

Once Bitten Once Shy: Learning or Conservatism after Audit Failure?

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Once Bitten Once Shy: Learning or Conservatism after Audit Failure?

Abstract

I examine how audit firms implicated in large audit failures behave subsequently. Using a difference-in-difference approach, I find that after a large audit failure, the implicated audit firm shows conservative behavior in audit outcomes. I further examine whether this conservative behavior leads to more informative audit reports due to *learning* or to less accurate audit reports due to *undue conservatism*. I find that implicated audit firms are less accurate and are more likely to issue going-concern opinion to clients who do not subsequently fail suggesting a conservative bias that reduces informativeness of audit reports. Further, supporting the undue conservatism hypothesis, I find that the changes in audit outcomes reverse after a year. Exploring the sources of undue conservatism, I posit that this response could be over-reaction of the implicated audit firm due to availability bias. In support of availability bias, I find that within the implicated audit firm, the reaction is strongest for audit offices located geographically closest to the implicated office, and for auditors with clients in the same industry as the failed client. Overall, these results provide evidence that following large audit failures, the increased media and regulatory scrutiny can steer away audit firms from learning and result in unduly conservative behavior. This study also contributes to the literature documenting systematic biases in auditor behavior.

1. Introduction

Large audit failures although detrimental to the economy, have historically led to positive audit outcomes, either through establishment of new audit standards¹ or through passage of new laws such as Sarbanes Oxley Act which established PCAOB to provide independent oversight of auditors. Recent evidence on auditor learning after litigation experience (Lennox and Li 2014) also suggests that large audit failures may lead to improved audit quality through identification and rectification of errors. However, following large audit failures, increased media scrutiny, higher litigation risk and greater reputational concerns could potentially lead to conservative behavior by auditors and may reduce the quality of audits. For example, Cahan and Zhang (2006) argue that following Arthur Andersen's demise, successor auditors required conservative accounting from ex-Andersen clients to mitigate litigation risk. In this paper, I investigate how an audit firm that is implicated in a large audit failure ("implicated audit firm") behaves subsequently in terms of audit outcomes. I further explore whether the change in audit outcomes leads to higher audit quality due to *learning*, or lower audit quality due to *excessive conservatism*.

I hypothesize that following large audit failures, implicated audit firms will become conservative. This conservatism could occur because of strategic reasons of increased litigation and reputation risk, or alternatively due to a cognitive reason namely availability heuristic. A large audit failure could raise concerns amongst investors and regulators about the credibility of financial statements of other clients of the implicated auditor, potentially leading to higher threat of litigation. To reduce this threat of litigation, auditors could report conservatively (Cahan and Zhang 2006; Kaplan and Williams 2012). Large audit failures hurt the reputation of the audit firm involved (Weber, Willenborg, and Zhang 2008; Skinner and Srinivasan 2012). To counteract the effect of loss of reputation, auditors could choose to report conservatively. Beyond strategic reasons, behavioral research suggests that auditors will become conservative after large audit failures due to the use of availability heuristic by the auditors. Availability heuristic is a heuristic used to estimate the probability of an event based on the ease with which similar events can be recalled (Tversky and Kahneman 1973). The vividness² and increased press coverage³ of large audit failures would make these events more salient and easily recallable to the auditors. Hence, this heuristic would lead

¹ Anecdotally, the McKesson & Robbins fraud in 1938 led to the first statement on audit procedures which required auditors to physically verify inventory and directly confirm receivables with debtors; ZZZZ Best fraud in 1988 led to Auditing Standards Board issuing nine new auditing standards which were designed to reduce the incidence of fraudulent financial reporting including evaluating accounting estimates and internal controls (Clikeman 2010)

² Hirshleifer at a keynote address of EFMA(2007) mentions that the events such as Enron, together with other accounting frauds were so vivid that it created an intense pressure for a regulatory response (Hirshleifer 2008).

³ Number of newspaper articles in the one year surrounding Enron event was -----

auditors to over-estimate the probability of audit failures occurring in future thereby making them conservative. In support of this argument, prior research finds that negative press coverage of a client (Joe 2003) and proximity to SEC regional office (DeFond, Francis, and Hallman 2015) causes auditors to over-react and issue more going-concern opinions than warranted. Thus, both strategic and cognitive reasons predict that implicated audit firms will become conservative after large audit failures.

I test the conservatism hypothesis using a difference-in-difference strategy where I compare the change in audit outcomes of implicated audit firm, to that of non-implicated audit firm. I perform all tests at the audit firm level and the audit office level. At the audit office level, I check if the implicated audit office has any incremental change in audit outcomes as compared to rest of the firm. Consistent with prior literature, I use three measures of audit quality – signed discretionary accruals (Chung and Kallapur 2003), propensity to misstate (Lennox and Li 2014), and going-concern opinion (DeFond, Francis, and Hallman 2015). For further tests, I use going-concern opinion as the main measure of audit quality as it has the benefit of isolating the auditor effect from managerial effect since managers do not have any input in the audit opinion. I identify large audit failures as top-100 security class action settlements against an audit client⁴. Selecting the lawsuits that have had a restatement and an SEC investigation⁵ from the top-100, results in a list of 33 large audit failures. Using a sample from 2001 – 2014, I find that following large audit failures, both the implicated audit firm and the implicated audit office have a higher propensity to issue going concern opinion. At the implicated audit office, the propensity to issue going concern opinion increases by 3.7 percentage points. I also find that the propensity to misstate decreases and the abnormal accruals decrease by 1.2 percent of the total assets. Together, the evidence suggests that implicated auditors become conservative after large audit failures.

I next evaluate whether auditor conservatism improves audit quality. Audit quality would improve if the auditor learns from his experience of failed clients and utilizes that knowledge to provide more precise and accurate audit opinions.⁶ Alternatively, audit quality could reduce if implicated auditors become unduly conservative. Undue conservatism can occur for two reasons. First, due to an increase in reputation and litigation risk, the auditors may rationally respond by becoming conservative beyond a level justified by the firm fundamentals (Morris 2001). Second,

⁴ I use security class action lawsuits against clients instead of audit firms because the bar to successfully sue auditors is very high even when the client is accused of accounting fraud (Coffee 2006; Donelson and Prentice 2012).

⁵ The list of top-100 class action settlements gives us the largest corporate wrongdoings. However, to get to the ones driven by accounting reasons, I use the criteria of them having a restatement. Each of these cases has been investigated by the SEC.

⁶ In a recent paper, Lennox and Li (2014) argue that auditors learn from their experience of past litigation, and find that those experiences influence an auditor's future actions.

availability heuristic also suggests that auditors would become excessively conservative due to an over-estimation of the probability of an audit failure occurring.⁷ To distinguish between learning and conservatism, I check the accuracy of the going concern opinion as mapped to next-period bankruptcy (DeFond, Francis, and Hallman 2015). Learning suggests that auditors will become more accurate in issuing going concern opinions – have lesser Type I (incorrectly issuing GC to firms that don't go bankrupt) and Type II errors (failing to issue GC to firms that go bankrupt). However, if auditors are becoming excessively conservative, I expect that Type I errors will increase with a decrease in Type II errors. I find that Type I error increases by 3.16 percentage points and Type II errors decreases suggesting that auditors are becoming excessively conservative. I also check the length of the effect to differentiate between learning and excessive conservatism. Learning suggests that the change in audit outcomes will be long-term, however if it is excessive conservatism, I expect that the change will be short-lived. Supporting excessive conservatism, I find that the change in audit outcomes only lasts for a year after the event.

The last set of analyses aim to discriminate between strategic and cognitive explanations for auditors' excessive conservatism after large audit failures. Since availability heuristic hinges on the ease with which an example of audit failure can be recollected (Tversky and Kahneman 1973), I focus on factors that impact recall – geographic distance from audit failure, time since the audit failure, and social distance from the audit failure measured by being in the same industry as audit failure. First, availability heuristic suggests that within the implicated audit firm, audit offices located closer to the failed audit office will show a greater change in audit quality than those farther away due to the ease with which they can recollect an example of audit failure. Second, the effect of availability heuristic should reduce with time as auditors will find it more difficult to recall instances of audit failure as time lapses. Finally, the recollection of an audit failure would be easier for auditors that had clients in the same industry as the audit failure.

In support of availability heuristic, I find that within the implicated audit firm, audit offices closer to the audit failure issue more going concern opinions than audit offices farther away. The change in audit quality can be seen in the form of ripples, where the audit offices in the ripple closest to audit failure (<50km from event) show the maximum increase in going concern issuing propensity, while those in subsequent ripples (50-100km, 100-150km) show relatively lower propensity to issue going concern opinion. I also find that the change in audit outcomes lasts only for a year when the event is most salient in the minds of auditors. Finally, I find that within the implicated audit firm, the

⁷ As an example for availability heuristic, Tversky and Kahneman (1973) refer to the phenomenon of the temporary rise in the subjective probability of an accident after having seen a car overturned by the side of the road.

greatest response is from auditors with clients in the same industry as the audit failure. The geography, industry and time results suggest that availability bias plays a significant role in determining auditor's response after large audit failures. However, the results do not rule out the strategic hypothesis; that is, the finding that a cognitive bias is a driver of auditor behavior does not negate strategic explanation because both effects can occur simultaneously. They do, however, offer evidence that behavioral heuristics plays a significant role in auditor's decision making

Using the setting of large audit failures to study whether auditors learn or become conservative has several advantages. First, there is an expectation of learning by the audit firm as the audit failures reveal deficiencies in the audit processes and highlight personnel issues.⁸ Second, there is an increase in reputation and litigation risk which may incentivize auditors to become conservative (Geiger, Raghunandan, and Rama 2005). Third, the increased media coverage and vividness of these audit failure makes it a good setting to look for behavioral biases if any exist (Hirshleifer 2008).

This paper contributes to two strands of literature. First it contributes to literature analyzing the after-effects of an audit failure. Prior literature looks at the response of the market to audit failure (Firth 1990; Weber, Willenborg, and Zhang 2008; Chaney and Philipich 2002), and response of auditing profession as a whole (Geiger, Raghunandan, and Rama 2005; Feldmann and Read 2010). In contrast, this paper looks at responses of auditors within the implicated audit firm. I find that within the implicated audit firm auditors become conservative at the cost of audit quality. This provides support to the concern voiced in DeFond and Zhang (2014) that conservatism may be excessive and unwarranted.

