

**PCAOB Inspections and Audit Firm Behavior:  
An Analysis of the First Three Inspection Rounds of Small Audit Firms**

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April 2017

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**Acknowledgements:** Ann Vanstraelen and Lei Zou thank NWO for financial support of this research project (NWO grant number: 406-13-071). We also gratefully acknowledge the valuable comments we have received from Matt Ege, the workshop participants at ESSEC Business School and the 2017 UF International Conference on Assurance and Governance. We further thank Mona Offermanns and Robert Knechel involved in an early stage of this project.

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## ABSTRACT

This study examines the impact of PCAOB inspections on audit firm behavior over time. More specifically, we investigate whether and how different inspection results affect audit fees. While inspections arguably result in increased costs for audit firms to comply with PCAOB standards, the impact on audit fees likely depends on audit firm reputation triggered by the inspection report. In particular, we expect that the ability of the audit firm to pass these increased costs to their clients by increasing audit fees is conditional on the type of inspection report (clean or deficient) and response of the audit firm (whether or not identified deficiencies are contested and quality control deficiencies are addressed). Using a sample of audit firms subject to triennial inspection, we find, on average, audit fees are higher for companies without PCAOB Part I or Part II deficiencies before the inspection, suggesting that PCAOB inspection results do reflect audit effort. When classifying the inspection results based on Part I (engagement) and Part II (quality control) inspection findings and considering the audit firms' response, we find, consistent with predictions, an increase in audit fees for audit firms without quality control deficiencies. This increase in fees persists across the first three inspection rounds. For Part I of the inspection reports, we find limited impact on audit fees. To further corroborate these results, we find evidence of an increase in the number of CPAs employed by audit firms who do not disagree with the PCAOB Part I findings and audit firms who remediated the quality control deficiencies, suggesting increased audit effort. At the same time, they are not able to charge higher fees for the additional effort, implying potential reputation damage. While audit firms without quality control deficiencies are able to increase their fees, the number of public clients decreases. If PCAOB inspection reports signal audit quality, these findings imply that in the small audit firm market, there appears to be a strong focus of public clients on negotiating for the lowest possible fee instead of searching for higher audit quality. Collectively, we provide evidence that PCAOB inspections led to significant changes in audit firm behavior and a redistribution of client companies in the small audit firm market segment.

## 1. Introduction

Since more than a decade the US Public Company Accounting Oversight Board (PCAOB) is conducting periodic independent inspections of accounting firms that perform audits of U.S. registrants. The mission of the inspections is to improve audit quality and protect the interests of investors. Given the amount of resources PCAOB inspections require, investigating whether the PCAOB has been effective in achieving this mission over time as well as examining economic consequences (both intended and unintended) of PCAOB inspections are important questions for academics, regulators and society at large. A number of studies already looked into the impact of PCAOB inspections on different audit quality outcome variables, including financial reporting quality (Lamoreaux 2016; Gipper et al. 2015; Carcello et al. 2011) and auditor reporting (Lamoreaux 2016; DeFond and Lennox 2015; Gramling et al. 2011). In this paper, we look into another dimension of audit quality, audit fees, which is considered to be an input factor of audit quality (e.g., DeFond and Zhang 2014). Furthermore, we investigate the impact of inspections on audit fees over time. Prior research has typically focused on the impact of inspections after the first inspection round. Hence, not much is currently known about the impact of inspections over time and whether the effects fade out over time. We focus our study on the small audit firm setting. Not much is known about these firms while they actually play a significant role in the competitive landscape of local markets (Bills and Stephens 2016). Research on the impact of PCAOB inspections for this type of audit firms is also relatively limited. Further, a focus on triennially inspected audit firms allows to investigate the impact of inspections on audit fees conditional on the outcome of the inspection report (clean or deficient). This is not possible for annually inspected firms since they receive continuously deficient inspection reports over time. Interestingly, despite these systematic deficient inspection reports, research findings suggest that audit quality of annually inspected audit firms improves. In contrast, the evidence is much less conclusive for triennially inspected audit firms. For example, while Gunny and Zhang (2013) do not find an association between inspection reports and

going concern opinions (GCO) as a measure of audit quality, Gramling et al. (2011) document an increase in the likelihood of a GCO in the post-inspection period for clients from triennially inspected audit firms with PCAOB deficiencies. At the same time, Daugherty and Tervo (2010) document that small audit firms do not perceive an improvement in audit quality or public confidence in the audit profession following PCAOB inspections. Recently, Tanyi and Litt (2016) provide evidence of lower quality and audit fees in the post-inspection period for non-Big 4 audit firms subject to triennial inspection compared to non-Big 4 audit firms which are inspected on an annual basis. Furthermore, the results of Tanyi and Litt show that small and midsize audit firms inspected annually are more selective in their choice of new clients in the post-inspection period compared to the triennially inspected firms.

The purpose of this study is to extend this line of research by examining how smaller audit firms that are subject to triennial inspection respond to the findings of the PCAOB inspections. More specifically, we start our analyses with examining whether audit fees are different before the inspections, conditional on the inspection outcomes. Then we continue to investigate whether inspections affect the audit fees of smaller audit firms charged to their clients, and whether this effect changes over time. We expect that the impact on audit fees is conditional on audit firm reputation triggered by the type of inspection report received and the public response of the audit firm on this inspection report. Finally, we construct our third set of analyses to investigate whether the inspections can have long-term impact.

We argue that PCAOB inspections can lead to a change in audit fees for at least two reasons. First, the cost of remaining within the public sector increases after the installment of the PCAOB inspections, especially for small audit firms (DeFond and Lennox 2011). Indeed, as explained by DeFond and Lennox (2011), audit firms with a smaller audit fee base are less able to recover the fixed cost component of complying with the stricter regulatory standards demanded by the PCAOB through higher fees and still remain competitive. Second, audit firms face regulatory sanctions and

penalties if serious deficiencies are not corrected (DeFond 2010).<sup>1</sup> Assuming that the market in which small audit firms operate is competitive, the increased costs are likely to lead to an increase in audit fees and this effect is arguably even more pronounced for audit firms considered to be deficient by the PCAOB. On the other hand, a number of recent studies show the importance of auditor reputation for providing firms with incentives to supply high quality audits (Craswell et al. 1995; Skinner and Srinivasan 2012; Weber et al. 2008; Francis et al. 2005). For audit firms with deficient inspection reports, it has been documented that it can harm the auditor's reputation resulting in an adverse effect on clients' valuations (Dee et al. 2011) or may cause the firm to exit the audit market (DeFond and Lennox 2011). From this point of view, although faced with increased costs, deficient audit firms will have difficulties to pass these additional costs to their clients by increasing audit fees.

At the same time, there may be reasons why a PCAOB inspection may not influence the effort level for individual engagements. That is, the extent to which deficiencies create a sufficient incentive for the auditor to adjust behavior, especially at the level of individual engagements, uncertain for at least two reasons. First, there has been criticism on the PCAOB inspectors' technical and in-depth expertise (Glover et al., 2009) and firms may disagree with the inspector's findings as they pertain to specific audits. Second, it takes an extended period of time before inspection results are published and the identity of the inspected clients remains unknown, so it is not possible to link deficiencies to audit effort for individual clients. Furthermore, in spite of a reputation for high quality, Big4 audit firms have repeatedly received deficient inspection reports in the US so it remains unclear to what extent the inspection result can cause severe damage to an audit firm's reputation. For example, Lennox and Pittman (2010) find no support for changes in audit firm market shares as a result of deficient

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<sup>1</sup>Examples of such actions include notifying the SEC, the US Justice Department, and disciplinary proceedings by the PCAOB such as censuring, suspending, and barring auditors, or revoking the registration of audit firms, all of which can be accompanied with large monetary penalties. For example, Deloitte was assessed a \$1 million fine based on the inspection of the conduct of the 2003 audit of the public company Ligand Pharmaceuticals.

inspection reports. Therefore, it is an empirical question whether audit firms are sufficiently incentivized to change their behavior after the instalment of PCAOB inspections.

Using PCAOB inspection reports on small audit firms of the first three rounds published from 2005 to 2014, we investigate whether and how the inspections affect audit fees, while considering the different types of inspection outcomes. During this period, most of the small audit firms were inspected for at least three rounds. For our first set of analyses, we use the first round to study whether audit fees are different conditional on inspection results. For our second and third set of analyses, we use all first three rounds and aim to investigate whether PCAOB inspections have a long-term impact and whether the impact is influenced by the inspection findings and audit firm's responses to the inspection findings. While the costs of complying with PCAOB quality control standards may mainly relate to the beginning period of inspections, the increase in engagement costs is likely structural since more work is needed on each engagement to meet PCAOB standards. The sample for the first set of analyses include 5,050 company-year observations relating to 1825 clients and 418 first round inspected audit firms. Our sample for the second set of analyses includes 5,020 company-year observations relating to 325 audit firms for the first inspection, 3,908 company-year observations relating to 259 audit firms for the second inspection and 3,118 company-year observations relating to 175 audit firms for the third inspection. Finally, we construct a constant sample without any auditor switches from at least one fiscal year before the publication of the first inspection to at least one year after the third inspection for our third set of analyses. This sample consists of 2597 client-year observations for 275 clients and 115 audit firms. For all the inspection reports included in our analyses, we manually coded them based on Part I and Part II PCAOB findings as well as the audit firms' responses to those findings.

Our results indicate that audit fees are higher on average before the publication of the inspection reports for audit firms without any Part I or Part II deficiencies. In line with our predictions, we show that the audit fees increase is mainly driven by audit firms without any quality control deficiencies.

