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journal homepage: [www.elsevier.com/locate/jae](http://www.elsevier.com/locate/jae)Accounting misstatements following lawsuits against auditors<sup>☆</sup>Clive Lennox<sup>a,\*</sup>, Bing Li<sup>b</sup><sup>a</sup> Nanyang Technological University, Singapore 639798<sup>b</sup> City University of Hong Kong, Tat Chee Avenue, Hong Kong

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## ABSTRACT

This study investigates whether an auditor's experience of litigation in the recent past affects subsequent financial reporting quality. At the audit firm level, we find accounting misstatements occur significantly less (more) often after audit firms are sued (not sued). At the audit office level, the negative association between past litigation and future misstatements is stronger for offices who were directly implicated in the litigation than for the non-accused offices of sued audit firms. Therefore, the litigation experiences of both audit firms and audit offices are incrementally significant predictors of future financial reporting quality.

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## 1. Introduction

Numerous studies in the accounting literature examine the antecedents of litigation against auditors (e.g., Bonner et al., 1998; Carcello and Palmrose, 1994; Heninger, 2001; Lys and Watts, 1994; Palmrose, 1988; Palmrose and Scholz, 2004). In contrast, the purpose of this study is to examine the *consequences* of being sued. In particular, we are interested in whether auditors learn from their litigation experiences and whether this subsequently has an effect on financial reporting quality.

In analytical models of rational learning, imperfectly informed agents update their beliefs using Bayes' rule whenever their new experiences convey decision-relevant information (Harsanyi, 1967; Kihlstrom and Mirman, 1975; Townsend, 1978; Feldman, 1987). The revisions to agents' beliefs in turn affect agents' subsequent actions. Anecdotally there is some evidence in the law and criminology literatures that agents learn from their experiences of punishment and revise their future actions. For example, a driver who is caught speeding rationally revises upwards his assessment of the probability of being caught again in the future if he continues to speed. Thus, the driver is less likely to speed again in the future (Andenaes, 1966). Conversely, a driver who is not caught speeding rationally revises downward his assessment of the risk of being

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caught and chooses to speed more often in the future. In short, experiences affect beliefs which then affect subsequent actions.

Similarly, we posit that auditors learn from their experiences of being sued (not sued). Learning occurs because the experience of being sued (not sued) signals new information to the auditor causing a change to the auditor's beliefs. Auditors learn from these experiences and this in turn affects their subsequent actions. For example, a lawsuit can cause an audit firm to downgrade its assessment of the competence and integrity of its personnel or the reliability of its quality control procedures. The audit firm may then respond by giving its personnel more training or introducing superior quality control procedures. Conversely, an auditor would have greater confidence in the quality of its personnel and its quality control procedures if it has no recent experiences of litigation, which could cause the auditor to become complacent and audit quality to drop. In short, an auditor's recent experiences with litigation can convey new information to the auditor about the quality of its audit work. The arrival of new information causes the auditor to update his beliefs and this in turn affects future audit quality.

Such learning can affect audit quality at both the audit firm level and the office level. At the audit firm level, a recent experience with litigation can signal audit quality deficiencies that are systemic to the entire audit firm. For example, a lawsuit may reveal flaws in quality-control procedures applied in all offices of the audit firm. Therefore, audit quality might be affected across the entire audit firm, not just at the office implicated in the lawsuit. On the other hand, a lawsuit may signal systematic problems at one audit office but these problems may not extend to other offices of the same audit firm. For example, an office may suffer from having low quality personnel but this problem may not contaminate the rest of the audit firm. Accordingly, we test whether past litigation affects quality at the audit office level and whether these office-level effects are incremental to any firm-wide effects.

We focus on the impact of litigation on future accounting misstatements for two main reasons (explained further in Section 2). First, a lawsuit typically alleges that the financial statements violated GAAP and therefore misled the investing public. A restatement announcement offers particularly tangible evidence to courts of a misstatement. Courts therefore draw stronger inferences from alleged GAAP violations if the company restates its financial statements. Accordingly, an accounting restatement is often a trigger for a lawsuit to be filed (Kinney and McDaniel, 1989; Palmrose and Scholz, 2004; Johnson et al., 2007; Hennes et al., 2008; Cheng et al., 2013). In contrast, an alleged accounting violation without an accompanying restatement announcement provides a weaker inference of audit failure (Pritchard and Sale, 2005). Therefore, there is a clear conceptual link between an auditor's past experience of litigation and the auditor's incentives to avoid future litigation by preventing future misstatements. In contrast, the conceptual link between litigation and alternative empirical proxies for audit quality (e.g., audit opinions) is much less direct. For example, there is mixed evidence as to whether the issuance of a modified audit opinion reduces or increases the auditor's risk of being sued (Carcello and Palmrose, 1994; Lys and Watts, 1994; Kaplan and Williams, 2013).

Second, a misstatement of the audited financial statements occurs when a client's pre-audit financial statements are misstated *and* the auditor fails to detect and correct the misstatement. An improvement in audit quality can cause an improvement in the quality of a manager's pre-audit financial reporting due to the strategic nature of the interaction between auditors and managers. The incidence of accounting misstatements is expected to be lower following audit litigation due to both an improvement in audit quality and an improvement in the quality of a manager's pre-audit financial statements. By examining the incidence of accounting misstatements, we capture both of these channels through which litigation can affect financial reporting quality.

We identify 830 lawsuits citing auditors as defendants in the period 2001 to 2010. We measure each auditor's experience of litigation during the previous three years and investigate whether this experience predicts the likelihood of a misstatement in the following year.<sup>1</sup> If financial reporting improves (deteriorates) after auditors are sued (not sued), we expect fewer (more) accounting misstatements in the following year. Consistent with this, we find financial reporting quality is higher (lower) after auditors are sued (not sued). The improvements are observed at both the audit firm level and the audit office level.<sup>2</sup> Moreover, the effects are incrementally greater at offices directly involved in the litigation than at offices of the sued audit firms not caught up in the lawsuits. These results are not mechanically driven by improved financial reporting at the companies involved in auditor litigation because those companies are excluded from the estimation samples. Rather, our findings suggest that past auditor litigation affects future financial reporting quality at the clients that do *not* sue their auditors.

To our knowledge, this study is the first to examine whether lawsuits affect auditors' incentives to supply higher quality audits *after* they are sued. In contrast, the existing literature focuses on the determinants of lawsuits against auditors (Palmrose, 1988; Carcello and Palmrose, 1994; Lys and Watts, 1994; Heninger, 2001; Palmrose and Scholz, 2004). Our study also provides a new perspective on office-level and firm-level determinants of audit quality. Francis and Michas (2013) find earnings overstatements are often clustered within specific audit offices and such problematic audits do not necessarily

<sup>1</sup> These three year windows have two main advantages: 1) auditors need a reasonable amount of time to respond to their prior litigation experiences, and 2) lawsuits are relatively rare in any given auditor-year. Although the choice of three years is somewhat *ad hoc*, we obtain similar results using windows corresponding to the previous two years, four years, and five years. Moreover, in untabulated tests we find that auditors' litigation experiences matter more during the most recent three years than prior to this. Specifically, conditioning on auditor litigation during the prior three years, we find no incremental association between the likelihood of a misstatement in year  $t$  and litigation that occurred during year  $t-4$  and  $t-5$ .

<sup>2</sup> Unfortunately, we are unable to test whether the firm-level effects are significant within the sub-sample of Big Four firms because there is essentially no variation in the litigation variables across the Big Four. Accordingly, our results at the audit firm level are likely driven by the non-Big Four firms. On the other hand, we find that the office-level effects are significant within the sub-sample of Big Four firms as well as the sub-sample of non-Big Four firms.

contaminate the entire audit firm. We contribute by showing that auditor litigation affects financial reporting quality at both the audit firm level and the office level. Consistent with audit deficiencies being clustered within certain problematic offices (Francis and Michas, 2013), we find the effect of litigation on financial reporting quality is more pronounced at the offices accused of wrongdoing than at other offices of the sued audit firms. In addition, we find significant changes in the frequency of accounting misstatements within the three year period after audit firms (offices) are sued, which is consistent with lawsuits motivating audit firms (offices) to rectify the problems in a timely way. In contrast, Francis and Michas (2013) find it can take up to five years for the systematic deficiencies at low-quality audit offices to disappear. This suggests that lawsuits prompt more learning than misstatements, perhaps because the costs associated with them are higher.

The remainder of this paper is organized as follows. Section 2 reviews the empirical literature on audit litigation and the theoretical literature on rational learning. We then develop hypotheses for how audit firms and audit offices respond to their past experiences of being sued (not sued). Section 3 explains the research design. Section 4 presents the sample, descriptive statistics, and the main findings. Section 5 presents supplementary analyses, while Section 6 concludes.

## 2. Prior literature and hypothesis development

### 2.1. Prior literature on the determinants of litigation against auditors

The existing literature focuses on the determinants of litigation against auditors. For example, Palmrose (1988) reports higher litigation rates at non-Big 8 audit firms than Big 8 firms, consistent with large firms supplying higher quality audits. Lys and Watts (1994) show the probability of a lawsuit against an auditor is increasing in client size and the fraction of audit revenues derived from the client. In both Lys and Watts (1994) and Heninger (2001), the likelihood of an auditor being sued is found to be higher when abnormal accruals are income-increasing. Bonner et al. (1998) find financial statement frauds of a common variety or arising from fictitious transactions are more likely to lead to lawsuits against auditors.

Public restatements of audited financial statements are often the key triggers prompting lawsuits against auditors (Palmrose and Scholz, 2004; Hennes et al., 2008). This means an auditor can effectively reduce the risk of being sued by preventing material misstatements of the audited financial statements.<sup>3</sup> In contrast, there is mixed evidence as to whether the issuance of a modified (or qualified) audit opinion reduces the risk of being sued. Lys and Watts (1994) find a significant positive association between the issuance of qualified opinions and litigation against auditors. They suggest a qualified opinion is a signal of pre-existing financial reporting problems and is therefore not a strong protection against litigation. Carcello and Palmrose (1994) find mixed results for the association between modified audit reporting and lawsuits against auditors in a sample of bankrupt companies. Like Lys and Watts (1994) they find a significant positive association in their univariate tests, but in multivariate tests the significance of the modified opinion variable depends on the chosen model specification. More recently, Kaplan and Williams (2013) find the issuance of a going-concern opinion is an insignificant predictor of lawsuits in a single equation model. However, the relation becomes significantly negative after they control for endogeneity by replacing the observed going-concern variable with an instrumented going-concern variable.