Second, this paper contributes to the literature on psychological biases impacting auditor judgments. Prior literature (see Koch and Wüstemann 2009 for review) has used experimental methodology showing that heuristics and biases affect auditor judgments in specific tasks. To the best of my knowledge, this is one of the first papers to use archival methodology to establish that auditors are prone to biases. The only other paper to document availability bias in auditors is a working paper by DeFond, Francis, and Hallman (2015) which shows that non-big 4 audit offices closer to SEC regional offices issue more unwarranted going-concern reports due to availability bias. They do not find any evidence of availability bias in Big-4 auditors. In contrast, I find that Big-4 auditors are also prone to availability bias following a large audit failure. One possible reason for the

⁸ For example, audit failure in Xerox, revealed that KPMG did not question the client's justification for departure from GAAP. They also did not have processes to document circumstances surrounding change of an audit partner. While settling with the SEC KPMG agreed to take remedial actions for these issues (SEC 2005).

difference in the finding could be that the large audit failures are so prominent (Hirshleifer 2008) that even the controls put in place by big-4 auditors is insufficient to overcome the bias.

2. Hypothesis Development

2.1 Large Audit Failures and Audit Outcomes

Large audit failures such as Enron and HealthSouth could increase the litigation risk of auditors. Lys and Watts (1994) note that three factors are necessary for a lawsuit against an auditor – existence of cause, discovery of cause, and net benefits to the suit. They further argue that existence of cause is determined by three factors – the probability of misstatement, probability of audit failure, and the existence of loss for the plaintiff. As pointed out in Cahan and Zhang (2006), large audit failures could increase the litigation risk for the implicated auditor in two ways. First, if the real audit quality of the implicated auditor was lower, then probability of misstatements for other clients of the implicated auditor would increase, i.e. increase the probability of existence of cause. Second, if investors believe that the audit quality of implicated auditor is lower, they could scrutinize the financial statements of other clients of the implicated auditor in more detail. This could increase the probability of detecting problems in the financial statements, i.e. probability of discovery of cause is increased. To counteract the threat of litigation, auditors can choose a more conservative accounting choice (Cahan and Zhang 2006; Kaplan and Williams 2012). Along with increased litigation risk, auditor's reputation may also get hit following large audit failures. Skinner and Srinivasan (2012) and Weber, Willenborg, and Zhang (2008) find that auditors suffer significant loss to their reputation following large accounting scandals. This reputation loss is seen in the form of defection of clients from the auditor, and negative market reaction to other clients of the auditor. As a measure to build reputation, auditors may choose conservative accounting choice.

Beyond strategic reasons of litigation and reputation risk, cognitive factors could also cause implicated auditors to become conservative. One such cognitive factor is availability heuristic. Availability heuristic is a mechanism to estimate frequency or probability of an event using the ease with which instances or associations can be brought to mind (Tversky and Kahneman 1973). This ease of retrieval is affected by factors such as proximity, salience, personal experience, and recency of an event (Kahneman 2011). Bordalo, Gennaioli, and Shleifer (2012) in their paper argue that people may overweight the downside of a risky event when it is salient and may act in a risk-averse manner. Considering that large audit failures are vivid and salient events, implicated auditors would over-estimate the probability of audit failure occurring and behave in risk-averse manner leading to conservative accounting choices. This leads to my first hypothesis:

H1: Implicated audit firms become conservative in audit outcomes after large audit failures.

However, there are two reasons why the implicated audit firms may not become conservative. First, even though choosing conservative accounting can help auditors rebuild reputation and provide protection against potential litigation, it levies certain costs on the auditor. Managers do not prefer conservative accounting choices and hence the threat of being dismissed increases for an auditor if he is conservative (DeFond and Subramanyam 1998; Lennox 2000). Choosing income decreasing accruals, and issuing going-concern reports are two ways auditors can become conservative. Auditors are loathe to issue going concern report because it could become a self-fulfilling prophecy, whereby the client does not get access to financing due to the going-concern report issued that ultimately leads the client to fail (Kaplan and Williams 2012). Thus, when deciding to go for a conservative accounting choice, auditors have to weigh the benefits of future litigation protection and reputation restoration against the cost of loss of clients.

Second, since all the large audit failures in my sample occur in large audit firms, availability bias may not even operationalize due to strong standardized and uniform opinion formulation procedures (DeFond, Francis, and Hallman 2015). Big-4 accounting firms have developed products such as Ernst and Young's *Global Accounting and Auditing Information Tool (GAIT)* to help guide clarification and implementation of GAAP (Francis, Pinnuck, and Watanabe 2013). The existence of auditor style (Francis, Pinnuck, and Watanabe 2013) points to the notion that the audit firms are uniform in application of rules across all their offices. Anecdotal evidence in (Dichev et al. 2013)⁹ mentions that interpretation of FASB's rules comes from the national head office rather than local audit office, and that audit firms have developed a centralized authority model, where decisions are made at the centre and passed on to the local audit offices. Due to these standardized and uniform opinion formulation procedures in the large audit firms, I do not expect that they would suffer from any cognitive biases, and hence may not become conservative.

2.2 Large audit failures and Audit Quality: Learning versus Undue Conservatism

I next evaluate whether the change in audit outcomes improves audit quality. A key role of auditors is to transmit important but subjective information to investors. If auditors become unduly conservative in their exercise of professional judgment, financial reports will become less informative (Grout et al. 1994). DeFond and Zhang (2014) in their review paper caution researchers

⁹ "the big audit firms are not passing authority downstream to the regional headquarters or onto the actual auditors like they used to... Interpretation of these rules in the accounting firms comes from high above now rather than from the field"
 "... earlier you could work with your local accounting firm, your local partner and accomplish things. Now pretty much everything goes up to their think tank at national."

against interpreting greater GCs, lower accruals and fewer restatements as a measure of audit quality. They argue that these indicators may also represent excessive auditor conservatism, which reduces audit quality. Hence it becomes important to understand whether the change in audit outcomes can be attributed to learning or to undue conservatism. To answer this research question, I develop predictions about the accuracy of going concern opinion offered by the auditor.

Large audit failures could reveal deficiencies which were specific to a given audit, or reveal more broader concerns about the audit process such as quality of audit personnel in the implicated audit office, or inadequacies in the quality control procedures of the implicated audit firm. For example, report of the investigation into Worldcom fraud¹⁰ specifically details flaws in Andersen's audit approach¹¹, such as failing to design tests to detect improperly capitalized expenses. Under the rational learning framework (L. E Blume, Bray, and Easley 1982; Lawrence E Blume and Easley 1982; Kalai and Lehrer 1993), the new information revealed by audit failure will make the audit firm downgrade its assessment of its own quality, and increase the probability of such a failure occurring again. Thus, after large audit failures, audit firms will take steps to mitigate the risk of such a failure happening again. Corroborating this logic, Lennox and Li (2014) find that misstatements of audited financial statements occur less often after auditors are sued. Even though implicated auditors face litigation and reputation risk, if they are learning from their experience, I expect that they will issue more "appropriate" going concern opinions, i.e. both Type I and Type II errors will decrease.

Alternatively, implicated auditors could become excessively conservative due to both strategic and cognitive reasons. Strategically, increased issuance of going-concern opinion protects auditors from threat of litigation (Kaplan and Williams 2012), and helps protect and rebuild their reputation (Morris 2001). As a result, implicated auditors could rationally become excessively conservative. Cognitively, if availability bias is at work, auditors will over-estimate the probability of audit failure reoccurring and will become excessively conservative. In both these cases, the auditors will issue more going concern opinion than necessary, and accuracy of audit report will decrease. I expect that there will be an increase in Type I errors (issuing going concern opinion when the client doesn't go bankrupt subsequently). Also, since the auditor is becoming excessively conservative, it is possible that they catch some genuine bankruptcies. Hence I expect that Type II errors will decrease. The discussion above leads me to the second hypothesis regarding errors in going-concern opinion:

¹⁰ http://www.sec.gov/Archives/edgar/data/723527/000093176303001862/dex991.htm#ex991902_63

¹¹ An example of deficiency as mentioned in the report is: "although Andersen received a schedule showing that \$133,000,000 in revenue was recognized for "minimum deficiencies" during the third quarter of 2000, we did not find any evidence that Andersen analyzed this amount. Even when Andersen asked questions about unusual entries of large, round-dollar amounts, it apparently did not go beyond asking. Despite Andersen's SMART tool rating Worldcom as "high risk" between 1999 and 2001, there was no apparent change in Andersen's audit approach to prevent fraud."

H2A (Learning Hypothesis): If implicated auditors become conservative due to learning, I expect that both Type I and Type II errors will decrease.

H2B (Undue Conservatism Hypothesis): If implicated auditors become unduly conservative due to strategic or cognitive reasons, I expect that Type I errors will increase, and Type II errors will decrease.

To further check if the change in audit outcomes is due to learning or not, I test whether the change in auditor behavior is temporary or permanent. If the audit firms are truly learning and implementing procedural changes or providing training to their personnel, I expect that the change in auditor behavior will be long lasting. However, if auditors become unduly conservative, I expect that the change will be temporary. My third hypothesis is as follows:

H3A (Learning Hypothesis): If implicated auditors are becoming conservative due to learning, I expect the change in auditor behavior to be long lasting

H3B (Undue Conservatism Hypothesis): If implicated auditors become unduly conservative due to strategic or cognitive reasons, I expect that the change in auditor behavior will be temporary.

2.3 Strategic motives versus Cognitive Motives:

I further explore whether undue conservatism is driven by strategic motives – reputation and litigation risk, or by cognitive reason of availability bias. Since availability bias depends on ease with which large audit failures can be recollected, I look for factors that impact recall. Geographic proximity to an audit failure can make the event more vivid to auditors. Also, as geographic proximity makes direct interactions easier and more frequent (Lomi 1995), I expect that audit offices located closer to audit failure will react much more than audit office located farther away. Similarly, availability bias operates strongly when agents are socially proximate to the event. I measure social proximity by industry affiliation of the auditor. I expect that within the audit firm, auditors who serve clients in the same industry as audit failure will react stronger than rest of the audit firm.

This discussion leads me to two hypotheses:

H4: Within the implicated audit firm, geographically proximate audit offices react more than farther offices.

H5: Within the implicated audit firm, auditors with clients in the same industry as audit failure will react more than rest of the audit firm.

3. Sample and empirical measures

3.1 Sample

For the analyses, I use data obtained from intersection of Compustat and Audit Analytics. Audit analytics opinion database contains the audit office locations, and client headquarters location starting from year 2000. Prior to year 2000, audit analytics database contains very few observations. I begin with observations in Audit analytics database for firms with fiscal year end starting January 1, 2000 till October 31, 2014. As shown in the table below, I obtain 236,185 observations from audit analytics. After merging with Compustat, I lose 128,566 observations. Eliminating financial firms reduces the sample by further 30,012 observations. There are 178 firms which are involved in fraud which are dropped. After eliminating missing observations for accrual model (28,148), I am left with 49,281 observations.