To further corroborate these results, we find in an additional analysis that deficient audit firms who do not state disagreement with the engagement deficiencies and audit firms who remediated their identified quality control deficiencies experienced increases in the number of CPAs, which suggest a seeking for increased audit effort. However, combining with the main findings that audit fees do not change significantly for these two groups, our results show that PCAOB identified deficiencies limit their ability to charge for the additional effort by reputation damage. Interestingly, we find that while audit firms without quality control deficiencies are able to increase audit fees, their number of public clients decreases. Furthermore, we show that new clients added to the client portfolio of clean audit firms after the inspections have lower financial risks compared to deficient audit firms. If a clean PCAOB inspection report is an indication of higher audit quality, this finding would suggest that in the small audit firm market, there appears to be a strong focus of clients on lowering the fees instead of seeking for higher audit quality. Consistently, for those audit firms who react negatively to the PCAOB deficiencies by disagreeing with the Part I findings or failing to address the quality control deficiencies, the inspection does not have any significant impact. At the same time, these two groups also charge the lowest fee in the market.

Our study contributes to the growing body of literature on the economic effects of PCAOB inspections by focusing on the smaller audit firm market segment and by considering different dimensions of audit firms' behavior. Recent studies mainly document positive effects of PCAOB inspections, though most of these studies relate to annually inspected audit firms. We show that the evidence for the small audit firm market is not unequivocally positive, which appears to be driven by the lower demand for audit quality in this market segment. This would also be consistent with the recent evidence of Tanyi and Litt (2016) showing that audit quality and audit fees are lower for triennially inspected audit firms in the post-inspection period compared to annually inspected non-Big 4 audit firms. The remainder of the paper proceeds as follows. Section 2 describes prior literature on the effects of PCAOB inspections. Next, we develop our hypotheses in Section 3. The research design

is outlined in Section 4, which is followed by a discussion of the results in Section 5. Section 6 contains additional analyses and Section 7 provides conclusions and limitations.

## 2. Background

Under the provisions of SOX, the PCAOB conducts annual inspections of firms that audit more than 100 issuers, and triennial inspections of the audit firms with fewer than 100 registrant clients (the latter referred to as “small audit firms” hereafter). Along with the evaluation of an audit firm’s quality control policies and procedures, the inspection process involves a review of some audits selected based on characteristics of the client, its industry, practice office, partner, or prior inspection results (PCAOB 2009). The results of the inspection process are publicly disclosed in a report for each audit firm. While not disclosing the identity of inspected clients, Part I of the inspection report contains information about engagement-specific deficiencies and Part II contains the existence of quality control deficiencies. Details about quality control deficiencies are only made available to the public if the audit firm does not sufficiently address the PCAOB’s concerns within a one-year period. At the end of the inspection report, audit firms are allowed to provide their responses to the PCAOB findings. In the course of this paper, the term “deficient” is used for inspection reports that contain one or more engagement-specific deficiencies and the term “clean” (or non-deficient) for reports without any engagement-specific deficiencies.

Prior research addresses the relationship between PCAOB inspections and audit quality in different ways. From a conceptual point of view, researchers and practitioners have argued both for and against the effectiveness of the inspection process, i.e., whether the process is able to systematically identify meaningful audit deficiencies that can lead to an improvement in audit quality. Some argue that the PCAOB inspection process is superior to the older peer review system because it is independent and objective, has better access to auditor documentation, and has more resources available for inspectors (Gunny and Zhang 2013; Carcello et al. 2011). Others criticize the inspection



process because of limited staff and expertise, inadequate transparency of procedures and inspection outcomes, and the slow timing of feedback (DeFond 2010; Glover et al. 2009; Oliverio and Newman 2009; Palmrose 2005).

This conceptual debate served as motivation for a number of studies examining the association between inspection outcomes and various proxies for audit quality.<sup>2</sup> Insights obtained from these studies include that clients of audit firms with engagement deficiencies discovered during the inspection process display higher levels of abnormal accruals (Gunny and Zhang 2013). Further, it has been documented that auditor tenure and industry expertise mitigates engagement deficiencies for non-Big4 auditors (Gunny, Krishnan, & Zhang, 2007). However, there appears to be no association between PCAOB reports for triennially inspected auditors and GCOs as a measure of audit quality (Gunny and Zhang 2013).

Additional insights can be obtained by examining reactions to inspections. The most extreme reaction is that negative inspection outcomes for small audit firms have resulted in deregistration with the PCAOB (DeFond and Lennox 2011). For audit firms remaining in the market, Gramling et al. (2011) find that triennially inspected audit firms with PCAOB deficiencies were more likely to issue a GC opinion for financially distressed clients subsequent to their PCAOB inspection than prior to their inspection. Similarly, Carcello et al. (2011) find that absolute abnormal accruals decrease following inspections for Big4 clients. These findings would support the notion that PCAOB oversight and inspections are effective. On the other hand, it has been documented that small audit firms do not perceive that the inspection process improved audit quality or public confidence in the audit profession arising from the inspection process (Daugherty and Tervo 2010). Recently, Tanyi and Litt (2016) show that non-Big 4 audit firms subject to triennial inspection have lower audit quality and audit fees in the post-inspection period compared to non-Big 4 audit firms which are

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<sup>2</sup>While the PCAOB mainly considers engagement-specific quality, the selected engagements may still be representative of other clients because the deficiencies in audit procedures may recur for other clients. Also, deficiencies in the audit firm's quality control policies and procedures can affect all clients.

inspected on an annual basis. In addition, Tanyi and Litt (2016) show that small and midsize audit firms inspected annually are more selective in their choice of new clients in the post-inspection period compared to the triennially inspected firms. Furthermore, it has been shown that clients with effective audit committees or with high potential reporting quality of GAAP-deficient triennially inspected auditors are more likely to switch to audit firms without GAAP related deficiencies (Abbott et al. 2013). Finally, the capital market also appears to react to the PCAOB inspection reports. Vanstraelen et al. (2016) find that stock market liquidity decreases after the publication of the first round inspection reports but increases after the publication of the second round inspection reports. Capital market responses to unexpected earnings also significantly increase following the introduction of the PCAOB inspection regime (Gipper et al. 2015).

### 3. Theoretical background and development of hypotheses

The audit production process comprises technology and effort as fixed and variable factors of production (Hope et al. 2012). Even though advances in audit technology have rendered auditing less labour intensive (Elliott 1998), human resource compensation is still a major part of audit fees (Knechel et al. 2013). Audit firms have flexibility in adjusting human resource inputs as a result of excess capacity, shifts of resources from non-public clients, and new employee hires. Firms can alter audit effort by assigning more or better experienced personnel to a client's team, or let the existing team members conduct more work. In either case, fees are likely to increase as extra time and more expensive staff is assigned to a client.<sup>3</sup> Using fees as a proxy for effort is based on the assumption that the market for audit services is competitive (Elliott 1998; Craswell et al. 1995; Simunic 1980). This assumption is supported by prior studies that indicate that the market in which smaller audit firms compete is highly fragmented and competitive (Sirois and Simunic 2011). Competition implies that fee changes are mainly caused by changes in cost rather than profit margin, and prior evidence

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<sup>3</sup>Some of the incremental costs might be absorbed by the audit firm initially in the form of lower margins so as to not motivate a client to consider changing auditors. However, lower margins may not be sustainable over the long term. This response by an auditor, plus potential efficiency improvements, would work against finding a change in audit fees.

corroborates that fees are reflective of audit effort (Schelleman and Knechel 2010; Bell et al. 2001; Menon and Williams 2001; Simunic and Stein 1996; Davis et al. 1993).

During the fieldwork, the PCAOB inspectors dissect the audit work papers, interact frequently with the engagement team to improve their understanding of the work completed during the audit (Aobdia 2016). Audit firms receiving a deficient Part I inspection report have, in the opinion of the PCAOB inspectors, failed to “obtain sufficient competent evidential matter to support its audit opinion”. In other words, deficiencies can be attributed to inadequate effort, at least in the judgment of the inspectors. As shown by Causholli et al. (2010), the level of effort needed to achieve a minimum standard of audit quality for the particular client may be difficult to assess by a client and external parties. Hence, insufficient audit effort may arise when clients are unable to observe the exact quality of their audit. Further, auditors and regulators may have differing opinions as to what constitutes sufficient evidence and documentation since an auditor’s decisions related to a single engagement are potentially influenced by commercial considerations when setting fees and scoping the audit work. For these reasons, independent inspections are designed to check whether the level of audit effort is in accordance with quality standards. Thus, we expect that audit fees are lower for clients with deficient auditors compared to clients with clean auditors before the first inspection, as audit effort is lower for these clients.

The same reasoning applies to the clients of audit firms which have quality control deficiencies. An audit firm’s quality control system aims to provide reasonable assurance that the firm’s personnel comply with applicable profession standards and the firm’s standards of quality (PCAOB 2003, QC Section 20.03). The PCAOB’s evaluation of a firm’s system of quality control typically includes a review of policies, procedures, and practices concerning audit performance, training, compliance with independence requirements, client acceptance and retention, and the establishment of policies and procedures (PCAOB 2012). Compared to the engagement level deficiencies, QCDs are identified at the firm level and are arguably even more likely to represent audit quality and audit

effort since the quality control system can be considered as the foundation for the way audits are performed within the firm. As a result, we also expect that audit fees are lower for clients of auditors with quality control deficiencies compared to clients of auditors without any quality control deficiencies before the inspection. In summary, we formulate our first hypothesis as following:

H1: Audit fees in the pre-inspection period are different conditional on the inspection outcome.