### 2.2. Models of rational learning

The concept of rational expectations was introduced by Muth (1961). Rationality does not require all agents to be perfectly informed or hold identical beliefs. Instead, rational agents can hold different beliefs when they have different information sets. Muth argues that - under rational behavior - the *mean* value of agents' subjective probability assessments is equal to the objective probability. Imperfectly informed agents adjust their beliefs as they learn more information and so their beliefs become more accurate over time, *i.e.*, rational learning.

In models of rational learning, economic agents are assumed to be imperfectly informed. Agents form prior probability assessments of parameters they are uncertain about and, as agents receive more information, their priors are updated using Bayes' rule. Learning then takes the form of changes to agents' subjective probability distributions.<sup>4</sup> For example, in game theory, imperfectly-informed agents update their beliefs when they observe new information (Harsanyi, 1967). Learning is beneficial as agents are then able to make more informed decisions. Importantly, the theoretical literature finds agents' subjective beliefs eventually converge to the same objective probability distribution regardless of the initial values of their heterogeneous priors (*e.g.*, Kihlstrom and Mirman, 1975; Townsend, 1978; Feldman, 1987). Learning ends once agents become fully informed, at which point all agents hold identical beliefs corresponding to objective reality.<sup>5</sup>

<sup>3</sup> Bedard and Johnstone (2004) find auditors plan increased levels of effort for clients assessed as having a higher risk of misstatement.

<sup>4</sup> Models of rational learning impose high computational requirements on economic agents as they are assumed to know all possible states of the world, the objective probability distribution of the random draws made over these states, and they are able to apply Bayes' rule to the entire state space. This has motivated a second stream of the theoretical literature in which learning is not fully rational and agents follow simpler behavioral rules (*e.g.*, Blume and Easley, 1982; Canning, 1992; Cyert and DeGroot, 1974). See Blume et al. (1982) for a survey of the literatures on fully-rational and partially-rational learning.

<sup>5</sup> The convergence result is non-trivial as agents' beliefs affect their actions and their actions also affect how agents learn. This means there are important feedback loops which make rational learning models more complicated than just a simple application of Bayes' rule. For example, Townsend (1978: 482) states: "To correctly estimate the relevant parameters, agents need to have knowledge of the way in which the reduced form equations evolve over time. But the time path itself may depend on the way in which all agents are solving the inference problem."

### 2.3. Hypotheses development

Our hypotheses assume auditors rationally update their priors when their experiences of litigation convey decision-relevant information. This raises a question as to when a lawsuit would convey new information to the auditor. We argue a lawsuit can indicate one of three things. First, a one-off lawsuit can occur if an audit was of low quality due to engagement-specific or idiosyncratic reasons. In this situation the lawsuit would indicate a low quality audit but would not indicate any systematic problems at the audit firm or audit office. Second, a lawsuit may lack merit (Cloyd et al., 1996; Palmrose, 1997). For example, an auditor may not detect a material misstatement of the audited financial statements despite conducting a competent audit. In this situation the lawsuit would not indicate a low quality audit. Third, a lawsuit may reveal a systematic problem with the quality of an auditor's work.

We apply the rational learning framework to develop auditor response predictions for each of these three situations. In the first situation, the lawsuit is a one-off case and does not provide useful information about the quality of the auditor's work on the audits of other clients. In the second situation, the lawsuit is non-meritorious and so it is also not informative about the auditor's quality. In the third situation, the lawsuit is informative about the quality of the auditor's work. For example, the lawsuit may reveal previously unknown inadequacies in staff training or in the auditor's quality control procedures. Thus, the experience of being sued can be informative to the auditor about the quality of its audits. In this case, there is scope for an auditor to learn from the experience of being sued (not sued).

The direction in which an auditor would update his prior beliefs would depend on whether the auditor's recent experience of litigation is greater or less than originally expected. An auditor's assessment of its own quality would be adjusted downwards when the auditor incurs more lawsuits than it was expecting. Conversely, an auditor's assessment of its own quality would be revised upward when it experiences fewer lawsuits than originally expected. After updating their priors, auditors would modify their behavior in accordance with their new beliefs. For example, if an auditor now believes its quality is lower than it had previously expected, it is likely to take steps to improve.<sup>6</sup>

The quality of audited financial statements depends on both managers' initial reporting decisions and the quality of the auditor's work. The joint nature of the financial reporting process implies a strategic relationship between an auditor and manager (Hillegeist, 1999). For example, a manager is more likely to prepare high quality financial statements if the manager believes the auditor is high quality. Therefore, if managers anticipate an improvement in audit quality after their auditors are sued, there may be a concurrent improvement in the quality of managers' pre-audit financial reporting. Conversely, the quality of pre-audit financial reporting is expected to deteriorate if audit quality drops after auditors learn they have not been sued. Therefore, an improvement or deterioration in audit quality can also affect the quality of clients' pre-audit financial reporting quality. Accounting misstatements reflect both of these channels through which audit litigation can affect financial reporting quality.

Further, there is a clear conceptual link between material misstatements of the audited financial statements and lawsuits against auditors. Provisions in the securities acts provide incentives for plaintiffs to initiate lawsuits when stock prices decline upon news of a reduction in reported net assets or book income (Kellogg, 1984). A restatement announcement typically causes a fall in the restating company's stock price and can therefore act as a trigger for lawyers to determine whether there are sufficient grounds for a lawsuit (sometimes known as "ambulance-chasing" behavior). Moreover, a restatement provides plaintiffs with an opportunity to make specific complaints relating to the period of the misstatement (Hennes et al., 2008; Cheng et al., 2013).<sup>7</sup> Consistent with these arguments, auditors are more likely to be sued when there are restatements of the audited financial statements (Palmrose and Scholz, 2004).<sup>8</sup> As a corollary, this means an auditor can reduce the likelihood of being sued by preventing material misstatements of the audited financial statements. Overall, then, we expect fewer (more) accounting misstatements to occur after auditors are sued (not sued). This leads to the following hypothesis (expressed in the alternative form):

**H<sub>1</sub>.** The incidence of accounting misstatements is lower (higher) after auditors experience more (less) litigation.

*Ex ante*, it is unclear whether H<sub>1</sub> would hold across the entire audit firm or just at the offices directly involved in the failed audits. H<sub>1</sub> is expected to hold at the audit firm level if the litigation signals problems systemic to the entire audit firm. For example, a lawsuit may reveal flaws in an audit firm's quality-control procedures applied across all offices of the audit firm. On the other hand, H<sub>1</sub> may hold at the audit office level but not at the audit firm level if the lawsuit signals problems at

<sup>6</sup> There is anecdotal evidence of auditors' litigation experiences affecting their subsequent behavior. Following a series of lawsuits against Peat Marwick Mitchell in the early 1970s, a senior partner told the *Wall Street Journal*: "We have a little bit of an image problem, and we'd better start doing something about it" ([referenceforbusiness.com/history2/91/KPMG-International.html](http://referenceforbusiness.com/history2/91/KPMG-International.html)). Peat Marwick Mitchell engaged another Big Eight accounting firm to audit its quality control procedures and thereby became the first public accounting firm to inaugurate a peer review process. Except for anecdotal examples such as this, we are unaware of any systematic evidence that auditors alter their behavior after they experience litigation (no litigation).

<sup>7</sup> Johnson et al. (2007: 633) state: "A key element of any securities fraud claim is a material misstatement or omission. Some of the strongest evidence to satisfy this requirement available to plaintiffs' lawyers is a violation of generally accepted accounting principles (GAAP) that results in an earnings restatement."

<sup>8</sup> As discussed in Section 2.1, there is mixed evidence as to whether a modified audit opinion helps to protect an auditor from being sued (Carcello and Palmrose, 1994; Lys and Watts, 1994; Kaplan and Williams, 2013). Given this ambiguity, we make no prediction for how an auditor's recent experience of litigation affects the propensity to issue a modified audit opinion. In untabulated tests, we find no significant association between an auditor's past experience of litigation and the auditor's subsequent decision to issue a going-concern opinion.

the office that conducted the audit but those problems are not present elsewhere in the audit firm. For example, a cluster of low-quality audits could occur in an auditor office location due to office-specific characteristics including low quality personnel and a poor culture among office partners. This is consistent with audit quality being partly determined by actions taken at the individual office level (Francis and Yu, 2009; Choi et al., 2010; Francis and Michas, 2013). Because of this, we test  $H_1$  at the audit office level as well as at the audit firm level:

**H<sub>1a</sub>**. The incidence of accounting misstatements is lower (higher) after audit firms experience more (less) litigation.

**H<sub>1b</sub>**. The incidence of accounting misstatements is lower (higher) after audit offices experience more (less) litigation.

### 3. Research design

#### 3.1. The model of accounting misstatements

We test  $H_{1a}$  and  $H_{1b}$  by estimating Eq. (1) and variants thereof:

$$Pr(\text{misstate}_{it} = 1) = F(\alpha_0 + \alpha_1 \text{audfirm\_lit}_{it-3,t-1} + \alpha_2 \text{audoff\_lit}_{it-3,t-1} + \text{CONTROLS} + e_{it}), \quad (1)$$

the dependent variable ( $\text{misstate}_{it}$ ) equals one if company  $i$ 's audited financial report is misstated in year  $t$ , and zero otherwise, where year  $t$  corresponds to the fiscal year in which the misstated earnings are originally reported, *i.e.*, prior to the restatement announcement. The  $\text{audfirm\_lit}_{it-3,t-1}$  variable equals one if company  $i$ 's audit firm was sued during the previous three years ( $t-1$  to  $t-3$ ), zero otherwise. Under  $H_{1a}$ , we predict a lower (higher) likelihood of misstatement after an audit firm is sued (not sued); *i.e.*,  $\alpha_1 < 0$ . The  $\text{audoff\_lit}_{it-3,t-1}$  variable equals one if company  $i$  is audited by an office implicated in at least one lawsuit during the previous three years ( $t-1$  to  $t-3$ ), zero otherwise. Under  $H_{1b}$ , we expect misstatements occur less (more) frequently after audit offices are sued (not sued); *i.e.*,  $\alpha_2 < 0$ .

