Abstract:
Extant research typically uses a variation of Big N auditor, discretionary accruals, audit fees, accrual quality, going-concern opinions, or meet or beat the quarterly earnings target as a proxy for audit quality. We provide evidence on the construct validity of these measures by evaluating whether they are able to successfully predict alleged audit deficiencies in engagements that are the subject of non-dismissed lawsuits and SEC’s AAERs filed against auditors over the violation years 1978-2011. The presence of a Big N auditor signing off on the statements of the company during the violation periods is negatively associated with the total number of audit quality allegations and this result is driven by a lower incidence of allegations that a Big N auditor did not exercise due care in the audit. Abnormal audit fees during the violation period are positively associated with the number of alleged audit quality violations. The relation between abnormal audit fees and specific allegations is mixed in that such fees are negatively associated with allegations that the audit was inadequately planned, financial statements were not GAAP compliant and auditor did not assess audit risk adequately but positively associated with other allegations. The proportion of non-audit fees to total fees is associated with accusations of independence violations. However, the other proxies are not systematically associated with audit deficiencies. Our results raise questions about the descriptive accuracy of the commonly used measures of audit quality in the literature.
Measuring Audit Quality

1. Introduction

A large body of research investigates the antecedents and consequences of poor audit quality. Much of this research relies on some variation of the following five proxies to measure audit quality: (i) Big N auditor; (ii) discretionary accruals, signed or absolute value, (iii) going concern opinions, (iv) audit fees, (v) accrual quality, and (vii) meet or beat a quarterly earnings target.\(^1\) The use of these proxies is presumably motivated by cost-benefit considerations. These measures are relatively easy to compute from machine readable databases. However, there is little evidence on the construct validity of these proxies or descriptive accuracy of these measures. In this paper, we evaluate the ability of these proxies to predict detailed, fine-grained, hand-collected allegations related to how auditors actually performed in specific engagements covered in non-dismissed lawsuits and the SEC’s Accounting and Auditing Enforcement Releases (AAERs) filed against auditors.

Any discussion of the proxies of audit quality is complicated by how to define audit quality. The two most cited definitions of audit quality have been provided by (i) DeAngelo (1981), who defines audit quality as the joint probability that auditors both “discover a breach in the client’s accounting system, and report the breach;” and (ii) by DeFond and Zhang (2013) who believe higher audit quality is “greater assurance of high financial reporting quality.” Survey evidence (Christensen et al. 2013) suggests that individual investors value auditor competence as indicative of high audit quality whereas audit professionals view compliance with audit standards as a sign of high audit quality. We do not take a position on the exact definition of audit quality. As long as readers believe that lawyers, either from private law firms or the SEC, put in substantial time and effort into constructing a case against auditors by enumerating specific deficiencies of audit quality in a particular engagement, our empirical analysis is likely to shed some light on the construct validity of the audit quality proxies used in the literature. As a practical matter, allegations against auditors are framed by both the SEC and the class action lawyers in

\(^1\) Defond and Zhang (2013) summarize this literature and the concerns related to the use of these proxies.
terms of violations of Generally Accepted Auditing Standards (GAAS). However, we also believe that allegations about the quality of the auditor’s effort or mindset in a particular engagement are not inconsistent with the above mentioned definitions of audit quality. Our attempt to compile fine-grained data on audit quality is also consistent with calls by Donavan et al. (2014) to incorporate “the institutional features of the audit process into the definition of audit quality.”

We provide two sets of empirical analyses to evaluate how well the extant proxies capture actual audit deficiencies. We begin with a detailed description of alleged deficiencies on audits of 79 companies identified by the SEC over the years 1985-2010 and 135 companies identified as deficient by securities class action lawyers over the years 1996-2010. We only focus on lawsuits that were not subsequently dismissed to eliminate frivolous allegations. Because the rest of the lawsuits are invariably settled, we cannot ascertain whether these alleged deficiencies held up in a court of law. Of course, the sample of SEC AAERs is less likely to suffer from this limitation. Our sample is also subject to selection issues in that the SEC is much less likely to pursue Big N auditors relative to the class action lawyers, who focus, almost exclusively on the Big N. Notwithstanding these limitations, we believe our evidence is interesting because it provides among the first granular perspective into audit quality deficiencies at the field level based on what practitioners actually do rather than relying on aggregate and arguably indirect measures of audit quality that the literature has typically relied upon.

Relying on the GAAS framework for general, fieldwork, and reporting standards, we classify audit deficiencies into seven categories: (i) bogus audit; (ii) issues with engagement acceptance, (iii) violation of general standards; (iv) three specific violations of GAAS standard on fieldwork including (a) deficiencies in audit planning; (b) insufficient competent evidence; and (c) understanding internal controls; and (v) a violation of the GAAS standard on reporting\(^2\). Within each of these broad categories, we

\(^2\) AU Section 150 Generally Accepted Auditing Standards (http:// pcaobus.org/Standards/Auditing/Pages/AU150.aspx) consists of 3 broad categories: 1) general standards, 2) standards of field work, and 3) standards of reporting. We recognize that the terminologies could be confusing. In our paper, (iii) violation of general standards is not a superset of (iv) violations of GAAS standard on fieldwork and (v) violation of the GAAS standard on reporting. Theoretically, they are three independent categories derived from AU Section 150.
identify 45 sub-categories of specific violations. A framework based on violations of GAAS standards facilitates cross-sectional comparison of deficiencies across audit engagements.

An AAER or a lawsuit usually contains allegations of multiple deficiencies. The five most commonly cited violations of GAAS standards, at the sub-category level, for AAERs and lawsuits combined, relate to (i) failure to gather sufficient competent audit evidence (160 cases); (ii) failure to exercise due professional care (143 cases); (iii) failure to express an appropriate audit opinion (134 cases); (iv) failure to obtain an understanding of internal control (101 cases); and (v) inadequate planning and supervision (100 cases).³

After documenting the nature of the allegations in detail, we assess how well the extant proxies of audit quality predict these alleged violations. Our results are easily summarized. Two proxies are associated with the total number of allegations: Big N auditor and abnormal audit fees. In particular, the presence of a Big N auditor signing off on the accounts during the violation period is negatively associated with the total number of allegations. That negative association is driven by the finding that that Big N firms are less likely to be accused of failure to exercise professional care in the conduct of the audit.

Abnormal audit fees, unexpectedly, are positively associated (albeit weakly) with the number of total violations. If abnormal audit fees suggest the need for greater audit effort in the case of risky clients, one would expect a negative association between such fees and number of violations. Consistent with expectations, abnormal audit fees are negatively associated with three allegations: (i) failure to adequately plan the audit; (ii) failure to faithfully state whether the financial statements are presented in accordance with GAAP; and (iii) inadequate consideration of fraud risks. However, abnormal audit fees are positively related to the sum total of other allegations of audit deficiencies. Hence, the performance of abnormal audit fees as an audit quality proxy is somewhat mixed. Consistent with expectations, the ratio of non-audit fees to total fees is positively associated with allegations that the auditor is not independent of the client.

³ See Appendix 2 for the top 10 cited audit deficiencies
The other proxies of audit quality do not fare well. We could not evaluate the use of going concern opinions because we found only six such opinions among firms whose audits were alleged as deficient in AAERs and lawsuits. There is virtually no association between discretionary accruals, either signed or unsigned, with either the total number of deficiency allegations or the more textured objections raised by the SEC and lawyers. Accrual quality, following Dechow and Dichev (2002), and the frequency of quarterly meet or beats of analyst consensus earnings are not associated with the total number of alleged audit deficiencies. The association between accrual quality and absolute discretionary accruals with specific audit deficiencies is mixed and not clearly interpretable. We do not evaluate earnings restatements as a proxy because most AAERs and lawsuits are almost mechanically related to an earnings restatement (the incidence is 70% in our sample). In sum, if applied researchers are looking for one audit quality proxy to use, we recommend the presence of a Big N auditor and with qualifications, abnormal audit fees. The other measures of audit quality, as per our analyses, suffer from construct validity issues.

Our paper follows a long tradition of work designed to test the construct validity of machine-readable measures designed to capture earnings management (Dechow et al. 1995; Dechow et al. 2011) or litigation risk (Kim and Skinner 2011). Our paper contributes to the literature in two important ways. First, we provide comprehensive evidence on how poor audit quality is actually perceived at the field level. Beasley et al. (1999, 2013) in separate reports commissioned by the American Institute of CPAs (AICPA), and the Center for Audit Quality (CAQ) respectively also report descriptive data on audit deficiencies identified by the SEC for 56 and 81 AAERs for the period 1987-1997 and 1998-2010. Our sample is more comprehensive in that we also cover 135 non-dismissed lawsuits against auditors over the period 1996-2010. There are substantial differences in the nature of deficiencies identified by the SEC when compared with the class action lawyers. For instance, lawyers cite substantially more violations of specific GAAS standards than the SEC, perhaps because they need to make a stronger legal case against the auditor than the SEC. Class action lawyers are also more likely than the SEC to allege lack of auditor independence, GAAP violations, failure to obtain an understanding of internal control and a failure to express an appropriate audit opinion. Second, unlike Beasley et al. (1999 and 2013), we evaluate whether
widely used models of audit quality predict these detailed deficiencies. This is an important task given the ubiquity of the standard proxies of audit quality in the literature.

The remainder of the paper is as follows. Section 2 discusses previous research on audit quality and reports on the merits and costs of relying on SEC AAERs and lawsuits to identify audit quality deficiencies. Section 3 presents our data, section 4 discusses the empirical validation of audit quality proxies against accusations of deficient audit quality as per AAERs and lawsuits. Section 5 concludes.

2.0 Previous research and our setting

2.1 Previous work on audit quality proxies

A large body of accounting research investigates the drivers and consequences of audit quality. The more commonly used proxies for audit quality can be categorized into input-based proxies and output-based proxies (Defond and Zhang 2014). Input-based proxies refer to auditor-specific characteristics, and auditor fees. The most popular measure for auditor-specific characteristics is auditor size, in particular whether or not the company is audited by a Big N auditor (Defond et al. 2014). The intuition is that Big N auditors provide a higher quality audit. Given their scale, Big N auditors have access to better resources related to technology, training, and facilities (Chaney et al. 2004; Craswell et al. 1995; Francis et al. 1999; Khurana and Raman 2004). Big N auditors are thought to be more independent than smaller audit firms because they (i) suffer greater reputational risk should they be negligent; (ii) rely less on an individual client’s revenues and hence less likely to be swayed by an individual client; and (iii) their larger revenue base exposes them to higher litigation risk (Palmrose 1988; Stice 1991; Bonner et al. 1998; Skinner and Srinivasan 2012; Koh et al. 2013; DeFond and Zhang 2014). However, the Big N variable is an indicator variable without much nuance because it is not an engagement specific measure.