For the triennially inspected audit firms, the cost of remaining within the public sector increases after the instalment of the PCAOB inspections. In particular, the PCAOB's strict enforcement of compliance with auditing standards, drives the costs upwards of audit firms choosing to remain auditing public clients (Farrell and Shadab 2005). Stricter compliance requires auditors to invest in a variety of practice areas that are closely monitored by the PCAOB, such as procedures for client acceptance and retention, partner compensation and review, auditor independence, and staff training (DeFond and Lennox 2011). Moreover, compared to the big audit firms, the percentage of engagements being inspected is much larger for small audit firms (Lennox and Pittman 2010). As PCAOB inspections have a disruptive impact on auditors' normal activities, examining a higher proportion of their clients imposes a relatively greater cost on small auditors (DeFond and Lennox 2011). Furthermore, PCAOB inspections are expected to increase the cost of an engagement since more work is required to meet PCAOB standards (e.g., more documentation requirements). As a result, auditor firms who remain in the market and audit public clients are likely faced with increased costs, which could result in higher fees. At the same time, audit fees are not only reflective of audit effort but also of reputation. We argue that the extent to which the audit firm can pass these increased costs to the client will depend on audit firm reputation triggered by the inspection report. Clean audit firms are arguably able to pass the increased costs to the client as a clean inspection report provides a positive signal about the audit firm's reputation. This leads to our second hypothesis:

***Hypothesis 2a:** Clients of triennially inspected clean audit firms are associated with an increase in audit fees in the post-inspection period.*

The auditor determines the level of effort supplied and fees charged for an audit based on risk factors and reputation concerns (Schelleman and Knechel 2010; Stefaniak 2009; Hay et al. 2006; Nelson 2006; Lyon and Maher 2005; Larcker and Richardson 2004; Johnstone and Bedard 2003; Seetharaman et al. 2002; Reynolds and Francis 2001). Expected losses from inadequate audit effort can arise from regulatory penalties and the potential loss of clients due to reputation loss. Consequently, the detection of deficiencies by PCAOB inspectors may cause a change in the auditor's assessment of expected losses from insufficient effort and provide ex-ante incentives that could lead to a change in auditor behavior.

On the other hand, inspection reports are not intended to categorize audit firms into high and low quality firms. This is partly due to the fact that the engagements and audit issues selected for review are not random. Lennox and Pittman (2010) find no evidence of changes in the market share of Big4 audit firms as a result of deficient inspection results. Thus, the extent of the threat of client switching in response to deficiencies mentioned in the inspection report may be limited. Even though clients might not switch in response to a deficient report, the PCAOB is authorized to conduct disciplinary proceedings, impose sanctions, and communicate inspection results to other regulatory agencies (Gunny and Zhang 2013; Wegman 2008; Farrell and Shadab 2005). The PCAOB has demonstrated its willingness to impose sanctions for violations of standards detected via inspections by revoking the registration of audit firms and censuring, suspending, or barring auditors (Gilbertson and Herron 2009; PCAOB 2011). Moreover, audit firms have an incentive to prevent publication of their deficiencies if they can be addressed by changes in firm practices. In general, since detected deficiencies can raise the

probability that sanctions and penalties are imposed, it is likely that auditors will change their behavior when presented with potential losses or penalties.<sup>4</sup>

Auditors may have a number of options for addressing the issues raised in a deficiency report. While the auditor might merely charge a fee premium to cover expected future losses from deficient audits, clients are unlikely to accept fee changes without observable adjustments to audit work. Further, such an approach is also unlikely to satisfy inspectors. The risk of regulatory penalties as a result of PCAOB inspections is less remote than the risk of litigation, given that a problem has already been detected. For that reason, the deficient inspection gives audit firms a convincing argument for fee increases when having the annual meeting with the audit committee to determine current year's audit fees, i.e., previous fees may have been artificially low and the auditor can convince the client that alternative auditors would have to charge comparable fees. However, we expect this effect to be less profound if audit firms stated in their responses to the PCAOB inspections that they disagree with the findings as it shows an unwillingness to improve.

At the same time, audit firms receiving a deficient inspection report will likely suffer from reputation loss. Indeed, since PCAOB inspection reports do not disclose the specific name of the inspected engagement for the engagement deficiencies, clients are not likely to perceive the news of the inspection reports an isolated incident to a specific client of the audit firm. As a result, it may be difficult for audit firms to pass increased costs to their clients. For example, prior research shows that an audit firm experiences economic losses, including lower fees, after incurring damage to their reputation (Davis and Simon 1992; Boone et al. 2015). Instead of choosing to increase the audit effort and pay higher audit fees, audit committees of the clients may still be focused on negotiating for the lowest fee and make full use of the reputation damage caused by a deficient report, especially in the small audit firm market. Audit firms not contesting the deficiencies identified by the PCAOB are arguably more

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<sup>4</sup>While the threat of an inspection provides an *ex ante* incentive for auditors to change their behavior, there was a high level of uncertainty surrounding the type of clients to be inspected, the kind of issues to be addressed, and the strictness of inspectors. Also, while firms are informed about inspections a number of months in advance, they only learn during the inspection about certain engagements selected for inspection. Hence, anticipation of issues likely to be criticized is difficult prior to inspection, and especially prior to the first inspection round.

likely to increase audit effort to address the identified deficiencies. However, it remains unclear whether they will be able to pass these higher costs to their clients because of reputation loss. Hence, this is an empirical question and we therefore formulate our hypothesis in the null form:

***Hypothesis 2b:** There is no difference in audit fees for clients of triennially inspected deficient audit firms not contesting the PCAOB findings in the post-inspection period.*

The predictions for audit firms disagreeing with the PCAOB findings are likely more clear. In particular, it would seem very difficult, if not impossible, for this type of audit firms to charge higher audit fees because of loss of reputation in combination with a low likelihood that they will increase effort on individual engagements. Since these audit firms are unlikely to change behaviour, we expect that this will be reflected in lower audit fees. Hence, we hypothesize that:

***Hypothesis 2c:** Clients of triennially inspected deficient audit firms disagreeing with the PCAOB findings are associated with a decrease in audit fees in the post-inspection period.*

The same reasoning applies to audit firms which did not successfully address quality control deficiencies. As we discussed earlier, QCDs are identified at the firm level and are arguably even more likely to represent audit quality since the quality control system can be considered as the foundation for the way audits are performed within the firm. Thus, it is possible for audit fees to increase for auditors who initially have QCDs identified during the inspections while not publically disclosed later, as the firm established and implemented the quality control upgrades that were agreed upon as part of its settlement with the PCAOB, and managed to pass along these higher costs to its clients. But it still remains an empirical question whether clients would accept this approach in a highly competitive market. Boone et al. (2015) find that the disclosure of QCDs for Deloitte actually causes reputation damage and a decrease in Deloitte's audit fee growth rates. We argue this could also apply to small audit firms. For auditors with QCDs, the public disclosure of these QCDs arguably causes reputation damage and is likely also a signal of unwillingness to improve audit quality. As a result, audit fees are expected to decrease. However, audit firms which addressed the

QCDs are likely to have a convincing argument to increase audit fees. Similarly, clean audit firms are also likely facing some increased costs, though presumable to a smaller extent than firms with QCDs. Similar to our reasoning for H1a, we expect that clean audit firms are likely to be able to pass the increased costs to their clients since they received a positive signal about their reputation. This leads to the following set of hypotheses:

***Hypothesis 3a:*** *Clients of triennially inspected audit firms without identified quality control deficiencies are associated with an increase in audit fees in the post-inspection period.*

***Hypothesis 3b:*** *Clients of triennially inspected audit firms with identified quality control deficiencies which are addressed within one year are associated with an increase in audit fees in the post-inspection period.*

***Hypothesis 3c:*** *Clients of triennially inspected audit firms with disclosed quality control deficiencies are associated with a decrease in audit fees in the post-inspection period.*

Finally, we examine the impact of inspections on audit fees over time. As discussed earlier, inspections are expected to result in increased costs. First, engagement costs are expected to increase to comply with PCAOB standards (e.g., documentation requirements). Second, audit firms will likely need to invest in their internal quality control system to meet PCAOB standards. While the increase in engagements costs is arguably structural in nature, these costs may not necessarily further increase after each inspection round unless the PCAOB becomes more strict with each inspection round resulting in higher compliance costs over time. Furthermore, the investments in the internal quality control system are not expected to further increase over time once an appropriate system is in place. Overall, this would imply that the impact of inspections on audit fees decreases over time. Hence, we hypothesize that:

***Hypothesis 4:*** *The change in audit fees from pre- to post inspection decreases over time.*

#### 4. Research Design



#### 4.1 Sample selection

The sample selection is based on the first three rounds of inspection on the US audit firms that are inspected on a triennial basis (<100 registrant clients). We include all available inspection reports on the PCAOB website as of December 2014. The inspected audit firms are matched with their respective audit clients in Audit-Analytics and financial information is retrieved from Compustat for the years 2003 through 2015. The final samples consist of the observations contained in the intersection of these three data sources.<sup>5</sup>

To test our first hypothesis, only observations before the first inspection are included and it gives us a sample with 5050 client-year observations for 1825 clients and 418 audit firms. Table 1 displays the composition of the sample for testing our second and third hypotheses. We start with 761 inspection reports for the first round, 537 for the second round and 373 for the third round. We exclude the audit firms that do not have data available in AuditAnalytics. This gives us a sample of 666 audit firms with 9,639 clients for the first inspection, 485 audit firms with 8,789 clients for the second inspection and 344 audit firms with 7,723 clients for the third inspection. Next, we retrieve the financial data from Compustat and exclude all observations with missing values for variables in our empirical model. This yields a sample of 505 audit firms with 3,282 clients for the first round, 400 audit firms with 3,087 clients for the second round and 288 audit firms with 2,770 clients for the third round. In addition, for each round of inspection, we exclude the client-year observations that have a financial year-end before the previous round and after the next round<sup>6</sup>. Moreover, we exclude observations classified as financial institutions (SIC codes 6000–6700) or utilities (SIC codes 4000–4900). To ensure proper representation of client firms in all time periods, only auditor-client combinations that have at least one financial year-end before and after the inspection are included in

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<sup>5</sup>As Audit-Analytics neither contains all inspected audit firms nor the full set of an audit firm's clients, it is not possible to match the inspected audit firms with all their clients. Furthermore, information is incomplete for certain client observations due to missing data or missing identifiers for matching the different databases. Because of these reasons, a number of inspection reports are excluded from the analysis.

