ICFR, and intensify their enforcement actions targeting ICFR audits (Rowe et al. 2022; Munter 2023). This study provides evidence that the regulatory enforcement play an important role in auditors' detection and formulation of opinions over the effectiveness of clients' internal controls, indicating that auditors react to regulators' disciplinary actions.

Third, the study generates important implications to the regulators, professional accounting associations, and practitioners. For regulators, the study implies that enforcement actions against exam cheating scandals produce externalities that are detectable in client-facing audit quality, thereby underlying the deterrent value of targeted sanctions. The exam cheating scandals that involve misconducts on ethical portion of the CPA exam and internal training related to CPE suggest a need to reassess the exam design and requirements, regarding whether more proctored formats and strict monitoring are warranted to ensure the ethics exam and CPE achieve the substantive objectives rather than purely compliance exercise. [3] Further, enforcement actions impose negative consequences on audit firms that result in client loss, beyond the monetary penalties and revocation of license for the audit personnel involved in the exam cheating scandals. Audit firms should therefore invest in ethical culture through more robust internal training and effective monitoring of personnel compliance, not only to fulfill their professional responsibility but also to mitigate reputational and litigation risks.

[3] The regulatory enforcement against exam cheating scandals may generate spillover effects beyond the targeted auditors. For example, in the aftermath of KPMG UK's exam cheating scandal, Deloitte UK began disclosing measures to detect and prevent exam cheating in professional exams in its transparency reports from 2022. Similarly, EY UK started mentioning how it safeguards the integrity of professional exams in its transparency reports from 2023.

2. Background

Over the past decade, the U.S. oversight bodies SEC and PCAOB, as well as national regulators, have uncovered widespread misconduct on internal training, answer sharing of the ethics portion of Certified Public Accountant (CPA) exams, and continuing professional education exams across multiple Big 4 audit firms in different jurisdictions. Although these exam cheating scandals do not directly reflect failures in compliance with Generally Accepted Accounting Standards or Generally Accepted Auditing Standards, they raise serious concerns about the credibility of auditors' judgement and tone at the top, thereby threatening public trust in the auditing profession.

To deter threats to the ethics of the auditing profession, SEC, PCAOB, and national regulators have conducted investigations and imposed sanctions on the improper conduct in mandatory internal training and ethics assessments. SEC fined KPMG U.S. 50 million dollars for widespread answering sharing in internal training exams and manipulation of pass rates in the administrated software for internal training tests (SEC 2019). PCAOB penalized KPMG Australia 4.5 million dollars and sanctioned 1,131 auditing professionals involved in improper answering sharing in internal training exams. CPAB and CPA Ontario as well as PCAOB censored PwC Canada with more than 1,200 personnel involved in improper sharing of training test answers (CPAB 2022; PCAOB 2022; CPA Ontario 2023). SEC penalized EY U.S. for multiple exam cheating cases. Specifically, over 200 audit professionals exploited the flaw in the firm's test software to pass CPE exams without the required number of correct answers, 49 audit professionals used answer keys to cheat on CPA ethics exams, and hundreds of auditing professionals improperly shared test answers to pass CPE courses' requirements (SEC 2022). PCAOB fined KPMG UK 2 million dollars for widespread answering sharing on internal training tests involving hundreds of personnel (PCAOB 2022). PCAOB censured four million dollars for KPMG Colombia as its personnel improperly shared answers for the mandatory

assurance training tests. PCAOB fined PwC China and Hong Kong a total of 7 million dollars as over one thousand audit personnel cheated on mandatory internal training tests.

Taken together, the exam cheating scandals have been widespread in multiple audit firms across various jurisdictions, which reflects the issues of internal governance within the audit firms and audit professionals' ability to act with integrity in audit assignments. As such, the U.S. oversight bodies and national regulators have imposed compliance monitoring to reinforce the public trust in the culture of compliance and integrity within the audit firms.

3. Literature review and hypothesis development

The exam cheating scandals have two broad implications for the ethical issues of the auditing profession. On the one hand, the exam cheating scandals expose problems in audit firms' potential to deliver high-quality audits as they implicated the leadership of audit firms with responsibility to oversee firm-wide audit quality. On the other hand, the exam cheating scandals undermine public trust in the tainted audit firms with negative publicity, as the unethical behaviors of audit professionals in exam cheating scandals may call into questions their ability to exercise professional judgement.

Faced with the litigations, audit firms may have strong incentives to take remedial actions. Prior literature documents the disciplinary effect of inspections leads to improvement in the quality of audits (DeFond and Lennox 2017; Lamoreaux et al. 2023). On the other hand, trust is the value proposition of the audit profession given that audit is a credence product (Causholli and Knechel 2012). As external audits are expected to enhance public trust in clients' financial statements, ethical violations may deteriorate capital market participants' trust in the audit firms (Jha and Chen 2015). Previous studies find that audit firms that fail to demonstrate the trustworthiness in audits face negative outcomes including client losses and decline in the market share (Wilson and Grimlund 1990; Weber et al. 2008; Skinner and Srinivasan 2012; Boone et al.2015). Organizational learning theory suggests that audit firms can learn from their

experiences, such as regulatory inspections and litigation, and embed these lessons into firm-level routines and processes (Levitt and March 1988). Consistent with this theoretical perspective, prior research finds that auditors' experiences with inspections and litigation are associated with subsequent improvement in the quality of audits and financial reporting at both the audit office level and the audit firm level (Lennox and Li 2014; Lamoreau et al. 2023). Drawing on the above discussion, audit firms may cast concerns on how capital market participants perceive the credibility of audits and take actions to mitigate negative reputational consequences in the aftermath of regulatory enforcement against exam cheating scandals. As such, audit firms that have been involved in exam cheating scandals may take remedial actions to provide higher-quality audits to repair reputation and mitigate litigation risks. Moreover, audit firms may learn from the experience of being penalized from the exam cheating scandals and improve their assessment of the competence and integrity of its personnel and introduce quality control procedures.

However, several competing arguments suggest that exam cheating scandals may not result in changes in audit quality. Exam cheating scandals do not directly imply serious deficiencies in audit firms' audit procedures. From the service provision perspective, if clients perceive exam cheating scandals as informative about a deterioration in audit quality, audit firms may have strong incentives to provide higher quality audits to protect or expand their market shares. Consistent with this view, prior studies find that unfavorable PCAOB inspection reports do not always trigger auditor dismissals, if the issues disclosed in PCAOB inspection reports are perceived less severe or informative (Lennox and Pittman 2010; Abbott et al. 2013). In addition, audit firms may hesitate to issue adverse internal control opinions which may increase the likelihood of dismissal and thereby economic costs, especially if clients are unwilling to pay higher fees for costly remediation (Ettredge et al., 2011; Newton et al., 2016; Johnson et al. 2019). These countervailing arguments complicate the role of regulatory

enforcement in influencing audit quality, I therefore propose the following non-directional hypothesis:

Hypothesis: Regulatory enforcement against exam cheating scandals does not influence audit quality.

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4. Research design

4.1 Empirical Model

To examine the effect of regulatory enforcement against audit firms' exam cheating scandals on audit quality, I estimate the generalized difference-in-difference (GDD) framework with staggered treatments[4]:

$$ICOP_{i,j,t} = \alpha + \beta_1 PostReg_{j,t} + \beta_2 Controls_{i,j,t-1} + \text{Fixed Effects} + \epsilon_{i,j,t} \quad (1)$$

where the subscripts *i*, *j*, and *t* correspond to client, audit firm, and year, respectively. The dependent variable, *ICOP*, is an indicator variable equal to one if the author issues an adverse internal control opinion to its client, and zero otherwise. The main variable of interest *PostReg* is an indicator variable equal to one for audit firms in the period after the regulatory enforcement against the exam cheating scandals, and zero otherwise. Under this specification, audit firms involved in the exam cheating scandals are part of the control group before regulatory enforcement against exam cheating scandals and then switch into the treatment group after being affected. Audit firms that are not involved in the exam cheating scandals and not subject to regulatory enforcement against exam cheating scandals throughout the sample period remain in the control group at all times.

To ensure that other observable factors do not affect the main relationship, I control for potentially confounding factors following prior studies (e.g., Boone et al. 2015; Defond and

[4] I employ the generalized differences-in-difference design rather than the traditional differences-in-difference design which specifies clear treated group and control group across the period and common pre- and post-event periods for all units. As the regulatory enforcement against clients' exam cheating scandals occur at different times and target different audit firms, the generalized differences-in-difference design accommodates the heterogeneous treatment timings and treatment effects.

Lennox 2017). Specifically, I control for audit firm characteristics including Big 4 auditors (*BIG4*), and whether the audit occurs during busy season (*BUSY_SEASON*), and auditor-client mismatch (*MISMATCH*). I also control for client characteristics including book-to-market ratio (*BTM*), current ratio (*CURRENT*), external financing (*FINANCING*), institutional ownership (*INST*), inventory (*INVENTORY*), whether the company reports a loss (*LOSS*), leverage (*LEVERAGE*), merger and acquisition activity (*MA*), restructurings (*RESTRUCT*), return on assets (*ROA*), the number of operating segments (*SEGMENTS*), company size (*SIZE*), and bankruptcy probability (*ZSCORE*). I include audit firm, industry, and year fixed effects to account for unobserved heterogeneity across audit firms and industries and over time. I winsorize all continuous variables at the 1st and 99th percentiles to reduce the effect of outliers and cluster standard errors by client (Bertrand et al. 2004; Petersen 2009).

4.2 Sample

The initial sample consists of 76,169 company-year observations at the intersection of Compustat and Audit Analytics with available data on auditors' internal control opinions for the fiscal years from 2004 to 2023.[5] The sample period begins in 2004 because it is the first year in which data on auditors' internal control opinions is available on Audit Analytics. Next, I exclude observations with missing data on audit firm and client characteristics in Audit Analytics. I also remove observations with missing data necessary to create client-level variables in Compustat. Finally, I drop singletons for the groupings of audit firm-country and year fixed effects. Table 1 presents a summary of the sample selection process. The final sample includes 37,050 company-year observations consisting of 5,243 unique clients.

[Insert Table 1 about here]

[5] Audit Analytics' Auditor Opinion on ICOP dataset, which covers auditors' opinions on internal control over financial reporting for SEC registrants when an ICFR attestation report is issued under SOX 404 (b). These opinions are integrated with financial statement audits required by PCAOB AS 2201 standard.