Audit fees proxy for the level of effort the auditor puts into scrutinizing a client. Fees capture both demand and supply factors associated with audits. Some researchers have also used the proportion of audit fees to non-audit fees as a proxy for their independence (Frankel et al. 2002). However, audit fees
are likely tainted by efficiency improvements, which may not directly capture audit quality improvements. Moreover, oligopolistic premiums charged by the Big N may not directly translate to higher audit quality.

Output based measures typically cover (i) material restatements, preferably initiated by the auditor; and SEC AAERs (ii) going concern opinions; (iii) financial reporting characteristics such as the use signed or absolute discretionary accruals, the Dechow-Dichev (2002) measure of earnings quality or Basu’s timely loss recognition measure (Basu 1997) or the firm’s tendency to meet or beat quarterly analyst consensus estimates of earnings; and finally (iv) perception based measures such as the earnings response coefficient, stock price reactions to auditor related events, and cost of capital measures. Defond and Zhang (2014) summarize the pros and cons of each of these measures. Broadly speaking, the researcher needs to disentangle audit quality from the innate characteristics of the firm and its reporting quality that also affect outputs and such a separation is not a trivial endeavor (Dichev et al. 2013). In particular, material restatements and AAERs are great proxies because they directly speak to the quality of the audit process but these observations, while capturing egregious conduct, are almost, by definition, rare and also do not account for “within GAAP” manipulations of financial statements. Moreover, absence of an AAER or a material restatement does not automatically imply higher audit quality as even the most careful executed audit cannot guarantee detection of fraud. Further, managerial and auditor incentives can lead to non-disclosure of identified misstatements (Srinivasan et al. 2015). Going concern opinions are also direct measures of the auditor’s opinion about the financial statements but these are issued only in exceptional cases. While financial reporting characteristics are easy to compute and capture an element of audit quality since financial reporting and audit quality are inextricably intertwined, they are rife with measurement error and bias (Kothari, Leone, and Wasley 2005, Dietrich, Muller, and Riedl 2007, Patatoukas and Thomas 2011, Ball, Kothari, and Nikolaev 2013). Perception based measures such as ERC can capture audit quality in more comprehensive and less error prone ways than financial reporting measures, but they are indirect measures of audit quality.
We focus on validating six measures of audit quality that are commonly used in the literature: Big 4 auditor, signed or absolute discretionary accruals, going-concern opinions, audit fees, accrual quality, and meet or beat quarterly earnings target. We describe next our research setting in greater detail.

2.2 Our setting

We focus on SEC AAERs and class action lawsuits against auditors to identify detailed data on deficiencies in the audit of particular firms. Our setting has a number of advantages and disadvantages. The SEC has the power to demand disclosure of non-public data from both auditors and companies via its enquiry process. Because the SEC is also concerned about losing face with the investing public and its political constituents, it is less likely to allege audit inadequacies unless it can establish guilt with a high degree of assurance. The United States is unique among much of the developed world in that public enforcement of audits is supplemented by the possibility of private class action litigation against auditors. That is, investors can use securities class action lawsuits to protect their rights and hold auditors accountable for violations of securities laws resulting from negligent audits. However, in the litigation process, the plaintiff bears the burden to establish the defendant’s scienter. Hence, a few lawsuits against auditors are potentially frivolous. We minimize that possibility by deleting lawsuits that were eventually dismissed. In general, the AAER sample, and to some extent the lawsuit sample, is likely to have a lower Type I error rate because when a company is subject to an AAER or a class action lawsuit, the SEC and class action lawyers are more likely to have identified wrong-doing when it actually occurred.

The other consideration that deserves discussion is the time period over which lawsuit data has been gathered: 1996-2010. This period starts after the passage of the Private Securities Litigation Reform Act (PSLRA). Coffee (2002), in particular, has argued that PSLRA made it more difficult for class action plaintiffs to sue public companies for accounting abuses. Moreover, the Securities Litigation Uniform Standards Act of 1998 abolished state court class actions alleging securities fraud, increasing plaintiffs’ difficulty in suing public companies. Difficulty in suing public companies for accounting violations automatically raises the bar for litigating against audit firms, who are a step removed from management,
which presumably orchestrates frauds. Hence, the allegations documented in the class action suits against auditors arguably represent (a) a lower bound on such cases, if these restrictions were not in force; and (b) more egregious instances of auditor laxity while conducting audits.

However, our setting suffers from disadvantages as well. First, there could be a selection bias in cases identified by the SEC; any guidelines that the SEC follows in picking cases and how it implements those guidelines are not visible to a researcher. Empirically though, the SEC is, if anything, less likely to pursue Big N audit firms (Kedia, Khan and Rajgopal 2014). Moreover, most of the allegations leveled by the SEC are usually neither contested nor accepted by the audit firms as the cases are settled, not necessarily won, by the SEC. Hence, we cannot assert that the SEC’s allegations are truly violations.

Class action lawsuits are heavily tilted against Big N auditors because they have deep pockets. Although we delete non-dismissed cases, the remaining cases against auditors almost never go to trial as they are settled out of court. Hence, we can never observe whether the lawyers’ allegations would have withstood scrutiny during a trial. Of course, one can argue that the auditors are not entirely blameless as they seek settlement rather than risk scrutiny of their audit procedures in a trial.

Despite these limitations, we believe that audit deficiencies identified by the SEC and the class action lawyers provide a hitherto under-discussed perspective on granular deficiencies in audit quality at the engagement level. Hence, these deserve to be documented and analyzed. Furthermore, it is useful to ascertain how well the popular measures of audit quality in the literature line up with these granular deficiencies. We now turn to that task.

3.0 Data

3.1 Sample selection

Our sample is drawn from two sources: SEC AAERs and non-dismissed securities litigation against auditors. We identify enforcement actions against auditors using the AAER dataset discussed in Dechow et al. (2011). We started with a total of 107 AAERs from this dataset, which we supplement by 52 AAERs based on our own search of the SEC’s database. We end up with 79 usable observations after
eliminating (i) 38 AAERs that pertain to the auditor’s lack of registration with the PCAOB; (ii) 21 cases that were miscoded in the original dataset as “auditor” cases⁴; (iii) 10 missing AAER files from the SEC’s website; (iv) 2 overlapping AAERs; (v) eight redundant cases; and (vi) one AAER with insufficient details to enable coding audit deficiencies. We download these 79 AAERs against auditors between 1986 and 2010 from the SEC’s website (http://www.sec.gov/divisions/enforce/fractions.shtml). Although the detailed descriptive data on the allegations reported in Table 2 are based on these 79 AAERs, only 34 AAERs, equivalent of 124 firm years related to the violation period during which the faulty audit was conducted, are available for use in the regressions reported in Tables 3-11. The primary culprit is the unavailability of data related to several control variables in the regressions on CRSP and COMPUSTAT.

We obtained 276 non-dismissed lawsuits against auditors from the ISS securities class action database. We collected the lawsuit filings for all these cases and verified that the auditor was listed as a defendant. To optimally allocate our effort related to data gathering and coding, we eliminated (i) 53 cases where the auditors were not listed as a defendant⁵; (ii) 24 cases where the lawsuit complain filing could not be found; (iii) 22 cases where the allegations were too vague to code⁶; and (iv) 21 cases for whom records could not be found on CRSP and COMPUSTAT. This left us with 135 usable lawsuits comprising 366 firm-years representing the class period where faulty audits are alleged by the plaintiffs.

We read each complaint in detail and manually coded every listed allegation against the auditor under seven broad categories of alleged deficiencies. To define these categories, we rely on the GAAS framework for general, fieldwork, and reporting standards. Reliance on GAAS facilitates cross-audit comparison of deficiencies and enables us to report comparable descriptive data for the sample. More

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⁴ Some of these cases were related with the company’s audit report but the SEC did not pursue the auditor directly. For example, in AAER 3063 (SEC VS China Holdings, Inc and its CEO), the CEO forged the audit report despite that the auditor resigned. The SEC sued the company and its CEO, but it did not sue its auditor.

⁵ This could mean one of two things: 1) there could be data errors in the ISS database, or 2) the lawsuit against the auditor could be filed separately. Regardless, we exclude cases where auditor’s name does not appear on the complaint that we could find.

⁶ When coding the audit deficiencies in lawsuits, we look for sections where it lists all the audit standard violations for defendants. Usually this section is named as: “Defendant Auditor’s Violation of Auditing Standards” or something similar. If this section is missing, we go through the entire document to look for alleged audit deficiencies. In order to be coded, we look for terms like “the auditor violated certain GAAS standard.” If no concrete allegations with auditing standards can be found, we exclude them from our sample.
important, accusations against auditors are leveled by both the SEC and the plaintiff lawyers in terms of the violation of GAAS.

A brief description of these standards follows. The general standards require that (i) the audit is to be performed by a person or persons having adequate technical training and proficiency as an auditor; (ii) in all matters relating to the assignment, an independence in mental attitude is to be maintained by the auditor or auditors; (iii) due professional care is to be exercised in the performance of the audit and the preparation of the report. The standards of field work require that (i) the work is to be adequately planned and assistants, if any, are to be properly supervised; (ii) a sufficient understanding of internal control is to be obtained to plan the audit and to determine the nature, timing, and extent of tests to be performed; (iii) sufficient competent evidential matter is to be obtained through inspection, observation, inquiries, and confirmations to afford a reasonable basis for an opinion regarding the financial statements under audit.

The standards of reporting mandate that (i) the report shall state whether the financial statements are presented in accordance with GAAP; (ii) the report shall identify those circumstances in which such principles have not been consistently observed in the current period in relation to the preceding period; (iii) informative disclosures in the financial statements are to be regarded as reasonably adequate unless otherwise stated in the report; and (iv) the report shall contain either an expression of opinion regarding the financial statements, taken as a whole, or an assertion to the effect that an opinion cannot be expressed. When an overall opinion cannot be expressed, the reasons therefore should be stated. In all cases where an auditor’s name is associated with financial statements, the report should contain a clear-cut indication of the character of the auditor’s work, if any, and the degree of responsibility the auditor is taking.