For the going concern model, I start with the observations used in the accrual model. I do this to ensure that both models are estimated on a similar sample. As in prior research(DeFond, Raghunandan, and Subramanyam 2002; Mutchler, Hopwood, and McKeown 1997), I limit the analysis to financially distressed firms with the propensity to issue first time going concern opinion. Financially distressed firms identified as those that report a loss or negative operating cash flow are retained. This eliminates 26,875 observations. I eliminate 2557 observations which are repeat going concern opinions, and 2990 observations with missing values to calculate control variables. This leaves me with 16,859 observations for the going concern model. However, while performing accuracy tests which need data for a year ahead, I lose 3581 observations from the year 2014 which leaves me with 13,278 observations. All the continuous variables are winsorized at 1% and 99%

<Insert Table 1>

3.2 Large audit failures

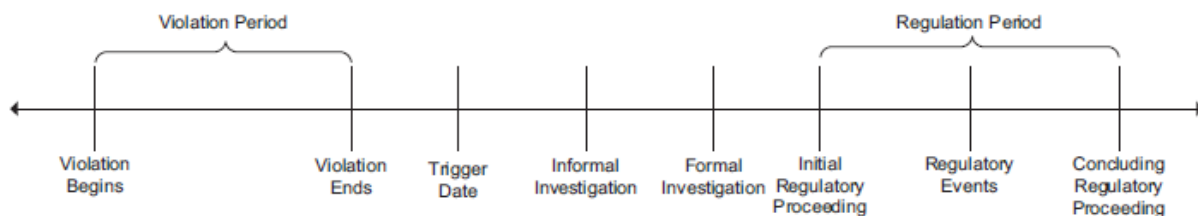
Corporate accounting frauds represent the most severe case of audit failure and can be identified using securities class action lawsuits (Amoah and Tang 2010; Gande and Lewis 2009)¹². I obtain a list of securities class action lawsuits from Institutional Shareholder Services (ISS) Securities Class Action database used in prior research (Brochet and Srinivasan 2013; Agnes Cheng et al. 2010).

To capture the most egregious corporate frauds, I use top 100 securities class action settlements from 1996 – 2013 as identified by ISS. Of these, I retain only 53 cases which involve accounting

¹² Rule 10b-5 of the Securities Exchange Act of 1934 is widely used as a basis of class action lawsuits which are filed by shareholders against a defendant firm in response to alleged fraudulent and deceptive behavior (Peng and Röell 2008)

restatement to ensure I capture accounting fraud rather than issues such as bid-rigging or price-fixing which go beyond financial misrepresentation. I verify that each of these cases has been investigated by the SEC. Frauds involving Arthur Anderson as the auditor are eliminated as we do not have a post-period behavior of the implicated auditor. Similarly, frauds where SEC investigation was initiated prior to 2000 are eliminated as data is unavailable for pre-period behavior of the implicated auditor. Frauds committed by cross listed firms (for example: Satyam where the auditor was from India) are dropped. This leaves me with a list of 33 corporate frauds which forms the sample of large audit failures.

To understand the choice of event date, I reproduce the timeline of SEC enforcement action as depicted in (Karpoff, Lee, and Martin 2008; Karpoff, Scott Lee, and Martin 2008).



Trigger date is generally the date when the public is made aware of possibility of certain problems in the company. Examples of trigger event include restatement, auditor departure, problems revealed during internal audit, investigation by other regulatory agencies such as DOJ, or problems revealed during routine checks by SEC (Kedia and Rajgopal 2011). Following the trigger event, SEC starts an informal investigation, and if just cause is found, proceeds to begin a formal investigation. Based on the investigation, SEC proceeds to take regulatory action if required. The date of informal investigation is generally not available publicly, but the date of formal investigation is available in the 8-k or 10-k filed subsequent to the beginning of formal investigation. The date of formal investigation also represents the earliest date when definitive problems in the company was identified. The beginning of investigation sets into motion a chain of events starting from markets reacting to the news, to auditors themselves initiating any changes in audit process if required.

To identify the audit office involved in the audit failure, I manually look up 10-k filing of the company involved in the investigation on SEC EDGAR database for the investigation year. I now have a list of 33 audit failure events along with date of investigation, headquarters of the company involved in the audit failure and the audit office involved in the failure.

Table 2 contains a list of the 33 audit failure events which have been selected on the basis of criteria mentioned above. As can be seen from column 2 of the table, the events have been spread across various years. Column 3 of the table shows that the location of audit office which was implicated is not concentrated in one geographical region. Figure 1 represents the locations of various audit failures. From the figure, it is clear that the audit failures are not clustered in a particular city or state.

<Insert Table 2>

3.3 Measures of earnings management

The main measure used in the analysis is going concern opinion (DeFond and Zhang 2014). The secondary measure of analysis is signed discretionary accruals (Chung and Kallapur 2003). Each of these measures is measured at the firm level for every year.

Going concern opinion has been used as a measure of audit quality in several prior studies (Defond, Francis, And Hallman 2015; M. L. DeFond, Raghunandan, and Subramanyam 2002). I obtain the details of whether auditor has issued a going concern opinion or not from audit analytics database.

As in prior research, I also use signed value of discretionary accruals as a measure of audit quality (Reynolds and Francis 2000; Chung and Kallapur 2003). Use of discretionary accruals has the benefit of being a measure continuous measure which can detect within GAAP earnings management (Aobdia 2015) over other measures of audit quality. I use the modified Jones model (Jones 1991) as described by (Dechow, Sloan, and Sweeney 1995) to estimate abnormal accruals. Modified Jones model is estimated for two digit SIC grouping to obtain the level of normal accruals. The model used to obtain abnormal accruals is as follows:

$$\frac{TA_{it}}{Assets_{it-1}} = \gamma_1 * \frac{1}{Assets_{it-1}} + \gamma_2 * \frac{\Delta Rev_{it}}{Assets_{it-1}} + \gamma_3 * \frac{PPE_{it}}{Assets_{it-1}} + \epsilon_{it} \quad (1)$$

where, TA_{it} is total accruals for fiscal year t and firm i calculated as

$TA = \text{Earnings before extraordinary items and discontinued operations} - \text{Operating cash flows}$. $Assets$ represents the total assets, ΔRev is the change in revenues from previous year, and PPE is the gross value of property, plant, and equipment. We obtain normal accruals (NA_{it}) using the coefficient estimates obtained from estimating equation (2):

$$NA_{it} = \hat{\gamma}_1 * \frac{1}{Assets_{it-1}} + \hat{\gamma}_2 * \frac{(\Delta Rev_{it} - \Delta AR_{it})}{Assets_{it-1}} + \hat{\gamma}_3 * \frac{PPE_{it}}{Assets_{it}} \quad (2)$$

where, ΔAR_{it} is change in accounts receivable from the previous year. We calculate signed abnormal accruals as $DACC_{it} = \frac{TA_{it}}{Assets_{it-1}} - NA_{it}$. The signed value of abnormal accruals is used as the measure of audit quality in the regressions.

3.4 Distance estimation

I use latitude and longitude data obtained from the U.S. Census Bureau Gazetteer to calculate distance from the event. I calculate two distances for each large audit failure: (i) distance of company's headquarters from the audit failure location (ii) distance of audit office from the audit failure location. All distances are calculated using Haversine formula¹³.

4. Empirical Methodology

To test the various hypotheses, I use a difference-in-difference strategy where I compare the change in audit quality of implicated audit firm, to that of the non-implicated audit firm. The main model to be estimated is:

$$\begin{aligned}
 & \textit{Audit Quality} \\
 & = \alpha + \beta_1 * \textit{Implicated audit firm} + \beta_2 * \textit{Implicated audit firm} * \textit{AFTER} + \beta_3 \\
 & * \textit{Implicated audit firm} * \textit{Implicated Office} + \beta_4 \\
 & * \textit{Implicated audit firm} * \textit{Implicated Office} * \textit{AFTER} + \textit{CONTROLS} + \textit{FE} \\
 & + \epsilon_{it}
 \end{aligned} \tag{3}$$

Difference-in-difference model is used to overcome the problem of pre-existing difference in audit quality which is the problem with cross-sectional studies. Consider the case where I estimate the difference in audit quality of an audit firm 'A' which has committed fraud in the past, versus an audit firm 'B' which has not. There are two problems with this estimation: (i) Any difference in audit quality can also be attributed to pre-existing differences in the audit firms 'A' and 'B' rather than to learning from audit failure, and (ii) all the large audit failures occur in the big-4 firms, and the test would end up estimating difference in audit quality between big-4 versus non-big 4 auditors.

In all the tests, except the short term versus long term tests, the pre period is defined as the year before the investigation (t-1), and post period(*AFTER*) is defined as the year of investigation(t), and year after investigation (t+1). In this model, *Implicated audit office* takes the value of 1 if the client is

¹³ Haversine Formula to calculate distance d12 between cities1 and 2 is calculated as $d_{12} = R \times 2 \times \arcsin(\min(1, \sqrt{a}))$, where R is the radius of the earth (≈ 6378 km) and $a = (\sin(dlat/2))^2 + \cos(lat1) \times \cos(lat2) \times (\sin(dlon/2))^2$. In the above expression dlat= lat2-lat1 and dlon = lon2-lon1. lat1 and lon1 are the latitude and longitude of location of large audit failure, and lat2 and lon2 are latitude and longitude of company head quarters or audit office location

audited by the implicated audit firm in either the pre, or post period for an audit failure. *Implicated audit firm *AFTER* takes the value of 1 in the post-period. Similarly, *Implicated audit office* is set to 1 if the client is audited by the implicated audit office during the pre, or post period of an audit failure. *Implicated audit office *AFTER* takes the value of 1 if the client is audited by and implicated audit office during the post period of the audit failure. In this model, I do not have AFTER as a separate variable as there is an audit failure in almost every year, and AFTER will take a value of 1 in all years. As an alternative, the model has year fixed effects which subsumes changes in behavior of all auditors due to a large audit failure.

To understand the coefficients, consider the following example. There are two firms A and B, where firm A has been implicated in a large audit failure, and firm B has not been. In firm A, audit office A₁ is the office which has been implicated, while audit office A₂ is a non-implicated office.

Due to the presence of year fixed effects, β_4 captures the change in audit quality of non-implicated branch of implicated firm (A₂) over the change in audit quality of non-implicated firm (B). $\beta_2 + \beta_4$ will capture the total change in audit quality of implicated branch (A₁) over the change in audit quality of the non-implicated audit firm (B). β_2 captures the incremental change in audit quality of implicated branch(A₂). Appendix gives the detailed explanations of these coefficients.