5. Main results

5.1 Descriptive statistics

Table 2 presents the descriptive statistics. Panel A reports the descriptive statistics of the variables in equation (1). The mean rate of adverse internal control opinions is 6.9 percent. 5 percent of the observations are in the post-enforcement period. The distributions of control variables are comparable to prior studies (e.g., Hale and Truelson 2023). For example, 85.3 percent of the observations receive audit services from Big 4 auditors and 73.8 percent of audits occur during the busy season.

[Insert Table 2 about here]

5.2 Parallel trends assumption

The parallel trends assumption underlying the valid identification requires no differential pre-event trends for treated and control firms. To examine the parallel trends assumption, I replace the *PostReg* variable in equation (1) with separate event-year indicators for each year relative to the year of regulatory enforcement against exam cheating scandals. Figure 1 plots the point estimates of the coefficients for dummy variables indicating each of the previous years before the regulatory enforcement against exam cheating scandals (i.e. year *t*-4, year *t*-3, and year *t*-2), each of the subsequent years after regulatory enforcement against exam cheating scandals (i.e. year *t*+1 to year *t*+2, year *t*+3+), and their corresponding 95% confidence intervals. I omit the indicator for year *t*-1 that serves as the benchmark year.

The results in Figure 1 document no differential pre-enforcement trends in auditors' issuance of adverse internal control opinions to clients with treatment audit firms compared to those with control audit firms, confirming the parallel trends assumption.[6] However, the

[6] Table OA3 in the Online Appendix present the details of coefficient estimates for the event-year indicators. The coefficients on the event-year indicators prior to the regulatory enforcement against exam cheating scandals (i.e. *PostReg_t*-4, *PostReg_t*-3, *PostReg_t*-2) are all statistically insignificant, confirming the parallel trends assumption.

likelihood of auditors' issuance of adverse internal control opinions increases subsequent to regulatory enforcement against exam cheating scandals, and this effect persists into the following year. This pattern suggests that the observed effect emerges promptly after regulatory enforcement against exam cheating scandals.

[Insert Figure 1 about here]

5.3 Test of hypothesis

Table 3 presents the results from estimating equation (1), which examines the influence of regulatory enforcement against exam cheating scandals on audit quality. The baseline regression results without control variables in column (1) show positive and significant coefficient on *PostReg* (p-value < 0.05). Similarly, the results from estimating equation (1) with control variables in column (2) report positive and significant coefficient on *PostReg* (p-value < 0.01). Economically, regulatory enforcement against exam cheating scandals results in a 2.4 percent increase in the odds of targeted auditors' issuance of adverse internal control opinions. These findings reject the null hypothesis and suggest that audit firms involved in exam cheating scandals respond to regulatory enforcement by improving their evaluation and detection of internal control weaknesses.[7]

[Insert Table 3 about here]

6. Robustness checks

6.1 Alternative sample construction

I evaluate the sensitivity of the main results to sample composition. First, I shorten the event windows surrounding regulatory enforcement against exam cheating scandals, and

[7] I also examine whether the audit quality of targeted audit firms differ before and during the exam cheating periods. The results in Table OA5 document insignificant differences in average audit quality of targeted audit firms during the exam cheating periods relative to the pre-cheating periods.

exclude never-targeted audit firms. Both columns (1) and (2) in Table 4 show positive and significant coefficients on *PostReg* (p-value < 0.05 and p-value < 0.10, respectively), indicating that the main inferences hold using the two-side five-year window or the two-side three-year window surrounding the time of regulatory enforcement against exam cheating scandals.

Second, I assess robustness to alternative sample constructions. The results in column (3) of Table 4 restrict to the sample of targeted audit firms before and after the regulatory enforcement, and present positive and significant coefficient on *PostReg* (p-value < 0.10), which indicate more adverse internal control opinions of the targeted audit firms after the regulatory enforcement relative to the pre-enforcement periods. The results in column (4) of Table 4 restrict to the audit firms that operate in the same countries as the targeted audit firms and yield positive and significant coefficient on *PostReg* (p-value < 0.01). Column (5) of Table 4 presents the results of the subsample of audit firms within the same networks and shows positive and significant coefficient on *PostReg* (p-value < 0.01). The results in columns (3), (4) and (5) further strengthen the main inferences and suggest that the main effects are more prominent for the audit firms involved in the exam cheating scandals, compared to other audit firms in the same geographical market or within the same network as the targeted auditors.

[Insert Table 4 about here]

6.2 Entropy balancing analyses

Covariate imbalance or functional form misspecification in the observed covariates may influence the results (McMullin and Schonberger 2020). To examine whether differences in observed company and auditor characteristics affect the main inferences, I employ entropy balancing approach which reweights observations in the treatment and control groups to achieve covariate balance of the control variables except the variable of interest (Hainmueller 2012). Specifically, I reweight company-year observations with targeted audit firms and

company-year observations with non-targeted audit firms to equalize the first (mean), second (variance), and third (skewness) moments of the distributions of the control variables in equation (1).

Table 5 reports the results. The coefficient on *PostReg* is positive and significant in column (1) where I balance the covariates of the control group at the first moment (mean) to those of the treatment group (p-value < 0.01). Similarly, column (2) shows the results of achieving covariate balance at the first (mean) and second (variance) moments for the treatment and control groups and presents positive and significant coefficient on *PostReg* (p-value < 0.01). Column (3) also presents positive and significant coefficient on *PostReg*, after eliminating imbalance for covariates at the first (mean), second (variance), and third (skewness) moments for the treatment and control groups (p-value < 0.01). These results mitigate the concern that covariate imbalance or functional form misspecification affect the main inferences.

[Insert Table 5 about here]

6.3 Stacked difference-in-differences design

Baker et al. (2022) note potential biases in coefficient estimates from DID design with staggered treatments due to heterogeneous treatment effects and variations in treatment timing. The specific concern in this empirical setting is that clients with previously targeted audit firms act as the control group for clients with later targeted audit firms. To address this concern, I use a stacked DID approach as in Gormley and Matsa (2011) and Cengiz et al. (2019). Specifically, for each regulatory enforcement against exam cheating scandals, I construct a cohort of treatment audit firms and control audit firms for each event year *t*. The treatment audit firms are audit firms that have not been subject to regulatory enforcement against exam cheating scandal by year *t*-1, but are subject to regulatory enforcement against exam cheating scandals in year *t*, whereas the control audit firms are audit firms that have not been subject to regulatory

enforcement against exam cheating scandals by year *t*. I then keep observations for both treatment and control audit firms within the two-side three-year or five-year window surrounding the date of regulatory enforcement.[8] Next, I stack the data across all the cohorts into one dataset and estimate the average treatment effect with cohort-specific fixed effects included in the following equation:

$$ICOP_{c,i,t} = \alpha + \beta_1 Treat_{c,i} \times Post_{c,t} + \beta_2 Controls_{c,i,t-1} + \text{Fixed Effects} + \epsilon_{c,i,t} \quad (2)$$

where the subscripts *c*, *i*, and *t* correspond to cohort, client, and year, respectively. The dependent variable, *ICOP*, is an indicator variable equal to one if the author issues an adverse internal control opinion to its client, and zero otherwise. *Treat* is an indicator variable equal to one for clients with auditors that are subject to regulatory enforcement against exam cheating scandals in the event-specific cohort, and zero for clients with auditors that are not subject to regulatory enforcement against exam cheating scandals in the event-specific cohort. *Post* is an indicator variable equal to one for all clients in the period after regulatory enforcement against exam cheating scandals in the event-specific cohort, and zero for all clients in the period before regulatory enforcement against exam cheating scandals in the event-specific cohort. I include the same set of control variables in equation (1). I also control for unobserved within-cohort variations across audit firms and over time by including cohort-audit firm-country and cohort-industry, and cohort-year fixed effects in equation (2). Given the inclusion of cohort-audit firm-country, cohort-industry and cohort-year fixed effects, the individual *Treat* and *Post* terms are omitted from equation (2). I winsorize all continuous variables at the 1st and 99th percentiles and cluster standard errors by client.

Table 6 reports the results using stacked DID. Column (1) shows the results using two-sided five-year window around the date of regulatory enforcement against exam cheating

[8] Prior studies that use stacked DID design examine either three-year window (e.g. Dube and Zhu 2021) or five-year window (e.g. Chen 2024) around the event time. I therefore examine both event window options for the robustness of the main inferences.

scandals, and column (2) presents the results using the two-sided three-year window around the date of regulatory enforcement against exam cheating scandals. The coefficients on the interaction term *Treat* × *Post* are positive and significant in columns (1) and (2) (p-values < 0.05). The main results are therefore robust to the alternative estimation approach using stacked DID.

[Insert Table 6 about here]

6.4 Exclusion of observations with auditor change

The composition of audit firms' client portfolios may change after regulatory enforcement against exam cheating scandals. Specifically, auditors involved in the exam cheating scandals may resign from risky clients, or clients may switch away auditors who are involved in the exam cheating scandals. To examine whether the changes in audit firms' client portfolios affect the main results, I drop the company-year observations with auditor change.

Table 7 reports the results. The coefficient on *PostReg* is positive and significant (p-value < 0.05). The main inferences hold after dropping company-year observations with auditor change. Therefore, changes in the composition of auditors' client portfolios do not drive the main results.

[Insert Table 7 about here]

7. Additional analyses

7.1 Detection of material weaknesses versus auditor conservatism

A plausible explanation of the main result is that auditors become conservative in issuing adverse internal control opinions rather than increase the rigor of internal control audit procedures. To address the alternative explanation, I estimate the following equation:

$$RESTATE_{i,j,t} = \alpha + \beta_1 PostReg \times ICOP_{j,t} + \beta_2 PostReg \times (1 - ICOP)_{j,t} + \beta_3 Controls_{i,j,t-1} + \text{Fixed Effects} + \epsilon_{i,j,t} \quad (3)$$

The dependent variable is *RESTATE* which is an indicator variable equal to one if a client's fiscal year-end financial statements are misstated and later restated, and zero otherwise. All variables and fixed effects are defined as previously.

Table 8 presents the results.[9] The coefficient on the interaction term $PostReg \times ICOP$ is positive and significant (p-value < 0.01), whereas the coefficient on the interaction term $PostReg \times (1 - ICOP)$ is insignificant (p-value > 0.10). These results imply that auditors are more likely to report material weaknesses in internal control audits of clients that subsequently restate fiscal year-ended financial statements in the aftermaths of regulatory enforcement against exam cheating scandals.