We classify audit deficiencies into seven categories by audit area: (i) bogus audit; (ii) issues with engagement acceptance, (iii) violation of GAAS; (iv) three specific violations of GAAS standard on fieldwork including (a) deficiencies in audit planning; (b) insufficient competent evidence; and (c) understanding internal controls; and (v) a violation of the GAAS standard on reporting. These seven categories are catalogued as panels A-G in Table 2. We identify 45 sub-categories of fine grained deficiencies under each of these broad categories.
The data reveal substantial differences in the frequency with which the class action lawyers and the SEC cite violations of specific GAAS standards. As indicated in panel H, on average, plaintiff lawyers refer to the violation of 16 GAAS standards and sub-standards per case relative to 3.7 violations cited by the SEC. Panel I suggests that the lawyers are also more likely to cite other standards such as GAAP (2.3, on average, relative to one by the SEC). In addition, the distributions of total allegation count between AAERs and lawsuits are significant, as reported in Panel J Table 2. On average, an AAER receives 4.4 allegations in total while a lawsuit receives 8.7 allegations in total. Other specific differences are as follows. First, the SEC found three bogus audits but the lawyers found none, as per panel A. This is not surprising considering that the SEC tends to investigate audits by smaller accounting firms, unlike securities lawyers. Second, for almost all the heavily cited categories of sub-standards, the lawyers are more likely to cite these violations relative to the SEC. The only major exceptions appear to reference to insufficient levels of professional skepticism and incorrect or inconsistent application of the requirements of GAAP. Both the SEC and the lawyers are equally likely to refer to inadequate skepticism among auditors and inappropriate application to GAAP. Because these data have not received a lot of academic attention, we turn to a somewhat detailed discussion of the more frequently cited deficiencies.

3.2 Most frequently cited deficiencies

In this section, we briefly discuss the ten most frequently observed categories of deficiencies in our data: (i) 160 instances of failure to gather sufficient competent audit evidence (violation of the fieldwork standard, row E2 in Table 2); (ii) 143 cases of failure to exercise due professional care (violation of the general GAAS standard, row C3); (iii) 134 instances of failure to express an appropriate audit opinion (violation of the reporting standard, row G5); (iv) 101 instances of failure to obtain an understanding of internal control (violation of the fieldwork standard, row F2); (v) 100 instances of inadequate planning and supervision (violation of the audit planning standard, row D1); (vi) 97 cases of lack of independence from the client (violation of the general GAAS standards, row C2); (vii) 87 cases of failure to faithfully state whether the financial statements are presented in accordance with GAAP
(violation of the reporting standard, row G3); (viii) 72 cases of insufficient level of professional skepticism (violation of general GAAS standard, row C4); (ix) 61 cases of failure to evaluate the adequacy of disclosure (violation of the reporting standard, row G6); and (x) 59 cases of inadequate consideration of fraud risks (violation of the audit planning standard, row D3). These instances are reviewed in detail in the following sub-sections.

3.3 Failure to gather sufficient competent audit evidence

Several cases in this category accuse the auditor of relying too much on management’s representations without verifying the evidence underlying these representations. Some cases allege that the auditor did not even obtain management representation before signing off on the audit report. An illustrative example of the former type of allegation can be found in the lawsuit filed by class action lawyers of Worldcom’s shareholders against Arthur Andersen: “Andersen failed to obtain sufficient evidence in connection with WorldCom’s elimination or reduction of expenses through write-offs of reserves. Instead, Andersen relied largely on management’s representations. As a result, during 1999 and 2000, approximately $1.2 billion of those reserves were written off directly to income without any conceptual basis under GAAP. Andersen failed to discover that the adjustments were unsupported by documentation. In particular, Andersen failed to determine whether non-reporting-system journal entries (i.e., those entries that come from sources other than WorldCom’s revenue, expense, cash receipts, cash disbursement and payroll accounting and reporting systems) were valid. Either Andersen failed to review WorldCom’s general ledgers or failed to ask to see any post-closing journal entries, or recklessly disregarded such journal entries made without support. For example, while discussing management’s aggressive accounting practices, Andersen documented the following note in its work papers: ‘Manual Journal Entries How deep are we going? Surprise w[i]th look [at] journal entries.’ Anderson failed to examine the nature of these manual journal entries (In re Worldcom, Inc. Securities Litigation, U.S. District Court, Southern District of New York, December 2, 2003, p. 224).”

3.4 Failure to exercise due professional care
Most of the allegations in this category are about inadequate audit procedures despite knowledge of potential risks associated with the client. For example, the SEC states, “PwC and Hirsch (the audit partner) identified a number of risk factors associated with the preparation of SmarTalk's financial statements. Despite PwC's and Hirsch's awareness of numerous risks and other information that could materially impact the financial statements, PwC and Hirsch failed to perform sufficient audit procedures to assess properly whether SmarTalk's accounting for and charges against its restructuring reserves was in conformity with GAAP. As a result, SmarTalk improperly established a non-GAAP restructuring reserve and, as described above, misused it to materially inflate earnings before one-time charges at year-end 1997 (AAER 1787, 2003).”

The SEC alleges in the matter related to the Gemstar audit that “KPMG did not have in place a policy that required consultation with the Department of Professional Practice regarding all significant issues that had come to the attention of the engagement.” They go on to assert, “With respect to the AOL revenue, Wong, Palbaum, Hori, (the partners) and KPMG unreasonably failed to exercise professional care and skepticism in reviewing the AOL IPG agreement and in testing Gemstar's representations regarding the purpose of the upfront nonrefundable fee (AAER 2125, 2004).”

3.5 Failure to express an appropriate audit opinion

Most of the allegations in this category relate to the auditor issuing an unqualified opinion on the financial statements despite alleged knowledge of the fraudulent accounting policies or schemes used. For instance, in the lawsuit against Seitel securities (In re Seitel, Inc. Securities Litigation, U.S. District Court, Southern District of Texas, December 6, 2002, p. 58), the lawyers allege, “E&Y’s published audit opinion, which represented that Seitel's 2000 financial statements were presented in conformity with GAAP, was materially false and misleading because E&Y knew or was reckless in not knowing that Seitel's 2000 financial statements violated the principles of fair reporting and GAAP.” Similarly, in the case against Andersen related to the company Global Crossing (In re Global Crossing LTD. Securities Litigation, Second Amended Complaint, U.S. District Court, Southern District of New York, March 22,
2004, p. 331), the lawyers allege, “Andersen's failure to qualify, modify or disclaim issuing its audit opinions on Global Crossing's 1998, 1999, and 2000 financial statements, or Asia Global Crossing's 2000 financial statements, when it knew or deliberately turned a blind eye to numerous facts that showed that those financial statements were materially false and misleading caused Andersen to violate at least the following provisions of GAAS.”

3.6 Failure to obtain an understanding of internal control

These allegations typically deal with the auditor’s negligence in appreciating the deficient internal control systems of the firm which potentially led to the alleged accounting fraud. For instance, the lawyers state the following in the case related to Cellstar: “although KPMG Peat Marwick was retained by the Company to address deficient internal control problems at the same time that it was auditing the Company's financial statements for the year ended November 30, 1995, KPMG Peat Marwick recklessly failed to enhance the scope of its audit so as to uncover Defendants' fraudulent scheme (State of Wisconsin Investment Board, et al. v. Goldfield, et al., U.S. District Court, Northern District of Texas, p. 23).” Similarly, in the matter of Informix, the lawyers allege, “Informix had weak internal controls. E&Y knew that Informix's tiny internal audit department that performed no procedures to ensure revenue was recognized properly but primarily audited customer accounts as to license use. Informix's weak internal controls made it possible for the defendants to recognize revenue on shipments made after quarter end (In re Informix, Corp. Securities Litigation, U.S. District Court, Northern District of California, April 6, 1998, p.42).”

3.7 Inadequate planning and supervision

As the title suggests, this category relates to deficient audit plans. In the SEC’s AAER no.1452, the SEC alleges, “For the fiscal 1994 and 1995 audits conducted by Wilkinson, there is a complete lack of documentation of any planning and no written audit programs. For the fiscal 1996 to 1998 audits conducted by Boettger and reviewed by Wilkinson (partner), audit planning documents and checklists were often incomplete, undated and unsigned. Supervision of the audits was inadequate and included
little partner involvement. For the fiscal 1998 audit, a staff accountant conducted the audit at Madera's Miami headquarters while his supervisor, an audit manager, remained at Harlan & Boettger's San Diego office. Boettger permitted the audit manager to supervise the audit by telephone (AAER 1452, 2001)."

In the case against Nicor, the lawyers allege, “Nicor's switch to the PBR plan was a new audit area that presented Andersen with a high degree of audit risk and it needed to focus on this area with an audit strategy characterized by, among other things, heightened professional skepticism and expanded audit procedures designed to obtain more persuasive evidence that Nicor's financial statements were not materially misstated. Such procedures would include careful investigation of the third-party contracts Nicor was relying upon to justify the LIFO decrements, the substantial December 1999 "sales" which inflated earnings in 2000, and the impossibly high volume of infield transfers in 2000 (In re Nicor, Inc. Securities Litigation, U.S. District Court, Northern District of Illinois, February 14, 2003, p. 80).”

3.8 Lack of independence

These allegations relate to the absence of an independent mental attitude of the auditor in dealing with the client. For instance in the Global Crossing case, the lawyers allege, “because of significant non-audit related fees paid by Global Crossing and the hiring of Andersen's former senior partner in charge of the Telecommunications Practice in the Firm and lead partner on the Global Crossing engagement as the Senior Vice President of Finance at Global Crossing in May 2000, Andersen lacked the requisite independence when Andersen audited the Company's financial statements (In re Global Crossing LTD. Securities Litigation, Second Amended Complaint, U.S. District Court, Southern District of New York, March 22, 2004, p. 331).” Similarly in the matter of AaiPharma, the lawyers allege, “E&Y participated in the wrongdoing alleged herein in order to retain AaiPharma as a client and to protect the fees it received from AaiPharma. E&Y enjoyed a lucrative, long-standing business relationship with AaiPharma’s senior management for which it received $4.7 million dollars in fees for auditing, consulting, tax and due diligence services for 2002-2003. These fees were particularly important to the partners in E&Y’s Raleigh office as their incomes were dependent on the continued business from AaiPharma (In re
3.9 Failure to faithfully state whether financial statements are in accordance with GAAP

In the class action lawsuit involving Microstrategy, the lawyers allege, “PWC violated GAAS Standard of Reporting No. 1 which requires the audit report to state whether the financial statements are presented in accordance with GAAP. PWC’s audit reports falsely represented that MicroStrategy's fiscal 1997, 1998 and 1999 financial statements were presented in accordance with GAAP when they were not for the reasons stated herein (In re MicroStrategy Inc. Securities Litigation, U.S. District Court, Eastern District of Virginia, p. 33).” In AAER no. 2238, the SEC alleges, “the Respondents did not heed sufficiently indications that Just for Feet may have been improperly recognizing income through the acquisition of vendor display booths and failed to consider that this would mean that the financial statements did not conform to GAAP (AAER 2238, 2005).”