In Eq. (1), the firm-level and office-level litigation variables are included together to determine whether their effects are incremental to each other. For example, consider two audit firms ( $X$  and  $Y$ ) where  $X$  was recently sued and  $Y$  was not recently sued and the lawsuit incurred by firm  $X$  involves an audit by office  $X_1$ . Eq. (1) tests whether there is an incrementally bigger effect on quality at office  $X_1$  than at office  $X_2$ , and whether there is a firm-wide effect on quality for both offices of firm  $X$  (*i.e.*, both  $X_1$  and  $X_2$ ). The coefficient,  $\alpha_1$ , captures the effect for a non-accused office of a sued firm (*e.g.*, office  $X_2$ ). The sum of the coefficients,  $\alpha_1 + \alpha_2$ , captures the effect for an accused office (*e.g.*, office  $X_1$ ). The coefficient,  $\alpha_2$ , captures the incremental difference between an accused office and a non-accused office of the same sued audit firm (*e.g.*, office  $X_1$  versus office  $X_2$ ).

The  $\text{audfirm\_lit}_{it-3,t-1}$  ( $\text{audoff\_lit}_{it-3,t-1}$ ) variable is simply an indicator for whether or not the audit firm (audit office) was recently sued. As an alternative, we also count the number of lawsuits against the audit firm (office) during the previous three years. The number of lawsuits variable is  $\text{audfirm\_nlit}_{it-3,t-1}$  at the audit firm level and  $\text{audoff\_nlit}_{it-3,t-1}$  at the office level. Further, because auditors incur more lawsuits when they conduct more audits, we also scale the number of lawsuits by the number of SEC audits conducted by the audit firm (office) over the same three year period. The scaled variables are  $\text{audfirm\_nlit/ncli}_{it-3,t-1}$  at the audit firm level and  $\text{audoff\_nlit/ncli}_{it-3,t-1}$  at the office level.

Finally, we use a regression approach to control for the effect of client characteristics on the auditor's risk of litigation. Specifically, we model auditors' litigation rates as a function of their client characteristics. The dependent variables in these models are  $\text{audfirm\_nlit/ncli}_{it-3,t-1}$  at the firm level and  $\text{audoff\_nlit/ncli}_{it-3,t-1}$  at the office level. The independent variables capture the characteristics of the auditor's *non-suing* clients because the clients involved in audit litigation are not included in the samples used to estimate the misstatement models. The residuals from the litigation models are computed at both the audit firm level ( $\text{audfirm\_lit\_resid}_{it-3,t-1}$ ) and the audit office level ( $\text{audoff\_lit\_resid}_{it-3,t-1}$ ). Accordingly, the residuals indicate whether an audit firm's (audit office's) litigation rate is abnormally high or low. Please see the Appendix for further details on the models that are used to estimate the litigation residuals.

#### 3.2. Control variables

Our choice of control variables follows prior research. Companies sometimes misstate across consecutive years (Palmrose et al., 2004), so we control for persistence in misreporting by including a lagged dependent variable ( $\text{misstate}_{it-1}$ ) in Eq. (1). We include a Big 4 indicator ( $\text{Big4}_{it}$ ) because Big 4 clients generally have higher financial reporting quality.

Companies are more likely to misstate if they are smaller or less profitable (Kinney and McDaniel, 1989). We control for company size using the log of client total assets ( $\text{Inta}_{it}$ ) and we include an indicator variable for losses ( $\text{loss}_{it}$ ). Mergers and acquisitions can lead to complicated accounting issues and business integration problems, which increase the incidence of misstatements (Kinney et al., 2004). We control for this using  $\text{M\&A}_{it}$ , which equals one if company  $i$  is involved in a merger or acquisition in the most recent three years. Companies with weak internal controls are more likely to have material misstatements. We control for this by including  $\text{S404}_{it}$  and  $\text{S404} \times \text{IC}_{it}$ . The  $\text{S404}_{it}$  variable equals one if company  $i$  is subject to Section 404 of the Sarbanes-Oxley Act, and zero otherwise.  $\text{IC}_{it}$  equals one if a material internal control weakness is disclosed for company  $i$  in year  $t$ , and zero otherwise. We control for the book-to-market ratio ( $\text{BtM}_{it}$ ) because misstatements are more common among companies that are perceived by investors as having high growth opportunities (Povel et al., 2007). We control for whether the company is traded on a stock exchange ( $\text{Exchg}_{it}$ ) and whether the client is located in the

**Table 1**  
Variable definitions.

$misstate_{it}$	=one if company $i$ misstates its financial report in year $t$ , =zero otherwise.
$audfirm\_lit_{it-3,t-1}$	=one if company $i$ 's audit firm experienced at least one lawsuit during the previous three years, =zero otherwise.
$audfirm\_nlit_{it-3,t-1}$	=the total number of lawsuits experienced by company $i$ 's audit firm during the previous three years.
$audfirm\_nlit/ncli_{it-3,t-1}$	= $audfirm\_nlit_{it-3,t-1}$ scaled by the number of public company audits by company $i$ 's audit firm during the previous three years.
$audfirm\_lit\_resid_{it-3,t-1}$	=the mean value of the residual for company $i$ 's audit firm during the previous three years, where the residuals are obtained from estimating a litigation prediction model (See the <a href="#">Appendix</a> for further details.)
$audoff\_lit_{it-3,t-1}$	=one if company $i$ 's audit office experienced at least one lawsuit during the previous three years, =zero otherwise.
$audoff\_nlit_{it-3,t-1}$	=the total number of lawsuits experienced by company $i$ 's audit office during the previous three years.
$audoff\_nlit/ncli_{it-3,t-1}$	= $audoff\_nlit_{it-3,t-1}$ scaled by the number of public company audits by company $i$ 's audit office during the previous three years.
$audoff\_lit\_resid_{it-3,t-1}$	=the mean value of the residual for company $i$ 's audit office during the previous three years, where the residuals are obtained from estimating a litigation prediction model (See the <a href="#">Appendix</a> for further details.)
$Big4_{it}$	=one if company $i$ is audited by a Big 4 firm, =zero otherwise.
$UScli_{it}$	=one if company $i$ is a U.S. company in year $t$ , =zero otherwise.
$Exchg_{it}$	=one if company $i$ is traded on an exchange in year $t$ , =zero otherwise.
$loss_{it}$	=one if company $i$ reports losses in year $t$ , =zero otherwise.
$M\&A_{it}$	=one if company $i$ is involved in a merger or acquisition in the most recent three years, =zero otherwise.
$cli\_litig_{it-3,t-1}$	=one if there is at least one lawsuit against company $i$ or its managers during the previous three years, =zero otherwise.
$lna_{it}$	=natural log of the total assets of company $i$ in year $t$ .
$BtM_{it}$	=book value of equity divided by market value of equity for company $i$ in year $t$ .
$S404_{it}$	=one if company $i$ reports under SOX Section 404, =zero otherwise.
$IC_{it}$	=one if at least one material weakness is disclosed in company $i$ 's internal control report for year $t$ , =zero otherwise.

US ( $UScli_{it}$ ) because these client characteristics can affect financial reporting quality. We also include an indicator equal to one if a company or its management are sued ( $cli\_litig_{it-3,t-1}$ ). However, we do not necessarily expect this to be a predictor of misstatements because many of the lawsuits against clients are for reasons unrelated to financial reporting (e.g., wrongful termination of employee contracts). [Table 1](#) provides definitions for all the above variables. We address outliers by winsorizing the continuous variables at the 1% and 99% percentiles.

Eq. (1) includes year indicator variables to control for any time-varying changes in the overall incidence of accounting misstatements. Controlling for year effects is important because a high-profile lawsuit could affect the behavior of *all* auditors in any given year, not just the auditor who was sued. In contrast, our objective is to determine how an auditor responds to its own experience of litigation. If litigation in any given year affects the behavior of all auditors, this would be subsumed in our year fixed effects. Finally, we include industry indicators to control for industry-specific factors.

## 4. Sample, descriptive statistics, and main results

### 4.1. Lawsuits against auditors

The *Audit Analytics* database includes all lawsuits in which audit firms are named as defendants, including those arising from audits of non-SEC clients. In addition, the database identifies the underlying reason for the lawsuit. Consistent with [Schmidt \(2012\)](#), we restrict the sample to lawsuits involving financial reporting matters.<sup>9</sup> Other types of lawsuits are dropped, e.g., a lawsuit by an audit employee against his employer. We also include lawsuits from the *Stanford Class Action Clearinghouse*. As shown in [Table 2](#), these two data sources yield a total of 830 lawsuits against auditors over the period 2001 to 2010.<sup>10</sup>

Although the names of defendants (i.e., audit firms) are readily available, the names of plaintiffs are typically different from the names of the entities originally audited. To identify auditee names, we collect the lawsuit dockets from *Audit Analytics*, the *Stanford Class Action Clearinghouse*, and a web search via *Google*. Of the 830 lawsuits in our sample, we find 558 involve SEC registrants, 172 are private companies, 3 are not-for-profit organizations, and 2 are government entities.<sup>11</sup> In the remaining 95 lawsuits, we are unable to identify the name of the auditee because the dockets cannot be traced from the above sources. While we know the identity of the audit firm for all 830 lawsuits, the dockets generally do not identify which office conducted the audit. Thus, we collect this information from SEC filings for the lawsuits involving SEC registrants. Of the 558 lawsuits involving SEC registrants, we are able to identify the location of the audit office in 509 cases. In the remaining 49 cases we cannot identify the office because the audited financial statements corresponding to the period of

<sup>9</sup> We count a lawsuit as being related to financial reporting if it is coded by *Audit Analytics* as one of the following: Accounting and Auditing Enforcement Release, Accounting malpractice, Class actions, Financial reporting, Fraud or truth in lending, Initial public offering, Mergers and acquisitions, Securities law, and Stockholders' suits.

<sup>10</sup> The vast majority of the 830 lawsuits are from the *Audit Analytics* database rather than the Stanford database. There are 128 lawsuits covered by both databases, 681 come from the *Audit Analytics* database alone, while 21 come from the Stanford database alone.

<sup>11</sup> Of the 558 lawsuits involving SEC registrants, only 3 arise from the SEC suing the auditors in regulatory enforcement actions.