<sup>6</sup> For example, for the second inspection sample, we excluded all the observations that have a fiscal-year end before the publication of the first inspection and after the publication of the third round inspection.

the samples for testing our other hypotheses. This yields a final sample of 5,020 client-year observations for 1083 clients and 325 audit firms for the first round inspection; 3,908 client-year observations for 931 clients and 259 audit firms for the second round inspection; and 3,118 client-year observations for 759 clients and 175 audit firms for the third round inspection. In addition, we constructed a constant sample with only clients that do not switch audit firm from at least one year before the publication of the first inspection report to one year after the publication of the third round inspection report to test our fourth hypothesis. This sample consist of 2597 client-year observations for 275 clients and 115 audit firms.

For each inspection report, we manually code the type of the report as “*DEF*” or “*CLEAN*”, depending on whether any engagement specific deficiency is disclosed in Part I of the PCAOB inspection report. If the audit firms state that they disagree or they do not fully agree with the PCAOB findings, they were coded as “*DISAGREE*”. Alternatively, if they do not disagree, they were coded as “*OTHER*”. We further manually code the inspection reports as “*NON-QCD*” if no quality control deficiency is identified during the inspection, “*QCD-D*” if any quality control deficiency is identified and disclosed later, “*QCD-ND*” if any quality control deficiency is identified but not disclosed.<sup>7</sup> We also create a variable “*POST*” to indicate whether the observation belongs to the period before or after the publication of the inspection reports.

## 4.2 Empirical Models

We start our analyses with a benchmark model to examine whether audit fees are different conditional on the PCAOB inspection outcomes before the inspection. Following Francis et al. (2005) and Hay et al. (2006), we use the following audit fee model using ordinary least squares regression:

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<sup>7</sup>If audit firms have quality control deficiencies identified during the inspection reports, the PCAOB will state in Part II of the inspection report “Any defects in, or criticisms of, the Firm's quality control system are discussed in the nonpublic portion of this report and will remain nonpublic unless the Firm fails to address them to the Board's satisfaction within 12 months of the date of this report”. If the audit firm does not have any quality control deficiency identified, the PCAOB will state in part II of the inspection report “The inspection team did not identify anything that it considered to be a quality control defect that warrants discussion in a Board inspection report”.

$$\begin{aligned}
LAF = & \alpha_0 + \alpha_1 \text{CLEAN/NON-QCD} + \alpha_2 \text{LOGASSETS} + \alpha_3 \text{LEVERAGE} + \alpha_4 \text{INVERE} + \alpha_5 \text{ROA} \\
& + \alpha_6 \text{LOSS} + \alpha_7 \text{FOREIGN} + \alpha_8 \text{BUSY} + \alpha_9 \text{OPINION} + \alpha_{10} \text{LOGSEG} + \alpha_{11} \text{SHORT} \\
& + \alpha_{12} \text{LOGAVG\_ASSET} + \alpha_{12} \text{LOGTOTAL\_FEE} + \text{Fixed effects} + e \quad (1)
\end{aligned}$$

Where *LAF* is measured as the natural logarithm of audit fees as reported in AuditAnalytics. *CLEAN/NON-QCD* is our variable of interest. *CLEAN/NON-QCD* is an indicator variable and is equal to 1 for clients of audit firms without any deficiencies identified in Part I/Part II of the inspection reports. If audit fees are higher already before the inspection for clients of auditors without Part I/Part II deficiencies, the coefficient on *CLEAN/NON-QCD* will be positive. We include *LOGASSETS*, the natural logarithm of total assets to control for size. To account for client risk, we include *LEVERAGE*, the sum of the company's current and long term debt divided by total assets, and *INVERE*, the sum of inventories and receivables scaled by total assets. We expect both of them to be positively related to audit fees as they indicate higher audit risk. We include client performance variables *ROA*, measured as net income divided by total assets, and *LOSS*, a dummy variable for a loss in the current year. As less profitable companies exhibit more financial risk, we expect audit fees to decrease with *ROA* and to increase with *LOSS*. Client complexity is measured by *LOGSEG*, the natural logarithm of the number of business segments reported and we expect it to be positively related to audit fees. Additional dummy variables include *OPINION*, *FOREIGN*, and *BUSY*, where *OPINION* equals one when a going-concern opinion is issued, *FOREIGN* equals one whenever foreign income is earned, and *BUSY* is set to one for audits where the financial year-end is in December. We expect all of them to be positively associated with audit fees. *SHORTTENURE* is one in the first year of the auditor-client relationship to account for possible low-balling. Finally, we also add two variables *LOGAVG\_ASSET* and *LOGTOTAL\_FEE* to control for audit firm size, calculated as the natural logarithm of the average client size of the audit firm and the natural logarithm of the total fee collected by the audit firm, respectively. Additionally, we also control for industry fixed effects for which we use the two digit SIC code and year fixed effects. All the variables are

winsorized at the 5 and 95 percent.<sup>8</sup> The descriptions of all variables used in the empirical analyses are included in Appendix 1.

To test hypotheses H2a, H2b and H2c, we use three variables of interest: *CLEAN*, *OTHER* and *POST* replacing the variable *CLEAN/NON-QCD* in Model 1. *POST* is an indicator variable and is equal to 1 for the fiscal years after the publication of the inspection results. *CLEAN* and *OTHER* are equal to 1 for clients with clean Part I auditors and clients with deficient auditors who do not state disagreement with the PCAOB Part I findings, respectively. For the second and third inspection rounds, we also control for the previous round Part I inspection report findings, and in particular whether the previous inspection report was deficient or not. We interact *CLEAN* and *OTHER* with *POST* to see the audit fee change from pre-inspection to post-inspection conditional on the Part I inspection findings.<sup>9</sup> To test hypotheses H3a, H3b, and H3c, we use the following three variables of interest: *NON-QCD*, *QCD\_ND* and *POST*, which replace again the variable *CLEAN/NON-QCD* in Model 1. *NON-QCD* and *QCD\_ND* are equal to 1 for clients with auditors who do not have any quality control deficiencies identified and clients with auditors who have quality control deficiencies identified but not disclosed.<sup>10</sup> For the second and third inspection rounds, we also control for the previous round Part II inspection report findings, and in particular whether the previous inspection report had QCDs or not. We interact these two variables with *POST* to analysis the fee change from pre- to post-inspection, conditional on the PCAOB Part II findings.<sup>11</sup>

In order to compare the change of audit fees across the three inspection rounds, we constructed a constant sample with only clients that do not switch audit firm from at least one year before the publication of the first inspection report to one year after the publication of the third round inspection

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<sup>8</sup>We winsorize our data at the 5 and 95 percent to make sure that most of the continuous variables remain in the range of three standard deviations from the means.

<sup>9</sup> Clients with audit firms disagreeing the PCAOB Part I findings are used as control group.

<sup>10</sup>The PCAOB (2003) stated that “Deficiencies in individual audit, attest, review, and compilation engagements do not, in and of themselves, indicate that the firm's system of quality control is insufficient to provide it with reasonable assurance that its personnel comply with applicable professional standards.” However, we find that quality control deficiency and engagement level deficiency are highly correlated in our sample. As a result, we do not include quality control deficiencies as control variables in our analysis on engagement deficiencies and vice versa.

<sup>11</sup> Clients of auditors with disclosed quality control deficiencies are used as control group.

report to test our fourth hypothesis. To conduct our empirical tests, we first define three dummy variables as our variables of interest for three inspection rounds: *Period1*, *Period2* and *Period3*. *Period1* (*Period2/Period3*) takes a value of one if the observation belongs to the period after the publication date of the first (second/third) round inspection reports and before the publication of the second round inspection reports (third/after the publication of the third inspection round reports), zero otherwise. We also excluded the auditor-client combinations that do not have at least one observation in each period of time. Then we rerun our analysis using Model1 replacing the variable *CLEAN/NON-QCD* with *Period1*, *Period2* and *Period3*.

## 5. Empirical Results

### 5.1 Descriptive statistics

Table 2 describes the report type related characteristics for both the inspection reports and the client companies for testing our second and third hypotheses. Panel A and Panel B provide an overview of Part I and Part II inspection results for the audit firms, respectively. The total sample includes 325 first round inspection reports, 259 second round inspection reports and 175 third round inspection reports. Out of the 325 first round reports, 208 (64 percent) have PCAOB identified deficiencies and among them 49 (15 percent) stated disagreement with the PCAOB, while out of the 259 second round reports, only 115 (44 percent) have deficiencies and among them 24 stated disagreement with the PCAOB. For the third round inspection, 93 (53 percent) out of the 175 inspection reports have deficiencies and among them 13 (7 percent) stated disagreement with the PCAOB. Hence, there appears to be a clear indication of improvement after the second round of inspection, as only 36 percent of the reports are clean in the first round while the proportion increases to 56 percent in the second. However, this rate drops again to 47 percent after the third round. Turning to the Part II inspection findings, 47 (14 percent) of the first round inspected firms, 28 (11 percent) of the second round inspected firms and 18 (10 percent) of the third round inspected firms have

disclosed quality control deficiencies (QCD). The number of audit firms with QCD identified but not disclosed because the PCAOB considers that they were satisfactorily addressed within a one year period is 200 (62 percent), 123 (48 percent) and 102 (58 percent) for the first three rounds of inspections, respectively.