3.10 Insufficient level of professional skepticism

Exercise of professional skepticism requires auditors to demonstrate a questioning mind and to critically assess audit evidence. In the Worldcom case, the lawyers allege, “Specific examples of failing to exercise due professional case include: (i) given the poor state of the telecommunications industry in 2000 and 2001, Andersen failed to use professional skepticism in evaluating WorldCom’s ability to continue to meet aggressive revenue growth targets and maintain a 42% line cost expense-to-revenue ratio; and (ii) during 2000, WorldCom employees reported to Andersen audit team that WorldCom’s European operation reversed $33.6M in line costs accruals after the close of the first quarter of 2000 and as a result they were under-accrued. This top-side entry was directed by WorldCom’s U.S. management, and the U.K. employees did not have supporting documentation for it. Andersen failed to request and receive supporting documentation for this reduction and failed to exercise due professional care in evaluating the accrual (In re Worldcom, Inc. Securities Litigation, U.S. District Court, Southern District of New York, December 2, 2003, p. 224).”
In the matter of Hollinger Inc, the lawyers allege, “KPMG was required to exercise professional skepticism, an attitude that includes a questioning mind, including an increased recognition of the need to corroborate management representations and explanations concerning mutual matters. Here, KPMG completely failed in its duties by issuing ‘clean’ or unqualified opinions in connection with its deficient audits and reviews of Hollinger’s financial statements (In re Hollinger International, Inc, Securities Litigation, U.S. District Court, Northern District of Illinois, p. 151).”

3.11 Failure to evaluate the adequacy of disclosure

GAAS requires the auditor to determine whether informative disclosures are reasonably adequate, and if not, the auditor must state so in the auditor's report (AU 431.01). Allegations in this category pertain to the auditor’s failure to assess whether the client should have disclosed material information in its financial statements. For instance, in the case of KPMG and Xerox, the SEC in its AAER no. 2234, stated, “KPMG also failed to assess adequately (or require Xerox to assess) the need to disclose in the MD&A or financial statements the nature of and the impacts from these accounting actions, which materially deviated from the company’s historical accounting and financial reporting and accelerated $2.8 billion of equipment revenues and $659 million in pre-tax earnings that otherwise would not have been recorded under GAAP (AAER 2234, 2005).”

In the case of PWC and Arthocare, the class action lawyers allege, “ArthroCare's financial statement disclosures were inadequate and, therefore, PwC violated GAAS by not modifying its previously issued unqualified audit opinions for the inadequacy of the information disclosed. The inadequate disclosures involved basic fundamental concepts such as revenue recognition, acquisition accounting and impairment analysis (In re Arthrocare Corp. Securities Litigation, U.S. District Court, Western District of Texas, December 18, 2009, p. 275).”

3.12 Inadequate consideration of fraud risks

In the matter of Hanover, lawyers allege, “under AU §316, consideration of fraud in a financial statement audit, PWC was required to consider and plan for factors that indicated Hanover may be
dealing with entities that were not independent. The risk factors under AU §316.17 included: (i) significant, unusual, or highly complex transactions, especially those close to year end, that pose difficult "substance over form" questions; (ii) overly complex organizational structure involving numerous or unusual legal entities, managerial lines of authority, or contractual arrangements without apparent business purpose; (iii) difficulty in determining the organization or individual(s) that control(s) the entity; and (iv) unusually rapid growth or profitability, especially compared with that of other companies in the same industry (Pirelli Armstrong Tire Corporation Retiree Medical Benefits Trust, et al. v. Hangover Compressor Company, et al., U.S. District Court, Southern District of Texas, October 4, 2004, p.37).”

Similarly, in SEC AAER 2815, the SEC alleges, “Putnam received indications of possible fraud at Ebix including earnings management, high involvement in accounting decisions by non-financial management, commitments made to analysts, the expectation of possible equity funding, the desire to maintain a high stock price, Ebix’s very aggressive accounting policies, and possible opinion shopping by Ebix among accounting firms, among others. In particular, Putnam became aware that Ebix’s management had taken an extremely aggressive approach to recognizing revenue from the company’s software sales (AAER 2815, 2008).”

In the following sections, we evaluate whether the extant proxies for audit quality that are widely used in the literature reflect the economic content of these allegations.

4.0 Validating existing audit quality proxies

The five most popular proxies for audit quality, as per Defond and Zhang (2013) are (i) Big N auditor; (ii) discretionary accruals, signed and unsigned; (iii) earnings restatements; (iv) going concern opinions; and (v) audit fees. To these, we add (vi) accrual quality and (vii) meet or beat quarterly earnings target because they are frequently used in the audit quality literature. We evaluate the descriptive validity of these proxies by regressing them against (i) the total number of allegations related to deficient audits alleged during the violation period; and (ii) indicator variables for the ten most frequently cited allegations, after introducing control variables commonly used in the literature as per Defond and Zhang
Note that we could not validate going-concern opinions as an audit quality proxy because we found only six going concern opinions among SEC AAERs and lawsuits.

To give readers a feel for the time-series and industry level distribution of the SEC AAERs and lawsuits used in the regressions, we tabulate such data in Table 3, panels A and B. As highlighted in section 3.1, we have access to 158 violation firm-years for the SEC allegations and 383 class period firm-years for the lawsuit sample. As can be seen, the largest number of AAERs and lawsuits are clustered around the technology stock boom and the subsequent bust. In particular, 40% of the observations are drawn from 1998-2001. Also, lawsuit data before 1996 is not available in an easily accessible format. The lawsuit observations in the years prior to 1996 in Table 3 refer to violation years during which the faulty audit is alleged although these lawsuits are actually filed in the years 1996 and after. Table 3, panel B reveals that Big N audit firms account for most of the firm years covered by the AAERs and the lawsuits.

4.1 Big N auditor

Table 4 provides descriptive data on the six proxies of audit quality. In panel A, we report that the number of cases where Big N is subject to an AAER or a lawsuit. As can be seen, the number of AAERs where the Big N is blamed by the SEC is almost equal to those where the non-Big N are involved. In contrast, almost 90% of the lawsuits are filed against the Big N. The control sample refers to the universe of firm-years with no lawsuits nor AAERs matched with those of the violation years, underlying the AAERs and lawsuits, for which we can find data on CRSP and COMPUSTAT. Because we have data on violation periods for the years 1989-2010, the control sample comprises of all firm years during that time period that have not been subject to a faulty audit allegation (106,055 firm years). In the control sample, 83% of the observations are audited by Big N audit firms.

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7 We made sure that the accounting numbers reported for the violation period from COMPUSTAT are the ones originally reported, as opposed to restated numbers. When we contacted COMPUSTAT, they stated “the majority of our annual data is un-restated. We only collected a handful of restated items. However, to tell whether the data is restated or not, I encourage you to look at the DATAFMT item. DATAFMT = STD indicates that the annual data is the originally reported figures. A DATAFMT = SUMM_STD indicates restated annual data.” In all of our analyses, we rely on DATAFMT = STD, i.e. un-restated data.
We use the following logistic model to evaluate whether Big N variable is associated with the total number of allegations and the specific allegations against the auditor:

\[
\text{Big N} = f(\text{Intercept, Total no. of allegations, Control variables comprising of Size, Leverage, Loss, ROA, AssetTurn, SalesGrow, Investment/Asset, and Age, Law firm fixed effects, Industry and Year fixed effects})
\]  

(1)

Big N is set to one when the auditor that signed off on the firm’s audit report during the year, including the violation year, is one of the Big 4/6/8 audit firms. The set of control variables used here closely follows the ones identified by Defond and Zhang (2013) in their review of the audit quality literature. We control for firm size (Size), leverage (Leverage), the presence of a reported loss (Loss), return on assets (ROA), the firm’s asset turnover (AssetTurn), growth (SalesGrow), the magnitude of financial instruments held by the firm (Investment/Asset) and the firm’s age (Age). We insert law firm fixed effects to account for the possibility that certain law firms allege a particular set of audit deficiencies when suing the auditor. The detailed variable definitions can be found in Appendix 1. These variables are measured to coincide with the year for which the dependent variable (Big N) is measured. Descriptive data on these variables are reported in Table 5.

Table 6 reports the results of estimating equation (1). In column (1), we regress Big N against an indicator variable, Treatment, which is set to one if a faulty audit is alleged by an SEC AAER or a lawsuit. The significant and negative coefficient on Treatment (coefficient = -1.170) suggests that, in general, Big N auditors are less likely to be involved in a faulty audit. However, column (2), suggests that this result is driven by the SEC’s preference for pursuing non-Big N auditors more than the plaintiff lawyers (see Kedia, Khan and Rajgopal 2014). In particular, the Lawsuit indicator variable, Law_ind, which is set to one when a class action lawsuit alleges a faulty audit, assumes a positive coefficient (coefficient = 3.243). Column (3) replaces “Treatment” with the total number of allegations found in the AAER/lawsuit, via the variable, “TotalAllegations.” The coefficient on TotalAllegations is negative and significant (coefficient = -0.077), suggests that Big N audits are associated with fewer audit deficiencies, on average, after
controlling for other variables. This finding indicates that Big N can serve as a valid proxy for audit quality (Defond, Erkens and Zhang 2014).

To exploit the textured nature of the allegations discussed in section 3.2-3.12, we create six variables. In particular, we create an indicator variable each if the allegation involved (i) failure to exercise professional care (“DueCare”); (ii) failure to gather sufficient competent evidence (“Evidence”); (iii) failure to obtain an understanding of internal control (“IntControl”); (iv) failure to express an audit opinion (“FailOpinion”); and (v) inadequate planning and supervision (“InadeqPlan”). The sixth indicator variable is “Excl_Top5”) which counts the number of allegations excluding the ones covered by the five already covered. We chose these five allegations because they occur most often in the data. These six variables replace “TotalAllegations” in column (3).

The results reported in column (4) suggests that the negative coefficient on total allegations is driven by the negative coefficient on “DueCare” (coefficient = -1.316) suggesting that Big N auditors are less likely to be accused of failure to exercise professional care during the conduct of their engagement. In column (5), we repeat this exercise but expand the list of allegations to the top 10 most cited. The ones added are indicator variables: (i) failure to be independent from the client (“Indep”); (ii) failure to state whether the financial statements are presented as per GAAP (“FSNotGAAP”); (iii) insufficient level of professional skepticism (“Skeptic”); (iv) failure to evaluate adequacy of disclosure (“InadDiscl”); and (v) inadequate consideration of fraud risk (“FraudRisk”). The original results do not change even after the new variables are added. In sum, Big N is negatively related with one of the 10 specific allegations and with the total number of allegations.