Given the results in (Kedia and Rajgopal 2011), I control for change in audit quality of clients in the same city as the event to rule out the explanation that change in audit quality is driven by client proximity rather than auditor proximity. Controlling for client proximity also has the benefit of taking care of any legislation changes specific to the region.

I use the following model in estimating geographic proximity tests:

$$\begin{aligned}
 \text{Audit Quality} = & \alpha + \beta_1 * \text{Proximate audit office within } d \text{ km} + \beta_2 \\
 & * \text{Proximate audit office within } d \text{ km} * \text{AFTER} + \beta_3 * \text{Implicated audit firm} \\
 & + \beta_4 * \text{Implicated audit firm} * \text{AFTER} + \text{CONTROLS} + \text{FE} \\
 & + \epsilon
 \end{aligned}
 \tag{4}$$

The variable *Proximate audit office within 'd' km* takes a value of 1 if the audit office of the implicated audit firm falls within 'd' km of distance from the audit failure event. The model is estimated a different distances of 'd' starting from 50km to 300 km in increment of 50km. The coefficient β_2 captures the incremental change in audit quality of proximate audit office.

4.1 Going concern model

I test the hypotheses by estimating the following logistic regression that models the auditor's probability of issuing a going concern opinion to a financially distressed client:

Going Concern

$$\begin{aligned}
 &= \alpha + \beta_1 * \text{Implicated audit office} + \beta_2 * \text{Implicated audit office} * \text{AFTER} \\
 &+ \beta_3 * \text{Implicated audit firm} + \beta_4 * \text{Implicated audit firm} * \text{AFTER} + \beta_5 \\
 &* \text{probability of bankruptcy} + \beta_6 * \log(\text{asset}) + \beta_7 \\
 &* \text{absolute abnormal accruals} + \beta_8 * \text{volatility} + \beta_9 * \text{stock return} + \beta_{10} \\
 &* \text{investments} + \beta_{11} * \text{operating cash flows} + \beta_{12} * \log(\text{age}) + \beta_{13} \\
 &* \text{newfinance} + \beta_{14} * \text{prior loss} + \beta_{15} * \text{BIG 4} + \beta_{16} \\
 &* \text{Clients in the same city} + \beta_{17} * \text{Clients in same city} * \text{After} + \sum_j \gamma_j D_j \\
 &+ \text{year fixed effects} + u \quad (5)
 \end{aligned}$$

Where:

Going Concern	1 for client firms which have been issued a Going concern opinion by auditor
Implicated audit firm * Implicated office	1 if the auditor belongs to the implicated audit office
Implicated audit firm * Implicated office * After	1 if the auditor belongs to the implicated audit office for the duration after the audit failure event
Implicated audit firm	1 if the auditor belongs to the implicated audit firm
Implicated audit firm * After	1 if the auditor belongs to the implicated audit firm for the duration after the audit failure event
Clients in fraudulent city	1 if the client firm is headquartered in the city where audit failure occurred
Clients in fraudulent city * After	1 if firm is headquartered in the city where audit failure occurred, for the duration after the audit failure event.
Probability of bankruptcy	

	Probability of bankruptcy as measured by (Hillegeist et al. 2004)
Log(asset)	Natural log of total assets
Absolute abnormal accruals	Absolute value of residual of accruals from modified Jones model
volatility	Volatility of residuals obtained from market model
Stock return	Stock return of the firm during the financial year
leverage	Ratio of total leverage to total assets
Operating cash flows	Cash flow from operations deflated by assets
Log (age)	Natural log of age of client firm
New finance	1 if the firm has raised debt or issued new equity or sold PPE in the subsequent year
Prior loss	1 if the firm reported negative net income for at least two prior years
Dj	1 if firm belongs to jth industry, 0 otherwise
Big4	1 if the client was audited by a big 4 auditor

Choice of independent variables is based on factors identified in AU Section 341(earlier SAS No.59), and prior research(M. L. Defond, Raghunandan, and Subramanyam 2002; Reynolds and Francis 2000). There are two sets of variables identified, *contrary factors* which indicate that a going concern opinion may be appropriate, and *mitigating* factors which might reduce the adverse effects of conditions and events. Financial distress is an important contrary factor, and I capture this through several market and financial statement variables. I capture the probability of bankruptcy as defined by (Hillegeist et al. 2004) in the variable *probability of bankruptcy*. Log(age) is the logarithm of number of years the firm has been publicly traded and is included in the model as younger firms are more prone to default (Dopuch, Holthausen, and Leftwich 1987).

As suggested in prior research (Dopuch, Holthausen, and Leftwich 1987), I use market variables as controls because market return measures can capture information above and beyond financial statement variables. The market variables used are, volatility of residuals obtained from

market model, and stock return of the firm during the financial year. Volatility of residuals captures the increased probability of large decline in stock price leading to increased risk of lawsuits against auditors; and annual return could be used by auditors to infer the information in market prices. Other variables included are: leverage because higher leverage is more likely to cause a firm to be closer to violating a covenant (Reynolds and Francis 2000) which in turn is positively associated with probability of issuing a going concern opinion (Mutchler, Hopwood, and McKeown 1997); cash flow from operations deflated by assets is added as poorer cash flows is associated with higher probability of bankruptcy. I also include *prior loss*, a dummy indicating a loss in prior two years, as firms with multiple year losses are more likely to go bankrupt (Reynolds, Deis, and Francis 2004). Log(age) and Big 4 are two variables which are added as younger firms have a higher probability of going bankrupt, and big 4 firms are known to issue more going concern opinions than non-big 4.

Log of assets (proxy for size of firm) is added as it a mitigating factor. Large firms may have greater capability to negotiate in the event of financial distress (Reynolds and Francis 2000). I add a dummy variable *new finance* which takes the value of 1 if the firm has raised debt or issued new equity or sold PPE in the subsequent year. This variable captures the ability of the firm to raise cash quickly.

4.2 Accrual Model

To estimate the change in audit quality, we use the following model

$$\begin{aligned}
 DA = & \alpha + \beta_1 * \text{Implicated audit firm} + \beta_2 * \text{Implicated audit firm} * \text{AFTER} + \beta_3 \\
 & * \text{Implicated audit firm} * \text{Implicated Office} + \beta_4 * \text{Implicated audit firm} \\
 & * \text{Implicated Office} * \text{AFTER} + \beta_5 * \text{ROA}_{-1} + \beta_6 * \text{ROA}_{-1}^+ + \beta_7 * \text{OCF} + \beta_8 \\
 & * \text{OCF}^+ + \beta_9 * \log(\text{ASSETS}) + \beta_{10} * \text{ACC}_{-1} + \beta_{11} * \text{ACC}_{-1}^+ + \beta_{12} * \text{TENURE} \\
 & + \beta_{13} * \text{AFTER} + \beta_{14} * \text{Clients in the same city} + \beta_{14} * \text{Clients in same city} \\
 & * \text{After} + \sum_j \gamma_j D_j + \text{year fixed effects} \\
 & + u \qquad \qquad \qquad (6)
 \end{aligned}$$

Where:

ROA-1	net income in year -1 / ASSETS in year -2 (ACC+1, and ROA+1 are defined similar to OCF+)
OCF	operating cash flows /ASSETS in year -1;

OCF+	0 if OCF < 0, and = OCF if OCF >=0
ASSETS	total assets;
ACC-1	total accruals in year -1 /ASSETS in year -2;
TENURE	number of years the current auditor has been auditing the company;
Dj	1 if firm belongs to jth industry, 0 otherwise

I control for past ROA and current operating cash flow because prior research (Dechow, Sloan, and Sweeney 1995) shows that abnormal accruals depends on these variables. As the dependent variable is the signed value of abnormal accruals, I interact each of control these with a dummy variable indicating if it is positive or not as in prior research (Chung and Kallapur 2003). I control for auditor tenure following (Frankel, Johnson, and Nelson 2002; Myers, Myers, and Omer 2003).

5. Analysis and Results

Table 3 provides descriptive statistics for the sample used for going concern model and accrual model. I find that the summary statistics largely matches the values found in prior research.

<Insert Table 3 here>

5.1 Effect of Large Audit Failures on Audit Outcomes:

To test whether implicated audit firms have become conservative after large audit failures (H1), I estimate the accrual model shown in equation 5. Results of this estimation are shown in table 4. The coefficient on *Implicated Audit Firm*After* as shown in column (1) of table 4 is negative and significant ($p < 0.05$) supporting H1. Similarly, the coefficient on *Implicated Audit Firm*Implicated Office*After* in column (2) of table 4 is negative and significant ($p < 0.05$) showing that the implicated audit office becomes conservative in the year after large audit failure. In column (3) of table 4, we can see that the coefficient on *Implicated Audit Firm*After* and *Implicated Audit Firm*Implicated Office*After* are both negative and significant, suggesting that the implicated audit office becomes more conservative than rest of the firm. The total decrease in discretionary accruals brought about by the implicated audit office is 3% of the total assets. The results are robust to clustering by audit office and client firm.

<Insert table 4>

Table 5 shows the results of estimation of the restatement model. Corroborating the results of the accrual model, I find that both the implicated audit office and implicated audit firm have lower propensity to misstate their financial statements in the year following audit failure. I also estimate the going concern model in equation 4 to test H1. Results of the estimation are shown in table 5. Similar to the previous two results, in table 6, I find that the implicated audit firm and implicated audit office become conservative. After an audit failure, the propensity to issue a going concern opinion by the non-implicated branch of implicated audit office increases by 3.06 percentage points (while holding other variables at their means), while the propensity to issue going concern opinion at the implicated audit office increases by 3.7 percentage points. Clients of other audit firms in the same city as the large audit failure (*Client in fraudulent city*After*) do not seem to show any change in propensity to issue going concern opinion. Control variable results are largely as expected. Overall, the results suggest implicated auditors become conservative in the year after an audit failure despite the costs to conservative behavior.

<Insert Table 5>

<Insert Table 6>

5.2 Effect of Large audit failures on Audit Quality: Learning versus Undue Conservatism

Having established that auditors become conservative in the aftermath of large audit failure, I next test whether this conservatism leads to higher audit quality. Audit quality could improve if auditors learn from their mistakes and make fewer errors. Alternative, if auditors are becoming unduly conservative, audit quality could decrease. To test H2, I estimate the accuracy of going concern opinion, the results of which are shown in table 7. I find that at the implicated audit firms' non-implicated audit offices, the probability of type I error (issuing GC to clients that didn't subsequently go bankrupt) has significantly increased, while there is no change in type II error rates (not issuing GC to clients that went bankrupt subsequently). At the implicated audit office, type II error has decreased and probability of type I error has increased by 3.16 percentage points. This result is consistent with auditors at the implicated audit office becoming unduly conservative and not improving audit quality, thus, supporting H2B. This result also provides support to the concerns voiced by DeFond and Zhang (2014) that conservatism may be excessive, and need not increase audit quality.