[Insert Table 8 about here]

7.2 Effect of regulatory enforcement against audit firms' exam cheating scandals on fees for audit services and non-audit services

The main results suggest that changes in auditor behavior following the regulatory enforcement against exam cheating scandals likely lead to a change in auditor effort. One plausible scenario is that the affected audit firms may pass on additional effort to their clients in the form of increased fees. On the one hand, an audit firm may increase its fees to offset the costs of remediation. On the other hand, reduction in audit fees may result from the need to counteract client desertion. Furthermore, audit fees may not be adjusted immediately as they are confirmed in the contract in advance and vary based on the amount of work in the audit assignment (Hackenbrack et al. 2014). As such, I explore whether the audit pricing changes in the targeted audit firms relative to the non-targeted audit firms following the regulatory enforcement against exam cheating scandals. I estimate the following equation where the dependent variable *FEE* are *AUDT_FEES*, *NAS_FEES*, and *TOTAL_FEES*, and include the

[9] I exclude observations with more than one auditor over the restatement period and observations that lack information of auditors for the restatement period in Audit Analytics Restatements modules to ensure a clean setting.

same set of controls in equation (1):

$$FEE_{i,j,t} = \alpha + \beta_1 PostReg_{j,t} + \beta_2 Controls_{i,j,t-1} + \text{Fixed Effects} + \epsilon_{i,j,t} \quad (4)$$

Table 9 reports the results. Columns (1) and (3) show positive and significant coefficients on *PostReg* (p-value < 0.05 and p-value < 0.01, respectively), whereas column (2) presents insignificant coefficient on *PostReg* (p-values > 0.10). These results imply that auditors charge high costs for increased remediation efforts to improve their audits of internal controls.

[Insert Table 9 about here]

7.3 Effect of regulatory enforcement against audit firms' exam cheating scandals on auditor change

Prior studies find that clients are more likely to switch auditors in the aftermaths of discipline actions due to reputation concerns (e.g., Wilson and Grimlund 1990; Weber et al. 2008). To test the effect of regulatory enforcement against exam cheating scandals on auditor change, I estimate a modified form of equation (1) where the dependent variable is *AUD_CHANGE*:

$$AUD\_CHANGE_{i,j,t} = \alpha + \beta_1 PostReg_{j,t} + \beta_2 Controls_{i,j,t-1} + \text{Fixed Effects} + \epsilon_{i,j,t} \quad (5)$$

Table 10 presents the results. First, I find positive but insignificant coefficient on *PostReg* in column (1) using the full sample (p-value > 0.10). These results indicate that regulatory enforcement leads to increase in auditor change among clients of targeted audit firms, but the effect is not significant when compared with other U.S. listed firms audited by non-targeted audit firms. Second, I focus on the sample of clients with targeted audit firms in the pre- and post-enforcement periods and find a positive and significant coefficient on *PostReg* in column (2) (p-value < 0.01). These results suggest that clients of targeted audit firms are more likely to switch auditors in the year following the regulatory enforcement. Third, I compare targeted audit firms and other audit firms that are not involved in the exam cheating scandals

but operate in the same countries as the targeted audit firms. The coefficient on *PostReg* remains positive and significant in column (3) (p-value < 0.01), implying that clients of targeted audit firms exhibit high propensity to switch auditors compared to other audit firms in the same national markets. Finally, I compare targeted audit firms and other audit firms that are not involved in the exam cheating scandals but share the same network with targeted audit firms. Column (4) reports a positive and significant on *PostReg* (p-value < 0.01), indicating that clients of targeted audit firms are more likely to switch audit firms relative to clients of other audit firms within the same network. Taken together, these results suggest that clients of targeted audit firms have increased propensity to switch auditors are among, compared to clients with other audit firms in the same national markets or within the same network as targeted audit firms.

[Insert Table 10 about here]

7.4 Spillover effects of regulatory enforcement against audit firms' exam cheating scandals

I further examine whether regulatory enforcement against audit firms' exam cheating scandals have spillover effects on the audit quality of other audit firms in the same country or the same network as the targeted audit firms. I estimate a modified form of equation (1) where the main variable of interest *PostReg_Same* represents *PostReg_SameCountry* or *PostReg_SameNetwork*:

$$ICOP_{i,j,t} = \alpha + \beta_1 PostReg\_Same_{j,t} + \beta_2 Controls_{i,j,t-1} + \text{Fixed Effects} + \epsilon_{i,j,t} \quad (6)$$

Table 11 presents the results. Column (1) presents the results for the sample of all other audit firms that are in the same countries as the targeted audit firms and presents a positive and significant coefficient on *PostReg_SameCountry* (p-value < 0.01). Column (2) also shows positive and significant coefficient on *PostReg_SameCountry* (p-value < 0.10), where I exclude the observations with targeted audit firms. These results document within-country spillover

effect of regulatory enforcement on the audit quality of other audit firms that are in the same national markets as the targeted audit firms. Column (3) find insignificant coefficient on *PostReg_SameNetwork*, where I restrict the sample to all other audit firms in the same network as the targeted audit firms (p-value>0.10). Similar, the results in column (4) show insignificant coefficient on *PostReg_SameNetwork* for the sample excluding the observations with targeted audit firms (p-value>0.10). These results imply that the spillover effect does not exist among audit firms in the same network as targeted audit firms.

[Insert Table 11 about here]

8. Conclusion

In this study, I examine the influence of regulatory enforcement against auditor firms' exam cheating scandals on audit quality. I find that auditors involved in the exam cheating scandals increases their issuance of adverse internal control opinions in the aftermath of regulatory enforcement. These adverse internal control opinions are informative about clients' subsequent restatements, therefore reflect improvement in quality of audits rather than auditor conservatism. In addition, I find that auditors charge higher audit fees due to increased efforts in improving detection and evaluation of internal control weaknesses. Furthermore, clients express concerns about audit reputation, and are more likely to dismiss auditors involved in the exam cheating scandals subsequent to the regulatory enforcement, relative to clients with audit firms that are not involved in the exam cheating scandals but are in the same national markets or network as the targeted audit firms. Finally, regulatory enforcement against audit firms' exam cheating scandals have spillover effects on the audit quality of other audit firms in the same countries as the targeted audit firms, but not for other audit firms in the same networks of the targeted audit firms.

The study is subject to several limitations. First, the data confidentiality of culpable audit personnel involved in the exam cheating scandals constrains the assessment of audit

quality at the individual level. In addition, the exam cheating scandals may occur in certain offices of the audit firm, which are not generally disclosed in the regulatory filings. Second, although I carefully evaluation the assumptions of the GDD and stacked DID frameworks, some may not be perfectly verifiable. The results may therefore be interpreted with caution.

Despite these limitations, this study generates several important implications. First, DeFond and Zhang (2014) suggest that auditor firms have strong incentives to reduce litigation risk and to protect their reputation. The main findings corroborate the claim and show that audit firms involved in the exam cheating scandals improve internal control testing and evaluation of detected internal control weaknesses in the aftermath of regulatory enforcement. Second, the study complements Defond and Lennox (2017) by documenting that regulatory enforcement targeting deficiencies in audit firms' internal functions improve quality in internal control audits, albeit imposing high costs on clients. Third, the exam cheating scandals induce negative consequences to audit firms' reputation as clients subsequently switch away from auditors involved in the exam cheating scandals.

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Appendix A: Variable definitions

Variable	Definition	Source
Dependent Variables		
ICOP	Indicator variable equal to one if the auditor issues an adverse internal control opinion to its client, and zero otherwise.	Audit Analytics

RESTATE	Indicator variable equal to one if the fiscal year-end financial statements are subsequently restated, and zero otherwise.	Audit Analytics
AUD_CHANGE	Indicator variable equal to one if the client switches its auditor, and zero otherwise.	Audit Analytics
AUD_FEES	Natural logarithm of audit fees paid by the client to the auditor (in million USD).	Audit Analytics
NAS_FEES	Natural logarithm of NAS fees paid by the client to the auditor (in million USD).	Audit Analytics
TOTAL_FEES	Natural logarithm of total fees paid by the client to the auditor (in million USD).	Audit Analytics
Main Variables of Interest		
PostReg	Indicator variable equal to one for the auditor involved in the exam cheating scandals in the year after the regulatory enforcement against exam cheating scandals and all years thereafter, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_SameCountry	Indicator variable equal to one for the auditor in the same country as the targeted auditors in the year after the regulatory enforcement against exam cheating scandals and all years thereafter, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_SameNetwork	Indicator variable equal to one for the auditor in the same network as the targeted auditors in the year after the regulatory enforcement against exam cheating scandals and all years thereafter, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Treat	Indicator variable equal to one if the auditor is subject to regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Post	Indicator variable equal to one if the time period is after regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Audit Firm-Level Control Variables		
BIG4	Indicator variable equal to one when the client is audited by a Big 4 auditor, and zero otherwise.	Audit Analytics
BUSY_SEASON	Indicator variable equal to one when the client is audited during the busy season, and zero otherwise. A busy season audit is an audit of a client with December fiscal year-end.	Audit Analytics
MISMATCH	Indicator variable equal to one if there is a auditor-client mismatch as in Shu (2000), and zero otherwise.	Audit Analytics Compustat
Client-Level Control Variables		
BTM	Book to market ratio	Compustat
CURRENT	Current assets divided by current liabilities.	Audit Analytics Compustat
FINANCING	The sum of long-term debt issuances plus the sale of common and preferred stock divided by total assets.	Audit Analytics Compustat
INST	Percentage of shares owned by institutional investors.	Thomson Reuters
INVENTORY	Inventory divided by total assets.	Audit Analytics Compustat

LOSS	Indicator variable equal to one if the client's net income is less than zero, and zero otherwise.	Compustat
LEVERAGE	The sum of current liabilities and long-term debt divided by average total assets.	Audit Analytics Compustat
MA	Indicator variable equal to one if the client is engaged in a merger or acquisition (aqp and aqeps are non-missing and non-zero), and zero otherwise.	Compustat
RESTRUCT	Indicator variable equal to one if the client has undergone restructuring activities (rcp, rca, rceps, and rcd are non-missing and non-zero) in year *t*, and zero otherwise.	Compustat
ROA	Income before extraordinary items divided by average total assets.	Audit Analytics Compustat
SEGMENTS	Natural logarithm of the client's operating segments.	Compustat
SIZE	Natural logarithm of the client's total assets (in million USD).	Audit Analytics Compustat
ZSCORE	Z-score of the client calculated as -4.336-4.513×(net income/total assets)+5.679×(total liabilities/total assets)+0.004×(current assets/current liabilities).	Audit Analytics Compustat

Appendix B: Regulatory enforcement against audit firms' exam cheating scandals

		Regulatory Proceedings	
Audit Firm	Country	Date	Document
KPMG	United States	06/17/2019	Securities Exchange Act of 1934 Release No. 86118
KPMG	Australia	09/13/2021	PCAOB Release No. 105-2021-008
PwC	Canada	02/03/2022	CPAB Order
		02/24/2022	PCAOB Release No. 105-2022-002
		11/22/2023	Chartered Professional Accountants of Ontario
EY	United States	06/28/2022	Securities Exchange Act of 1934 Release No. 95167
KPMG	United Kingdom	12/06/2022	PCAOB Release No. 105-2022-032
KPMG	Colombia	12/06/2022	PCAOB Release No. 105-2022-034
PwC	Hong Kong	11/30/2023	PCAOB Release No. 105-2023-043
PwC	China	11/30/2023	PCAOB Release No. 105-2023-044

Note: This table lists the regulatory enforcement against audit firms' exam cheating scandals. Details of audit firms' exam cheating cases are presented in the Online Appendix A.