Turning to the control variables, generally consistent with prior research, in column (1), we find that Big N auditors are associated with large firms (coefficient on Size is 0.73), levered firms (coefficient on Leverage is 1.268), loss making firms (coefficient on Loss is 0.176), firms with worse operating performance (coefficient on ROA is -0.05), greater asset turnover (coefficient on AssetTurn is 0.158), greater short-term liquidity (coefficient on InvestmentAsset is 0.743), and with older firms (coefficient on Age is -0.003). The Pseudo R-squared of the logistic regression is 0.256 suggesting that the model in
general has reasonable explanatory power. In sum, there is evidence to suggest that a Big N indicator variable does a reasonable job of capturing audit quality defects raised in AAERs and lawsuits.

4.2 Discretionary accruals

We explore two variations of discretionary accruals: (i) signed; and (ii) absolute discretionary accruals. In particular, we follow the well-known Jones (1991) model, with an intercept, to compute non-discretionary accruals. We subtract the derived non-discretionary accruals from accruals to obtain signed discretionary accruals. Descriptive data related to these accruals are reported in panel B of Table 4. As expected, the mean discretionary accruals for the control sample is close to zero (0.02, to be precise). The mean discretionary accruals for the violation years in the SEC AAERs which allege audit deficiencies is negative (-0.04), contrary to expectations. However, given the small AAER sample size it is hard to interpret this finding. As expected, the mean discretionary accruals measure for the class period underlying the lawsuit sample is positive (0.08). So, ex-ante there is some likelihood that signed accruals could potentially pick up audit deficiencies. Univariate data on unsigned or the absolute value of accruals is presented in panel B as well. Mean unsigned accruals for the AAER and lawsuit sample (0.11 and 0.21) is much lower than that for the control sample (0.28). However, as noted before (Dichev, Graham, Harvey and Rajgopal 2013), the mean unsigned accruals of 28% of assets is implausibly large.

Table 7, panel A substitutes signed discretionary accruals (DAC) for Big N in equation (1). To be consistent with prior work summarized in Defond and Zhang (2013), we introduce two new control variables in regressions: stock returns over the year (RetAvg) and the volatility of stock returns over the year (RetStd). Column (1) shows that the coefficient on Treatment is insignificant, suggesting that there is no statistically detectable difference in DAC during violation periods/class periods of AAERs and lawsuits where faulty audits are alleged. Column (2) indicates that DAC is larger for lawsuits. Column (3) indicates that DAC is not associated with the number of allegations. When we consider specific allegations, the results are not consistent between column (4) and column (5). The coefficient on “IntControl” is positive in column (5) but not in column (4). The coefficient on “FailOpinion” is negative

23
and significant in column (5) but not in column (4). In addition, the coefficient on “Indep” is negative and significant in column (5). In terms of control variables, unsurprisingly, signed DAC is positively correlated with InvestmentAsset and ROA (as shown by Kasznik 1996, Dechow, Sweeney Sloan 1995 and Kothari, Leone and Wasley 2005) in all specifications. DAC is also negatively related to size and asset turnover in all specifications. The explanatory power of the model is poor as R-squared is only 0.6%.

Table 7, panel B repeats the analyses after substituting the absolute value of discretionary accruals (Absolute DAC) for Big N in equation (1). The results are generally consistent with those for DAC in that these proxies for audit quality exhibit no association with the total number of allegations in column (3). In columns (4) and (5), the coefficient on “IntControl” is negative and significant (coefficient = -0.144). However, the negative sign is counter-intuitive in that we would expect firms with poor internal control to have higher, not lower levels of absolute accruals (Doyle, Ge and McVay 2007; Ashbaugh-Skaife, Collins, Kinney and Lafond 2007). In sum, the ability of absolute discretionary accruals in explaining alleged audit deficiencies is not encouraging.

Turning to the control variables, we find, in column (1), consistent with prior work (Becker et al. 1998, Francis and Yu 2009, Gul et al. 2009, Menon and Williams 2004, Prawitt et al. 2009), that absolute DAC falls with size (coefficient = -0.025), increases with return volatility (coefficient on RetStd = 0.260) and sales growth (coefficient = 0.269). The adjusted R-squareds are higher at around 6% relative to the regressions that involve signed DAC. Nevertheless, the bottom line finding is that neither DAC nor absolute DAC are consistently correlated with the allegations related to deficient audits.

4.3 Audit fees

Data on audit fees is only available from the year 2000 onwards. This restriction reduces the number of usable treatment observations to 11 SEC AAERs and 121 lawsuits. Descriptive data on the dollar value of audit fees is presented in panel C of Table 4. The average dollar amount of audit fees for the control sample is $1.62 million. The average fees for the AAER sample, is $4.01 million and for the litigation sample is $2.42 million. However, the median fees are much smaller, suggesting considerable
skewness in the data. To address the skewness, we rely on the natural logarithm of audit fees as the dependent variable. Table 8 presents the multivariate results related to audit fees.

To be consistent with prior work on modeling audit fees (Chaney et al. 2004, Dao et al. 2012, Francis et al. 2005, Fung et al. 2012, Gul and Goodwin 2010, Seetharaman et al. 2002), we include four new control variables: (i) current assets (CurAsset); (ii) quick ratio of the client (QuickR); (iii) a December year end (December); and (iv) whether the audit firm issued a going concern opinion (GC) during the period when the dependent variable was measured. Again to be consistent with prior work, we drop four variables in equation (1): AssetTurn, SalesGrow, Investment/Asset, and Age. The results reported in column (1) show that the coefficient on Treatment is not significant, suggesting that there is no difference in the magnitude of abnormal audit fees in cases where the SEC or the class action lawyers allege deficient audits relative to the control sample. Column (2) shows that the coefficient on Law_Ind is negative, suggesting that abnormal audit fees are smaller in this sample for firms that were subject of lawsuits as opposed to SEC AAERs. Recall that the number of underlying AAERs is small at only 11.

Column (3) shows a weak positive association between the magnitude of abnormal audit fees and the total number of allegations (coefficient = 0.07). This is somewhat unexpected in that higher abnormal fees potentially proxy for extra audit effort required for potentially high risk firms. However, such effort, ex post, does not seem to have uncovered the alleged audit deficiencies. When we focus on specific allegations, column (5) shows, consistent with expectations, we find that abnormal audit fees are negatively associated with (i) InadeqPlan (coefficient = -0.547); (ii) FSNotGAAP (coefficient = -0.413); and (iii) FraudRisk (coefficient = -0.666). That is, abnormal audit fees are associated with a lower incidence of accusations that the auditor did not sufficiently plan for the audit engagement, failed to state whether financial statements are as per GAAP and inadequately considered fraud risks. However, abnormal audit fees are positively associated with “AllExclTop10” which is the number of allegations other than those that are ten most frequently cited. Thus, the performance of abnormal audit fees is mixed.

The coefficients on the control variables are largely in line with expectations. In column (1), audit fees are greater for larger firms (coefficient = 0.438), levered firms (coefficient = 0.961), loss making
firms (coefficient = 0.118), firms with lower ROA (coefficient = -0.014), lower current assets (coefficient = -0.204), firms with December year-ends (coefficient = 0.108) and with going concern opinions (coefficient = 0.22).

Column (6) reports evidence on whether the proportion of non-audit fees to total audit fees is associated with allegations of lack of independence among auditors. A large body of prior research (e.g., Frankel et al. 2002, Ashbaugh et al. 2003) has relied on this premise. To test this premise, we create two new variables: (i) an indicator variable named, “Indep” which is set to one if the AAER or the lawsuit accuses the auditor of an independence violation and zero otherwise; and (ii) a variable, “AllegExclIndep,” counts the number of allegations, other than the one related to lack of independence. As can be seen from Table 8, column (6), the ratio of non-audit fees to total fees is not significantly associated with the lack of the independence allegation. However, that relation shows up only in the post-SOX period perhaps because such disclosures were not available prior to November 2000 and SOX became effective July 2002. That is, the coefficient on the interaction of SOX and Indep is positive and significant (coefficient = 2.124), consistent with several prior papers that have relied on this ratio to proxy for auditors’ alleged lack of independence from their clients (e.g., Frankel et al. 2002, Defond et al. 2002, Ashbaugh et al. 2003, Chung and Kallapur 2003, Francis and Ke 2006, Kinney et al. 2006, Koh et al. 2013). The post SOX indicator variable is negative and significant (coefficient = -2.701) suggesting that non-audit fees fell in the post SOX period.

4.4 Accrual quality

We use the standard deviation of residuals from industry-specific regressions using Dichev and Dechow (2002) model to measure accrual quality. Fama-French 48-industry specification is used in the regression. Thus, a greater (lower) standard deviation of residuals indicates worse (better) accrual quality. The descriptive data in panel E of Table 2 shows that accrual quality for AAER/lawsuit firms is marginally better than that for the control sample (0.06 and 0.068 v/s 0/073).
In column (1), of Table 9, we find that firms subject to AAERs and lawsuits against auditors report accrual quality that is worse than the control sample, consistent with expectations (coefficient = 0.142). However, sued firms have worse accrual quality as the coefficient on Law_Ind in column (2) is 0.137 and statistically significant. There is no association between poor accrual quality and the total number of allegations, as the coefficient on TotalAllegations is not significant at conventional levels in column (3). However, there is patchy significance with individual allegations are considered. In column (4), the coefficient on Evidence is positive (coefficient = 0.112) but that on DueCare and IntControl is negative (coefficients = -0.095 and -0.029 respectively) and these mutually opposite effects almost offset each other. In column (5), the following four coefficients are significant: (i) negative coefficient on DueCare (coefficient = -0.075), InadeqPlan (coefficient = -0.112), Skeptic (coefficient = -0.037) and InadDiscl (coefficient = -0.099); and (ii) positive coefficient on Evidence (coefficient = 0.204), FSNotGAAP (coefficient = 0.109) and FraudRisk (coefficient = 0.164). It is difficult to assign a cogent interpretation to these coefficients. In column (1), the coefficients on the control variables are largely in line with expectations in that accrual quality is better at larger firms (coefficient on Size = -0.011), worse at value firms (coefficient on B2M = 0.015), loss making firms (coefficient on Loss = 0.005), better performing firms (coefficient on RetAvg = -0.094) and at volatile firms (coefficient on RetStd = 0.087). In sum, accrual quality does not fare well as a proxy for audit quality.