**Table 2**  
Lawsuits against audit firms (2001–2010).

	Number of lawsuits
Type of audit client:	
SEC registrant	558
Private company	172
Not-for-profit organization	3
Government entity	2
Unknown <sup>a</sup>	95
Total lawsuits against audit firms	830
Lawsuits where we are able to identify the offices which performed the allegedly negligent audits <sup>b</sup>	509

<sup>a</sup> In 95 lawsuits, we are unable to identify the name of the auditee because the lawsuit dockets are unavailable from *Audit Analytics*, the *Stanford Class Action Clearinghouse*, or a *Google* search.

<sup>b</sup> There are 558 lawsuits involving SEC registrants. For 509 of these lawsuits we are able to identify from SEC filings the audit offices. We cannot identify the offices for the remaining 49 lawsuits because their audited financial statements corresponding to the allegation periods are not on *EDGAR*.

the allegation are not available on *EDGAR*. In our main tests, we construct the audit firm and audit office litigation variables using the restricted sample of 509 lawsuits where the office is identified.<sup>12</sup>

A data limitation is that court case outcomes and settlements are generally unavailable because cases are often resolved privately without public disclosure of the agreed settlements. Information on case outcomes is available for only 204 of the 830 lawsuits and only 108 cases reveal settlements paid by the auditors. This means we are unable to distinguish between meritorious and non-meritorious lawsuits. Nevertheless, non-meritorious litigation may be less important during our sample period because the Private Securities Litigation Reform Act of 1995 helped to discourage weak or frivolous lawsuits (Pritchard and Sale, 2005; Johnson et al., 2007).<sup>13</sup> Further, although we lack information on case settlements, we expect lawsuits have more serious consequences for auditors when they involve larger audit clients. The implications of this are examined in Section 4.7, where we consider the sizes of the SEC registrants involved in litigation against their auditors.

#### 4.2. Accounting misstatements

We identify misstatements of the audited annual financial statements using restatements data from *Audit Analytics*. Using restatements announced up to the end of 2012, we allow at least two years from the original issuance of the financial statements to the occurrence of a subsequent restatement announcement, which means our sample period for estimating the misstatement models ends in 2010. We collect restatement and lawsuits data for 2001 onwards because this is the year data coverage starts in *Audit Analytics*.

We drop from the estimation sample any companies involved in audit litigation because such companies would likely experience an improvement in financial reporting quality even if their auditors do not improve. For example, if Company A sues Auditor X, we drop Company A from the sample and test whether financial reporting quality improves for Auditor X's other non-suing clients.<sup>14</sup> This leaves 49,562 SEC audits during the period 2001–2010. There are 433 audit firms, of which 58 firms are sued at least once and there are 979 audit offices, of which 187 are involved in litigation. Because there are repeated observations on both companies and audit firms (offices), we adjust the standard errors using two-way clustering on each company and audit firm (office).

The *Audit Analytics* database provides audit and restatement data for all SEC registrants, whereas *COMPUSTAT* does not cover all SEC registrants. This is important because many of the auditors in our sample have no clients covered by *COMPUSTAT*. For example, the number of audit firms in our sample drops from 433 to just 215 when we construct an abnormal accruals variable using data from *COMPUSTAT*. As this would reduce the power of our tests, we assemble a more comprehensive sample by constructing all the variables using data from *Audit Analytics* rather than *COMPUSTAT*. Results for abnormal accruals in the smaller sample are reported as a supplementary analysis in Section 5.2.

#### 4.3. Lawsuits against audit firms and audit offices

Col. (1) of Table 3 reports the total number of lawsuits suffered by each audit firm, while Col. (2) shows the number of lawsuits involving SEC registrants. For example, the first row of Table 3 shows Ernst & Young incurred 182 lawsuits of which 139 involved SEC registrants. Col. (3) shows the number of SEC audits conducted by each audit firm while Col. (4) reports the

<sup>12</sup> In untabulated supplementary analyses, we obtain similar results for the audit firm litigation variables when they are constructed using the full sample of lawsuits ( $N=830$ ) rather than the restricted sample ( $N=509$ ). In these supplementary analyses, we drop the audit office litigation variables because we are unable to identify the audit offices for 321 of the 830 lawsuits (see Table 2).

<sup>13</sup> In a *Statement of Position* in 1992, the large audit firms claimed: "the principal causes of the accounting profession's liability problems are unwarranted litigation and coerced settlements" (Arthur Andersen et al., 1992).

<sup>14</sup> However, our inferences are unchanged if these companies are retained in the estimation sample.

**Table 3**  
Lawsuits against audit firms and audit offices (2001–2010).

Audit firm	(1) Total lawsuits	(2) Lawsuits involving SEC audits	(3) Total SEC audits	(4) SEC lawsuit frequency (Col. 2/Col. 3) (%)	(5) Total audit offices	(6) Offices involved in SEC lawsuits
Ernst & Young	182	139	10,578	1.31	77	39
Pricewaterhouse Coopers	194	138	8,215	1.68	69	40
Deloitte & Touche	139	105	7,780	1.35	72	33
KPMG	161	94	7,190	1.31	82	31
Grant Thornton	35	24	2,081	1.15	41	10
BDO Seidman	40	9	1,431	0.63	29	3
McGladrey & Pullen	8	4	571	0.70	36	2
Crowe Chizek & Co	2	1	483	0.21	12	0
BKD	1	0	309	0.00	12	0
Moss Adams	1	0	304	0.00	12	0
Sherb & Co	6	5	200	2.50	2	1
JH Cohn	1	1	186	0.54	4	1
Beard Miller Company	1	0	182	0.00	8	0
Ehrhardt Keefe Steiner & Hottman	1	1	165	0.61	1	1
Elliott Davis	1	0	164	0.00	3	0
Hansen Barnett & Maxwell	1	1	135	0.74	1	1
Marcum & Kliegman	1	0	134	0.00	3	0
Amper Politziner & Mattia	3	3	124	2.42	2	1
Goldstein Golub Kessler	2	1	114	0.88	1	0
Peterson Sullivan	1	1	104	0.96	1	1
Rothstein Kass & Co	1	0	101	0.00	2	0
Virchow Krause & Co	1	0	96	0.00	2	0
Singer Lewak Greenbaum	1	1	89	1.12	1	1
UHY	1	0	88	0.00	10	0
Cherry Bekaert & Holland	2	2	69	2.90	7	1
KBA Group	2	0	66	0.00	1	0
Kabani & Co	1	1	65	1.54	2	1
Haskell & White	1	0	59	0.00	1	0
Hacker Johnson & Smith	1	1	55	1.82	2	1
Epstein Weber & Conover	1	1	40	2.50	1	1
Comiskey & Co	1	1	40	2.50	1	1
Tanner & Co	2	2	40	5.00	1	1
Salberg & Co	1	1	38	2.63	1	1
Murrell Hall McIntosh & Co	4	4	35	11.43	2	1
Daszkal Bolton	1	1	33	3.03	1	1
Freed Maxick & Battaglia	1	0	32	0.00	1	0
Radin Glass & Co	2	0	32	0.00	1	0
Clifton Gunderson	1	0	30	0.00	2	0
Mahoney Cohen & Co	1	0	26	0.00	1	0
Tullius Taylor Sartain & Sartain	1	1	26	3.85	3	1
Withum Smith & Brown	1	0	23	0.00	4	0
Beckstead & Watts	1	1	21	4.76	2	1
Tedder James Worden & Associates	1	0	19	0.00	1	0
Eide Bailly	3	3	19	15.79	2	2
Bagell Josephs Levine & Co	1	1	16	6.25	2	1
Reznick Group	1	0	15	0.00	3	0
Moore Stephens Lovelace	2	1	14	7.14	1	1
Brady Martz & Associates	1	0	13	0.00	1	0
Margolin Winer & Evens	1	0	13	0.00	1	0
Weinick Sanders Leventhal & Co	1	1	12	8.33	1	1
Jewett Schwartz Wolfe & Associates	1	1	12	8.33	1	1
Haefele Flanagan & Co	1	0	12	0.00	1	0
Killman Murrell & Co	1	1	11	9.09	1	1
Berkovits Lago & Co	1	1	7	14.29	1	1
Scott McElveen	1	1	7	14.29	1	0
Rubin Brown Gornstein & Co	2	2	7	28.57	1	1
Davis Accounting Group	1	1	5	20.00	1	1
Smith Carney & Co	1	1	4	25.00	1	1
375 audit firms with zero lawsuits	0	0	7,822	0.00	442	0
Totals	830	558	49,562	1.13	979	187

lawsuit frequency for SEC audits (calculated as Col. (2) divided by Col. (3)). For example, Ernst & Young conducted 10,578 SEC audits and incurred 139 SEC lawsuits, giving an overall litigation rate of 1.31% (= 139/10,578). The litigation rates are similar among the Big 4 firms: 1.31% for Ernst & Young, 1.68% for PricewaterhouseCoopers, 1.35% for Deloitte & Touche, and 1.31% for KPMG. The litigation rates among the non-Big 4 firms range from 0.00% to 28.57%.



**Table 4**  
Accounting misstatements and SEC lawsuits by year (2001–2010).

	(1)	(2)	(3)
<i>Panel A: SEC lawsuits against auditors</i>			
Year	Total SEC audits	Lawsuits involving SEC audits	SEC lawsuit frequency (Col. 1/Col. 2) (%)
2001	4,190	41	0.98
2002	6,031	43	0.71
2003	5,009	69	1.38
2004	4,312	70	1.62
2005	4,652	60	1.29
2006	5,138	93	1.81
2007	6,009	55	0.92
2008	5,640	39	0.69
2009	4,528	59	1.30
2010	4,053	29	0.72
Total	49,562	558	1.13
<i>Panel B: Accounting misstatements</i>			
Year	Total SEC audits	Number of misstated financial reports	Misstatement frequency (Col. 1 / Col. 2) (%)
2001	4,190	489	11.67
2002	6,031	841	13.94
2003	5,009	837	16.71
2004	4,312	673	15.61
2005	4,652	533	11.46
2006	5,138	433	8.43
2007	6,009	394	6.56
2008	5,640	385	6.83
2009	4,528	312	6.89
2010	4,053	278	6.86
Total	49,562	5,175	10.44

Col. (5) reports the number of offices for each audit firm while Col. (6) shows how many offices are implicated in an SEC lawsuit. For example, the first row of Table 3 shows Ernst & Young has 77 offices, of which 39 (*i.e.*, 50.7%) are sued in connection with their audits of SEC registrants.<sup>15</sup> In total there are 979 audit offices of which 187 (19.1%) are implicated in lawsuits for their audits of SEC registrants.