Table 1: Sample description

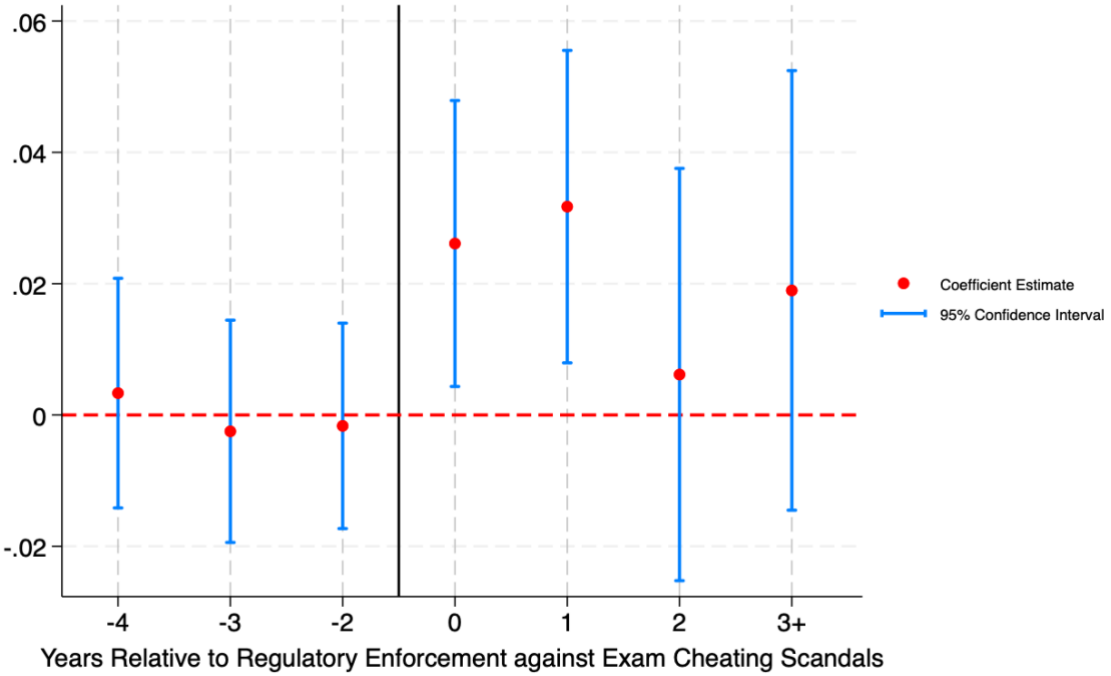
Selection Criteria	Company-Year Observations
Observations in Audit Analytics, Compustat North America, Compustat Global, and Compustat Bank with available data on auditors' internal control opinions from 2004 to 2023	76,169
Remove observations with missing audit-firm-level and client-level data in Audit Analytics	(732)
Remove observations with missing client-level data in Compustat	(38,324)
Remove singletons for the fixed effect groupings	(63)
Full sample	37,050
Number of unique companies	5,243

Table 2: Descriptive statistics

Variable	Obs.	Mean	S.D.	P25	Median	P75
ICOP	37,050	0.069	0.253	0.000	0.000	0.000
PostReg	37,050	0.050	0.217	0.000	0.000	0.000
BIG4	37,050	0.853	0.355	1.000	1.000	1.000
BUSY_SEASON	37,050	0.738	0.440	0.000	1.000	1.000
MISMATCH	37,050	0.138	0.345	0.000	0.000	0.000
BTM	37,050	0.475	0.442	0.208	0.385	0.635
CURRENT	37,050	2.833	2.725	1.306	1.982	3.203
FINANCING	37,050	0.168	0.252	0.009	0.055	0.222
INST	37,050	0.668	0.304	0.462	0.747	0.906
INVENTORY	37,050	0.087	0.106	0.002	0.047	0.137
LOSS	37,050	0.282	0.450	0.000	0.000	1.000
LEVERAGE	37,050	0.250	0.232	0.033	0.216	0.385
MA	37,050	0.263	0.440	0.000	0.000	1.000
RESTRUCT	37,050	0.339	0.473	0.000	0.000	1.000
ROA	37,050	0.005	0.173	-0.012	0.039	0.084
SEGMENTS	37,050	1.359	0.765	0.693	1.386	1.946
SIZE	37,050	7.114	1.833	5.772	7.005	8.324
ZSCORE	37,050	-1.407	1.751	-2.596	-1.525	-0.514

Note: This table presents the descriptive statistics for all the variables in equation (1). Continuous variables are winsorized at the 1st and 99th percentiles. See Appendix A for variable definitions.

Figure 1: Parallel trends assumption



Note: This figure illustrates the dynamic effect of regulatory enforcement against audit firms' exam cheating scandals. I plot the coefficients on a set of dummy variables indicating the event years relative to the year for regulatory enforcement against exam cheating scandals and the corresponding 95% confidence intervals. Year 0 is the year with the issuance of regulatory fillings on the exam cheating scandals. Year 3+ indicates the three years and all subsequent years after Year 0. I omit the indicator for *t*–1 that serves as the benchmark period. The vertical dashed line splits the event years into before and after the regulatory enforcement against exam cheating scandals.

Table 3: Effect of regulatory enforcement against audit firms' exam cheating scandals on audit quality

Variable	(1) *ICOP*	(2) *ICOP*
PostReg	0.022**	0.024***
	(2.564)	(2.844)
BIG4		-0.032*
		(-1.707)
BUSY_SEASON		-0.003
		(-0.677)
MISMATCH		-0.005
		(-0.705)
BTM		0.020***
		(3.822)
CURRENT		-0.003***
		(-3.672)
FINANCING		0.022***
		(2.907)
INST		-0.029***
		(-3.901)
INVENTORY		0.005
		(0.211)
LOSS		0.027***
		(5.326)
LEVERAGE		0.014
		(1.009)
MA		0.022***
		(5.842)
RESTRUCT		0.004
		(1.002)
ROA		0.016
		(0.807)
SEGMENTS		0.010***
		(3.322)
SIZE		-0.016***
		(-11.672)
ZSCORE		0.003
		(1.403)
Constant	0.068***	0.195***
	(39.483)	(9.453)
Audit Firm-Country FE	Yes	Yes
Industry	Yes	Yes
Year FE	Yes	Yes
Observations	37,050	37,050
Adj. R^2	0.064	0.078

Notes: This table presents the main results. Columns (1) show the result of baseline model without control variables. Columns (2) show the result of estimating equation (1). The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 4: Alternative sample construction

	(1)	(2)	(3)	(4)	(5)
	Event window [-5, +5]	Event window [-3, +3]	Targeted audit firms only	Audit firms in the same country	Audit firms in the same network
Variable	*ICOP*	*ICOP*	*ICOP*	*ICOP*	*ICOP*
PostReg	0.026**	0.035*	0.022*	0.025***	0.027***
	(2.005)	(1.898)	(1.943)	(3.028)	(3.047)
BIG4	0.026	0.022	-0.151***	-0.029	-0.181***
	(0.673)	(0.992)	(-3.515)	(-1.555)	(-4.703)
BUSY_SEASON	-0.006	0.000	-0.008	-0.003	-0.003
	(-0.652)	(0.005)	(-1.345)	(-0.707)	(-0.548)
MISMATCH	-0.018	-0.053**	-0.024**	-0.004	-0.011
	(-0.659)	(-2.200)	(-2.093)	(-0.568)	(-1.075)
BTM	0.000	-0.001	0.008	0.018***	0.018***
	(0.034)	(-0.134)	(1.146)	(3.658)	(2.801)
CURRENT	-0.005***	-0.005***	-0.004***	-0.003***	-0.003***
	(-3.403)	(-2.615)	(-3.911)	(-3.753)	(-3.685)
FINANCING	0.020	0.041**	0.010	0.021***	0.022**
	(1.420)	(2.405)	(1.102)	(2.721)	(2.510)
INST	-0.037**	-0.013	-0.020**	-0.027***	-0.012
	(-2.066)	(-0.590)	(-2.004)	(-3.515)	(-1.351)
INVENTORY	0.080	0.062	0.004	0.009	0.016
	(1.436)	(0.880)	(0.126)	(0.378)	(0.510)
LOSS	0.023**	0.033***	0.022***	0.026***	0.028***
	(2.203)	(2.610)	(3.000)	(5.010)	(4.789)
LEVERAGE	0.010	0.013	0.022	0.017	0.007
	(0.339)	(0.355)	(1.214)	(1.224)	(0.444)
MA	0.029***	0.025**	0.024***	0.022***	0.020***
	(3.513)	(2.530)	(4.470)	(5.775)	(4.774)
RESTRUCT	0.014*	0.008	0.010**	0.003	0.005
	(1.785)	(0.870)	(2.098)	(0.935)	(1.335)
ROA	-0.020	0.005	-0.002	0.012	0.015

	(-0.527)	(0.111)	(-0.072)	(0.600)	(0.659)
SEGMENTS	0.005	0.006	0.014***	0.010***	0.012***
	(0.690)	(0.675)	(3.400)	(3.210)	(3.560)
SIZE	-0.016***	-0.017***	-0.017***	-0.015***	-0.016***
	(-5.406)	(-4.641)	(-8.918)	(-11.342)	(-10.165)
ZSCORE	-0.005	-0.003	-0.001	0.002	0.003
	(-0.974)	(-0.583)	(-0.276)	(0.893)	(1.107)
Constant	0.135**	0.124**	0.314***	0.188***	0.328***
	(2.570)	(2.533)	(6.272)	(8.973)	(7.620)
Audit Firm-Country FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	5,782	4,059	14,491	34,354	24,177
Adj. R^2	0.053	0.067	0.043	0.072	0.047