Table 2, Panel C and Panel D provide the report related statistics of the client companies in the sample. For the first round inspection, there are in total 1,143 client companies included. 239 (21 percent) of them are audited by audit firms receiving a deficiency report and indicating a disagreement with the PCAOB, while 579 (51 percent) are audited by audit firms receiving a deficiency report without indicated disagreement. 115 (10 percent) client companies have audit firms with disclosed QCDs, while 847 (74 percent) are audited by firms with QCDs identified but not disclosed. Out of the 968 client companies for the second round inspection, 114 of them (12 percent) are audited by audit firms receiving a deficiency report and stating a disagreement with the PCAOB and 376 (39 percent) are audited by audit firms receiving a deficiency report without indicated disagreement. Regarding the Part II findings, 86 (9 percent) have auditors with disclosed QCDs and 552 (57 percent) have auditors with remediated QCDs. Turning to the third round inspection, the sample has 771 clients included, of which 72 (9 percent) are audited by audit firms receiving a deficiency report and stating a disagreement with the PCAOB, and 430 (56 percent) are audited by audit firms receiving a deficiency report without indicated disagreement. The number of clients with disclosed QCDs is 67 (9 percent) and the number of clients with no QCDs identified is 171 (22 percent). A comparison of the first and the second inspection round indicates a significant improvement in the Part I inspection results, as in the first round only 28 percent of the companies are audited by clean audit firms while this percentage increased to 49 percent for the second inspection round. However, the percentage of clients audited by clean firms falls to 35 percent again for the third inspection round.

Table 3, Panel A presents descriptive statistics for the first round inspection. Audit fees paid by the clients range from \$10,000 to \$415,048 with a mean of \$122,562. The average client in the

period has total assets of slightly more than \$36.7 million with inventory and receivables representing 25 percent of that amount. Average leverage is 1.775 and the mean *ROA* is -1.289.<sup>12</sup> The average client reports 1.6 business segments. Overall, 62 percent of the observations are loss-making, 30 percent receive going-concern opinions and 12 percent report foreign income. Also, 64 percent of the audits are conducted during busy season and 13 percent are first year new clients.

Table 3, Panel B provides descriptive statistics for the second round inspection. Audit fees paid by the clients range from \$10,000 to \$426,000 with a mean of \$142,070. The average client in the period has total assets of slightly more than \$43.6 million with inventory and receivables representing 25 percent of that amount. Average leverage is 1.977 and a mean *ROA* is -1.424. Clients have on average 1.6 segments. Overall, 62 percent of the observations are loss-making, 30 percent receive going-concern opinions and 14 percent report foreign income. Also, 62 percent of the audits are conducted during busy season and 7 percent are first year new clients.

Table 3, Panel C shows descriptive statistics for the third round inspection. Audit fees paid by the clients range from \$11,000 to \$432,136 with a mean of \$150,547. The average client in the period has total assets of slightly more than \$45.2 million with inventory and receivables representing 25 percent of that amount. Average leverage is 1.861 and average *ROA* is -1.378. The average client reports 1.6 business segments. Overall, 64 percent of the observations are loss-making, 30 percent receive going-concern opinions and 16 percent report foreign income. Also, 64 percent of the audits are conducted during busy season and 7 percent are first year new clients.

## 5.2 Multivariate Results

Table 4, the first column shows the regression results of the benchmark model to test our first hypothesis regarding the Part I inspection findings. The regressions contain 5,050 observations and yield  $R^2$  of 58 percent. *CLEAN* has a positive coefficient (**0.172, p<0.01**) indicating that the average

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<sup>12</sup> Note the average *ROA* is highly negative. This is partly driven by the financial crisis. In our sample, we see some firms with a loss approaching 90% even after winsorizing at 5%.

fees are higher for companies with clean auditors before the first inspection compared to companies with deficient Part I findings. Similarly, the second column reports the regression results based on the Part II inspection findings and the coefficient on NON-QCD is also significant positive (**0.151,  $p < 0.01$** ), suggesting that audit fees are also higher for companies without any quality control deficiencies. These findings provide support for our first hypothesis.

Table 5 presents the results of the regression analysis used to test hypotheses H2a, H2b, and H2c. The coefficients on POST are all positive but only significant for the second round inspection (**0.096,  $p < 0.10$** ), providing no support for H2c. The coefficient on *CLEAN* is positive for the first round inspections, which provide additionally support to our first hypothesis. However, the coefficients on the interaction terms between POST and CLEAN are all insignificant. Moreover, the F-test shows that the change in audit fees from pre- to post- inspection for clean auditors does not change significantly for our H2a. For testing H2b, interestingly, the coefficients on OTHER are also significantly positive for the first round inspection, suggesting that audit fees are also higher for clients of audit firms who do not contesting the identified Part I deficiencies compared to clients of audit firms who disagreeing with the Part I findings before the inspections. However, the coefficients on the interaction term between POST and OTHER are all insignificant. We further use the F-test to examine the total effect of OTHER on the audit fees from pre- and post- inspection and it still shows no significant results. All the control variables have the expected signs. In summary, we conclude that the impact of the publication of Part I findings on the change of audit fees is very limited. A possible explanation is that Part I deficiencies are viewed as individual engagement related and they have limited impact on the average fees for all clients. Since PCAOB do not disclose the names of the inspected engagements, we are not able to observe what effect the inspection can have on these deficient engagements.

Table 6 provides the regression results for our hypotheses H3a, H3b, and H3c. The coefficients on *POST* are insignificant for all three inspection rounds. In other words, audit fees do not change



significantly for clients of audit firms with disclosed quality control deficiencies and it does not support our H3c. The coefficients on NON-QCD and QCD-ND are both significantly positive for the first round regression, suggesting that audit fees are higher before the first/second inspection for clients of audit firms without QCDs and clients of audit firms who remediated the QCDs than for clients of audit firms with disclosed QCDs. These findings further support our first hypothesis that audit fees are different before the inspection, conditional on the inspection outcomes. We continue to use F-test by adding up the coefficients on NON-QCD/QCD-ND with the coefficients on the interaction terms. The results suggesting that the total effects that NON-QCD have are significantly positive for both the second and third round inspections. In other words, for clients of audit firms who have a clean Part II inspection report, audit fees increase after the publication of the inspection reports. These findings support our H3a. Similarly, we also use F-test to analysis the total effect of QCD-ND to test our H3b. The results suggest that audit fees only increase after the third inspection for clients of audit firms who remediated their QCDs, providing limited support for our hypothesis. Collectively, we conclude that PCAOB inspections provide an opportunity for small audit firms to signal their audit quality, especially when no quality control deficiencies are identified.

Table 7 presents the OLS regression results for testing H4. The model explains 76 percent of the variance. All the control variables have the expected sign. The coefficients on *Period1*, *Period2* and *Period3* are all significantly positive, consistent with our previous findings that audit fees increase after the PCAOB inspections. However, the t-test indicates that there is no significant difference between the coefficient on *Period2* and *Period3*. Overall, the results suggest that for the companies that do not switch auditors, audit fees increase after the first and second inspection round. However, after the third inspection, audit fees do not change significantly compared to the period after the second inspection, suggesting that there is a saturation point after which there is no further incremental increase in audit fees for audit firms which have been subject to multiple inspection rounds. This would be in line with hypothesis 4.

## 6. Additional Analyses

### 6.1 Personnel Adjustments

To further examine whether the expected change in audit fees is associated with a change in audit effort, we investigate personnel adjustments of audit firms. Specifically, we argue that an observed fee increase of a audit firm is likely to reflect an increase in effort when we also observe an increase in human resources for that audit firm. At the same time, it is less likely that a firm with a deficient inspection hires additional staff due to growth in its revenue (Lennox and Pittman 2010), which is also reflected in our previous results that deficient audit firms have problems in raising their audit fees. In line with this reasoning, we expect that deficient firms are less likely to increase the number of professionals employed by the firm. We examine changes in human resources (the number of CPAs) using the Form2 Data published on the PCAOB website. All PCAOB registered audit firms are required to publish this form which covers a 12-month period from April 1 to March 31 starting in 2010. These reports contain information on the number of CPAs working for the firms. We regress the natural logarithm of the number of CPAs on the indicator variables based on the Part I inspection results and two audit firm level control variables:

$$\begin{aligned} \text{LOGCPAS} = & \alpha_0 + \alpha_1 \text{CLEAN\#POST} + \alpha_2 \text{OTHER\#POST} + \alpha_3 \text{LOGTOTAL\_FEE} \\ & + \alpha_4 \text{LOGAVG\_ASSET} + e \end{aligned} \quad (2)$$

Next, following our previous analysis, we use two variables of interest relating to the Part II inspection findings: *NON-QCD* and *QCD\_ND* replacing the two variables *CLEAN* and *OTHER* in Model 2.

Table 8 and Table 9 present the results for the effect that Part I and Part II inspection findings have on the number of CPAs of the audit firms, respectively. Table 8 shows that the number of CPAs does not change significantly for deficient audit firms who state a disagreement with the PCAOB findings after all three rounds of inspections. For the deficient audit firms without public disagreement with the PCAOB findings, the number of CPAs only experiences a weak increase after

the second round of inspection. On the contrary, the number of CPAs significantly decreases for the clean auditors after the third round of inspections. Overall, this is not consistent with our expectation and it provides some evidence that audit firms who do not disagree with the PCAOB Part I findings put more effort to improve by turning to more expensive labor, irrespective of their inability to charge clients for it.