4.5 Meet or beat earnings target

We use the last mean analyst forecast before the quarterly earnings announcement in IBES as a measure for earning’s target. The unit of analysis here is a firm-quarter. If a firm’s quarterly earnings per share meets or beats analysts’ consensus by at least one cent, then the dependent variable in Table 10 is set to one. The descriptive data reported in panel F of Table 2 shows that firms subject to AAERs and lawsuits are less likely to meet or beat analyst forecasts relative to the control sample.

Column (1) in Table 10 shows that firms with audit deficiencies are less likely to meet or beat the analyst’s consensus estimate during the violation period. Column (3) shows that there is no association
between a firm’s ability to meet or beat its earnings estimates during the violation period and the total number of allegations. Column (4) reports that a firm’s tendency to meet or beat earnings estimates is positively correlated with the auditor’s failure to express an audit opinion but that significance disappears in column (5). The signs on the control variables look plausible in that the following sets of firms are more likely to meet or beat analyst estimates in column (1): (i) larger firms (coefficient on Size = 0.096); (ii) growing firms (coefficient on B2M = -0.026); (iii) less levered firms (coefficient on Leverage = -0.27); (iv) better performing firms (coefficient on ROA = 0.259 and coefficient on RetAvg = 5.417); and (v) less volatile firms (coefficient on RetStd = -0.725).

4.6 Restatements

Note that we do not evaluate restatements as a proxy for audit quality. This is because such an exercise would effectively be tautological in that firms that restate their financials are very likely to be subject to AAERs and auditor lawsuits. This conjecture is borne out in the data as well. For years 2002 and later, restatements are drawn from the Audit Analytics database and a restatement indicator variable from ISS database where we collected auditor lawsuits. For years before 2002, we use the restatement data from Andrew Leone’s website. We exclude restatements that stem from errors. The coverage of restatements in the Audit Analytics database starts from 1989 but the quality of data coverage is more reliable after 2002. Panel D of Table 4 reports descriptive univariate data on restatements for our sample. According to that panel, nearly 70% of our treatment sample restated their financials. As can be seen, we find that 41 of the 76 firm years for violation periods underlying AAERs accusing auditors of deficient audits are associated with a restatement and 235 of the 324 firm years covering class periods are associated with a restatement. In the control sample, in contrast, 6670 firm-years out of 96,365 firm-years are associated with restatements. This data suggests that restatements are fairly rare in general but are more likely to be associated with allegations of deficient audits.

8 https://sbaleone.bus.miami.edu/

9 In AuditAnalytics, there is a column identifying errors caused by simple clerical and bookkeeping errors. We exclude these.
5.0 Conclusions

We provide evidence on the validity of five proxies for audit quality that are commonly used in extant research: (i) Big N auditor; (ii) discretionary accruals, signed and unsigned; (iii) audit fees; (iv) accrual quality and (v) meet-beat analyst consensus estimates. Our empirical strategy relies on identifying specific complaints related to the audit identified in SEC AAERs and lawsuits filed against auditors over the violation years 1978-2011. Assuming these complaints capture fine-grained data on deficiencies in the audit process, we examine associations between these audit quality proxies and the total number of alleged audit deficiencies and the specific deficiencies listed.

We find that there is no overwhelmingly convincing proxy for audit quality. The presence of a Big N auditor is negatively related to the total number of allegations and specific allegations that the Big N auditor exercised professional care during the audit. Abnormal audit fees are unexpectedly positively related to the total number of allegations. The association between abnormal audit fees and specific allegations is mixed in that such fees are negatively related to allegations that the auditor (i) failed to plan adequately or supervise the audit; (ii) failed to faithfully state whether the financial statements are GAAP compliant; and (iii) failed to adequately consider fraud risks. However, abnormal audit fees are positively associated with the sum total of allegations not listed in the top 10 most frequently mentioned. Consistent with expectations, the proportion of non-audit fees to audit fees is positively associated with allegations that the auditor is not independent of his client, especially in the post-SOX period. The other empirical proxies for audit quality, such as discretionary accruals, signed and unsigned, accrual quality as per Dechow-Dichev (2002), and firm’s tendency to meet or beat analysts’ consensus estimates of earnings exhibit nil or inconsistent associations with audit deficiencies.

We could not evaluate going concern opinions which are too few to analyze (six). We do not examine restatements but they are likely tautologically related to SEC AAERs and auditor lawsuits, our primary data source. We hope future work will focus its energies on refining these audit quality proxies or persuade the audit industry or the PCAOB to get access to finer data such as anonymized work papers in an audit to further our understanding of what drives audit quality.
References


PCAOB. Adequacy of Disclosure in Financial Statements. In AU Section 431.


Table 1: Sample Description

<table>
<thead>
<tr>
<th>AAERs</th>
<th>Class Action Securities Litigations</th>
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<td># of litigations against auditors identified in the database</td>
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<td>52</td>
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<td></td>
<td>(22)</td>
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<tr>
<td></td>
<td>Subtracts:</td>
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<td>Overlapping AAERs</td>
<td>Complaints with missing pages</td>
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<td>(5)</td>
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<td>Missing AAER files</td>
<td>Auditors are not listed as a defendant in the complaints</td>
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<tr>
<td>(10)</td>
<td>(53)</td>
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<td>PCAOB registration</td>
<td>Privately traded firms</td>
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<td>(6)</td>
</tr>
<tr>
<td>Not Against Auditor</td>
<td>No records in CRSP and/or COMPUSTAT</td>
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<tr>
<td>(21)</td>
<td>(21)</td>
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<tr>
<td>Lack of details</td>
<td>Same cases as AAERs</td>
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<td>(9)</td>
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<tr>
<td>Redundant issues</td>
<td>Auditor is dismissed</td>
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<tr>
<td>(8)</td>
<td>(1)</td>
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<tr>
<td># of AAERs coded</td>
<td>Complaints cannot found</td>
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<td>(24)</td>
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<tr>
<td># of Lawsuits coded</td>
<td>135</td>
</tr>
</tbody>
</table>

Subtract:

| No records in CRSP and/or COMPUSTAT | # of firm-years |
| (42) | 372 |

Bogust Audit

<p>| # of distinct AAERs in final sample | # of firm-years |
| 34 | 87 |</p>
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<th>Panel A: Bogus Audit</th>
<th>AAER (N=79)</th>
<th>Lawsuits (N=135)</th>
<th>Significance Level</th>
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</tbody>
</table>

**Panel B: Engagement Acceptance**
- Failure to conduct adequate predecessor/successor communication
  - AAER: 3
  - Lawsuits: 1
- Inadequate assessment/consideration of management's integrity
  - AAER: 1
  - Lawsuits: 2

**Panel C: General GAAS Standards**
- Inadequate training and proficiency to conduct engagement
  - AAER: 6
  - Lawsuits: 36
  - Significance: ***
- Lack of independence from client
  - AAER: 25
  - Lawsuits: 72
  - Significance: ***
- Failure to exercise due professional care
  - AAER: 35
  - Lawsuits: 108
  - Significance: ***
- Insufficient level of professional skepticism
  - AAER: 24
  - Lawsuits: 48
- Former audit employee serves in client management role
  - AAER: 1
  - Lawsuits: 2

**Panel D: Audit Planning -- Fieldwork GAAS Standard**
- Inadequate planning and supervision
  - AAER: 16
  - Lawsuits: 84
  - Significance: ***
- Failure to adequately address audit risk and materiality
  - AAER: 8
  - Lawsuits: 31
  - Significance: **
- Failure to address illegal acts by clients
  - AAER: 1
  - Lawsuits: 8
- Failure to recognize/ensure disclosure of key related parties
  - AAER: 8
  - Lawsuits: 19
- Failure to appropriately design audit programs
  - AAER: 5
  - Lawsuits: 4
- Inadequate performance of analytical procedures
  - AAER: 1
  - Lawsuits: 1

**Panel E: Sufficient Competent Evidence -- Fieldwork GAAS Standard**
- Failure to adequately perform audit procedures in response to assessed risks
  - AAER: 5
  - Lawsuits: 11
- Failure to gather sufficient competent audit evidence
  - AAER: 43
  - Lawsuits: 117
  - Significance: ***
- Inadequate performance of substantive analytical procedures
  - AAER: 2
  - Lawsuits: 14
  - Significance: **
- Inappropriate confirmation procedures
  - AAER: 9
  - Lawsuits: 20
- Inadequate observation of inventories
  - AAER: 5
  - Lawsuits: 11
- Failure to adequately audit derivative instruments, hedging activities, and investments in securities
  - AAER: 3
  - Lawsuits: 7
- Failure to obtain adequate evidence related to management representations
  - AAER: 21
  - Lawsuits: 27
- Over-reliance on/failure to obtain work of specialists
  - AAER: 1
  - Lawsuits: 1
- Inadequately considering responses from clients legal counsel / attorney letters
  - AAER: 3
  - Lawsuits: 3
- Inadequate preparation and maintenance of audit documentations
  - AAER: 10
  - Lawsuits: 2
  - Significance: ***
- Failure to appropriately audit accounting estimates
  - AAER: 4
  - Lawsuits: 16
- Incorrect sampling techniques (failing to project results to population)
  - AAER: 0
  - Lawsuits: 1
- Intentional alteration and/or destruction of workpapers
  - AAER: 3
  - Lawsuits: 1
<table>
<thead>
<tr>
<th>Allegations</th>
<th>AAER (N=79)</th>
<th>Lawsuits (N=135)</th>
<th>Significance Level</th>
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</thead>
<tbody>
<tr>
<td><strong>Panel F: Understanding Internal Controls -- Fieldwork GAAS Standard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure to obtain an understanding of the entity and its environment</td>
<td>0.2</td>
<td>1.1</td>
<td>+++</td>
</tr>
<tr>
<td>F1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure to obtain an understanding of internal control</td>
<td>2</td>
<td>19</td>
<td>***</td>
</tr>
<tr>
<td>F2</td>
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<td></td>
</tr>
<tr>
<td>Over-reliance on internal controls (over-relying/failing to react to known control weaknesses)</td>
<td>8</td>
<td>93</td>
<td>***</td>
</tr>
<tr>
<td>F3</td>
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<tr>
<td>Failure to consider particular risks related to the control environment</td>
<td>1</td>
<td>7</td>
<td>***</td>
</tr>
<tr>
<td>F4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure to communicate internal control related matters identified in an audit</td>
<td>1</td>
<td>21</td>
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</tr>
<tr>
<td>F5</td>
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<td></td>
</tr>
<tr>
<td><strong>Panel G: Reporting GAAS Standards</strong></td>
<td>0.9</td>
<td>2.4</td>
<td>+++</td>
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<tr>
<td>Inadequate evaluation of entity’s going concern status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Failure to adequately communicate with the audit committee</td>
<td>3</td>
<td>15</td>
<td>*</td>
</tr>
<tr>
<td>G2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fail to faithfully state whether the financial statements are presented in accordance with GAAP</td>
<td>5</td>
<td>82</td>
<td>***</td>
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<tr>
<td>Incorrect/inconsistent interpretation or application of requirements of GAAP</td>
<td>15</td>
<td>36</td>
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</tr>
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<td>Failure to express an appropriate audit opinion</td>
<td>33</td>
<td>101</td>
<td>***</td>
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<td>G4</td>
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<tr>
<td>Failure to evaluate adequacy of disclosure</td>
<td>5</td>
<td>56</td>
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<td>Failure to appropriately reference the work performed by other auditors</td>
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<tr>
<td>G5</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Inappropriate consideration of material subsequent events</td>
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<td></td>
</tr>
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<tr>
<td>Inadequate evaluation of impact of uncertainties</td>
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<td>5</td>
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</tr>
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<td>G7</td>
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<tr>
<td>Failure to report changes in accounting principle</td>
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<td>3</td>
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</tr>
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<td>G8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure to evaluate known audit differences / improperly concluding that passed audit adjustments were immaterial</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>G9</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Inadequate reviews of quarterly/interim financial statement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G10</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>G11</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>G12</td>
<td>3</td>
<td>14</td>
<td>*</td>
</tr>
<tr>
<td><strong>Panel H: Number of cites of auditing standards (e.g. AU 150)</strong></td>
<td>3.7</td>
<td>16.0</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Panel I: Number of cites of other standards (e.g. GAAP rules)</strong></td>
<td>1.0</td>
<td>2.3</td>
<td>+++</td>
</tr>
</tbody>
</table>