Notes: This table presents the results of estimating equation (1) using alternative sample constructions. Column (1) shows the result of the subsample in the event window of three years before and the three years after the regulatory enforcement against exam cheating scandals. Column (2) shows the result of the subsample in the event window of five years before and five years after the regulatory enforcement against exam cheating scandals. Column (3) presents the results for the subsample of targeted audit firms. Column (4) presents the results for the subsample of all audit firms in the same country. Column (5) presents the results for the subsample of audit firms in the same network. The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 5: Entropy balancing analyses

Variable	(1) *ICOP*	(2) *ICOP*	(3) *ICOP*
PostReg	0.042***	0.043***	0.041***
	(4.252)	(4.344)	(4.157)
BIG4	0.029	0.031	0.028
	(1.300)	(1.332)	(1.169)
BUSY_SEASON	-0.006	-0.006	-0.007
	(-0.574)	(-0.607)	(-0.675)
MISMATCH	-0.049**	-0.053**	-0.052**
	(-2.245)	(-2.309)	(-2.249)
BTM	0.003	0.000	0.002
	(0.305)	(0.051)	(0.234)
CURRENT	-0.004***	-0.004***	-0.005***
	(-2.682)	(-2.616)	(-2.813)
FINANCING	0.046***	0.044***	0.045***
	(2.807)	(2.775)	(2.872)
INST	-0.003	-0.003	-0.007
	(-0.138)	(-0.162)	(-0.350)
INVENTORY	0.087*	0.086	0.082
	(1.646)	(1.615)	(1.509)
LOSS	0.031***	0.031***	0.032***
	(2.677)	(2.654)	(2.612)
LEVERAGE	0.015	0.016	0.012
	(0.482)	(0.531)	(0.404)
MA	0.017**	0.018**	0.018**
	(2.180)	(2.332)	(2.303)
RESTRUCT	0.010	0.011	0.012
	(1.374)	(1.397)	(1.528)
ROA	-0.040	-0.046	-0.040
	(-0.885)	(-1.084)	(-0.948)
SEGMENTS	0.007	0.007	0.006
	(0.995)	(0.998)	(0.813)
SIZE	-0.016***	-0.016***	-0.016***
	(-5.474)	(-5.386)	(-5.290)
ZSCORE	-0.003	-0.003	-0.003
	(-0.646)	(-0.686)	(-0.640)
Constant	0.100**	0.099**	0.107**
	(2.089)	(1.981)	(2.093)
Audit Firm-Country FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	37,050	37,050	37,050
Adj. R^2	0.051	0.052	0.054

Notes: This table presents the results of estimating equation (1) using entropy balancing approach. Column (1) shows the result of balancing the first moment (mean) of the distribution of all covariates. Column (2) shows the result of balancing the first moment (mean) and second moment (variance) of the distribution of all covariates. Column (3) shows the result of balancing the first moment (mean), second moment (variance), and third moment (skewness) of the distribution of all covariates. The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 6: Stacked difference-in-differences design

Variable	(1) Event Window [-5, +5] *ICOP*	(2) Event Window [-3, +3] *ICOP*
Treat × Post	0.021**	0.019**
	(2.331)	(2.057)
BIG4	-0.056	-0.082**
	(-1.563)	(-1.962)
BUSY_SEASON	0.006	0.006
	(0.813)	(0.771)
MISMATCH	0.007	-0.007
	(0.429)	(-0.364)
BTM	0.011*	0.009
	(1.648)	(1.169)
CURRENT	-0.002	-0.001
	(-1.322)	(-0.534)
FINANCING	0.039***	0.043***
	(3.147)	(3.096)
INST	-0.069***	-0.078***
	(-4.853)	(-4.826)
INVENTORY	0.003	0.005
	(0.061)	(0.116)
LOSS	0.023***	0.022***
	(3.093)	(2.754)
LEVERAGE	0.019	0.017
	(0.854)	(0.716)
MA	0.024***	0.025***
	(4.539)	(4.003)
RESTRUCT	-0.002	-0.000
	(-0.367)	(-0.051)
ROA	-0.014	-0.041
	(-0.454)	(-1.208)
SEGMENTS	0.006	0.007
	(1.260)	(1.259)
SIZE	-0.016***	-0.015***
	(-7.026)	(-6.323)
ZSCORE	-0.000	-0.001
	(-0.130)	(-0.312)
Constant	0.234***	0.258***
	(6.337)	(5.985)
Cohort-Audit Firm-Country FE	Yes	Yes
Cohort-Industry FE	Yes	Yes
Cohort-Year FE	Yes	Yes
Observations	66,936	47,152
Adj. R^2	0.117	0.140

Notes: This table reports the results of estimating equation (2) using the stacked DID approach. For each regulatory enforcement event, I form a cohort with targeted audit firms as the treated group, and never-targeted and later-targeted audit firms as the control group. Column (1) reports the outcome of interest in the treatment firms in the three years before and the three years after the treatment, relative to the clean control firms in the same cohort over the same period. Column (2) reports the outcome of interest in the treatment firms in the five years before and the five years after the treatment, relative to the clean control firms in the same cohort over the

same period. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 7: Exclude observations with auditor change

Variable	(1) *ICOP*
PostReg	0.020**
	(2.425)
BIG4	-0.032*
	(-1.728)
BUSY_SEASON	-0.003
	(-0.613)
MISMATCH	-0.005
	(-0.718)
BTM	0.020***
	(3.858)
CURRENT	-0.003***
	(-3.810)
FINANCING	0.021***
	(2.814)
INST	-0.029***
	(-3.942)
INVENTORY	0.004
	(0.171)
LOSS	0.026***
	(5.262)
LEVERAGE	0.013
	(0.960)
MA	0.021***
	(5.778)
RESTRUCT	0.004
	(1.083)
ROA	0.017
	(0.827)
SEGMENTS	0.010***
	(3.345)
SIZE	-0.016***
	(-11.780)
ZSCORE	0.004
	(1.452)
Constant	0.197***
	(9.548)
Audit Firm-Country FE	Yes
Industry FE	Yes
Year FE	Yes
Observations	36,998
Adj. R^2	0.079

Notes: This table presents the results after excluding observations with auditor change. The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 8: The role of auditors' adverse internal control opinions on clients' restatements

Variable	(1) *RESTATE*
PostReg × *ICOP*	0.153***
	(3.980)
PostReg × (1-*ICOP*)	0.009
	(1.278)
BIG4	-0.030***
	(-4.076)
BUSY_SEASON	-0.007
	(-1.278)
MISMATCH	0.000
	(0.074)
BTM	0.021***
	(4.451)
CURRENT	-0.001
	(-1.237)
FINANCING	0.004
	(0.467)
INST	0.005
	(0.618)
INVENTORY	0.013
	(0.534)
LOSS	-0.000
	(-0.017)
LEVERAGE	0.014
	(0.946)
MA	0.014***
	(3.375)
RESTRUCT	0.007
	(1.604)
ROA	0.012
	(0.654)
SEGMENTS	0.007**
	(2.014)
SIZE	-0.004**
	(-2.372)
ZSCORE	0.003
	(1.361)
Constant	0.099***
	(6.023)
Audit Firm-Country FE	Yes
Industry FE	Yes
Year FE	Yes
Observations	36,467
Adj. R^2	0.032

Notes: This table presents the results of estimating equation (3). The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 9: Effect of regulatory enforcement against audit firms' exam cheating scandals on fees for audit services and non-audit services

Variable	(1) *AUD_FEES*	(2) *NAS_FEES*	(3) *TOTAL_FEES*
PostReg	0.045**	0.076	0.048***
	(2.530)	(1.266)	(2.691)
BIG4	0.024	-0.122	0.021
	(0.999)	(-1.484)	(0.868)
BUSY_SEASON	0.061***	-0.018	0.053***
	(3.528)	(-0.400)	(3.101)
MISMATCH	-0.002	-0.090*	-0.012
	(-0.134)	(-1.842)	(-0.746)
BTM	-0.100***	-0.213***	-0.121***
	(-7.290)	(-5.544)	(-8.739)
CURRENT	-0.011***	-0.016**	-0.011***
	(-4.519)	(-2.313)	(-4.714)
FINANCING	0.103***	0.084	0.101***
	(5.090)	(1.457)	(4.707)
INST	-0.062**	-0.110*	-0.051**
	(-2.525)	(-1.701)	(-2.012)
INVENTORY	0.374***	-0.204	0.327***
	(4.139)	(-0.825)	(3.527)
LOSS	0.068***	-0.089**	0.052***
	(5.970)	(-2.553)	(4.521)
LEVERAGE	-0.481***	-0.505***	-0.464***
	(-10.489)	(-4.391)	(-10.069)
MA	0.084***	0.148***	0.093***
	(8.361)	(4.935)	(9.127)
RESTRUCT	0.117***	0.180***	0.126***
	(11.485)	(6.484)	(12.232)
ROA	0.123**	0.290*	0.126**
	(2.341)	(1.888)	(2.316)
SEGMENTS	0.194***	0.230***	0.198***
	(18.595)	(8.378)	(18.997)
SIZE	0.432***	0.556***	0.446***
	(76.616)	(40.427)	(78.297)
ZSCORE	0.078***	0.084***	0.076***
	(10.350)	(4.513)	(9.954)
Constant	11.108***	8.324***	11.173***
	(232.446)	(60.247)	(233.658)
Audit Firm-Country FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	36,870	32,774	36,873
Adj. R^2	0.814	0.416	0.816

Notes: This table presents the results of estimating equation (4). Columns (1), (2), and (3) show results where the dependent variables are *AUD_FEES*, *NAS_FEES*, and *TOTAL_FEES*, respectively. The *t*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 10: Effect of regulatory enforcement against audit firms' exam cheating scandals on auditor change