<Insert Table 7>

While increase in Type I errors suggests undue conservatism, the decrease in Type II could mean that auditors may in fact be learning. To further explore whether the implicated audit firm is learning, I test the duration of auditor conservatism. If auditors are learning, they would implement better procedures which should ensure that the conservatism is not temporary. To operationalize this test, I create two variables: a variable *short term* which is an indicator variable that takes value of 1 in the year of audit failure, and one year after, and another variable *long term* that takes value of 1 for the second, third and fourth year after audit failure. Results of this test are reported in table 8. Contrary to the learning hypothesis, I find that the change in auditor behavior is temporary supporting H3B. The coefficient on *Implicated audit firm*Long Term* and the coefficient on *Implicated Audit Firm*Implicated Office*After* are both insignificant. I find that auditors issue lot more going concern opinion in the one year after audit failure, but revert to their prior levels after a year supporting H3B. Overall, these results suggest that implicated auditors become excessively conservative leading to lower audit quality.

<Insert Table 8>

5.3 Differentiating Strategic and Cognitive Motives

The final set of analyses try to get to the source auditor conservatism. Auditor conservatism could be driven by strategic motives of reputation risk and litigation risk, or by cognitive motive of availability bias. To discriminate between the two sources of undue conservatism, I perform tests on geographic proximity (H4) and industry affiliation of clients (H5).

Table 9 reports the results of geographic proximity tests. The variable of interest is *Implicated Audit Firm* Implicated offices within 'd' Km*. This is an indicator variable that takes a value of 1 if an audit office in an implicated audit firm is within 'd' Km (d=50 to 250) from the implicated audit office. Column(1)-(5) of table 8 report the results when auditors are located within 50km – 250km from the event. Consider the coefficient on the variable *Implicated audit office within distance 'd'(after)* in column (2). The positive significant coefficient of 1.5765 (p<0.05) shows that the propensity to issue a going concern opinion by the audit offices within 100km radius of the event compared to audit offices farther away has gone up. For each of these models, I control for client effects within the same distance range. For example, in column (1), I control for clients in the radius of 50km from the event, while in column (2), I control for clients within 100km from the event.

Comparing the coefficients across columns of the variable *Implicated Audit Firm* Implicated offices within 'd' Km*, it is clear that audit offices closer to the event have a greater change in the

propensity to issue going concern opinion. This result is consistent with auditors closer to the event reacting more than auditors farther from an event thus supporting H4.

<Insert Table 9 >

Table 10 reports tests of client industry affiliation. Auditors with clients in the same industry as the audit failure could be more socially proximate to the event, and hence over-react. Social proximity suggests that such auditors will suffer from greater availability bias. The variable *Implicated Audit Firm* Industry of fraud* is an indicator variable that takes a value of 1 for all clients who share the same audit firm and industry as the failed client. I find that the clients who share the same industry as the failed client are issued going concern opinion more than clients in other industries as seen by the coefficient (0.790) on *Implicated Audit Firm* Industry of fraud *After* ($p < 0.10$).

<Insert table 10 here>

Availability bias seems to provide the most parsimonious explanation for the industry affiliation results, along with the results of geographic proximity and temporary nature of undue conservatism.

5.3 Robustness checks

To ensure that the results are not driven by region specific attributes which are constant across time, I perform the same set of tests with randomly chosen dates but same locations. I do not find any significance in the results. Similarly, to ensure that the results are not driven by time specific reasons, I perform the tests in the same time period but use random locations. These results are also insignificant.

Conclusion

I examine whether audit firms learn after a large audit failure or exhibit undue conservatism. I first document that the implicated audit firm and the implicated audit office show a higher propensity to issue going concern opinion, show a larger decrease in abnormal accruals as compared to a non-implicated audit firm, and show a lower propensity to restate following audit failures. This change in audit quality can be attributed to undue conservatism as evidenced by increased propensity to issue unwarranted going concern opinions. I posit that this excessive conservatism could be over-reaction of implicated audit firm due to availability bias triggered by ease with which an episode of audit

failure could be recollected. Availability bias suggests that within the implicated audit firm, audit offices closer to the audit failure will react more than geographically distant audit offices. Availability bias also would also suggest that the change in audit quality will be temporary. In support of availability bias, I find that the change in audit quality is in the form of a ripple, where audit offices closest to the event show a greater change in audit quality, and that the change in audit quality is temporary.

Overall, I find that after a large audit failure, audit firms do not learn from their experience. Rather, audit firms become unduly conservative due to availability bias. The findings in this paper suggest that regulators should bring in monitoring mechanisms which could promote long-term learning.

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Figures

Figure 1: Location of various audit firms involved in large audit failures.

The figure depicts that although audit failures are concentrated in the east coast, they are not all from a single city.

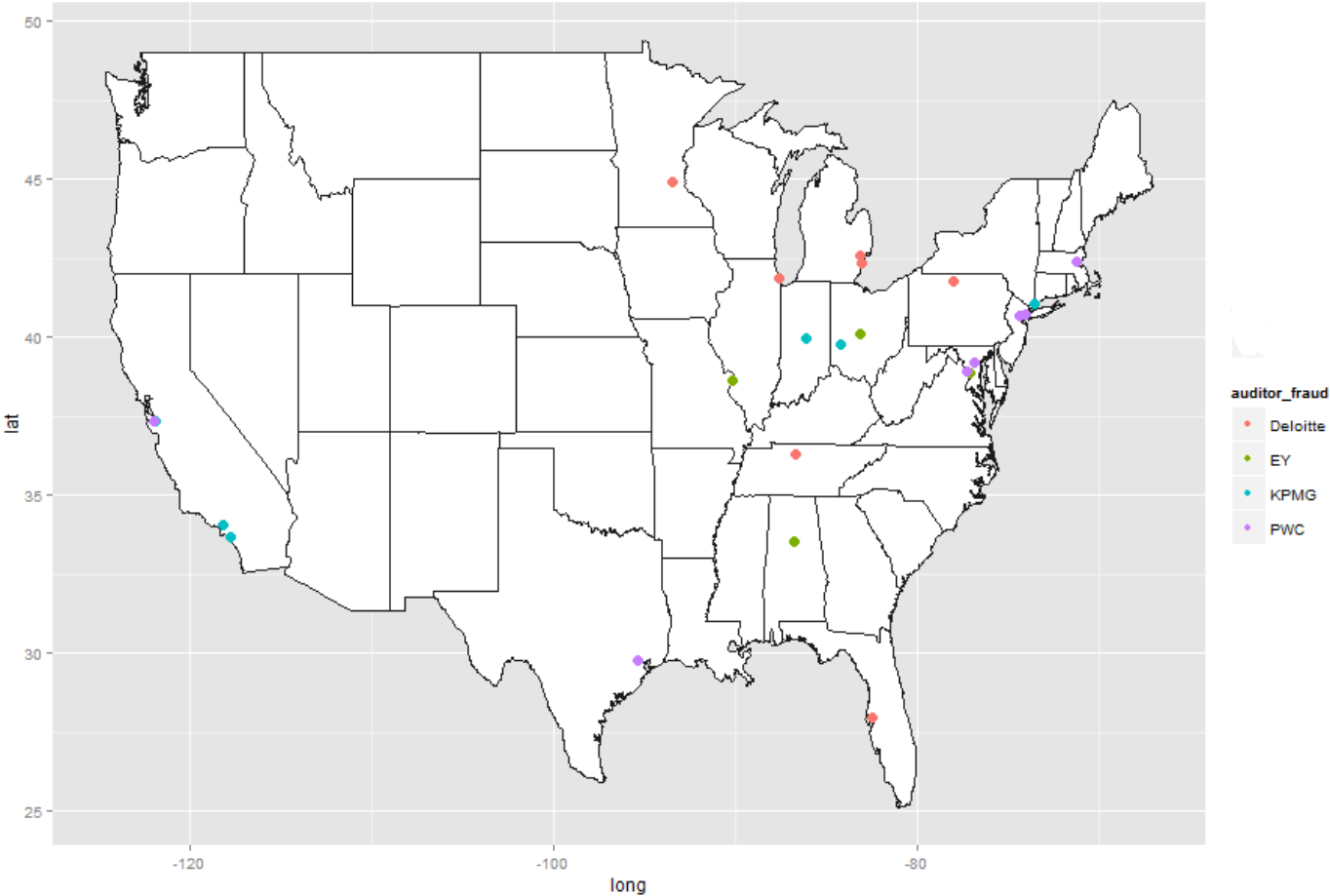
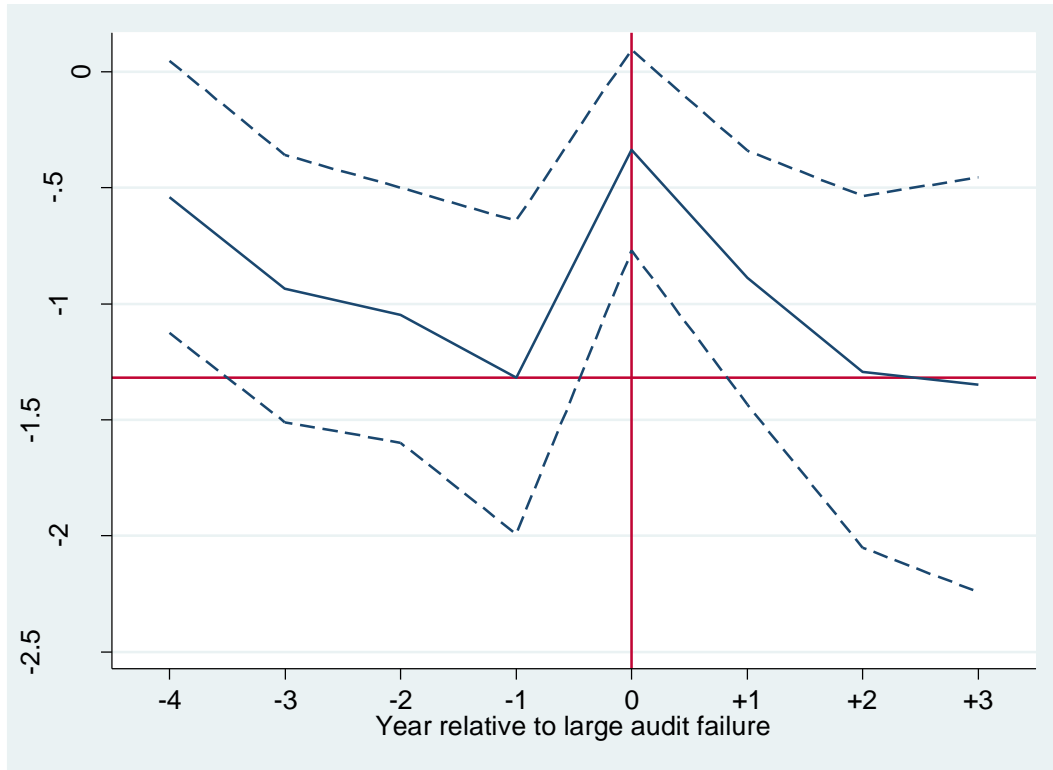