Note: This table presents the distribution of allegations for all the AAERs and Lawsuits coded. For rows within a panel, e.g. B1 and B2, and Panel A, the cells in AAER and Lawsuits represent the aggregate amount of allegations. For cells next to Panel B to Panel I, they represent the aggregate of all the rows within panel divided by N. For example, B1 equals 3 in AAER column. This means that 3 out of 79 AAERs received “failure of conduct adequate predecessor/successor communication.” Pane C Column AAER equals 1.2. This is the average of the sum of C1-C5 for all the AAERs, i.e. on average 1.2 standards within the General GAAS standards are mentioned in each AAER. For continuous variables, +, ++, +++ represent p-value at 0.1, 0.05, and 0.01 level for two-sided t-tests. For discrete dichotomous variables, *, **, *** represent p-value at 0.1, 0.05, and 0.01 level for two-sided chi-square tests.
Table 3: Longitudinal & Industry distributions of firm-year observations for all AAERs and Lawsuits
Panel A: Longitudinal distribution of firm-year observations from 79 distinct AAERs & 135 distinct lawsuits

<table>
<thead>
<tr>
<th>Year</th>
<th>AAER</th>
<th>Lawsuit</th>
<th># of firm-years in this year/total # of firm-years</th>
</tr>
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<tbody>
<tr>
<td>1978</td>
<td>1</td>
<td>0</td>
<td>0.18%</td>
</tr>
<tr>
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<td>1</td>
<td>0</td>
<td>0.18%</td>
</tr>
<tr>
<td>1980</td>
<td>2</td>
<td>0</td>
<td>0.37%</td>
</tr>
<tr>
<td>1981</td>
<td>2</td>
<td>0</td>
<td>0.37%</td>
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<tr>
<td>1982</td>
<td>2</td>
<td>0</td>
<td>0.37%</td>
</tr>
<tr>
<td>1983</td>
<td>3</td>
<td>0</td>
<td>0.55%</td>
</tr>
<tr>
<td>1984</td>
<td>2</td>
<td>0</td>
<td>0.37%</td>
</tr>
<tr>
<td>1985</td>
<td>3</td>
<td>0</td>
<td>0.55%</td>
</tr>
<tr>
<td>1986</td>
<td>4</td>
<td>0</td>
<td>0.74%</td>
</tr>
<tr>
<td>1987</td>
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<td>1988</td>
<td>6</td>
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<td>1989</td>
<td>7</td>
<td>0</td>
<td>1.29%</td>
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<td>22</td>
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<td>10</td>
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</tr>
<tr>
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<td>3</td>
<td>0.55%</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>1</td>
<td>0.18%</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>383</td>
<td>100%</td>
</tr>
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</table>
Panel B: Longitudinal distribution of firm-year observations by audit firm type from 34 distinct AAERs and 135 distinct lawsuits

<table>
<thead>
<tr>
<th>Year - Fiscal</th>
<th>Big N</th>
<th>Non-Big N</th>
<th>Total</th>
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<tbody>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1990</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
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<td>1992</td>
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<td>1994</td>
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<td>5</td>
<td>11</td>
</tr>
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<td>1996</td>
<td>10</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>1997</td>
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<td>4</td>
<td>35</td>
</tr>
<tr>
<td>1998</td>
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<td>7</td>
<td>45</td>
</tr>
<tr>
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<td>45</td>
<td>10</td>
<td>55</td>
</tr>
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</tr>
<tr>
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<td>30</td>
</tr>
<tr>
<td>2003</td>
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<td>2004</td>
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<td>2</td>
<td>24</td>
</tr>
<tr>
<td>2005</td>
<td>19</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>2006</td>
<td>16</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>2007</td>
<td>13</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>2008</td>
<td>5</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>2009</td>
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<td>7</td>
<td>9</td>
</tr>
<tr>
<td>2010</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>353</td>
<td>106</td>
<td>459</td>
</tr>
</tbody>
</table>

Panel A reports the longitudinal distribution of audit-deficient firm-years alleged in all the AAERs and lawsuits. Firm-years in Panel A include all the 79 AAERs and 135 lawsuits coded before merging the firm-year with COMPUSTAT and CRSP. Please refer to Table 1 for the breakdown of coding. Therefore, there are more firm-years in Panel A than Panel B. For many AAERs and lawsuits, a company can experience alleged audit deficiencies for more than one year. In Panel B, 87 firm-years are from 34 distinct AAERs and 372 firm-years are from 135 distinct lawsuits. For example, the lawsuit against Rite Aid Corp alleges that the company’s financial statements from year 1997 to 1999 suffer from audit deficiencies. Therefore, Rite Aid’s firm-year entries from 1997-1999 are coded as audit deficient years. Panel B describes the distribution of the allegedly audit deficient firm-years by audit firm type. The number of firm-years included in Panel B reflects the number of firm-years after the merge with COMPUSTAT and CRSP. Therefore, in this panel, the number of total observations is less than the total observations in Panel A where we include all the firm-years coded before merging with other data sources. Please refer to Appendix 1 for variable definitions.
Table 4: Distribution of audit quality proxies for treatment sample (AAER & lawsuits) VS control sample at firm-year level

Panel A: Big N Indicator

<table>
<thead>
<tr>
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<th>Treatment Sample</th>
<th></th>
<th>Control Sample</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AAER</td>
<td>Lawsuit</td>
<td>AAER</td>
<td>Lawsuit</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>0</td>
<td>37</td>
<td>9.4</td>
<td>30</td>
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</tr>
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<td>1</td>
<td>36</td>
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<td>290</td>
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Panel B: Discretionary Accruals

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<th>Control Sample</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Signed Discretionary Accruals</td>
<td>Unsigned Discretionary Accruals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AAER</td>
<td>Lawsuit</td>
<td>AAER</td>
<td>Lawsuit</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td></td>
<td>N</td>
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</tr>
<tr>
<td></td>
<td>MIN</td>
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</tr>
<tr>
<td></td>
<td>MAX</td>
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</tr>
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Panel C: Audit Fees

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</thead>
<tbody>
<tr>
<td></td>
<td>Audit Fees in $ amount</td>
<td>log (Audit Fees)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AAER</td>
<td>Law</td>
<td>AAER</td>
<td>Law</td>
</tr>
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<td>13.585</td>
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Panel D: Non-Audit Fees

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<th>Control Sample</th>
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</thead>
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<td>Non-Audit Fees/ Total Fees</td>
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</tr>
<tr>
<td></td>
<td>AAER</td>
<td>Law</td>
<td>AAER</td>
<td>Law</td>
</tr>
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## Panel E: Restatements

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<tbody>
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<tr>
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<td>AAER Frequency</td>
</tr>
<tr>
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<table>
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<td>Law</td>
</tr>
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## Panel G: Meet/Beat Earnings Target

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<td>Percent</td>
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<tr>
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<td>6.64</td>
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<td>455</td>
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<tr>
<td></td>
<td>38.24</td>
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Note: Panel A through G in this table presents the distributions of audit quality proxies respectively: Big N, discretionary accruals, audit fees, non-audit fees, restatements, accrual quality, and meet/beat earnings target. These proxies, except for restatements, are used as dependent variables in Table 6 to Table 10. The treatment sample is all the firm-years named in the AAERs and lawsuits. The control sample is all the firm-years that do not receive AAERs and class action lawsuits against auditors in the same time span, depending on the specific regression, as the treatment sample. The number of observation in each panel varies because the regressions using each of these variables from Panel A through F have different specification, e.g. different control variables and time span. In Panel A, when the Indicator =1, it means the company uses a Big N auditor. Big N is a dependent variable used in Table 6. Panel B presents the distribution of the signed and unsigned discretionary accruals derived from modified Jones model with an intercept, which are used as dependent variables in Table 7. Panel C and Panel D report the audit fees and non-audit fees extracted from AuditAnalytics. These two variables are used as dependent variables in Table 8. Panel E presents the frequency of restatements. We do not validate restatement as a proxy for audit quality because in our treatment sample, nearly 70% firm-years received restatements. Panel F shows the distribution of the Dechow Dichev (2002) accrual quality measure developed from Fama-French 48 industry-specific regressions, which is used a proxy for audit quality in Table 9. In Panel F, when the Indicator = 1, it means a firm’s quarterly earning meets/beat the analyst’s consensual forecast by one cent.
Table 5: Descriptive Statistics for Variables Used in Regressions to Validate Big4 as a Proxy for Audit Quality