#### 4.4. Descriptive statistics

Table 4 reports the incidence of SEC lawsuits and accounting misstatements by year. In Panel A, the lawsuit frequency goes from 0.98% in 2001 to 0.72% in 2010, with no obvious time trend. In Panel B, the misstatement frequency declines from 11.67% in 2001 to 6.86% in 2010, with clear evidence of a downward trend starting in 2003. We control for these yearly variations by including year fixed effects in all the models. In total, there are 5,175 misstated annual reports in 49,562 SEC audits, giving an average misstatement frequency equal to 10.44%.

Table 5 provides descriptive statistics for the sample used to estimate the misstatement models. The estimation period is 2004–2010 because our measures of past litigation require information for the preceding three years. The mean value of the dependent variable (*misstate<sub>it</sub>*) indicates a misstatement rate of 8.8% between 2004 and 2010. The mean values of *audfirm\_lit<sub>it-3,t-1</sub>* and *audoff\_lit<sub>it-3,t-1</sub>* reveal 75.0% (32.8%) of companies are audited by firms (offices) that were sued during the previous three years. The mean number of lawsuits is 25.645 for audit firms (*audfirm\_nlit<sub>it-3,t-1</sub>*) and 0.861 for audit offices (*audoff\_nlit<sub>it-3,t-1</sub>*). When these variables are scaled by the number of SEC audits, the mean litigation rates are 0.8% for audit firms and 0.7% for audit offices. Table 5 also reports descriptive statistics for the control variables: company size, the book-to-market ratio, internal control weaknesses, lawsuits against clients, the proportion of clients from the US, and the proportion traded on a stock exchange.

#### 4.5. Main results

We test whether financial reporting quality is higher after auditors are sued by estimating Eq. (1). The audit firm and audit office litigation variables are included together to determine whether there are incrementally significant effects on

<sup>15</sup> Col. (5) reports the total number of offices with at least one SEC audit. Some offices conduct zero SEC audits but these are not counted in Col. (5) because we wish to compare Col. (5) with Col. (6), which reports the number of offices involved in at least one lawsuit involving an SEC registrant.

**Table 5**

Descriptive statistics for the variables used in the misstatement models (2004–2010).

The misstatement models are estimated for the period 2004–2010 because we require three years of historic data to measure an auditor's experience of litigation during the previous three years ( $N=34,332$ ). The continuous variables are winsorized at the 1% and 99% percentiles to address the problem of outliers. See Table 1 for variable definitions.

	Mean	Median	Min	Max	St. dev.
<i>misstate<sub>it</sub></i>	0.088	0.000	0.000	1.000	0.283
<i>audfirm_lit<sub>it-3,t-1</sub></i>	0.750	1.000	0.000	1.000	0.433
<i>audoff_lit<sub>it-3,t-1</sub></i>	0.328	0.000	0.000	1.000	0.470
<i>audfirm_nlit<sub>it-3,t-1</sub></i>	25.645	30.000	0.000	67.000	20.144
<i>audoff_nlit<sub>it-3,t-1</sub></i>	0.861	0.000	0.000	7.000	1.626
<i>audfirm_nlit/ncli<sub>it-3,t-1</sub></i>	0.008	0.010	0.000	0.021	0.006
<i>audoff_nlit/ncli<sub>it-3,t-1</sub></i>	0.007	0.000	0.000	0.097	0.017
<i>audfirm_lit_resid<sub>it-3,t-1</sub></i>	0.000	-0.000	-0.009	0.020	0.004
<i>audoff_lit_resid<sub>it-3,t-1</sub></i>	-0.007	-0.009	-0.042	0.086	0.020
<i>Big4<sub>it</sub></i>	0.652	1.000	0.000	1.000	0.476
<i>UScli<sub>it</sub></i>	0.971	1.000	0.000	1.000	0.169
<i>Exchg<sub>it</sub></i>	0.871	1.000	0.000	1.000	0.336
<i>loss<sub>it</sub></i>	0.351	0.000	0.000	1.000	0.477
<i>M&amp;A<sub>it</sub></i>	0.194	0.000	0.000	1.000	0.395
<i>cli_lit<sub>it-3,t-1</sub></i>	0.228	0.000	0.000	1.000	0.419
<i>Inta<sub>it</sub></i>	19.428	19.781	9.792	25.042	2.802
<i>BtM<sub>it</sub></i>	0.418	0.346	-5.388	6.186	1.096
<i>S404<sub>it</sub></i>	0.738	1.000	0.000	1.000	0.440
<i>S404 × IC<sub>it</sub></i>	0.068	0.000	0.000	1.000	0.251

financial reporting quality at both the firm-level and the office-level.<sup>16</sup> To ensure the firm-level and office-level litigation variables are constructed using a consistent sample, the litigation variables are constructed using the SEC lawsuits in which the audit offices can be identified ( $N=509$  lawsuits, as per Table 2).

Table 6 finds significant negative coefficients on all four of the audit firm litigation variables. Therefore, litigation against audit firms predicts relatively higher financial reporting quality even for the offices not directly implicated in the lawsuits ( $\alpha_1 < 0$ ). Further, we find significant coefficients on all four of the audit office litigation variables. Therefore, the effects are incrementally stronger at the offices directly implicated in the lawsuits than at the non-accused offices of sued audit firms ( $\alpha_2 < 0$ ). We conclude that past litigation is associated with future financial reporting quality at the audit firm level ( $H_{1a}$ ), and there is an incremental effect at the accused audit offices ( $H_{1b}$ ). These findings suggest that auditors' experiences of litigation affect financial reporting quality at both the audit firm level and the office level.

To assess the economic significance of these results, we estimate the likelihood of a misstatement for different values of the litigation variables, holding other variables constant at their mean values. Beginning with Col. (1) the misstatement probabilities are found to be: (1) 9.94% if the client's audit firm (and office) are not sued ( $audfirm\_lit_{it-3,t-1} = audoff\_lit_{it-3,t-1} = 0$ ), (2) 8.90% if the audit firm is sued but not the office ( $audfirm\_lit_{it-3,t-1} = 1$  and  $audoff\_lit_{it-3,t-1} = 0$ ), and (3) 8.08% if the audit office (and audit firm) are sued ( $audfirm\_lit_{it-3,t-1} = audoff\_lit_{it-3,t-1} = 1$ ). Thus, the misstatement probability declines from 9.94% in the case of no litigation, to 8.08% when the client's audit office is involved in litigation. Overall, these effects are economically significant as well as statistically significant. Similar results are found in Cols. (2) to (4). For example, in Col. (3) the misstatement probability declines from 9.08% in the case of no litigation to 8.52% if both the audit firm and audit office incur a litigation rate of 1%.

Results for the control variables are generally as expected. The significant positive coefficients on  $misstate_{it-1}$  imply strong persistence in misreporting, *i.e.*, a company is more likely to misstate in year  $t$  if it misstated in year  $t-1$ . In addition, misstatements are more common in loss-making ( $loss_{it}$ ) and larger companies ( $Inta_{it}$ ), while they are less frequent for publicly traded companies ( $Exchg_{it}$ ) and companies with head-quarters in the US ( $UScli_{it}$ ).

#### 4.6. Big 4 versus non-Big 4 audit firms

Thus far, we have pooled the clients of large and small audit firms into one estimation sample. However, most audits are conducted by the Big 4 and they also incur the majority of lawsuits (see Table 3). Therefore, we investigate whether our results hold for both the small and large auditors. We begin by estimating the models in Table 6 for the sub-sample of non-Big 4 audits ( $N=11,942$ ). The results are reported in Table 7. Consistent with Table 6, all the audit firm and audit office litigation variables have negative and statistically significant coefficients. Therefore, both our audit firm-level results ( $H_{1a}$ ) and our office-level results ( $H_{1b}$ ) hold in the non-Big 4 sub-sample.

<sup>16</sup> Of the 433 audit firms in our sample, there are 367 audit firms with just one office. For these observations, the audit firm and audit office litigation variables are identical. Nevertheless, multicollinearity is not a problem as the single-office audit firms account for only 14.5% of the audits in our sample. In fact, the variance-inflation-factors for each variable are less than three in all of our tabulated models.

**Table 6**

Accounting misstatements following audit firms' and audit offices' experiences of litigation.  
See Table 1 for variable definitions.  $N=34,332$ .

<i>audfirm_lit</i> <sub><i>it-3,t-1</i></sub>	-0.200** (-2.04)			
<i>audoff_lit</i> <sub><i>it-3,t-1</i></sub>	-0.167*** (-3.66)			
<i>audfirm_nlit</i> <sub><i>it-3,t-1</i></sub>		-0.005** (-2.14)		
<i>audoff_nlit</i> <sub><i>it-3,t-1</i></sub>		-0.057*** (-2.61)		
<i>audfirm_nlit/ncli</i> <sub><i>it-3,t-1</i></sub>			-8.551** (-2.50)	
<i>audoff_nlit/ncli</i> <sub><i>it-3,t-1</i></sub>			-2.860** (-1.98)	
<i>audfirm_lit_resid</i> <sub><i>it-3,t-1</i></sub>				-6.734** (-2.41)
<i>audoff_lit_resid</i> <sub><i>it-3,t-1</i></sub>				-2.021* (-1.91)
<i>misstate</i> <sub><i>it-1</i></sub>	3.847*** (23.63)	3.845*** (23.65)	3.851*** (23.65)	3.851*** (23.65)
<i>Big4</i> <sub><i>it</i></sub>	0.047 (0.31)	0.085 (0.59)	-0.054 (-0.51)	-0.172* (-1.74)
<i>lna</i> <sub><i>it</i></sub>	0.047*** (3.72)	0.044*** (3.45)	0.045*** (3.42)	0.045*** (3.47)
<i>loss</i> <sub><i>it</i></sub>	0.113** (2.20)	0.116** (2.33)	0.115** (2.28)	0.112** (2.29)
<i>M&amp;A</i> <sub><i>it</i></sub>	0.096 (1.49)	0.093 (1.50)	0.092 (1.46)	0.092 (1.45)
<i>S404</i> <sub><i>it</i></sub>	-0.015 (-0.24)	-0.012 (-0.21)	-0.011 (-0.18)	-0.006 (-0.10)
<i>S404 × IC</i> <sub><i>it</i></sub>	0.057 (0.45)	0.047 (0.36)	0.045 (0.36)	0.046 (0.36)
<i>BtM</i> <sub><i>it</i></sub>	0.002 (0.10)	0.002 (0.08)	0.000 (0.00)	0.000 (0.02)
<i>Exchg</i> <sub><i>it</i></sub>	-0.183** (-2.05)	-0.212** (-2.41)	-0.211** (-2.39)	-0.211** (-2.38)
<i>UScli</i> <sub><i>it</i></sub>	-0.357*** (-2.62)	-0.370*** (-2.70)	-0.361*** (-2.61)	-0.363*** (-2.63)
<i>cli_lit</i> <sub><i>it-3,t-1</i></sub>	-0.042 (-1.22)	-0.037 (-1.17)	-0.042 (-1.24)	-0.045 (-1.30)
<i>intercept</i>	-3.393*** (-13.90)	-3.396*** (-13.73)	-3.371*** (-13.10)	-3.378*** (-13.57)
<i>Industry dummies?</i>	Yes	Yes	Yes	Yes
<i>Year dummies?</i>	Yes	Yes	Yes	Yes
Pseudo R-squared (%)	38.94	38.94	38.92	38.91

The models are estimated using logistic regression with standard errors adjusted for two-way clustering on each company and audit firm.