Figure 2: Effect of large audit failures on propensity to issue going concern opinion

This figure shows a visual difference-in-difference examining the effect of large audit failure on implicated audit offices relative to non-implicated audit offices. On the y-axis, the graph plots the log odds of issuing a going concern opinion versus not issuing a going concern opinion; the x-axis shows the year relative to the year of large audit failure. The graph plots the following point estimates and 95% confidence intervals of the parameters β_τ from the following equation

$$Going\ Concern_t = \beta_t + \sum_{\tau=-4}^{+3} \beta_\tau * Implicated\ Audit\ Office_t^\tau + \epsilon_t$$



Tables

Table 1: Sample selection

	Firm-year Observations
Audit Analytics (2000-2014)	236185
Less:	
Merge with Compustat	(128566)
Financial firms	(30012)
Missing values to calculate variables	(28146)
Firms involved in fraud	(178)
Final Accrual Sample	49279
Less:	
Non-distressed firms	(26875)
Repeated going concern opinion	(2557)
Missing values to calculate variables	(2988)
Final Going concern sample	16859

Table 2: List of large audit failures in descending order of amount of settlement

Name of fraudulent company	SEC investigation		Name of fraudulent	Location of fraudulent audit office	HQ Of Fraudulent Company
AOL Time Warner, Inc.	2002	2005	EY	Mclean, Virginia	New York, New York
Royal Ahold NV	2003	2004	KPMG	Baltimore, Maryland	Columbia, Maryland
American International Group, Inc.	2005	2006	PWC	New York, New York	New York, New York
UnitedHealth Group, Inc.	2006	2007	Deloitte	Minneapolis, Minnesota	Minnetonka, Minnesota
HealthSouth Corp.	2002	2005	EY	Birmingham, Alabama	Birmingham, Alabama
Xerox Corp.	2000	2002	KPMG	Stamford, Connecticut	Stamford, Connecticut
Lucent Technologies, Inc.	2000	2004	PWC	Florham Park, New Jersey	Murray Hill, New Jersey
Countrywide Financial Corp.	2008	2011	KPMG	Los Angeles, California	Los Angeles, California
Cardinal Health, Inc.	2004	2007	EY	Columbus, Ohio	Dublin, Ohio
Adelphia Communications Corp.	2002	2005	Deloitte	Pittsburgh, Pennsylvania	Coudersport, Pennsylvania
Raytheon Company	2001	2006	PWC	Boston, Massachusetts	Waltham, Massachusetts
General Motors Corp.	2005	2009	Deloitte	Detroit, Michigan	Detroit, Michigan
El Paso Corporation	2003	2007	PWC	Houston, Texas	Houston, Texas
Comverse technology	2009	2011	Deloitte	New York, New York	New York, New York
Sears Roebuck and co.	2002	2005	Deloitte	Chicago, Illinois	Chicago, Illinois
The Mills corp	2006	2010	EY	Mclean, Virginia	Arlington, Virginia
Wellcare Health Plans	2007	2009	Deloitte	Tampa, Florida	Tampa, Florida
Safety-Kleen Corp.	2000	2002	PWC	Charlotte, North Carolina	Columbia, Maryland

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MicroStrategy Inc	2000	2000	PWC	Mclean, Virginia	Vienna, Virginia
Broadcom Corp.	2006	2008	EY	Irvine, California	Irvine, California
Maxim Integrated Products, Inc.	2006	2007	EY	San Jose, California	Sunnyvale , California
Juniper Networks, Inc.	2006	2007	EY	San Jose, California	Sunnyvale , California
Dollar General Corp.	2002	2005	Deloitte	Nashville, Tennessee	Goodlettsville, Tennessee
Brocade Communications Systems, Inc.	2005	2007	KPMG	Mountain view, California	San Jose , California
Charter communication	2002	2004	EY	Denver, Colorado	St. Louis, Missouri
Delphi Corporation	2004	2006	Deloitte	Detroit, Michigan	Troy, Michigan
New Century Financial Corp.	2007	2009	KPMG	Los Angeles, California	Irvine, California
Conseco, Inc.	2002	2004	KPMG	Minneapolis, Minnesota	Carmel, Indiana
Mercury Interactive Corp.	2004	2007	PWC	San Jose, California	Sunnyvale , California
The Interpublic Group of Companies, Inc.	2003	2008	PWC	New York, New York	New York, New York
Federal Home Loan Mortgage Corp	2003	2007	PWC Grant	Mcclean, Virginia	Mcclean, Virginia New York, New York
Refco Inc	2005	2008	Thornton	New York, New York	York

Table 3: Descriptive statistics for Going concern Sample and Accrual Sample.

All continuous variables are winsorized at 1% and 99% to address the problem of outliers.

Panel A: Going Concern Sample						
VARIABLES	N	Mean	25 th Percentil e	Median	75 th Percentile	S.D.
Going Concern	16,859	0.0984	0	0	0	0.298
Discretionary accrual	16,859	0.173	0.0402	0.0969	0.206	0.258
Clients in same city	16,859	0.254	0	0	1	0.435
Clients in same city(after)	16,859	0.204	0	0	0	0.403
Implicated audit office	16,859	0.0460	0	0	0	0.209
Implicated audit office (after)	16,859	0.0331	0	0	0	0.179
Implicated audit firm	16,859	0.423	0	0	1	0.494
Implicated audit firm (after)	16,859	0.407	0	0	1	0.491
Log (asset)	16,859	4.444	3.029	4.391	5.847	2.146
Operating cash flow	16,859	-0.141	-0.179	-0.0264	0.0457	0.409
Big4	16,859	0.573	0	1	1	0.495
Probability of bankruptcy	16,859	0.164	2.39e-06	0.0039	0.147	0.303
New Finance	16,859	0.589	0.000	1	1	0.492
Prior loss	16,859	0.714	0.000	1	1	0.452
Investments	16,859	0.287	0.049	0.179	0.468	0.283
Log (age)	16,859	2.582	2.079	2.565	3.045	0.654
Volatility	16,859	0.262	0.000	0.0019	0.005	2.021
Stock Return	16,859	0.209	-0.486	-0.126	0.320	1.416
Leverage	16,859	0.54	0.25	0.44	0.720	0.42

Panel B: Accrual Sample						
VARIABLES	N	Mean	25 th Percentile	Median	75 th Percentile	S.D.
Total Accruals	49,281	-0.140	-0.132	-0.0642	-0.0233	0.461
Discretionary Accruals	49,281	0.146	0.0276	0.0688	0.162	0.246
Implicated audit firm	49,281	0.482	0	0	1	0.500
Implicated audit firm (after)	49,281	0.453	0	0	1	0.498
Log (asset)	49,281	5.411	3.734	5.555	7.217	2.507
Operating cash flow	49,281	-0.0170	-0.0210	0.0690	0.130	0.394
ROA	49,281	-0.155	-0.122	0.0193	0.0701	0.632
Auditor Tenure	49,281	4.683	2	4	7	3.023
Big4	49,281	0.676	0	1	1	0.468
Clients in same city	49,281	0.173	0	0	0	0.378
Clients in same city (After)	49,281	0.140	0	0	0	0.347
Implicated audit office	49,281	0.0443	0	0	0	0.206
Implicated audit office(after)	49,281	0.0323	0	0	0	0.177
Sale	49,281	2,089	31.11	232.5	1,159	9,617

Table- 4: Change in signed discretionary accruals after large audit failure

OLS Regression to test Hypothesis 1. Dependent variable is signed accruals estimated from modified Jones model. Test variables are indicator variables as follows: Implicated Audit Firm = 1 if the audit firm has been implicated in a large audit failure.

Implicated Audit Firm*After =1 if the audit firm has been implicated for the year of audit failure, and 1 year after audit failure.

Implicated Audit Firm * Implicated Office=1 for the implicated office. Implicated Audit Firm * Implicated Office * After = 1 for the implicated office in the year of audit failure and one year after audit failure. Client in fraudulent city =1 if a client firm is headquartered in the city of audit failure. Client in fraudulent city*After =1 if a client firm is headquartered in the city of audit failure for the year of audit failure, and 1 year after audit failure. This control is added to control behavior change of other clients in the in the nearby region who might be investigated by the SEC.

Coefficients of interest are Implicated Audit Firm*After and Implicated Audit Firm*Implicated Office*After.

Parenthesis contains t-statistic. *, **, *** denote statistical significance at 10%, 5%, and 1% respectively.

	DA	DA	DA
Implicated Audit Firm	0.013 (1.93)*		0.013 (1.86)*
Implicated Audit Firm * After	-0.013 (2.07)**		-0.012 (1.93)*
Implicated Audit Firm * Implicated Office		0.012 (1.24)	0.011 (1.14)
Implicated Audit Firm * Implicated Office* After		-0.019 (2.20)**	-0.018 (2.04)**
Client in fraudulent city	0.002 (0.22)	0.000 (0.04)	0.000 (0.06)
Client in fraudulent city * After	-0.008 (1.13)	-0.007 (0.85)	-0.007 (0.86)
Big4	-0.010 (1.87)*	-0.009 (2.06)**	-0.010 (1.87)*
Auditor Tenure	0.003 (3.96)***	0.003 (3.85)***	0.003 (3.96)***
Log(assets)	0.008 (6.33)***	0.007 (6.30)***	0.008 (6.33)***
Prior accruals(plus)	-0.225 (4.63)***	-0.224 (4.62)***	-0.225 (4.63)***
Prior accruals	0.109 (6.21)***	0.109 (6.20)***	0.109 (6.21)***
Prior ROA(plus)	0.199 (7.50)***	0.199 (7.50)***	0.199 (7.50)***
Prior ROA	0.067 (6.48)***	0.067 (6.48)***	0.067 (6.48)***

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Operating cash flows	0.173 (11.14)***	0.173 (11.14)***	0.173 (11.14)***
Operating cash flows(plus)	-0.494 (15.49)***	-0.494 (15.49)***	-0.494 (15.48)***
Constant	-0.031 (0.57)	-0.032 (0.57)	-0.032 (0.57)
R – squared	0.19	0.19	0.19
N	49,279	49,279	49,279
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Clustered SE	By Audit Office By Client Firm	By Audit Office By Client Firm	By Audit Office By Client Firm

Table-5: Change in propensity to restate after large audit failures

Logistic regression to test Hypothesis 1. Dependent variable is Restatement, 1= restated financials of the current year, 0= no restatement. Test variables are indicator variables as follows: Implicated Audit Firm = 1 if the audit firm has been implicated in a large audit failure. Implicated Audit Firm*After = 1 if the audit firm has been implicated for the year of audit failure, and 1 year after audit failure. Implicated Audit Firm * Implicated Office=1 for the implicated office. Implicated Audit Firm * Implicated Office * After = 1 for the implicated office in the year of audit failure and one year after audit failure. Client in fraudulent city =1 if a client firm is headquartered in the city of audit failure. Client in fraudulent city*After =1 if a client firm is headquartered in the city of audit failure for the year of audit failure, and 1 year after audit failure. This control is added to control behavior change of other clients in the in the nearby region who might be investigated by the SEC.