Variable	(1) All audit firms *AUDITOR_CHANGE*	(2) Targeted audit firms only *AUDITOR_CHANGE*	(3) Audit firms in the same country *AUDITOR_CHANGE*	(4) Audit firms in the same network *AUDITOR_CHANGE*
PostReg	0.008	0.019***	0.023***	0.017***
	(1.494)	(2.618)	(2.833)	(3.098)
BIG4	-0.031***	-0.036	-0.033***	-0.023
	(-3.086)	(-1.209)	(-3.202)	(-0.952)
BUSY_SEASON	0.000	-0.003	0.000	-0.002
	(0.207)	(-0.821)	(0.041)	(-0.763)
MISMATCH	0.010*	0.003	0.010*	0.004
	(1.761)	(0.320)	(1.712)	(0.470)
BTM	0.014***	0.021***	0.016***	0.017***
	(4.509)	(4.128)	(4.722)	(4.396)
CURRENT	0.000	-0.000	0.000	0.000
	(0.496)	(-0.147)	(0.471)	(0.623)
FINANCING	0.004	-0.002	0.004	0.002
	(0.764)	(-0.252)	(0.738)	(0.281)
INST	-0.011**	-0.008	-0.011**	-0.010*
	(-2.302)	(-1.132)	(-2.214)	(-1.831)
INVENTORY	0.024	0.008	0.023	0.013
	(1.402)	(0.351)	(1.317)	(0.648)
LOSS	0.004	0.006	0.003	0.007
	(0.995)	(1.105)	(0.910)	(1.623)
LEVERAGE	0.008	0.015	0.009	0.004
	(0.951)	(1.316)	(0.976)	(0.384)
MA	0.003	0.008**	0.003	0.005*
	(1.034)	(2.181)	(1.056)	(1.818)
RESTRUCT	0.001	-0.001	0.002	0.001
	(0.534)	(-0.339)	(0.657)	(0.483)
ROA	-0.003	0.024	0.001	0.018
	(-0.185)	(1.294)	(0.072)	(1.081)

SEGMENTS	0.007***	0.007***	0.007***	0.007***
	(3.840)	(2.736)	(3.778)	(3.496)
SIZE	-0.008***	-0.010***	-0.008***	-0.009***
	(-8.907)	(-7.670)	(-9.079)	(-8.959)
ZSCORE	0.001	0.002	0.001	0.002
	(0.478)	(0.999)	(0.785)	(0.969)
Constant	0.106***	0.122***	0.107***	0.110***
	(8.256)	(3.524)	(8.227)	(4.034)
Audit Firm-Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	37,050	14,491	34,354	24,177
Adj. R^2	0.044	0.017	0.043	0.025

Notes: This table presents the results of estimating equation (5). Column (1) shows the result including all the audit firms. Column (2) shows the result for the subsample of targeted audit firms. Column (3) presents the results for the subsample of all audit firms in the same country. Column (4) presents the results for the subsample of audit firms in the same network. The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Table 11: Spillover effect of regulatory enforcement against audit firms' exam cheating scandals

	(1)	(2)	(3)	(4)
	Audit firms in the same country only	Audit firms in the same country versus all other audit firms in different countries	Audit firms in the same network only	Audit firms in the same network versus all other audit firms in different networks
Variable	*ICOP*	*ICOP*	*ICOP*	*ICOP*
PostReg_SameCountry	0.067***	0.029*		
	(4.303)	(1.905)		
PostReg_SameNetwork			0.025	-0.011
			(1.090)	(-1.023)
BIG4	-0.003	-0.006	-0.243***	-0.006
	(-0.132)	(-0.296)	(-3.221)	(-0.301)
BUSY_SEASON	-0.001	0.000	0.008	-0.003
	(-0.149)	(0.012)	(0.991)	(-0.542)
MISMATCH	0.005	0.004	0.007	0.003
	(0.583)	(0.406)	(0.333)	(0.325)
BTM	0.024***	0.025***	0.033***	0.023***
	(3.542)	(3.659)	(2.716)	(3.516)
CURRENT	-0.002**	-0.002**	-0.002	-0.003**
	(-2.238)	(-2.216)	(-1.611)	(-2.573)
FINANCING	0.029***	0.032***	0.053***	0.031***
	(2.603)	(2.889)	(3.030)	(2.890)
INST	-0.034***	-0.036***	-0.000	-0.032***
	(-3.053)	(-3.501)	(-0.000)	(-3.175)
INVENTORY	0.008	0.004	0.038	0.009
	(0.235)	(0.115)	(0.634)	(0.334)
LOSS	0.030***	0.031***	0.036***	0.031***
	(4.206)	(4.600)	(3.832)	(4.729)
LEVERAGE	0.012	0.007	-0.012	-0.003
	(0.596)	(0.360)	(-0.454)	(-0.147)
MA	0.021***	0.020***	0.016**	0.023***
	(3.919)	(4.051)	(2.361)	(4.836)

RESTRUCT	-0.002	-0.001	-0.001	0.002
	(-0.414)	(-0.192)	(-0.196)	(0.410)
ROA	0.021	0.027	0.035	0.040
	(0.705)	(0.947)	(0.783)	(1.470)
SEGMENTS	0.006	0.007	0.007	0.009**
	(1.427)	(1.597)	(1.173)	(2.544)
SIZE	-0.014***	-0.015***	-0.013***	-0.017***
	(-7.493)	(-8.045)	(-5.001)	(-10.095)
ZSCORE	0.005	0.006*	0.008*	0.007**
	(1.311)	(1.854)	(1.712)	(1.968)
Constant	0.168***	0.179***	0.362***	0.192***
	(7.184)	(7.811)	(4.513)	(8.492)
Audit Firm-Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	19,863	22,559	9,686	22,559
Adj. R^2	0.089	0.096	0.062	0.094

Notes: This table presents the results of estimating equation (6). Column (1) shows the result for audit firms in the same country as targeted audit firms versus all other audit firms in countries that are different from those of targeted audit firms. Column (2) shows the result for only audit firms in the same country as targeted audit firms. Column (3) presents the results for audit firms in the same network as targeted audit firms versus all other audit firms in networks that are different from those of targeted audit firms. Column (4) presents the results for audit firms in the same network as . The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

Online Appendix

Online Appendix A: Cases of audit firms' exam cheating scandals

Case 1

Respondent: KPMG US

Exam Type: Internal Training Tests

Training Requirements:

As accountants licensed by state accountancy boards, many KPMG audit professionals are required to complete a minimum number of continuing professional education ("CPE") courses periodically – typically 120 hours every three years. KPMG requires its audit professionals to complete additional training in excess of state requirements. These training requirements vary by position, role, and industry, and are designed by the firm to be relevant to the audit work its professionals are performing. In addition to state accountancy boards' and KPMG's own continuing education requirements, the Commission ordered KPMG audit professionals to complete a minimum of 12 hours of training in specific audit areas as part of an August 2017 settlement of charges that KPMG failed to properly audit the financial statements of an oil and gas client. To help its audit professionals satisfy these requirements, KPMG administers its own set of online training programs that also qualify for CPE credit. KPMG requires its auditors to pass an examination at the conclusion of each online training program. Audit professionals are given three opportunities to pass each examination. If one of KPMG's audit professionals is unable to pass after two attempts, their Performance Management Leader is notified. If they are unable to pass after three attempts, the consequences are more significant: they are required to retake the training; they are prohibited from conducting audit work until they pass the exam; and others at the firm may be notified. Audit professionals also understood that failing to pass an exam could lead to their compensation being reduced.

Violation:

On numerous occasions, KPMG audit professionals who had passed training exams sent their answers to colleagues to help them pass those exams. They sent colleagues images of their answers primarily by email or printed their answers and gave them to their colleagues. This conduct was committed by audit professionals at all levels of seniority, including lead audit engagement partners who were responsible for compliance with PCAOB standards in auditing their clients' financial statements. A number of lead audit engagement partners not only sent exam answers to other partners, but also solicited answers from and sent answers to their subordinates. In addition to sharing answers to training examinations, certain audit professionals also manually changed the scores required to pass certain exams. Prior to November 2015, KPMG hosted exams to training programs on an internal server with software provided by a third party. KPMG sent participants in training programs a hyperlink that directed them to the applicable exams. Embedded in the hyperlink was an instruction to the server that specified the score necessary to pass the exam. Thus, the characters "MasteryScore=70" meant participants were required to answer at least 70 percent of the answers accurately to pass the exam. By changing the number in the hyperlink, audit professionals could change the score required to pass. For a period of time up to November 2015, certain audit professionals, including one partner, altered the URLs for their exams to lower the scores required to pass. Twenty-eight of these auditors did so on four or more occasions. Certain audit professionals lowered the required score to the point of passing exams while answering less than 25 percent of the questions correctly.

Case 2

Respondent: KPMG Australia

Exam Type: Internal Training Tests

Training Requirements:

As accountants licensed by state accountancy boards, many KPMG audit professionals are required to complete a minimum number of continuing professional education ("CPE") courses periodically – typically 120 hours every three years. KPMG requires its audit professionals to complete additional training in excess of state requirements. These training requirements vary by position, role, and industry, and are designed by the firm to be relevant to the audit work its professionals are performing. In addition to state accountancy boards' and KPMG's own continuing education requirements, the Commission ordered KPMG audit professionals to complete a minimum of 12 hours of training in specific audit areas as part of an August 2017 settlement of charges that KPMG failed to properly audit the financial statements of an oil and gas client. To help its audit professionals satisfy these requirements, KPMG administers its own set of online training programs that also qualify for CPE credit. KPMG requires its auditors to pass an examination at the conclusion of each online training program. Audit professionals are given three opportunities to pass each examination. If one of KPMG's audit professionals is unable to pass after two attempts, their Performance Management Leader is notified. If they are unable to pass after three attempts, the consequences are more significant: they are required to retake the training; they are prohibited from conducting audit work until they pass the exam; and others at the firm may be notified. Audit professionals also understood that failing to pass an exam could lead to their compensation being reduced.

Violation:

From at least 2016 to early 2020, more than 1,100 KPMG Australia personnel were involved in improper answer sharing when taking training tests. Firm personnel primarily shared answers using email, by attaching documents containing answers to training test questions. In addition, individuals also shared answers using text messages or instant message services, by providing the answers in hard copy documents, by saving the answers to test questions on a shared server, or orally when taking tests in the presence of others. Instances of improper answer sharing occurred in connection with tests that were a part of the Firm's mandatory training, including the Independence Training, Audit Foundations, Spotlight, and U.S. GAAP and GAAS courses. Improper sharing of training test answers occurred at all levels of the Firm. After Firm leadership learned of the practice and conducted an internal investigation, the Firm sanctioned 1,131 individuals, or approximately 12% of Firm personnel, for their involvement in answer sharing. The Firm's investigation revealed that the misconduct was widespread within the Firm's audit practice, including among those who performed work on audits governed by PCAOB standards. With respect to audit training tests, at least 277 personnel engaged in answer sharing

Case 3

Respondent: PwC Canada

Exam Type: Internal Training Tests

Training Requirements:

The Firm has designed its training program to serve multiple purposes, including to provide Firm personnel with technical instruction, to further their professional development, and to satisfy some of the continuing professional education requirements imposed by the accountancy boards that grant CPA certifications to the Firm's auditors. The Firm's training requirements vary by each professional's position, role, and industry practice area, and are intended to be relevant to, among other things, the independence of its personnel, the audit work they perform, and the integrity with which they carry out their professional responsibilities. The Firm's internal training often includes a testing component. Since at least 2016, the Firm has utilized an online platform to offer training to its personnel. The platform enables the Firm to deliver, track, and record completion of mandatory training and testing. The platform records the dates and times when personnel access and complete mandatory training and testing. For training courses with a testing component, the Firm does not credit personnel with completing the training until they satisfactorily pass the related test. Since at least 2016, the Firm has required all personnel to take certain online courses, including courses containing content regarding professional independence and performing professional responsibilities with integrity. These courses include a testing component at the end. During the same period, the Firm has also administered a number of online courses related to auditing and accounting. The particular courses the Firm's auditors must take vary based on their experience levels. Many of these audit-related courses include a testing component and are mandatory for the Firm's audit personnel.