Table 9 shows the regression results for how the QCDs are associated with the number of CPAs. The findings suggest that, for audit firms which successfully remediated their QCDs, audit fees increase after the second round of inspection. For audit firms who have disclosed QCDs and audit firms without any QCDs, the number of CPAs do not change significantly. Collectively, we find some support to the notion that audit firms who remediated the QCDs increase their effort after the publication of the inspection reports, at least through personnel adjustment. In combination with our previous findings that audit fees increase is driving by audit firms without any QCDs, it shows that both the reputation effect and the effort effect take place after the inspection.

## 6.2 Changes in number of clients

In addition to audit fee changes, we also investigate the clients' reaction from another side, which is the number of clients of the audit firms. Besides the number of CPAs, audit firms also report the number of public clients in the annually published Form 2. We extract the data and use the natural logarithm of the number of public clients as dependent variable instead of the natural logarithm of the number of CPAs and rerun Model 2 for Part I and Part II inspection findings. Table 10 and 11 show the regression results. Table 10 shows that the number of clients increases after the first inspection and then decreases after the second inspection for deficient audit firms who disagree with the PCAOB findings. At the same time, the number of clients has a weak decrease for audit firms who do not contest the Part I deficiencies after the second round inspection and does not change significantly for clean audit firms after all three inspections. Turning to Table 11, we only

find a weak decrease for audit firms without any QCDs. Interestingly, we find that the number of CPAs is higher and the number of clients is lower for audit firms without any deficiencies identified in Part I or Part II of the inspection reports. In summary, the pattern in our results shows that the increase in audit fees is always accompanied by a drop if the number of clients. As a result, client in the small audit firm market seem to prefer lower possible audit fees rather than better audit quality.

### 6.3 Total Audit Fee Change

As our results suggest that the clean audit firms lose clients while having an increase in audit fees for the remaining clients, we investigate how the total audit fee collected by audit firms from their public clients change after the publication of the inspection report. Table 12 displays our results. Using the data from AuditAnalytics, we calculate the natural logarithm of the total audit fees collected by each audit firm per year. We use t-tests to compare the total fees from pre- to post-inspection based on the outcome of the inspection report. The results suggest that total audit fees increase significantly for both clean auditors and auditors who disagree with the identified engagement deficiencies after the first round of inspection. After the second inspection, total audit fees drop significantly for audit firms receiving deficient reports irrespective of the audit firm's response, while total audit fees do not change significantly for clean audit firms. After the third inspection, total audit fees drop for deficient audit firms who do not state disagreement with the deficiencies while there is no significant change for the two other types of audit firms. In summary, the results give some indication that the clean audit firms are better off compared to the deficient ones, as there appears to be no decrease in the total audit fees for clean audit firms. This would imply that there is a net benefit of the increase in audit fees despite the loss of public clients.

### 6.4 Financial risk of new clients after the inspection

In our main analysis, we restrict our sample to clients that do not switch audit firms after the publication of the inspection report. To further corroborate our findings on how disclosure of inspection outcomes affects audit firm's behavior, we investigate the financial risks of the new clients after each round of inspection. We identify the new clients from AuditAnalytics and match them with the financial information from Compustat. Using t-tests, we compare whether ROA, Loss and Leverage<sup>13</sup> for the new clients are different across the audit firms with different inspection outcomes. The results are presented in Table 13. In general, the statistics show that the financial risks are lower for new clients of audit firms who receive clean inspection reports, implying that these audit firms became more selective in their client acceptance decisions, which is a key feature of a well-designed internal system of quality control.

## 6.5 Other Additional Tests

To rule out the possibility that very small client companies' might have different pricing decisions, we exclude clients with assets less than one million US dollars. The untabulated results show that our main results hold when excluding these small client companies. Furthermore, the number of engagements being inspected by the PCAOB is larger for audit firms with more clients. Therefore, these larger audit firms are more likely to get a deficient Part I finding even though they do not supply lower quality audits. In an untabulated analysis, we investigate whether the audit fee change depends on the percentage of deficient engagements (number of deficient engagement divided by the total number of inspected engagements). The results show that the percentage of deficient engagements is not significant, implying that this is not driving our main findings.

Finally, we rerun our regression analysis dropping the sample restriction used in the main analysis to only include the audit-client combinations that have at least one fiscal year end before

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<sup>13</sup>Following our main analysis, we winsorize our continuous variables at the 5 percent and 95 percent.

and after the publication of the inspection report. The results remain unchanged using the full panel without this restriction.

## 7. Conclusion

In view of recent regulatory changes that established independent inspections of U.S. audit firms, this paper starts with investigating whether audit fees are different before the inspection conditional on the inspection outcomes. The results suggest that PCAOB inspection findings are representative of audit effort. Then we continue to examine whether the inspection results caused changes in audit fees for triennially inspected firms. The findings of our study reveal that audit fees increase after the PCAOB inspections. This increase is driven by audit firms without disclosed quality control deficiencies. At the same time, the publication of the Part I inspection findings have limited impact on audit fees. Furthermore, we observe an increase in the number of CPAs employed by audit firms who do not contest with the PCAOB Part I findings and audit firms who remediated the quality control deficiencies. However, the reputation damage caused by the deficiencies limit their abilities to charge clients for the increased effort. Finally, we find that, instead of attracting more clients, audit firms without QCDs experience a decrease in the number of public clients while they do charge higher fees because of the good reputation. This would suggest that in the small audit firm market, clients seem to care more about obtaining the lowest fee instead of higher quality, which a clean inspection report is expected to reflect. Collectively, our evidence suggests that PCAOB inspections led to important changes in audit firm behavior.

Our study is subject to several data limitations. First, it would be desirable to have a fully balanced sample of audit clients across the period of investigation. Given limited data availability, however, a reasonable sample size is only achievable by including all clients with not less than one year of available data in each of the estimation, pre-, and post-inspection periods. Secondly, the Form 2 data we used for analyzing the change in the number of CPAs and the number of public

clients is only available after 2010. So the analysis based on these data is especially an issue for the first inspection round.

This study contributes to the literature on the effects of PCAOB inspections by focusing on a number of potential changes in audit firm behavior. More generally, we add to the literature on independent inspections of audit firms at a time when public oversight systems are being discussed, established, and refined across the world. While prior studies have either looked at client-level fees prior to inspections (Gunny et al. 2007) or at fees at a single audit firm level (Boone et al. 2015), this study contributes to the literature by showing that the established U.S. inspection system changes audit firms' behavior. While recent studies mainly relating to annually inspected audit firms report a number of positive economic effects of PCAOB inspections, we conclude that for the small audit firm market, the effects are not unequivocal positive. This seems to be driven by a lower demand for high quality in this audit market segment. This paper therefore also extends the literature on the potentially adverse effects of high fee pressure caused by competition and client-specific demand characteristics. The insights can be useful to regulators and oversight bodies throughout the world in setting guidelines regarding the detailed implementation and future development of audit firm inspections.

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**Table 1: Sample selection procedure**

<b>Number of Audit firms (number of clients)</b>	<b>First inspection</b>	<b>Second inspection</b>	<b>Third inspection</b>
Originally from PCAOB website	761	537	373
-without data from AuditAnalytics	666 (9639)	485 (8789)	344 (7723)
-without data from Compustat	578 (4131)	450 (3893)	329 (3513)
-missing values for variables used in the model	505 (3282)	400 (3087)	288 (2770)
-observations after the next inspection and before previous inspection	487 (2603)	369 (2193)	252 (1739)
-SIC 6000-6700 and SIC4000-4900	465 (2383)	358 (2045)	242 (1640)
-observations without at least one fiscal year before and one fiscal year after the inspection	325 (1083)	259 (931)	175 (759)

**Table 2: Report related statistics****Panel A: Auditor characteristics with Part I findings**

	<i>First-round</i>		<i>Second-round</i>		<i>Third-round</i>	
	N	Percentage	N	Percentage	N	Percentage
Def_disagree	49	15.08	24	9.27	13	7.43
Def_other	159	48.92	91	35.13	80	45.71
Clean	117	36	144	55.6	82	46.86
Total	325	100	259	100	175	100

**Panel B: Auditor characteristics with Part II findings**

	<i>First-round</i>		<i>Second-round</i>		<i>Third-round</i>	
	N	Percentage	N	Percentage	N	Percentage
QCD_D	47	14.46	28	10.81	18	10.29
QCD_ND	200	61.54	123	47.5	102	58.29
NON-QCD	78	24	108	41.69	55	31.42
Total	325	100	259	100	175	100

**Panel C: Client characteristics with Part I findings**

	<i>First-round</i>		<i>Second-round</i>		<i>Third-round</i>	
	N	Percentage	N	Percentage	N	Percentage
Def_disagree	239	20.91	114	11.78	72	9.34
Def_other	579	50.66	376	38.84	430	55.77
Clean	325	28.43	478	49.38	269	34.89
Total	1143	100	968	100	771	100

**Panel D: Client characteristics with Part II findings**

	<i>First-round</i>		<i>Second-round</i>		<i>Third-round</i>	
	N	Percentage	N	Percentage	N	Percentage
QCD_D	115	10.06	86	8.88	67	8.69
QCD_ND	847	74.1	552	57.02	533	69.13
NON-QCD	181	15.84	330	34.1	171	22.18
Total	1143	100	968	100	771	100