\* Statistically significant at the 10% level (two-tailed).

\*\* Statistically significant at the 5% level (two-tailed).

\*\*\* Statistically significant at the 1% level (two-tailed).

Ideally, we would like to estimate the same models for the sub-sample of Big 4 audits. However, there is a lack of variation in the audit firm litigation variables within the Big 4 sample. For example, the *audfirm\_lit*<sub>*it-3,t-1*</sub> variable is equal to one for every Big 4 audit because each Big 4 firm is sued at least once in every three year window. Likewise, the other three litigation variables display little variation because each Big 4 firm experiences a similar rate of litigation. (Table 3 shows the litigation rates for the Big 4 audit firms are 1.31%, 1.68%, 1.35% and 1.31%.) While this problem affects the audit firm litigation variables, it does not affect the audit office litigation variables as there is plenty of variation in offices' past experiences of litigation. This can be seen from Table 3, which shows 143 Big 4 offices are involved in litigation while 157 Big 4 offices are not involved.

Given these issues, we estimate the misstatement models on the Big 4 sub-sample ( $N=22,390$ ) using the audit office litigation variables but not the audit firm litigation variables. The results are reported in Table 8. Consistent with Table 6, all the audit office litigation variables have negative and statistically significant coefficients. Therefore, we find that the litigation experiences of Big 4 audit offices are positively associated with subsequent financial reporting quality.

#### 4.7. The accentuating effect of client size

We are unable to measure the severity of audit lawsuits using settlements data because settlements are usually not disclosed. As an alternative, we expect a lawsuit involving a larger audit client has more serious consequences for the

**Table 7**

Results for the clients of non-Big 4 audit firms.

See Table 1 for variable definitions.  $N=11,942$ . We include the same control variables as in Table 6 but results for the control variables are not reported for the sake of brevity.

<i>audfirm_lit</i> <sub><i>it-3,t-1</i></sub>	-0.191**			
	(-2.00)			
<i>audoff_lit</i> <sub><i>it-3,t-1</i></sub>	-0.396***			
	(-3.23)			
<i>audfirm_nlit</i> <sub><i>it-3,t-1</i></sub>		-0.003*		
		(-1.68)		
<i>audoff_nlit</i> <sub><i>it-3,t-1</i></sub>		-0.171***		
		(-2.94)		
<i>audfirm_nlit/ncli</i> <sub><i>it-3,t-1</i></sub>			-8.118***	
			(-2.64)	
<i>audoff_nlit/ncli</i> <sub><i>it-3,t-1</i></sub>			-2.415*	
			(-1.76)	
<i>audfirm_lit_resid</i> <sub><i>it-3,t-1</i></sub>				-7.759**
				(-2.48)
<i>audoff_lit_resid</i> <sub><i>it-3,t-1</i></sub>				-1.132*
				(-1.73)
Control variables?	Yes	Yes	Yes	Yes
Industry dummies?	Yes	Yes	Yes	Yes
Year dummies?	Yes	Yes	Yes	Yes
Pseudo R-squared (%)	29.54	29.42	29.45	29.45

The models are estimated using logistic regression with standard errors adjusted for two-way clustering on each company and audit firm.

\* Statistically significant at the 10% level (two-tailed).

\*\* Statistically significant at the 5% level (two-tailed).

\*\*\* Statistically significant at the 1% level (two-tailed).

**Table 8**

Results for the clients of Big 4 audit firms.

See Table 1 for variable definitions.  $N=22,390$ . We include the same control variables as in Table 6 but results for the control variables are not reported for the sake of brevity.

<i>audoff_lit</i> <sub><i>it-3,t-1</i></sub>	-0.152**			
	(-2.41)			
<i>audoff_nlit</i> <sub><i>it-3,t-1</i></sub>		-0.062***		
		(-3.53)		
<i>audoff_nlit/ncli</i> <sub><i>it-3,t-1</i></sub>			-3.576***	
			(-2.64)	
<i>audoff_lit_resid</i> <sub><i>it-3,t-1</i></sub>				-2.704**
				(-2.36)
Control variables?	Yes	Yes	Yes	Yes
Industry dummies?	Yes	Yes	Yes	Yes
Year dummies?	Yes	Yes	Yes	Yes
Pseudo R-squared (%)	45.33	45.37	45.32	45.31

The models are estimated using logistic regression with standard errors adjusted for two-way clustering on each company and audit office.

\* Statistically significant at the 10% level (two-tailed).

\*\* Statistically significant at the 5% level (two-tailed).

\*\*\* Statistically significant at the 1% level (two-tailed).

auditor. Therefore, we examine whether the impact of litigation on misstatements is stronger when lawsuits involve larger clients. Our first size measure is computed as the aggregate total assets of audit firm  $i$ 's sued clients divided by the aggregate total assets of all audit firm  $i$ 's clients during the previous three years. This captures the importance of the suing clients relative to the audit firm's entire portfolio of clients. Our second size measure is the mean assets of audit firm  $i$ 's sued clients divided by the mean assets of all audit firm  $i$ 's clients during the previous three years. This captures the average size of the suing clients relative to the average sizes of all the audit firm's clients.

In Table 9, Cols. (1) to (4) use the first size measure while Cols. (5) to (8) use the second measure (both measures are labeled as *audfirm\_litclisize*<sub>*it-3,t-1*</sub>). The *audfirm\_litclisize*<sub>*it-3,t-1*</sub> coefficients are found to be negative and incrementally significant in all eight columns. Therefore, financial reporting quality is higher after audit firms are sued for their audits of larger companies. This is consistent with larger lawsuits having a bigger impact on financial reporting quality than smaller lawsuits. The eight audit firm litigation coefficients remain negative and statistically significant, consistent with lawsuits having an effect on financial reporting quality even when they involve small companies.

**Table 9**

The accentuating effect of the size of suing clients.

See Table 1 for variable definitions.  $N=34,332$ . We include the same control variables as in Table 6 but results for the control variables are not reported for the sake of brevity.

	<i>audfirm_litclisize</i> <sub><i>it-3,t-1</i></sub> equals the aggregate total assets of the audit firm's sued clients divided by the aggregate total assets of all the audit firm's clients during the previous three years.				<i>audfirm_litclisize</i> <sub><i>it-3,t-1</i></sub> equals the mean assets of the audit firm's sued clients divided by the mean assets of all of the audit firm's clients during the previous three years.			
<i>audfirm_lit</i> <sub><i>it-3,t-1</i></sub>	-0.146*				-0.173*			
	(-1.72)				(-1.94)			
<i>audoff_lit</i> <sub><i>it-3,t-1</i></sub>	-0.166***				-0.132***			
	(-4.53)				(-2.93)			
<i>audfirm_nlit</i> <sub><i>it-3,t-1</i></sub>		-0.004**				-0.004**		
		(-2.00)				(-2.20)		
<i>audoff_nlit</i> <sub><i>it-3,t-1</i></sub>		-0.063***				-0.048**		
		(-3.37)				(-2.19)		
<i>audfirm_nlit/ncli</i> <sub><i>it-3,t-1</i></sub>			-7.372**				-8.832**	
			(-2.29)				(-2.55)	
<i>audoff_nlit/ncli</i> <sub><i>it-3,t-1</i></sub>			-3.210**				-1.986*	
			(-2.51)				(-1.67)	
<i>audfirm_lit_resid</i> <sub><i>it-3,t-1</i></sub>				-5.324**				-6.435**
				(-2.00)				(-2.34)
<i>audoff_lit_resid</i> <sub><i>it-3,t-1</i></sub>				-1.975**				-1.298*
				(-2.33)				(-1.65)
<i>audfirm_litclisize</i> <sub><i>it-3,t-1</i></sub>	-0.148***	-0.165***	-0.158***	-0.155***	-0.001***	-0.001***	-0.001***	-0.001***
	(-5.36)	(-4.40)	(-4.18)	(-4.24)	(-5.78)	(-5.76)	(-5.87)	(-5.90)
<i>audoff_litclisize</i> <sub><i>it-3,t-1</i></sub>	-0.019	0.125	0.068	-0.015	-0.006	-0.005	-0.008**	-0.009*
	(-0.32)	(0.82)	(0.44)	(-0.29)	(-1.45)	(-1.36)	(-1.98)	(-1.84)
Control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared (%)	38.96	38.97	38.95	38.93	38.96	38.97	38.96	38.95

The models are estimated using logistic regression with standard errors adjusted for two-way clustering on each company and audit firm.

\* Statistically significant at the 10% level (two-tailed).

\*\* Statistically significant at the 5% level (two-tailed).

\*\*\* Statistically significant at the 1% level (two-tailed).

We do the same analysis at the audit office level, by measuring the size of the suing companies relative to the size of the office's entire client portfolio and relative to the mean size of the office's clients (both measures are labeled as *audoff\_litclisize*<sub>*it-3,t-1*</sub>). In these tests, only two of the eight *audoff\_litclisize*<sub>*it-3,t-1*</sub> coefficients are negative and incrementally significant. Therefore, we find little evidence of an incremental size effect at the audit office level. Nevertheless, the eight audit office litigation coefficients remain negative and statistically significant, consistent with lawsuits causing an improvement in financial reporting quality among the accused audit offices.