Violation:

From at least 2016 to early 2020, more than 1,200 PwC Canada personnel were involved in improper answer sharing related to training tests. Firm personnel primarily shared answers through use of several shared drives that professionals had created on the Firm's computer network (the "Shared Drives"), and on which professionals had posted the answers for others to view and provide supplemental answers. In addition, individuals shared answers by sending emails with attached documents containing answers to training test questions, by providing answers in hard copy documents, or by discussing answers when taking tests in the presence of others. Instances of improper answer sharing primarily occurred in connection with tests that were a part of the Firm's mandatory Assurance training. The Shared Drives contained answers for at least 46 of the Firm's approximately 55 mandatory Assurance tests, as well as answers for some mandatory Firm-wide tests containing content concerning professional integrity and professional independence. Improper sharing of training test answers occurred among junior staff, managers, directors, and partners at the Firm. After Firm leadership learned of the practice, it conducted an internal investigation. The Firm's investigation revealed that the misconduct was widespread within the Firm's audit practice, including among those who performed work on audits governed by PCAOB standards. At least 1,100 professionals in the Firm's Assurance practice were involved in answer sharing.

Case 4

Respondent: EY US

Exam Type: Certified Public Accountant (CPA) exam and other examinations via EY CPE testing platform required to maintain their CPA licenses

Training Requirements:

To become licensed as a CPA, applicants in most states must pass ethics examinations. These are designed to keep accountants who do not sufficiently understand their ethical responsibilities from the essential role CPAs play in serving the public interest. State accountancy boards require CPAs to complete continuing professional education (CPE) courses to ensure they remain knowledgeable about their ethical obligations and current accounting standards. CPAs must pass examinations designed to test their understanding of these materials in order to get credit for these courses and maintain their licenses.

Violation:

In December 2014, an internal EY whistleblower reported a flaw in the firm's software that allowed professionals to pass CPE exams without the required number of correct responses. This vulnerability allowed exam takers to achieve a passing score while answering as little as one question correctly. The firm's investigation of this matter determined that from 2012 to 2015, over 200 EY audit professionals in multiple offices exploited this flaw to pass CPE exams. From 2017 to 2021, 49 EY audit professionals sent and/or received answer keys to CPA ethics exams. In addition, hundreds of other audit professionals cheated on CPE courses, including those addressing CPAs' ethical obligations. And a significant number of EY professionals who did not cheat themselves, but knew their colleagues were cheating and facilitating cheating, violated the firm's Code of Conduct by failing to report this misconduct.

Case 5

Respondent: KPMG UK

Exam Type: Internal Training Tests

Training Requirements:

KPMG UK and KRC designed their training programs to serve multiple purposes, including to provide personnel with technical instruction, to further their professional development, and to help employees satisfy some of the continuing professional education requirements imposed by the accountancy boards that license KPMG UK's and KRC's auditors. KPMG UK's and KRC's training requirements are intended to be relevant to, among other things, the independence of their personnel, the audit work they perform, and the integrity with which they carry out their professional responsibilities. However, the training requirements can vary by a professional's position, role, and industry practice area. Both KPMG UK's and KRC's internal trainings often include a testing component. Since at least 2018, KPMG UK and KRC have utilized online platforms to offer training to their personnel. The platforms enable KPMG UK and KRC to deliver, track, and record completion of mandatory training and testing. Since at least 2018, KPMG UK and KRC have required all personnel to take certain online courses, including courses containing content regarding professional independence and performing professional responsibilities with integrity. These courses include a testing component at the end. During the same period, KPMG UK

and KRC also have administered a number of online courses related to auditing and accounting. The particular courses KPMG UK and KRC auditors must take vary based on their experience levels. Many of these audit-related courses include a testing component and are mandatory for the KPMG UK and KRC audit personnel.

Violation:

From at least 2018 to March 2021, hundreds of KPMG UK personnel and KRC personnel assigned to support KPMG UK issuer audits were involved in improper answer sharing related to training tests. They shared answers primarily through emails attaching documents that contained answers to training test questions. Instances of improper answer sharing primarily occurred in connection with tests that were a part of KPMG UK's and KRC's mandatory training. At KPMG UK, individuals engaged in answer sharing in connection with tests for trainings entitled Update for Auditors, IFRS, US Auditing Standards Periodic Update, and SEC Baseline. At KRC, individuals engaged in answer sharing in connection with tests for trainings entitled Audit Foundations, Update for Auditors, IT Auditing, US GAAP/ICOFR, and IFRS.

Case 6

Respondent: KPMG Colombia

Exam Type: Internal Training Tests

Training Requirements:

The Firm administers an internal training program for all of its professionals. The Firm has designed its training program to serve multiple purposes, including to provide Firm personnel with technical instruction, to further their professional development, and to satisfy some of the continuing professional education requirements imposed by authorities that licensed some of the Firm's auditors. The Firm's training requirements vary by each professional's position, role, and industry practice area, and are intended to be relevant to, among other things, the independence of its personnel, the audit work they perform, and the integrity with which they carry out their professional responsibilities. Since at least 2016, the Firm required audit personnel to take certain online training courses that are relevant to compliance with PCAOB rules and standards. The particular courses the Firm's auditors must take vary based on their experience levels. These audit-related courses include a testing component and are mandatory for audit personnel.

Violation:

Between 2016 and 2020, KPMG Colombia personnel were involved in improper answer sharing. That conduct included sharing answers by sending emails with answers to training test questions, by providing screenshots of training questions and answers, or by discussing answers when taking tests in the presence of others. A preliminary internal investigation by the Firm revealed that the misconduct included improper answer sharing in connection with tests that were a part of the Firm's mandatory assurance training, including among individuals who performed work on audits governed by PCAOB standards.

Case 7

Respondent: PwC Hong Kong

Exam Type: Internal Training Tests

Training Requirements:

The training programs the Firm uses are designed to serve multiple purposes, including to provide personnel with technical instruction, to further their professional development, and to help employees satisfy some of the continuing professional education requirements imposed by the accountancy boards that license PwC HK's auditors. PwC HK's training requirements are intended to be relevant to, among other things, the independence of their personnel, the audit work they perform, and the integrity with which they carry out their professional responsibilities. However, the training requirements can vary by a professional's position, role, and industry practice area. Since at least 2018, PwC HK has required its personnel to take certain online courses that contain content regarding auditing of U.S. issuers. PwC Global plays a significant role in the development and deployment of the training programs PwC HK uses. PwC Global has issued several Global Assurance Quality – Learning & Education standards that PwC HK, as a member firm of the PwC network, is expected to comply with as part of PwC HK's system of quality control. To comply with these standards, PwC HK has elected to use training material provided by PwC Global to supplement trainings the Firm developed to satisfy local regulations and requirements. With respect to training tests PwC Global provides, PwC Global designs the tests, administers the platform that records test attempts and completions, and maintains certain exam-integrity measures like rotating banks of questions and randomizing the order of answer options.

Violation:

From at least 2018 to 2019, over one thousand PwC HK Assurance personnel obtained access to answers for training tests in an unauthorized manner. Firm personnel did so through software applications capable of obtaining the correct test answers from the online test platform. Instances of improper answer sharing primarily occurred in connection with two software applications: "vLearn" and "Lifeistooshort." The vLearn application, when run while a participant was taking an online training test, conducted a trial-and-error selection of each answer option offered in the test until the correct answers were selected (i.e., without the participants having to input the answer selections themselves). The application was directed at the 2018 U.S. Curriculum Auditing Workshop – Assessment. Throughout 2018, many hundreds of PwC HK personnel downloaded the vLearn software application. Despite the vast number of PwC HK personnel who downloaded the vLearn application, no one reported the improper conduct to the Firm until a staff member did so in December 2018. About one year later, in December 2019, the Firm initiated a review of test completion times for all mandatory training tests on U.S.-related topics taken by Firm personnel in 2019. The review showed that some tests were completed after an unreasonably high number of attempts. By January 2020, PwC HK investigated and learned that Lifeistooshort, another software application that automatically input the correct answers in online training tests for the test taker, had been downloaded by many hundreds of Firm personnel over the course of 2019.

Case 8

Respondent: PwC China

Exam Type: Internal Training Tests

Training Requirements:

The training programs the Firm uses are designed to serve multiple purposes, including to provide personnel with technical instruction, to further their professional development, and to help employees satisfy some of the continuing professional education requirements imposed by the accountancy boards that license PwC ZT's auditors. PwC ZT's training requirements are intended to be relevant to, among other things, the independence of their personnel, the audit work they perform, and the integrity with which they carry out their professional responsibilities. However, the training requirements can vary by a professional's position, role, and industry practice area. Since at least 2018, PwC ZT has required its personnel to take certain online courses that contain content regarding auditing of U.S. issuers. PwC Global plays a significant role in the development and deployment of the training programs PwC ZT uses. PwC Global has issued several Global Assurance Quality – Learning & Education standards that PwC ZT, as a member firm of the PwC network, is expected to comply with as part of PwC ZT's system of quality control. To comply with these standards, PwC ZT has elected to use training material provided by PwC Global to supplement trainings the Firm developed to satisfy local regulations and requirements. With respect to training tests PwC Global provides, PwC Global designs the tests, administers the platform that records test attempts and completions, and maintains certain exam-integrity measures like rotating banks of questions and randomizing the order of answer options.

Violation:

From at least 2018 to 2019, hundreds of PwC ZT Assurance personnel obtained access to answers for training tests in an unauthorized manner. Firm personnel did so through software applications capable of obtaining the correct test answers from the online test platform. Instances of improper answer sharing primarily occurred in connection with two software applications: "vLearn" and "Lifeistooshort." The vLearn application, when run while a participant was taking an online training test, conducted a trial-and-error selection of each answer option offered in the test until the correct answers were selected (i.e., without the participants having to input the answer selections themselves). The application was directed at the 2018 U.S. Curriculum Auditing Workshop – Assessment. Throughout 2018, hundreds of PwC ZT personnel downloaded the vLearn software application. Despite the high number of PwC ZT personnel who downloaded the vLearn application, no one reported the improper conduct to the Firm. The Firm learned about the vLearn application when a staff member at another PwC member firm made an internal report about it at that firm in December 2018. About one year later, in December 2019, the Firm initiated a review of test completion times for all mandatory training tests on U.S.-related topics taken by Firm personnel in 2019. The review showed that some tests were completed after an unreasonably high number of attempts. By January 2020, PwC ZT investigated and learned that Lifeistooshort, another software application that automatically input the correct answers in online training tests for the test taker, had been downloaded by hundreds of Firm personnel over the course of 2019.