**Table 3: Descriptive statistics**

<b>Panel A: First round inspection</b>						
Variables	N	Mean	Median	SD	Min	Max
AUDITFEE	5,020	122,562	81,810	110,816	10,000	415,048
ASSETS	5,020	36,730,000	12,750,000	54,980,000	57,000	212,600,000
LEVERAGE	5,020	1.775	0.432	4.199	0.0517	20.30
INVERE	5,020	0.253	0.194	0.232	0.00	0.728
ROA	5,020	-1.289	-0.0992	3.370	-15.88	0.236
LOSS	5,020	0.624	1.00	0.484	0.00	1.00
OPINION	5,020	0.309	0.00	0.462	0.00	1.00
FOREIGN	5,020	0.116	0.00	0.320	0.00	1.00
BUSY	5,020	0.642	1.00	0.480	0.00	1.00
SEGMENT	5,020	1.607	1.00	1.300	0.00	11.00
SHORT	5,020	0.133	0.00	0.339	0.00	1.00
TOTAL_FEE	5,020	3,212,000	1,503,000	3,864,000	91,751	13,970,000
AVG_ASSET	5,020	90,220,000	31,530,000	142,400,000	1,019,000	558,500,000
<b>Panel B: Second round inspection</b>						
AUDITFEE	3,908	142,070	103,629	118,893	10,000	426,000
ASSETS	3,908	43,650,000	16,220,000	61,590,000	62,000	216,800,000
LEVERAGE	3,908	1.977	0.416	4.535	0.0511	19.40
INVERE	3,908	0.250	0.187	0.230	0.00	0.728
ROA	3,908	-1.424	-0.103	3.543	-15.11	0.235
LOSS	3,908	0.623	1.00	0.485	0.00	1.00
OPINION	3,908	0.301	0.00	0.459	0.00	1.00
FOREIGN	3,908	0.144	0.00	0.351	0.00	1.00
BUSY	3,908	0.622	1.00	0.485	0.00	1.00
SEGMENT	3,908	1.600	1.00	1.271	0.00	10.00
SHORT	3,908	0.0693	0.00	0.254	0.00	1.00
TOTAL_FEE	3,908	3,465,000	1,771,000	3,921,000	100,622	14,320,000
AVG_ASSET	3,908	114,300,000	47,840,000	162,600,000	1,012,000	584,200,000
<b>Panel C: Third round inspection</b>						
AUDITFEE	3,118	150,547	117,473	118,465	11,000	432,136
ASSETS	3,118	45,210,000	17,050,000	63,710,000	69,000	219,900,000
LEVERAGE	3,118	1.861	0.41	4.235	0.0493	18.49
INVERE	3,118	0.247	0.187	0.23	0.00	0.719
ROA	3,118	-1.378	-0.125	3.342	-14.5	0.238

LOSS	3,118	0.639	1.00	0.48	0.00	1.00
OPINION	3,118	0.296	0.00	0.456	0.00	1.00
FOREIGN	3,118	0.158	0.00	0.365	0.00	1.00
BUSY	3,118	0.637	1.00	0.481	0.00	1.00
SEGMENT	3,118	1.581	1.00	1.28	0.00	10.00
SHORT	3,118	0.0712	0.00	0.257	0.00	1.00
TOTAL_FEE	3,118	4,411,000	2,038,000	4,597,000	114,056	14,490,000
AVG_ASSET	3,118	138,100,000	66,540,000	178,900,000	1,229,000	600,900,000

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All continuous variables have been winsorized at the 5<sup>th</sup> and 95<sup>th</sup> percentile.

**Table 4: Pre-inspection audit fee analysis**

Log_audit_fee	Part I findings	Part II findings
CLEAN	0.172*** (7.673)	
NON-QCD		0.151*** (5.017)
LOGASSETS	0.328*** (44.25)	0.328*** (43.60)
LEVERAGE	0.0145*** (4.471)	0.0145*** (4.244)
INVERE	0.248*** (5.706)	0.257*** (5.699)
ROA	-0.0303*** (-7.455)	-0.0303*** (-7.055)
LOSS	0.203*** (9.118)	0.206*** (8.936)
FOREIGN	0.197*** (5.629)	0.203*** (5.449)
BUSY	0.113*** (5.835)	0.112*** (5.738)
OPINION	0.157*** (6.962)	0.157*** (6.343)
LOGSEG	0.0460*** (5.838)	0.0449*** (5.961)
SHORT	-0.0154 (-0.689)	-0.0105 (-0.453)
LOGAVG_ASSET	0.0622*** (7.771)	0.0715*** (8.863)
LOGTOTAL_FEE	0.0977*** (13.12)	0.0929*** (12.23)
Constant	3.110*** (15.06)	3.017*** (15.50)
Observations	5,050	5,050
R-squared	0.580	0.577
Fixed effects	Year/industry	Year/industry
R2 adjusted	0.573	0.571

\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.

**Table 5: Regression results with Part I findings**

Log_audit_fee	First inspection	Second inspection	Third inspection
POST	0.056 (1.532)	0.096* (1.659)	0.020 (0.324)
CLEAN	0.190*** (5.968)	0.277*** (7.060)	-0.036 (-0.811)
POST*CLEAN	-0.004 (-0.077)	-0.061 (-1.011)	0.018 (0.279)
OTHER	0.149*** (5.442)	0.092** (2.229)	-0.067 (-1.559)
POST*OTHER	-0.024 (-0.586)	-0.091 (-1.431)	0.024 (0.379)
FIRST_DEF		-0.124*** (-6.282)	
SECOND_DEF			-0.146*** (-7.605)
LOGASSETS	0.348*** (48.039)	0.362*** (45.086)	0.346*** (42.168)
LEVERAGE	0.026*** (6.783)	0.029*** (7.606)	0.023*** (5.376)
INVERE	0.221*** (5.213)	0.250*** (5.515)	0.296*** (6.221)
ROA	-0.025*** (-5.080)	-0.024*** (-4.767)	-0.023*** (-3.721)
LOSS	0.167*** (8.574)	0.136*** (6.560)	0.064*** (2.914)
FOREIGN	0.256*** (9.297)	0.238*** (8.782)	0.204*** (7.804)
BUSY	0.085*** (4.831)	0.036* (1.914)	0.026 (1.310)
OPINION	0.173*** (7.006)	0.180*** (6.951)	0.134*** (5.063)
LOGSEG	0.031*** (4.670)	0.029*** (3.608)	0.007 (1.068)
SHORT	-0.095*** (-3.625)	-0.117*** (-2.981)	-0.203*** (-4.661)
LOGAVG_ASSET	0.061*** (8.249)	0.067*** (8.039)	0.042*** (4.997)
LOGTOTAL_FEE	0.085*** (12.686)	0.096*** (12.601)	0.112*** (13.501)
Constant	2.798*** (12.925)	2.420*** (11.583)	3.173*** (7.352)
Observations	5,020	3,908	3,118
R-squared	0.648	0.705	0.735

Fixed effects	Year/industry	Year/industry	Year/industry
R2 adjusted	0.642	0.699	0.729
<b>Total effect CLEAN</b>	<b>0.051</b>	<b>0.005</b>	<b>0.038</b>
<b>Total effect OTHER</b>	<b>0.032</b>	<b>0.005</b>	<b>0.044</b>

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\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.



**Table 6: Regression results with Part II findings**

Log_audit_fee	First inspection	Second inspection	Third inspection
POST	-0.045 (-0.796)	0.072 (0.878)	0.043 (0.584)
NON-QCD	0.220*** (4.438)	0.412*** (7.483)	-0.061 (-1.325)
POST*NON-QCD	0.116* (1.721)	-0.003 (-0.037)	0.057 (0.723)
QCD-ND	0.171*** (4.194)	0.337*** (6.257)	-0.028 (-0.715)
POST*QCD-ND	0.074 (1.284)	-0.028 (-0.339)	0.006 (0.086)
FIRST_QCD		-0.101*** (-4.054)	
SECOND_QCD			-0.080*** (-4.166)
LOGASSETS	0.346*** (47.608)	0.360*** (44.875)	0.346*** (42.021)
LEVERAGE	0.024*** (6.320)	0.029*** (7.613)	0.023*** (5.429)
INVERE	0.242*** (5.740)	0.250*** (5.458)	0.312*** (6.518)
ROA	-0.026*** (-5.324)	-0.022*** (-4.352)	-0.022*** (-3.674)
LOSS	0.173*** (8.892)	0.145*** (7.032)	0.067*** (3.009)
FOREIGN	0.253*** (9.159)	0.255*** (9.341)	0.202*** (7.640)
BUSY	0.086*** (4.894)	0.029 (1.575)	0.018 (0.891)
OPINION	0.176*** (7.152)	0.177*** (6.770)	0.129*** (4.857)
LOGSEG	0.030*** (4.521)	0.026*** (3.307)	0.005 (0.734)
SHORT	-0.092*** (-3.483)	-0.125*** (-3.200)	-0.197*** (-4.534)
LOGAVG_ASSET	0.060*** (8.312)	0.064*** (7.881)	0.039*** (4.661)
LOGTOTAL_FEE	0.075*** (10.845)	0.087*** (10.867)	0.113*** (14.156)
Constant	2.893*** (13.496)	2.465*** (11.646)	3.178*** (7.295)
Observations	5,020	3,908	3,118
R-squared	0.648	0.703	0.731

Fixed effects	Year/industry	Year/industry	Year/industry
R2 adjusted	0.643	0.697	0.725
<b>Total effect NON-QCD</b>	<b>0.071</b>	<b>0.069**</b>	<b>0.100**</b>
<b>Total effect QCD-ND</b>	<b>0.029</b>	<b>0.044</b>	<b>0.049*</b>

\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.

**Table 7: OLS regression with constant sample**

Log audit fee	
Period1	0.0875* (1.862)
Period2	0.209*** (3.265)
Period3	0.218** (2.707)
LOGASSETS	0.373*** (27.89)
LEVERAGE	0.0303** (2.664)
INVERE	0.310*** (4.592)
ROA	-0.0602** (-2.262)
LOSS	0.112** (2.528)
FOREIGN	0.296*** (4.800)
BUSY	0.0221 (0.528)
OPINION	0.117** (2.039)
LOGSEG	0.00642 (0.591)
LOGAVG_ASSET	0.0152 (0.761)
LOGTOTAL_FEE	0.0970*** (3.679)
Constant	3.018*** (12.10)
Observations	2,597
R-squared	0.766
Fixed effects	Year/industry
R2 adjusted	0.761

\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.