## 5. Supplementary analyses

### 5.1. Income-increasing versus income-decreasing misstatements

As noted by Hennes et al. (2008), accounting misstatements include both irregularities (i.e., intentional misstatements) and errors (i.e., unintentional misstatements). *Ex ante*, it is unclear whether lawsuits against auditors would reduce the incidence of both types of misstatement or just the intentional misstatements. On one hand, a lawsuit may motivate an auditor to work harder and an increase in auditor effort is likely to reduce the incidence of both accidental and intentional misstatements. On the other hand, auditors are more likely to be sued when their clients deliberately overstate (St. Pierre and Anderson, 1984; Kellogg, 1984). As auditors have asymmetric loss functions with respect to overstatements and understatements (Hillegeist, 1999; Kinney and Martin, 1994), their recent experiences of litigation may primarily affect the incidence of overstatements.

To shed light on this, we estimate a multinomial logit model in which the dependent variable indicates one of three possible outcomes: (1) overstatement, (2) understatement, and (3) no misstatement. To determine the sign of the misstatement, we use the coding in *Audit Analytics* to identify the impact of the misstatement on net income and/or stockholder equity. Overstatements and understatements would be expected to occur with approximately equal frequency if all misstatements represented accidental reporting errors rather than intentional misstatements. In the period 2004–2010, there are 2,461 overstatements compared with just 544 understatements. The fact overstatements are much more common than understatements is consistent with many of the overstatements being intentional rather than accidental. There are 3

misstatements in which the sign of the misstatement is unavailable from *Audit Analytics* and these are dropped from the sample.

We find significant negative coefficients on all of the audit firm litigation variables in the models predicting overstatements (the z-statistics range from  $-1.84$  to  $-3.44$ ). This is consistent with companies being less (more) likely to overstate after their audit firms are sued (not sued). Similarly, we find significant negative coefficients on all of the audit office litigation variables in the regressions explaining overstatements (the z-statistics range from  $-1.72$  to  $-3.57$ ). Thus, the litigation experiences of both audit firms and audit offices are significant predictors of future overstatements. In contrast, the audit firm and audit office litigation variables are statistically insignificant in the models predicting understatements. These results suggest auditors' recent experiences of litigation primarily affect the incidence of overstatements rather than understatements.

## 5.2. Abnormal accruals

Our main results on financial reporting quality are obtained using data on accounting misstatements. We feel this is better than using abnormal accruals for three reasons. First, there are strong conceptual arguments and clear evidence linking lawsuits to GAAP violations (Palmrose and Scholz, 2004; Hennes et al., 2008; Cheng et al., 2013). Whereas restatements are issued due to non-GAAP reporting (Palmrose and Scholz, 2004), abnormal accruals often reflect within-GAAP earnings management for which auditors are not liable (Ettredge et al., 2010). Second, the abnormal accruals metric is a notoriously noisy measure of financial reporting quality (e.g., Dechow et al., 2010). Third, computation of the abnormal accruals variable requires data from *COMPUSTAT* which greatly reduces the size of our sample. In contrast, restatements data are available for all SEC registrants from *Audit Analytics*.

Nevertheless, prior studies find auditors are more likely to be sued when their clients report income-increasing abnormal accruals (Lys and Watts, 1994; Heninger, 2001). Therefore, it is useful to test whether there is any evidence linking an auditor's past experience of litigation to future signed abnormal accruals. We estimate signed abnormal accruals ( $ab\_acc_{it}$ ) using the residuals from the cross-sectional Jones (1991) model. The data required from *COMPUSTAT* to estimate abnormal accruals causes the number of audit firms in our sample to drop from 433 to just 215. We re-estimate the models in Table 6 after replacing the misstatement dependent variable with signed abnormal accruals ( $ab\_acc_{it}$ ). Consistent with companies having less aggressive financial reporting after their audit firms are sued, we find negative coefficients on all eight of the litigation variables. The coefficients are statistically significant for three of the four audit firm litigation variables and for two of the four audit office litigation variables. In sum, we find some corroborating evidence when abnormal accruals are used as the measure of financial reporting quality. However, the results are more compelling when we use accounting misstatements.<sup>17</sup>

## 5.3. Changes in auditors' client portfolios

Client characteristics are unlikely to explain our results for two reasons. First, our models are estimated using clients *not* involved in litigation against their auditors and the characteristics of these non-suing clients are not associated with auditors' past experiences of litigation (see Appendix). Second, our two litigation residual variables ( $audfirm\_lit\_resid_{it-3,t-1}$  and  $audoff\_lit\_resid_{it-3,t-1}$ ) are, by construction, orthogonal to these client characteristics.

Nevertheless, the characteristics of auditors' client portfolios could change after auditors are sued. Therefore, even if auditors do not take steps to improve, a change in financial reporting quality might be observed if sued (non-sued) auditors become more (less) careful with respect to the clients they audit. Consistent with this, prior studies find high litigation risk is associated with an increased frequency of auditor resignations (Krishnan and Krishnan, 1997; Shu, 2000). Therefore, we re-estimate our models after dropping all observations in which companies change auditor. Our results are virtually unchanged. This is perhaps unsurprising as auditor change observations account for only a small proportion of our sample. Because our results hold even after dropping auditor change observations, our results are unlikely to be attributable to changes in auditors' client portfolios.<sup>18</sup>

## 6. Conclusions

Prior studies in the audit literature investigate the determinants of litigation against audit firms. Our study is different because we argue that the experience of being sued can convey new information to an auditor causing a change in the auditor's behavior. In particular, the experience of being sued (not sued) can lead to higher (lower) financial reporting subsequent to the litigation. Consistent with this prediction, we find misstatements of the audited financial statements

<sup>17</sup> Similarly, the results are suggestive rather than compelling when we use alternative methods for estimating abnormal accruals. Using the modified Jones model of Dechow et al. (1995), we find significant negative coefficients for all four of the audit firm litigation variables and for two of the four audit office litigation variables. Using the modified model of Francis et al. (2005) and the non-linear model of Ball and Shivakumar (2006), we find a significant negative coefficient for one of the four audit firm litigation variables and for all four of the audit office litigation variables.

<sup>18</sup> We drop auditor dismissals as well as auditor resignations because both types of auditor change could alter the riskiness of an audit firm's client portfolio. Our results also continue to hold if we only drop auditor resignations.

occur less (more) often after auditors are sued (not sued). These results hold when litigation is measured at both the audit firm level and the audit office level. Moreover, the office-level and firm-level effects are incremental to each other. We conclude that financial reporting quality is affected by auditors' past experiences of litigation and these effects are stronger at the offices accused of sub-standard auditing. These findings are important because they further our understanding about how auditor litigation affects financial reporting quality.

## Appendix

The misstatement models are estimated using clients not involved in lawsuits against their auditors. To ensure our litigation variables do not inadvertently capture the risk characteristics of these non-suing clients, we construct litigation variables that are orthogonal to client characteristics. Specifically, we regress auditors' litigation rates on the characteristics of auditors' non-suing clients and we take the residuals from these models. The mean residuals are then computed at the audit firm level ( $audfirm\_lit\_resid_{it-3,t-1}$ ) and the audit office level ( $audoff\_lit\_resid_{it-3,t-1}$ ) for the previous three years.

The litigation models are shown in Eqs. (A.1) and (A.2):

$$audfirm\_nlit/ncli_{it} = \alpha_0 + \alpha_1 Big4_i + \alpha_2 mlna_{it} + \alpha_3 \%Exchg_{it} + \alpha_4 \%loss_{it} + \alpha_5 \%UScli_{it} + \alpha_6 \%bankruptcy_{it} + \alpha_7 \%Goingcon_{it} + \alpha_8 mgrowth_{it} + Industry\ effects + Year\ dummies + e_{it} \quad (A.1)$$

$$audoff\_nlit/ncli_{it} = \alpha_0 + \alpha_1 Big4_i + \alpha_2 mlna_{it} + \alpha_3 \%Exchg_{it} + \alpha_4 \%loss_{it} + \alpha_5 \%UScli_{it} + \alpha_6 \%bankruptcy_{it} + \alpha_7 \%Goingcon_{it} + \alpha_8 mgrowth_{it} + Industry\ effects + Year\ dummies + e_{it}, \quad (A.2)$$

**Table A.1**

Audit firms' litigation rates and the characteristics of their non-suing clients.

$$audfirm\_nlit/ncli_{it} = \alpha_0 + \alpha_1 Big4_i + \alpha_2 mlna_{it} + \alpha_3 \%Exchg_{it} + \alpha_4 \%loss_{it} + \alpha_5 \%UScli_{it} + \alpha_6 \%bankruptcy_{it} + \alpha_7 \%Goingcon_{it} + \alpha_8 mgrowth_{it} + Industry\ effects + Year\ dummies + e_{it}. \quad (A.1)$$

Sample period	(1) 2001–2003	(2) 2002–2004	(3) 2003–2005	(4) 2004–2006	(5) 2005–2007	(6) 2006–2008	(7) 2007–2009
<i>Big4<sub>i</sub></i>	0.014** (2.36)	0.017*** (3.71)	0.013*** (8.40)	0.014*** (7.32)	0.015*** (3.83)	0.014*** (4.26)	0.014*** (3.05)
<i>mlna<sub>it</sub></i>	-0.003 (-0.90)	-0.003 (-1.42)	-0.001 (-1.41)	-0.001 (-1.62)	-0.003 (-1.19)	-0.002 (-0.94)	-0.004 (-1.21)
<i>%Exchg<sub>it</sub></i>	0.004 (0.77)	0.004 (0.85)	0.002 (0.71)	0.002 (0.90)	0.009 (1.16)	0.006 (0.79)	0.009 (0.96)
<i>%loss<sub>it</sub></i>	-0.003 (-0.43)	-0.012 (-1.63)	-0.005 (-1.13)	-0.006 (-1.25)	0.008 (0.88)	0.009 (0.98)	0.006 (0.56)
<i>%UScli<sub>it</sub></i>	0.000 (0.01)	0.006 (0.73)	0.002 (0.32)	0.003 (0.43)	0.004 (1.09)	0.008 (1.20)	0.009 (1.33)
<i>%bankruptcy<sub>it</sub></i>	0.003 (0.61)	-0.005 (-1.18)	-0.008* (-1.93)	-0.012* (-1.77)	-0.011 (-1.51)	-0.022 (-1.14)	-0.014 (-1.25)
<i>%Goingcon<sub>it</sub></i>	-0.007 (-1.04)	0.000 (0.01)	0.005 (1.00)	0.004 (0.85)	-0.010 (-0.94)	-0.004 (-0.33)	-0.007 (-0.52)
<i>mgrowth<sub>it</sub></i>	0.000 (0.62)	0.000 (0.61)	-0.000 (-0.71)	0.000 (0.57)	0.000 (0.35)	0.000 (0.93)	-0.000 (-0.35)
<i>Industry dummies?</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year dummies?</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of audit-firm years	762	880	932	982	1,021	1,021	950
R-squared (%)	1.47	1.90	1.51	1.36	2.24	1.72	1.72

The standard errors are adjusted for time-series dependence by clustering on each audit firm (*t*-statistics in parentheses).