Online Appendix B: Additional Tables and Analyses

B.1 Variable definitions

Table OA1: Variable definitions

Variable	Definition	Source
Dependent Variable		
ICOP	Indicator variable equal to one if the auditor issues an adverse internal control opinion to its client, and zero otherwise.	Audit Analytics
Main Variables of Interest		
ExamCheatingPeriod	Indicator variable equal to one for all years in the exam cheating period, and zero for all years before the exam cheating period.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_t-4	Indicator variable equal to one for the year of company-year observations with audit firm involved in the exam cheating scandals is four years before the regulatory enforcement against exam cheating scandals, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_t-3	Indicator variable equal to one for the year of company-year observations with audit firm involved in the exam cheating scandals is three years before the regulatory enforcement against exam cheating scandals, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_t-2	Indicator variable equal to one for the year of company-year observations with audit firm involved in the exam cheating scandals is two years before the regulatory enforcement against exam cheating scandals, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_t0	Indicator variable equal to one for the year of company-year observations with audit firm involved in the exam cheating scandals is in the year of the regulatory enforcement against exam cheating scandals, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_t+1	Indicator variable equal to one for the year of company-year observations with audit firm involved in the exam cheating scandals is one year after the regulatory enforcement against exam cheating scandals, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_t+2	Indicator variable equal to one for the year of company-year observations with audit firm involved in the exam cheating scandals is two years after the regulatory enforcement against exam cheating scandals, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
PostReg_t+3+	Indicator variable equal to one for the year of company-year observations with audit firm involved in the exam cheating scandals is three years and all subsequent years after the regulatory enforcement against exam cheating scandals, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario

Pre_t-4	Indicator variable equal to one if the year of company-year observations is four years before the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Pre_t-3	Indicator variable equal to one if the year of company-year observations is three years before the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Pre_t-2	Indicator variable equal to one if the year of company-year observations is two years before the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Post_t0	Indicator variable equal to one if the year of company-year observations is in the year of the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Post_t+1	Indicator variable equal to one if the year of company-year observations is one year after the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Post_t+2	Indicator variable equal to one if the year of company-year observations is two years after the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Post_t+3	Indicator variable equal to one if the year of company-year observations is three years and subsequent years after the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
Treat	Indicator variable equal to one if the audit firm is subject to the regulatory enforcement against exam cheating scandals in the cohort, and zero otherwise.	Proceedings of SEC, PCAOB CPAB, and CPA Ontario
<u>Audit Firm-Level Control Variables</u>		
BIG4	Indicator variable equal to one when the client is audited by a Big 4 auditor, and zero otherwise.	Audit Analytics
BUSY_SEASON	Indicator variable equal to one when the client is audited during the busy season, and zero otherwise. A busy season audit is an audit of a client with December fiscal year-end.	Audit Analytics
MISMATCH	Indicator variable equal to one if there is a auditor-client mismatch as in Shu (2000), and zero otherwise.	Audit Analytics Compustat
<u>Client-Level Control Variables</u>		
BTM	Book to market ratio	Compustat
CURRENT	Current assets divided by current liabilities.	Audit Analytics Compustat
FINANCING	The sum of long-term debt issuances plus the sale of common and preferred stock divided by total assets.	Audit Analytics Compustat
INST	Percentage of shares owned by institutional investors.	Thomson Reuters
INVENTORY	Inventory divided by total assets.	Audit Analytics

		Compustat
LOSS	Indicator variable equal to one if the client's net income is less than zero, and zero otherwise.	Compustat
LEVERAGE	The sum of current liabilities and long-term debt divided by average total assets.	Audit Analytics Compustat
MA	Indicator variable equal to one if the client is engaged in a merger or acquisition (aqp and aqeps are non-missing and non-zero), and zero otherwise.	Compustat
RESTRUCT	Indicator variable equal to one if the client has undergone restructuring activities (rcp, rca, rceps, and rcd are non-missing and non-zero) in year *t*, and zero otherwise.	Compustat
ROA	Income before extraordinary items divided by average total assets.	Audit Analytics Compustat
SEGMENTS	Natural logarithm of the client's operating segments.	Compustat
SIZE	Natural logarithm of the client's total assets (in million USD).	Audit Analytics Compustat
ZSCORE	Z-score of the client calculated as -4.336-4.513×(net income/total assets)+5.679×(total liabilities/total assets)+0.004×(current assets/current liabilities).	Audit Analytics Compustat

B.2 Details of audit firms' exam cheating periods

In Table OA2, I present the durations of audit firms' exam cheating issues as documented in the filings of SEC, PCAOB, CPAB, and CPA Ontario.

Table OA2: Audit firms' exam cheating periods

Audit Firm	Country	Period	Source
KPMG	United States	2015-2017	Securities Exchange Act of 1934 Release No. 86118
KPMG	Australia	2016-2020	PCAOB Release No. 105-2021-008
PwC	Canada	2016-2020	CPAB Order PCAOB Release No. 105-2022-002 Chartered Professional Accountants of Ontario
EY	United States	2012-2021	Securities Exchange Act of 1934 Release No. 95167
KPMG	United Kingdom	2018-2021	PCAOB Release No. 105-2022-032
KPMG	Colombia	2016-2020	PCAOB Release No. 105-2022-034
PwC	Hong Kong	2018-2019	PCAOB Release No. 105-2023-043
PwC	China	2018-2019	PCAOB Release No. 105-2023-044

B.3 Dynamic effect of regulatory enforcement against audit firms' exam cheating scandals on audit quality using GDD design

In this section, I present the results of the dynamic effect of regulatory enforcement against audit firms' exam cheating scandals using the GDD design. I omit the indicator for years *t*-1 which serve as the benchmark years. Figure 1 plots the estimates for the coefficients on a set of dummy variables indicating the event years relative to the year for regulatory enforcement against exam cheating scandals and the corresponding 95% confidence intervals.

Table OA3: Dynamic effect of regulatory enforcement against audit firms' exam cheating scandals on audit quality using GDD design

	(1)
Variable	*ICOP*
PostReg_t-4	0.003
	(0.374)
PostReg_t-3	-0.002
	(-0.288)
PostReg_t-2	-0.002
	(-0.207)
PostReg_t0	0.026**
	(2.351)
PostReg_t+1	0.032***
	(2.615)
PostReg_t+2	0.006
	(0.385)
PostReg_t+3+	0.019
	(1.111)
BIG4	-0.032*
	(-1.708)
BUSY_SEASON	-0.003
	(-0.684)
MISMATCH	-0.005
	(-0.703)
BTM	0.020***
	(3.811)
CURRENT	-0.003***
	(-3.676)
FINANCING	0.022***
	(2.917)
INST	-0.029***
	(-3.899)
INVENTORY	0.005
	(0.208)
LOSS	0.027***
	(5.335)

LEVERAGE	0.014
	(1.003)
MA	0.022***
	(5.841)
RESTRUCT	0.004
	(0.998)
ROA	0.017
	(0.810)
SEGMENTS	0.010***
	(3.316)
SIZE	-0.016***
	(-11.672)
ZSCORE	0.003
	(1.400)
Constant	0.195***
	(9.457)
Audit Firm-Country FE	Yes
Industry FE	Yes
Year FE	Yes
Observations	37,050
Adj. R^2	0.078

Notes: This table presents the results of the dynamic effect of regulatory enforcement against audit firms' exam cheating scandals on audit quality from estimating GDD. The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.

B.4 Audit quality during the exam cheating period

Table OA2 presents the duration of the exam cheating period for each audit firm. To test whether the audit quality differs during the exam cheating period relative to pre-exam cheating period, I estimate the following GDD specification:

$$ICOP_{i,j,t} = \alpha + \beta_1 ExamCheatingPeriod_{j,t} + \beta_2 Controls_{i,j,t-1} + \text{Fixed Effects} + \epsilon_{i,j,t}$$

where the subscripts *i*, *j*, and *t* correspond to client, audit firm, and year, respectively. The dependent variable, *ICOP*, is an indicator variable equal to one if the author issues an adverse internal control opinion to its client, and zero otherwise. The main variable of interest *ExamCheatingPeriod* is an indicator variable equal to one for all years in the exam cheating period, and zero if the years are before the exam cheating period. I include the same set of control variables in equation (1). I include audit firm, industry, and year fixed effects to account for unobserved heterogeneity across audit firms and industries and over time. Standard errors are clustered by clients. The sample is restricted to client-year observations of the affected audit firms before and during the exam cheating period, and all years in the post-cheating period are excluded. Table OA5 presents the results. The insignificant coefficient on *ExamCheatingPeriod* implies that the average audit quality during the exam cheating periods do not differ from that in the pre-cheating periods (p-value > 0.10).

Table OA5: Audit quality during and before the exam cheating periods

Variable	(1) *ICOP*
ExamCheatingPeriod	0.014
	(1.319)
BIG4	-0.186***
	(-3.849)
BUSY_SEASON	-0.010
	(-1.513)
MISMATCH	-0.019
	(-1.538)
BTM	0.013*
	(1.664)
CURRENT	-0.004***

	(-3.549)
FINANCING	0.001
	(0.127)
INST	-0.020**
	(-1.961)
INVENTORY	-0.026
	(-0.761)
LOSS	0.016**
	(2.042)
LEVERAGE	0.018
	(0.937)
MA	0.025***
	(4.338)
RESTRUCT	0.011**
	(2.105)
ROA	0.011
	(0.382)
SEGMENTS	0.013***
	(3.122)
SIZE	-0.018***
	(-8.668)
ZSCORE	0.001
	(0.369)
Constant	0.354***
	(6.401)
Audit Firm-Country FE	Yes
Industry FE	Yes
Year FE	Yes
Observations	12,188
Adj. R^2	0.045

Notes: This table presents the results of audit quality before and during the exam cheating periods using GDD design. The *z*-statistics are reported in parentheses. Continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote two-tailed statistical significance of coefficient estimates at the 1%, 5%, and 10% levels, respectively. See Appendix A for variable definitions.