**Table 8: Regression results with Part I findings**

Log(NCPAS)	First inspection	Second inspection	Third inspection
POST	0.108 (0.463)	0.372 (1.423)	-0.105 (-0.350)
CLEAN	1.360*** (5.099)	0.677*** (3.030)	0.432*** (2.613)
CLEAN*POST	-0.123 (-0.356)	-0.220 (-0.806)	-0.118 (-0.395)
OTHER	0.643** (2.567)	0.324 (1.462)	-0.269 (-1.619)
OTHER*POST	-0.0309 (-0.104)	0.00205 (0.00738)	0.0660 (0.212)
LOGSUMFEE	0.339*** (5.473)	0.461*** (13.39)	0.512*** (17.00)
LOGAVGASSET	0.236*** (8.099)	0.230*** (12.37)	0.158*** (8.151)
Constant	-6.845*** (-7.563)	-7.460*** (-14.15)	-6.463*** (-14.12)
Observations	220	862	917
R-squared	0.478	0.418	0.421
Fixed effects	Year	Year	Year
R2 adjusted	0.448	0.410	0.413
<b>Total effect CLEAN</b>	<b>-0.015</b>	<b>0.152</b>	<b>-0.223*</b>
<b>Total effect OTHER</b>	<b>0.077</b>	<b>0.374**</b>	<b>-0.039</b>

\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.

**Table 9: Regression results with Part II findings**

Log(NCPAS)	First inspection	Second inspection	Third inspection
POST	0.382 (1.057)	0.346 (1.456)	0.043 (0.160)
NON-QCD	1.488*** (4.525)	0.959*** (4.803)	1.156*** (6.818)
POST*NON-QCD	-0.561 (-1.047)	-0.384 (-1.478)	-0.223 (-0.797)
QCD-ND	0.589** (2.342)	0.683*** (3.661)	0.790*** (5.076)
POST*QCD-ND	-0.283 (-0.746)	-0.0299 (-0.118)	-0.035 (-0.130)
LOGSUMFEE	0.339*** (4.440)	0.449*** (12.98)	0.490*** (16.77)
LOGAVGASSET	0.212*** (6.495)	0.213*** (10.84)	0.147*** (7.730)
Constant	-6.263*** (-6.525)	-7.246*** (-14.29)	-6.678*** (-14.72)
Observations	220	862	917
R-squared	0.433	0.426	0.421
Fixed effects	Year	Year	Year
R2 adjusted	0.400	0.418	0.413
<b>Total effect NON-QCD</b>	-0.179	-0.038	-0.180
<b>Total effect QCD-ND</b>	0.099	0.316*	0.008

\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.

**Table 10: Regression results with Part I findings**

Log(NCLIENTS)	First inspection	Second inspection	Third inspection
POST	0.456** (2.239)	-0.308** (-2.092)	0.091 (0.779)
CLEAN	-0.438** (-2.041)	-0.350*** (-2.620)	-0.067 (-0.968)
CLEAN*POST	-0.317 (-1.171)	0.175 (1.123)	-0.182 (-1.531)
OTHER	-0.259 (-1.330)	-0.130 (-1.003)	0.079 (1.191)
OTHER*POST	-0.431* (-1.783)	0.158 (1.017)	-0.134 (-1.111)
LOGSUMFEE	0.820*** (18.86)	0.768*** (40.45)	0.777*** (47.36)
LOGAVGASSET	-0.247*** (-11.68)	-0.149*** (-13.74)	-0.135*** (-11.62)
Constant	-4.046*** (-6.976)	-5.181*** (-17.71)	-5.851*** (-23.05)
Observations	220	862	917
R-squared	0.706	0.688	0.737
Fixed effects	Year	Year	Year
R2 adjusted	0.689	0.683	0.734
<b>Total effect CLEAN</b>	0.139	-0.133	-0.091
<b>Total effect OTHER</b>	0.025	-0.438*	-0.043

\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.

**Table 11: Regression results with Part II findings**

Log(NCLIENTS)	First inspection	Second inspection	Third inspection
POST	-0.0170 (-0.0609)	-0.108 (-0.734)	-0.018 (-0.121)
NON-QCD	-0.550** (-2.054)	-0.582*** (-4.071)	-0.410*** (-4.016)
POST*NON-QCD	0.0990 (0.278)	0.0970 (0.594)	-0.132 (-0.815)
QCD-ND	-0.319 (-1.354)	-0.227* (-1.688)	-0.343*** (-3.835)
POST*QCD-ND	0.272 (0.957)	-0.032 (-0.204)	0.008 (0.0518)
LOGSUMFEE	0.821*** (18.40)	0.765*** (38.68)	0.781*** (47.34)
LOGAVGASSET	-0.231*** (-10.09)	-0.132*** (-11.88)	-0.126*** (-11.09)
Constant	-4.305*** (-7.541)	-5.329*** (-18.62)	-5.747*** (-22.61)
Observations	220	862	917
R-squared	0.685	0.697	0.744
Fixed effects	Year	Year	Year
R2 adjusted	0.667	0.693	0.740
<b>Total effect NON-QCD</b>	0.082	-0.011	-0.150*
<b>Total effect QCD-ND</b>	0.255	-0.140	-0.010

\* p<.1, \*\* p<0.05, \*\*\* p<0.01, based on two tailed test.

Table 12: Change in total audit fees

Log(sumfee)	Pre	Post	Diff	p-value
First inspection				
Def_disagree	12.73	13.29	0.56	0.000
Def_other	12.71	12.81	0.10	0.157
Clean	12.54	12.80	0.26	0.001
Second inspection				
Def_disagree	13.16	12.70	-0.46	0.029
Def_other	13.48	13.29	-0.19	0.096
Clean	12.88	12.87	-0.01	0.478
Third inspection				
Def_disagree	13.30	13.03	-0.27	0.189
Def_other	13.39	13.01	-0.38	0.022
Clean	13.06	12.90	-0.16	0.120

Table 13: Financial risks for the new clients after the inspections

First inspection						
	Def disagree(1)	Def other(2)	Clean(3)	Diff(1)-(2)	Diff(1)-(3)	Diff(2)-(3)
ROA	-3,456	-3,386	-1.843	-0.070	-1.613***	-1.543***
LEVERAGE	3.925	3.898	2.588	0.277	1.337***	1.310***
LOSS	0.735	0.734	0.549	0.001	0.186***	0.185***
Second inspection						
ROA	-2.874	-4.670	-3.106	1.796**	0.232	-1.564***
LEVERAGE	2.798	5.560	3.397	-2.762**	-0.599	2.163***
LOSS	0.755	0.746	0.722	0.009	0.033	0.024
Third inspection						
ROA	-3.874	-3.549	-2.602	-0.325	-1.272*	-0.947*
LEVERAGE	3.298	2.805	2.353	0.493	0.945*	0.452
LOSS	0.688	0.839	0.771	-0.151***	-0.083*	0.068**

## Appendix I - Variable Definitions

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<i>AUDITFEE</i>	Amount of audit fees paid by the client for the audit in the particular financial year.
<i>ASSETS</i>	Total assets of the client firm.
<i>INVERE</i>	Sum of inventory and receivables of the client divided by total assets.
<i>ROA</i>	Net income divided by total assets.
<i>LOSS</i>	Indicator equal to one when net income is below zero.
<i>OPINION</i>	Indicator equal to one when a going concern opinion was issued.
<i>BUSY</i>	Indicator equal to one when the financial year-end is in December.
<i>FOREIGN</i>	Indicator equal to one when the client reports foreign income.
<i>SEGMENT</i>	Number of business segments of the company.
<i>SHORT</i>	Indicator equals to one for first year engagement as anew client.
<i>TOTAL_FEE</i>	Total audit fee collected by the auditor in a year.
<i>AVG_ASSET</i>	Average client total assets of the audit firm.
<i>DISAGREE</i>	Indicator equal to 1 for deficient auditors who state disagreement with the PCAOB findings.
<i>OTHER</i>	Indicator equal to 1 for deficient auditors who do not state disagreement with the PCAOB findings.
<i>CLEAN</i>	Indicator equal to 1 for clean auditors.
<i>QCD_D</i>	Indicator equal to 1 for auditors with disclosed QCDs.
<i>QCD_ND</i>	Indicator equal to 1 for auditors with identified but not disclosed QCDs.
<i>NON-QCD</i>	Indicator equal to 1 for auditors without any QCDs identified.
<i>POST</i>	Indicator equal to 1 if the fiscal year ended after the publication of the inspection reports.
<i>FIRST_DEF</i>	Indicator equal to 1 for auditors with deficient first inspection results.
<i>SECOND_DEF</i>	Indicator equal to 1 for auditors with deficient second inspection results.
<i>FIRST-QCD</i>	Indicator equal to 1 for auditors with quality control deficiencies in first inspection reports.
<i>SECOND-QCD</i>	Indicator equal to 1 for auditors with d quality control deficiencies in second inspection reports.
<i>LOGNCPAS</i>	Natural logarithm of the number of CPAs of the audit firm.
<i>LOGNCLIENTS</i>	Natural logarithm of the number of public clients of the audit firm.



<i>Period1</i>	Indicator equal to 1 if the observation belongs to the period after the publication date of the first and before the publication of the second round inspection reports.
<i>Period2</i>	Indicator equal to 1 if the observation belongs to the period after the publication date of the second and before the publication of the third round inspection reports.
<i>Period3</i>	Indicator equal to 1 if the observation belongs to the period after the publication date of the third round inspection reports.