Coefficients of interest are Implicated Audit Firm*After and Implicated Audit Firm*Implicated Office*After.

Parenthesis contains z-statistic. *, **, *** denote statistical significance at 10%, 5%, and 1% respectively.

Dependent Variable	Restatement =1 if client restated financials of that year		
	(1)	(2)	(3)
Implicated Audit Firm	0.189 (2.64)***		0.201 (2.82)***
Implicated Audit Firm * After	-0.282 (3.78)***		-0.294 (3.87)***
Implicated Audit Firm * Implicated Office		0.189 (1.83)*	0.221 (2.24)**
Implicated Audit Firm * Implicated Office * After		-0.294 (2.85)***	-0.319 (3.17)***
Client in fraudulent city	-0.116 (1.38)	-0.133 (1.68)*	-0.134 (1.69)*
Client in fraudulent city * After	0.255 (2.88)***	0.282 (3.19)***	0.282 (3.18)***
BTM	-0.013 (0.50)	-0.013 (0.53)	-0.013 (0.50)
lnat	0.055 (5.94)***	0.057 (6.09)***	0.055 (5.91)***
Big4	-0.009 (0.23)	-0.087 (2.29)**	-0.009 (0.22)
Loss	0.219 (7.05)***	0.217 (6.99)***	0.219 (7.04)***
Exchange	0.026 (4.88)***	0.026 (4.93)***	0.026 (4.88)***
Restated(t-1)	3.117 (64.38)***	3.118 (64.17)***	3.118 (64.13)***
Mergers	0.243 (8.35)***	0.242 (8.32)***	0.243 (8.35)***

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Constant	-2.943 (8.19)***	-3.010 (8.34)***	-2.943 (8.18)***
N	79,364	79,364	79,364
Pseudo R-squared	0.2810	0.2809	0.2811
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Clustered SE	By Audit Office By Client Firm	By Audit Office By Client Firm	By Audit Office By Client Firm

Table-6: Change in propensity to issue going concern opinion after large audit failures

Logistic regression to test Hypothesis 1. Dependent variable is Going Concern, 1= received going concern opinion for current year, 0= not received. Test variables are indicator variables as follows: Implicated Audit Firm = 1 if the audit firm has been implicated in a large audit failure. Implicated Audit Firm*After =1 if the audit firm has been implicated for the year of audit failure, and 1 year after audit failure. Implicated Audit Firm * Implicated Office=1 for the implicated office. Implicated Audit Firm * Implicated Office * After = 1 for the implicated office in the year of audit failure and one year after audit failure. Client in fraudulent city =1 if a client firm is headquartered in the city of audit failure. Client in fraudulent city*After =1 if a client firm is headquartered in the city of audit failure for the year of audit failure, and 1 year after audit failure. This control is added to control behavior change of other clients in the in the nearby region who might be investigated by the SEC.

Coefficients of interest are Implicated Audit Firm*After and Implicated Audit Firm*Implicated Office*After.

Parenthesis contains z-statistic. *, **, *** denote statistical significance at 10%, 5%, and 1% respectively.

	Going concern =1 if received going concern opinion for that year		
Implicated Audit Firm	-1.200 (2.31)**		-1.176 (2.25)**
Implicated Audit Firm * After	1.191 (2.32)**		1.199 (2.32)**
Implicated Audit Firm * Implicated Office		-2.573 (3.09)***	-2.574 (3.08)***
Implicated Audit Firm * Implicated Office* After		2.403 (2.70)***	2.388 (2.69)***
Client in fraudulent city	-0.137 (0.91)	-0.071 (0.47)	-0.070 (0.46)
Client in fraudulent city * After	0.078 (0.51)	0.037 (0.24)	0.034 (0.23)
Big4	0.480 (3.44)***	0.478 (5.23)***	0.482 (3.44)***
Probability of default	1.903 (19.29)***	1.905 (19.31)***	1.907 (19.33)***
Discretionary accruals	0.653 (5.66)***	0.656 (5.68)***	0.655 (5.67)***
Volatility	-0.027 (1.70)*	-0.029 (1.81)*	-0.028 (1.73)*
log(asset)	-0.439 (15.65)***	-0.437 (15.66)***	-0.438 (15.63)***
Stock return	-0.359 (8.38)***	-0.359 (8.40)***	-0.358 (8.38)***
Leverage	0.090 (0.71)	0.093 (0.73)	0.094 (0.74)
Change in leverage	-1.574	-1.580	-1.590

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	(6.93)***	(7.00)***	(7.01)***
Operating cash flows	-0.956	-0.954	-0.954
	(10.58)***	(10.57)***	(10.57)***
log (age)	-0.408	-0.410	-0.411
	(6.84)***	(6.87)***	(6.90)***
New finance	0.562	0.563	0.562
	(7.41)***	(7.39)***	(7.39)***
Prior loss	0.662	0.665	0.666
	(7.08)***	(7.13)***	(7.13)***
Investments	-1.981	-1.972	-1.974
	(11.97)***	(11.99)***	(12.02)***
Constant	-0.276	-0.281	-0.303
	(0.45)	(0.46)	(0.50)
N	16,859	16,859	16,859
Pseudo R-squared	0.3215	0.3223	0.3229
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustered SE	By Audit Office By Client Firm	By Audit Office By Client Firm	By Audit Office By Client Firm

Table 7: Learning versus Conservatism: Test of accuracy of going-concern opinion

Logistic regression to test Hypothesis 2. This test checks the accuracy of going concern opinion at the implicated audit office and implicated audit firm.

Dependent variables are: Type I error =1 if going concern opinion was issued for clients that didn't subsequently go bankrupt. Type II error =1 if going concern opinion was not issued for clients that subsequently went bankrupt. Error = sum of Type I and Type II error.

Test variables are indicator variables as follows: Implicated Audit Firm = 1 if the audit firm has been implicated in a large audit failure. Implicated Audit Firm*After =1 if the audit firm has been implicated for the year of audit failure, and 1 year after audit failure. Implicated Audit Firm * Implicated Office=1 for the implicated office. Implicated Audit Firm * Implicated Office * After = 1 for the implicated office in the year of audit failure and one year after audit failure. Client in fraudulent city =1 if a client firm is headquartered in the city of audit failure. Client in fraudulent city*After =1 if a client firm is headquartered in the city of audit failure for the year of audit failure, and 1 year after audit failure. This control is added to control behavior change of other clients in the in the nearby region who might be investigated by the SEC.

Coefficients of interest are Implicated Audit Firm*After and Implicated Audit Firm*Implicated Office*After. Parenthesis contains z-statistic. *, **, *** denote statistical significance at 10%, 5%, and 1% respectively.

VARIABLES	(1) Error	(2) Type I error	(3) Type II error
Implicated Audit Firm * Implicated Office	-1.2987* (0.5163)	-2.4431** (1.0017)	1.4390 (0.9214)
Implicated Audit Firm * Implicated Office* After	0.9822 (0.6757)	2.1818** (1.0217)	-2.7224** (1.3163)
Implicated Audit Firm	-1.1924** (0.5194)	-1.3899** (0.5703)	-0.6460 (1.1805)
Implicated Audit Firm * After	1.1997** (0.5116)	1.4347** (0.5621)	0.0893 (1.1730)
Client in fraudulent city	-0.0712 (0.1477)	-0.0194 (0.1511)	-14.8285*** (0.5822)
Client in fraudulent city * After	0.0657 (0.1555)	-0.0163 (0.1590)	15.1052*** (0.5197)
Big4	0.4807*** (0.1331)	0.4799*** (0.1390)	0.6145 (0.6280)
Probability of bankruptcy	1.7510*** (0.0989)	1.7715*** (0.1024)	0.7793 (0.5220)
Absolute abnormal accruals	0.5984*** (0.1086)	0.5924*** (0.1110)	-0.3321 (0.7545)
Volatility	-0.0248 (0.0164)	-0.0217 (0.0171)	-0.2890* (0.1713)
log (asset)	-0.4525*** (0.0261)	-0.4957*** (0.0268)	0.3376*** (0.0949)
Stock return	-0.3335*** (0.0401)	-0.3230*** (0.0396)	-1.4218*** (0.5208)

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Leverage	0.1525 (0.1279)	0.0864 (0.1310)	1.4410*** (0.4146)
Operating cash flows	-0.8873*** (0.0926)	-0.9038*** (0.0956)	1.4560* (0.7463)
log (age)	-0.3989*** (0.0572)	-0.4303*** (0.0590)	0.0790 (0.2311)
New finance	0.5344*** (0.0731)	0.6067*** (0.0758)	-0.8536*** (0.3160)
Prior loss	0.6196*** (0.0935)	0.6387*** (0.0973)	0.4506 (0.3425)
Investments	-1.7727***	-1.9364***	2.6782***
Constant	-0.2583 (0.6212)	-0.0647 (0.6134)	-7.0271*** (1.0225)
Observations	16,859	16,859	13,278
Adjusted R-squared	0.307	0.328	0.222
Clustered SE	By client	By client	By client
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes

Table 8: Learning versus conservatism: Length of change in audit outcomes.

Logistic regression to test Hypothesis 3. Dependent variable is Going Concern, 1= received going concern opinion for current year, 0= not received. Test variables are indicator variables as follows: Implicated Audit Firm = 1 if the audit firm has been implicated in a large audit failure. Implicated Audit Firm*After = 1 if the audit firm has been implicated for the year of audit failure, and 1 year after audit failure. Implicated Audit Firm * Implicated Office=1 for the implicated office. Implicated Audit Firm * Implicated Office * After = 1 for the implicated office in the year of audit failure and one year after audit failure. Client in fraudulent city =1 if a client firm is headquartered in the city of audit failure. Client in fraudulent city*After =1 if a client firm is headquartered in the city of audit failure for the year of audit failure, and 1 year after audit failure. This control is added to control behavior change of other clients in the in the nearby region who might be investigated by the SEC. Short term =1 in the year after the audit failure. Long term=1 for years 2-4 after audit failure.