### Variable definitions

$audfirm\_nlit/ncli_{it}$  = the number of lawsuits against audit firm *i* in year *t*, scaled by the number of public company audits by audit firm *i* in year *t*.  $Big4_i = 1$  if audit firm *i* is one of the Big 4 audit firms, 0 otherwise.  $mlna_{it}$  = mean value of the log of total assets for all of audit firm *i*'s clients in year *t*.  $\%Exchg_{it}$  = the proportion of audit firm *i*'s clients in year *t* traded on public stock exchange.  $\%loss_{it}$  = the proportion of audit firm *i*'s clients in year *t* reporting losses.  $\%UScli_{it}$  = the proportion of audit firm *i*'s clients in year *t* that are US companies.  $\%bankruptcy_{it}$  = the proportion of audit firm *i*'s clients in year *t* going bankrupt.  $\%Goingcon_{it}$  = the proportion of audit firm *i*'s clients in year *t* receiving going concern opinions.  $mgrowth_{it}$  = the mean value of the growth of sales revenue from year *t* - 1 to year *t* for all of audit firm *i*'s clients.

\* Statistically significant at the 10% level (two-tailed).

\*\* Statistically significant at the 5% level (two-tailed).

\*\*\* Statistically significant at the 1% level (two-tailed).

**Table A.2**

Audit offices' litigation rates and the characteristics of their non-suing clients.

$$\text{audoff\_nlit}/\text{ncli}_{it} = \alpha_0 + \alpha_1 \text{Big4}_i + \alpha_2 \text{mlnta}_{it} + \alpha_3 \% \text{Exchg}_{it} + \alpha_4 \% \text{loss}_{it} + \alpha_5 \% \text{UScli}_{it} + \alpha_6 \% \text{bankruptcy}_{it} + \alpha_7 \% \text{Goingcon}_{it} + \alpha_8 \text{mgrowth}_{it} + \text{Industry effects} + \text{Year dummies} + e_{it}. \quad (\text{A.2})$$

Sample period	(1) 2001–2003	(2) 2002–2004	(3) 2003–2005	(4) 2004–2006	(5) 2005–2007	(6) 2006–2008	(7) 2007–2009
<i>Big4<sub>i</sub></i>	0.003 (0.80)	0.006** (2.06)	0.008* (1.80)	0.015* (1.88)	0.027** (2.29)	0.024** (2.06)	0.021** (2.53)
<i>mlnta<sub>it</sub></i>	0.004*** (2.71)	0.001 (1.35)	0.001 (0.49)	0.001 (0.72)	0.002 (0.48)	0.003 (0.79)	–0.000 (–0.01)
<i>%Exchg<sub>it</sub></i>	0.000 (0.18)	–0.001 (–0.20)	0.001 (0.15)	0.003 (0.57)	0.005 (0.80)	0.004 (0.57)	0.009 (1.61)
<i>%loss<sub>it</sub></i>	0.005 (0.72)	–0.006 (–1.08)	–0.006 (–0.84)	0.001 (0.07)	0.033 (1.12)	0.030 (1.26)	0.029 (1.35)
<i>%UScli<sub>it</sub></i>	–0.010 (–0.95)	0.002 (0.20)	0.003 (0.33)	0.001 (0.09)	–0.007 (–0.65)	–0.007 (–0.59)	–0.003 (–0.36)
<i>%bankruptcy<sub>it</sub></i>	–0.025* (–1.69)	–0.012 (–1.58)	–0.005 (–0.58)	0.001 (0.04)	–0.034 (–0.86)	–0.071 (–1.52)	–0.001 (–0.02)
<i>%Goingcon<sub>it</sub></i>	0.009 (1.30)	0.007** (2.21)	0.004 (1.05)	0.011 (1.29)	0.001 (0.16)	0.017 (1.10)	0.003 (0.26)
<i>mgrowth<sub>it</sub></i>	0.001 (0.66)	–0.001** (–2.15)	–0.000** (–2.27)	–0.000 (–0.25)	–0.000 (–0.75)	–0.000 (–0.31)	–0.000 (–1.29)
<i>Industry dummies?</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year dummies?</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of audit-office years	1,972	2,154	2,251	2,382	2,475	2,479	2,349
R-squared (%)	2.68	1.80	1.49	0.80	1.65	1.79	2.12

The standard errors are adjusted for time-series dependence by clustering on each audit office (*t*-statistics in parentheses).

**Variable definitions**

*audoff\_nlit/ncli<sub>it</sub>* = the number of lawsuits against audit office *i* in year *t*, scaled by the number of public company audits by audit office *i* in year *t*. *Big4<sub>i</sub>* = 1 if audit office *i* belongs to one of the Big 4 audit firms, 0 otherwise. *mlnta<sub>it</sub>* = mean value of the log of total assets for all of audit office *i*'s clients in year *t*. *%Exchg<sub>it</sub>* = the proportion of audit office *i*'s clients in year *t* traded on a public stock exchange. *%loss<sub>it</sub>* = the proportion of audit office *i*'s clients in year *t* reporting losses. *%UScli<sub>it</sub>* = the proportion of audit office *i*'s clients in year *t* that are US companies. *%bankruptcy<sub>it</sub>* = the proportion of audit office *i*'s clients in year *t* going bankrupt. *%Goingcon<sub>it</sub>* = the proportion of audit office *i*'s clients in year *t* receiving going concern opinions. *mgrowth<sub>it</sub>* = the mean value of the growth of sales revenue from year *t*–1 to year *t* for all of audit office *i*'s clients.

\* Statistically significant at the 10% level (two-tailed).

\*\* Statistically significant at the 5% level (two-tailed).

\*\*\* Statistically significant at the 1% level (two-tailed).

The dependent variable in Eq. (A.1) (*audfirm\_nlit/ncli<sub>it</sub>*) equals the number of lawsuits against audit firm *i* in year *t*, scaled by the number of public company audits by audit firm *i* in year *t*. The dependent variable in Eq. (A.2) (*audoff\_nlit/ncli<sub>it</sub>*) is defined analogously at the audit office level.

Eqs. (A.1) and (A.2) are estimated using seven three-year windows: 2001–2003, 2002–2004, 2003–2005, 2004–2006, 2005–2007, 2006–2008, 2007–2009. For example, positive residuals from the model estimated over the period 2001–2003 would imply an auditor in 2004 had experienced abnormally high litigation during the previous three years. Similarly, misstatements in 2005, 2006, 2007, 2008, 2009, and 2010 are predicted using values of *audfirm\_lit\_resid<sub>it-3,t-1</sub>* and *audoff\_lit\_resid<sub>it-3,t-1</sub>*, which are obtained from estimating (A.1) and (A.2) for the period 2002–2004, 2003–2005, 2004–2006, 2005–2007, 2006–2008, and 2007–2009, respectively.

The independent variables in Eqs. (A.1) and (A.2) capture the characteristics of auditors' non-suing clients. This makes our analysis different from prior studies examining the characteristics of companies involved in audit litigation (St. Pierre and Anderson, 1984; Palmrose, 1987; Lys and Watts, 1994; Carcello and Palmrose, 1994; Pratt and Stice, 1994; Dunbar et al., 1995; Bonner et al., 1998; Heninger, 2001). In addition, Eqs. (A.1) and (A.2) are estimated using the audit-firm-year (audit-office-year) rather than the company-year as the unit of observation because the dependent variables are measured at the audit-firm level (*audfirm\_nlit/ncli<sub>it</sub>*) and the office level (*audoff\_nlit/ncli<sub>it</sub>*), respectively.

The *Big4<sub>i</sub>* indicator equals one if audit firm *i* (office *i*) is a Big 4 auditor, zero otherwise. The remaining variables control for client portfolio characteristics that could potentially be associated with an auditor's litigation rate. We control for client size and client growth using the mean value of the log of total assets for auditor *i*'s clients in year *t* (*mlnta<sub>it</sub>*) and the mean growth in sales revenue (*mgrowth<sub>it</sub>*). We control for the percentage of auditor *i*'s clients listed on a stock exchange (*%Exchg<sub>it</sub>*) and the percentage that are US companies (*%UScli<sub>it</sub>*). We control for the proportion of companies reporting losses (*%loss<sub>it</sub>*), the proportion receiving going-concern opinions (*%Goingcon<sub>it</sub>*), and the proportion filing for bankruptcy (*%bankruptcy<sub>it</sub>*).



Finally, we control for industry effects (*i.e.*, the proportion of auditor *i*'s clients that belong to each industry sector) and we include indicator variables for each year.<sup>19</sup>

The firm-level results are reported in Table A.1 and the office-level results are reported in Table A.2.<sup>20</sup> The *Big4<sub>*i*</sub>* coefficients are generally positive and significant indicating that Big 4 auditors are sued more often than non-Big 4 auditors. This is consistent with the Big 4 attracting more lawsuits due to their deep pockets (Dye, 1993). Results for the client portfolio variables are generally insignificant. This suggests the observed litigation rates (*audfirm\_nlit/ncli<sub>*it*</sub>* and *audoff\_nlit/ncli<sub>*it*</sub>*) are not proxies for the riskiness of auditors' non-suing clients.

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<sup>19</sup> The inferences remain unchanged if we include in Eqs. (A.1) and (A.2) the proportion of auditor *i*'s clients that issue misstated accounts.

<sup>20</sup> In Table A1 the dependent variable is measured using SEC lawsuits in which the audit offices can be identified. However, we obtain very similar results if the dependent variable is measured using both SEC and non-SEC lawsuits.

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