Panel A: Descriptive Statistics

<table>
<thead>
<tr>
<th>NAME</th>
<th>Treatment Group (N=393)</th>
<th>Control Group (N=106055)</th>
<th>T-test P-value for the means</th>
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<td>STD</td>
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Note: This table describes firm characteristics between treatment sample and control sample for all firm-year observations used in the regression in Table 6 (validating Big N as a proxy for audit quality). Please see Appendix 1 for variable definitions. We choose to describe variables used in this regression because this regression has the largest number of total observations in comparison to other regressions. In the regression in Table 6, we use the InvestmentAsset (log) defined as ln(Cash and Short-Term Investments/Total Assets). However, to better understand the data, we also provide the distributions of both the ratio of Cash and Short-Term Investments over Total Assets. In addition, we test whether the mean values for these variables are different between treatment group and control group. The p-values for the t-tests are reported in the last column in this panel.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>(1) Baseline</th>
<th>(2) Lawsuit</th>
<th>(3) Total Allegations</th>
<th>(4) Top 5 Allegations</th>
<th>(5) Top 10 Allegations</th>
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</table>
# of Lawsuits      | 320          | 320         | 320                   | 320                   | 320                   |
# of AAERs         | 73           | 73          | 73                    | 73                    | 73                    |
# of Treatment Observations | 393 | 393 | 393 | 393 | 393 |
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<th>Spec 3</th>
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</table>

Note: This table presents the estimates from five specifications of a logistic regression. The dependent variable takes value 1 if the company uses Big N auditor in that fiscal year. The treatment sample is all the firm-years named in the AAERs and lawsuits. The control sample is all the firm-years that do not receive AAERs and class action lawsuits against auditors in the same time span (1989 to 2010) as the treatment sample. The coefficients for SalesGrow are multiplied by 1000. Variable definitions are included in Appendix 1. Top audit deficiency allegations are listed in Appendix 2. Associated p-values are reported using ***, **, and *, representing significance at the 1%, 5% and 10% levels respectively. Standard errors are clustered by firm and they are presented in the brackets.
Table 7: Validating DAC as a proxy for audit quality

Panel A: Signed DAC

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<th>(2) Lawsuit</th>
<th>(3) Total Allegations</th>
<th>(4) Top 5 Allegations</th>
<th>(5) Top 10 Allegations</th>
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</thead>
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<tr>
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<td>-0.127**</td>
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</tr>
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Note: Both panels in this table present the estimates from five specifications of an OLS model. The dependent variables are signed and absolute value of discretionary accruals in Panel A and B respectively. Discretionary accruals are estimated using modified Jones model with intercept. The treatment sample is all the firm-years named in the AAERs and lawsuits. The control sample is all the firm-years that do not receive AAERs and class action lawsuits against auditors in the same time span (1989 to 2010) as the treatment sample. In both Panels, the coefficients for SalesGrow and Age are multiplied by 1000. Variable definitions are included in Appendix 1. Top audit deficiency allegations are listed in Appendix 2. Associated p-values are reported using ***, **, and *, representing significance at the 1%, 5% and 10% levels respectively. Standard errors are clustered by firm and they are presented in the brackets.
Table 8: Validating Audit Fees as a proxy for audit quality

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Note: This table presents the estimates from six specifications of an OLS model. The dependent variable for column (1) – (5) is the natural log of audit fees. In column (6), the dependent variable is the natural log of non-audit-fee plus one divided by total fees charged by the auditor, i.e. log[(non-audit fees +1) / total fees]. This transformation accommodates cases where non-audit fee is zero. Both audit fees and non-audit fees are extracted from AuditAnalytics. In column (6), SOX is an indicator variable. If the fiscal year is in and after 2002, then SOX = 1. Otherwise, SOX = 0. The variable Independ_SOX is an interaction term between Indep and SOX. In our sample, there are 6,122 firm-year observations appearing before SOX. The treatment sample is all the firm-years named in the AAERs and lawsuits. The control sample is all the firm-years that do not receive AAERs and class action lawsuits against auditors in the same time span (2000 to 2010) as the treatment sample. Variable definitions are included in Appendix 1. Top audit deficiency allegations are listed in Appendix 2. Associated p-values are reported using ***, **, and *, representing significance at the 1%, 5% and 10% levels respectively. Standard errors are clustered by firm and they are presented in the brackets.
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*This table presents the estimates from four specifications of an OLS model. The dependent variable is the accrual quality measure by Dechow and Dichev (2002): the standard deviation of the residuals from industry-specific regressions of working capital accruals on last-year, current, and one-year-ahead cash flow from operations. We use Fama-French 48 industry classification here. The treatment sample is all the firm-years named in the AAERs and lawsuits. The control sample is all the firm-years that do not receive AAERs and class action lawsuits against auditors in the same time span (1992 to 2009) as the treatment sample. The coefficients for SalesGrow are multiplied by 1000. Variable definitions are included in Appendix 1. Top audit deficiency allegations are listed in Appendix 2. Associated p-values are reported using ***, **, and *, representing significance at the 1%, 5% and 10% levels respectively. Standard errors are clustered by firm and they are presented in the brackets.*
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*This table presents the estimates from five specifications of a logistic regression. The dependent variable takes value 1 if the company’s quarterly EPS meet or beat the analyst forecast consensus by one cent for a given quarter. Analyst forecast consensus is measured as the last mean analyst forecast before the quarterly earnings announcement. The treatment sample is all the firm-years named in the AAERs and lawsuits. Control sample is all the firm-years that do not receive AAERs and class action lawsuits against auditors in the same time span (1989 to 2010) as the treatment sample. Variable definitions are included in Appendix 1. Top audit deficiency allegations are listed in Appendix 2. Associated p-values are reported using ***, **, and *, representing significance at the 1%, 5% and 10% levels respectively. Standard errors are clustered by firm and they are presented in the brackets.*
### Appendix 1: Variable description

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</tr>
<tr>
<td>InadeqPlan</td>
<td>indicator variable. InadeqPlan = 1 when the allegation &quot;Inadequate planning and supervision&quot; is mentioned in the AAER or lawsuit. 0, otherwise.</td>
</tr>
<tr>
<td>FSNotGAAP</td>
<td>whether the financial statements are presented in accordance with GAAP is mentioned in the AAER or lawsuit. 0, otherwise.</td>
</tr>
<tr>
<td>Skptic</td>
<td>indicator variable. Skptic = 1 when the allegation &quot;Inssuficient level of professional skepticism&quot; is mentioned in the AAER or lawsuit. 0, otherwise.</td>
</tr>
<tr>
<td>InadDiscl</td>
<td>indicator variable. InadDiscl = 1 when the allegation &quot;Failure to evaluate adequacy of disclosure&quot; is mentioned in the AAER or lawsuit. 0, otherwise.</td>
</tr>
<tr>
<td>FraudRisk</td>
<td>indicator variable. FraudRisk = 1 when the allegation &quot;Inadequate consideration of fraud risks&quot; is mentioned in the AAER or lawsuit. 0, otherwise.</td>
</tr>
<tr>
<td>AllExclTop5</td>
<td>total amount of allegations excluding top 5 allegations</td>
</tr>
<tr>
<td>AllExclTop10</td>
<td>total amount of allegations excluding top 5 allegations</td>
</tr>
<tr>
<td>Size</td>
<td>natural log of size of the firm measured by the market value of common equity (in millions of dollars) as of fiscal year-end;</td>
</tr>
<tr>
<td>B2M</td>
<td>natural log of the ratio of book value of equity to market value of equity as of fiscal year-end;</td>
</tr>
<tr>
<td>Leverage</td>
<td>long-term-debt-to-asset ratio as of fiscal year-end;</td>
</tr>
<tr>
<td>Loss</td>
<td>indicator variable. If the net income is negative, then loss=1. Otherwise, loss=0.</td>
</tr>
<tr>
<td>ROE</td>
<td>Return on Assets = Net income before taxes and extraordinary items / total assets</td>
</tr>
<tr>
<td>Switch</td>
<td>indicator variable equal to 1 if a client changed its auditor in a year, and 0 otherwise.</td>
</tr>
<tr>
<td>QuickR</td>
<td>ratio of current assets (less inventories) to current liabilities</td>
</tr>
<tr>
<td>Treatment</td>
<td>indicator variable. If the sample is our treatment sample, i.e. the firm-year experiencing AAER or lawsuit, then treatment =1. Otherwise, treatment=0.</td>
</tr>
<tr>
<td>AssetTurn</td>
<td>sales over total asset</td>
</tr>
<tr>
<td>CurrAsset</td>
<td>current assets over total assets</td>
</tr>
</tbody>
</table>
Age = firm age: the length of data history in COMPUSTAT annual file
SalesGrow = Growth in sales in year t, \((SALES_t - SALES_{t-1})/ SALES_{t-1}\)
InvestmentAsset = natural log of Cash and Short-Term Investments over total assets
GC = indicator variable. GC = 1 when the company receives a going concern opinion; 0 otherwise.
December = indicator variable. December =1 if the company's fiscal year ending in December; 0 otherwise;
RetAvg = average one-year stock return using monthly CRSP returns for the allegation year
RetStd = standard deviation of monthly stock returns for the allegation year
SOX = indicator variable. If the fiscal year is in and after 2002, then SOX=1. Otherwise, SOX=0.
Indep_SOX = an interaction term between Indep and SOX
## Appendix 2: Top 10 Cited Audit Deficiencies

<table>
<thead>
<tr>
<th>Rank</th>
<th>Frequency</th>
<th>Allegations</th>
<th>Variable Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>160</td>
<td>Failure to gather sufficient competent audit evidence</td>
<td>Evidence</td>
</tr>
<tr>
<td>2</td>
<td>143</td>
<td>Failure to exercise due professional care</td>
<td>DueCare</td>
</tr>
<tr>
<td>3</td>
<td>134</td>
<td>Failure to express an appropriate audit opinion</td>
<td>FailOpinion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Failure to obtain an understanding of internal control over-reliance on internal controls (over-relying/failing to react to known control weaknesses)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>101</td>
<td>Inadequate planning and supervision</td>
<td>InadeqPlan</td>
</tr>
<tr>
<td>5</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>97</td>
<td>Lack of independence from client</td>
<td>Indep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fail to faithfully state whether the financial statements are presented in accordance with GAAP</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>87</td>
<td>Insufficient level of professional skepticism</td>
<td>Skeptic</td>
</tr>
<tr>
<td>8</td>
<td>72</td>
<td>Failure to evaluate adequacy of disclosure</td>
<td>InadDiscl</td>
</tr>
<tr>
<td>9</td>
<td>61</td>
<td>Inadequate consideration of fraud risks</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>59</td>
<td></td>
<td>FraudRisk</td>
</tr>
</tbody>
</table>