Parenthesis contains z-statistic. *, **, *** denote statistical significance at 10%, 5%, and 1% respectively.

	Dep Var: Going Concern	
Implicated Audit Firm *Implicated Office	-2.0741** (-2.5265)	-2.0741** (-2.5267)
Implicated Audit Firm *Implicated Office * Short term	2.3883** (2.3014)	2.3883** (2.3046)
Implicated Audit Firm *Implicated Office * Long term	0.0172 (0.7863)	0.0172 (0.7872)
Implicated Audit Firm	-1.1731** (-2.3830)	-1.1731** (-2.3518)
Implicated Audit Firm * Short term	1.1968** (2.4690)	1.1968** (2.4372)
Implicated Audit Firm * Long term	0.1634 (0.6502)	0.1634 (0.6537)
Client in fraudulent city	-0.0812 (-0.5395)	-0.0812 (-0.5395)
Client in fraudulent city * After	0.0472 (0.2921)	0.0472 (0.2984)
Big4	0.4793*** (3.5755)	0.4793*** (3.5697)
Probability of bankruptcy	1.9068*** (19.8491)	1.9068*** (18.9940)
Absolute abnormal accruals	0.6538*** (5.7614)	0.6538*** (5.7727)
Volatility	-0.0279* (-1.7785)	-0.0279* (-1.6604)
log (asset)	-0.4370*** (-18.1801)	-0.4370*** (-16.5884)
Stock return	-0.3583***	-0.3583***

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	(-8.4983)	(-8.4595)
Leverage	0.0938	0.0938
	(0.7972)	(0.7289)
Operating cash flows	-0.9552***	-0.9552***
	(-11.1485)	(-10.0019)
log (age)	-0.4108***	-0.4108***
	(-7.6605)	(-7.0943)
New finance	0.5608***	0.5608***
	(7.6961)	(7.4972)
Prior loss	0.6649***	0.6649***
	(7.2650)	(7.0317)
Investments	-1.9738***	-1.9738***
	(-12.5140)	(-11.9560)
Constant	-0.3051	-0.3051
	(-0.4371)	(-0.4804)
<hr/>		
Observations	16,859	16,859
Pseudo R-squared	0.323	0.323
Clustered SE	No	By firm
<hr/>		
Year FE	Yes	Yes
Industry FE	Yes	Yes
<hr/>		

Table 9: Test of availability bias: Test of geographic proximity using going-concern model

Logistic regression to test Hypothesis 4. Dependent variable is Going Concern, 1= received going concern opinion for current year, 0= not received. Test variables are as follows: Implicated Audit Firm = 1 if the audit firm has been implicated in a large audit failure. Implicated Audit Firm*After =1 if the audit firm has been implicated, for the year of audit failure, and 1 year after audit failure. Implicated Audit Firm * Implicated offices within distance 'd' =1 for offices of implicated firm located within 'd' Km, where d=50, 100, 150, 200, and 250.

The first column shows the result of model estimated where audit offices of the implicated audit firm are within 50 km of the audit failure. Similarly, second column shows the result when audit offices (of implicated audit firm) are within 100km from the audit failure.

Coefficients of interest are *Implicated Audit Firm*Implicated office within distance 'd'*After* and *Implicated Audit Firm* After*.

Parenthesis contains z-statistic. *, **, *** denote statistical significance at 10%, 5%, and 1% respectively.

Dep Var: Going concern opinion					
VARIABLES	d = 50km	100km	150km	200km	250km
Implicated Audit Firm * Implicated offices within distance 'd'	-2.6206** (-2.5710)	-1.5596** (-2.3968)	-0.3621 (-1.1375)	-0.1361 (-0.4687)	-0.1018 (-0.3828)
Implicated Audit Firm * Implicated offices within distance 'd' * After	2.4014** (2.5130)	1.5765** (2.3489)	0.4027** (2.457)	0.1932* (1.7359)	0.3074* (1.7427)
Implicated audit firm	-1.1722** (-2.3782)	-1.1727** (-2.3811)	-1.1870** (-2.4074)	-1.1931** (-2.4206)	-1.1962** (-2.4279)
Implicated audit firm * After	1.1965** (2.4655)	1.1822** (2.4373)	1.1799** (2.4306)	1.1786** (2.4283)	1.1608** (2.3921)
Clients within distance 'd'	0.0071 (0.0449)	-0.0953 (-0.6284)	0.0843 (0.6118)	0.0158 (0.1153)	0.0393 (0.2930)
Clients within distance 'd' (after)	0.0268 (0.1542)	0.0490 (0.3027)	-0.0938 (-0.6454)	-0.0340 (-0.2360)	-0.0747 (-0.5354)
Big4	0.4843*** (3.6120)	0.4781*** (3.5685)	0.4851*** (3.6186)	0.4840*** (3.6116)	0.4846*** (3.6141)
Probability of bankruptcy	1.9053*** (19.8318)	1.9029*** (19.8174)	1.8981*** (19.7620)	1.8991*** (19.7675)	1.8994*** (19.7578)
Absolute abnormal accruals	0.6548*** (5.7757)	0.6541*** (5.7559)	0.6536*** (5.7716)	0.6532*** (5.7711)	0.6541*** (5.7787)
Volatility	-0.0278* (-1.7698)	-0.0277* (-1.7695)	-0.0274* (-1.7394)	-0.0273* (-1.7361)	-0.0273* (-1.7319)
log (asset)	-0.4375*** (-18.2066)	-0.4369*** (-18.1792)	-0.4388*** (-18.2597)	-0.4391*** (-18.2754)	-0.4393*** (-18.2778)
Stock return	-0.3580*** (-8.4945)	-0.3583*** (-8.4988)	-0.3585*** (-8.4972)	-0.3588*** (-8.4988)	-0.3589*** (-8.4964)
Leverage	0.0962 (0.8188)	0.0915 (0.7772)	0.0938 (0.7962)	0.0924 (0.7851)	0.0915 (0.7767)

Once Bitten Once Shy (June 2016)

Operating cash flows	-0.9558*** (-11.1660)	-0.9549*** (-11.1394)	-0.9556*** (-11.1554)	-0.9570*** (-11.1694)	-0.9579*** (-11.1732)
log (age)	-0.4127*** (-7.7090)	-0.4097*** (-7.6312)	-0.4113*** (-7.6494)	-0.4102*** (-7.6248)	-0.4094*** (-7.6110)
New finance	0.5611*** (7.6988)	0.5603*** (7.6926)	0.5618*** (7.7111)	0.5615*** (7.7077)	0.5619*** (7.7145)
Prior loss	0.6640*** (7.2560)	0.6647*** (7.2584)	0.6619*** (7.2270)	0.6609*** (7.2167)	0.6605*** (7.2134)
Investments	-1.9780*** (-12.5217)	-1.9773*** (-12.5211)	-1.9819*** (-12.5497)	-1.9840*** (-12.5649)	-1.9868*** (-12.5754)
Constant	-0.3212 (-0.4615)	-0.2468 (-0.3547)	-0.2784 (-0.4002)	-0.2800 (-0.4018)	-0.2680 (-0.3844)
Observations	16,859	16,859	16,859	16,859	16,859
Pseudo R-squared	0.323	0.322	0.321	0.321	0.321
Clustering	By client	By client	By client	By client	By client
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes

Table 10: Test of availability bias: Test of same-industry clients using going-concern model

Logistic regression to test Hypothesis 5. Test variables are indicator variables as follows: Implicated Audit Firm = 1 if the audit firm has been implicated in a large audit failure. Implicated Audit Firm*After =1 if the audit firm has been implicated for the year of audit failure, and 1 year after audit failure. Implicated Audit Firm * Industry of Fraud =1 for the clients who share the implicated auditor and the industry of fraud. Implicated Audit Firm * Industry of Fraud * After = 1 the clients who share the implicated auditor and the industry of fraud in the year of audit failure and one year after audit failure. Client in fraudulent city =1 if a client firm is headquartered in the city of audit failure. Client in fraudulent city*After =1 if a client firm is headquartered in the city of audit failure for the year of audit failure, and 1 year after audit failure. This control is added to control behavior change of other clients in the in the nearby region who might be investigated by the SEC.

Parenthesis contains z-statistic. *, **, *** denote statistical significance at 10%, 5%, and 1% respectively.

	Going concern =1 if received going concern opinion for that year		
Implicated Audit Firm	-1.203 (2.31)**	-0.017 (0.12)	-1.202 (2.31)**
Implicated Audit Firm * After	1.183 (2.30)**		1.217 (2.37)**
Implicated Audit Firm*Industry of fraud		-1.060 (2.43)**	-1.076 (2.47)**
Implicated Audit Firm*Industry of fraud*After		0.794 (1.72)*	0.790 (1.71)*
Client in fraudulent city	-0.128 (0.84)	-0.134 (0.89)	-0.134 (0.89)
Client in fraudulent city * After	0.071 (0.46)	0.076 (0.50)	0.074 (0.49)
Big4	0.480 (3.44)***	0.488 (3.48)***	0.486 (3.48)***
Probability of default	1.906 (19.26)***	1.910 (19.13)***	1.912 (19.16)***
Discretionary accruals	0.654 (5.66)***	0.654 (5.67)***	0.653 (5.66)***
Volatility	-0.027 (1.70)*	-0.029 (1.82)*	-0.028 (1.74)*
log (asset)	-0.441 (15.70)***	-0.440 (15.77)***	-0.440 (15.74)***
Stock return	-0.359 (8.37)***	-0.360 (8.40)***	-0.360 (8.38)***
Leverage	0.091 (0.72)	0.087 (0.69)	0.088 (0.69)
Change in leverage	-1.580 (6.94)***	-1.571 (6.94)***	-1.582 (6.95)***
Operating cash flows	-0.951 (10.55)***	-0.952 (10.58)***	-0.953 (10.58)***
log (age)	-0.408 (6.83)***	-0.409 (6.83)***	-0.410 (6.86)***
New finance	0.557 (7.35)***	0.557 (7.33)***	0.556 (7.33)***
Prior loss	0.664 (7.09)***	0.665 (7.10)***	0.666 (7.11)***
Investments	-1.972 (11.92)***	-1.965 (11.90)***	-1.966 (11.91)***
N	16,859	16,859	16,859
Pseudo-Rsquared	0.3222	0.3223	0.3229
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Clustered SE	By Audit Firm By Client Firm	By Audit Firm By Client Firm	By Audit Firm By Client Firm