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LITIGATION RISK AND ABNORMAL ACCRUALS

Abstract

In this paper, we examine the relation between auditor litigation risk and abnormal accruals over the 1989-2007 time period. We address potential endogeneity in prior studies by jointly modeling abnormal accruals and litigation risk in a simultaneous equation system. Our findings suggest that client-specific litigation risk affects auditor incentives to acquiesce to client demands for earnings management, i.e., the higher the risk of auditor litigation, the greater the auditor's restraining influence on the abnormal accruals reported by the client. We also find evidence that abnormal accruals increase the likelihood of auditor litigation. We also document that the 1995 Public Securities Litigation Reform Act (PSLRA) lowered the client-specific risk of auditor litigation. Litigation reform remains a topic of ongoing interest. Our findings contribute to a better understanding of the effects of litigation reform (and related changes in legal exposure) on auditor incentives and earnings management.

Key Words: Litigation risk, abnormal accruals, auditor incentives.

JEL Classification: **M4**

LITIGATION RISK AND ABNORMAL ACCRUALS

INTRODUCTION

The relation between auditor litigation risk and earnings management is an important topic of interest for academics, regulators, and policymakers (Ali and Kallapur 2001; Coffee 2004; GAO 2003a; US Chamber of Commerce 2006; US Department of the Treasury 2008; Venkataraman et al. 2008).[1] In this paper, our objective is to better understand the relation between auditor litigation risk and abnormal accruals (earnings management). Specifically, we simultaneously address two distinct but related questions: (1) does litigation risk affect auditor incentives to restrain abnormal accruals, and (2) whether abnormal accruals increase the likelihood (risk) of auditor litigation.

In a recent study, Lee and Mande (2003) document an unintended consequence of litigation reform, i.e., an increase in abnormal accruals reported by Big N audit clients in the years following the 1995 Private Securities Litigation Reform Act (PSLRA).[2] They suggest that the 1995 Act lowered litigation risk for auditors and reduced their incentives to curtail earnings management by audit clients. However, as Lee and Mande (2003) acknowledge, the Act was an event that occurred at the same time for all companies, and it is possible that some other factor besides the decrease in litigation risk could be driving the increase in abnormal accruals.

Recall that pre-audit financial statements are prepared by the client, and that adjustments to these statements are essentially negotiated between the client and the auditor as part of the audit. Basically, it is the client who benefits from managed earnings (in terms of meeting or beating earnings targets for bonus

[1] Since the demise of Arthur Andersen in 2002, it has been suggested that the loss of yet another large international accounting firm (due, for example, to catastrophic legal claims) would have severe repercussions for investor confidence in global equity markets (The American Assembly 2003, 2005; GAO 2003a; US Chamber of Commerce 2006). Consequently, the American Assembly (2003), the US Chamber of Commerce (2006), and the Committee on Capital Market Regulation (2006) have called for a reduction in auditor liability. Potentially, a reduction in legal exposure could weaken auditor incentives to restrain earnings management by audit clients.

[2] For convenience, we use the term Big N to refer to the large international accounting firms which over the years have changed from the Big 8 to the extant Big 4. Separately, the 1995 Act sought to amend what was perceived to be an excessively litigious environment, by increasing restrictions on private litigation for securities frauds and reducing the potential for frivolous lawsuits. Throughout the paper, to vary the exposition, we refer to the 1995 legislation as the 1995 Litigation Reform Act, the 1995 Act, or simply as the Act.

plans, for example). Thus, prior research (Becker et al. 1998; Francis et al. 1999) suggests that earnings management is essentially client-driven, while the auditor's role is to maintain the credibility of financial reporting by restraining earnings management.

Placed in this context, what is the role of litigation risk? Prior analytical research (Dye 1993; Melumad and Thoman 1990; Thoman 1996) suggests that audit effectiveness (and, by implication, the quality of the client's reported earnings) is linked to the level of damages facing the auditor. Also, Francis and Krishnan (2002) suggest that the threat of litigation provides auditors the incentive to report more conservatively for their audit clients. Specifically, they suggest that the higher the likelihood of auditor litigation, the greater the probability of the auditor issuing a going concern qualification for the client.

Along the same lines, a higher level of legal exposure may be expected to tip the auditor's cost/benefit calculus in favor of allowing less earnings management.[3] In other words, given the substantial direct and indirect costs of potential litigation (i.e., settlements costs, damage to reputation, and opportunity costs in terms of time away from more productive efforts), the higher the risk of litigation, the greater the auditor's restraining influence on earnings management in an attempt to avoid future litigation. We refer to this potential *negative* relation between litigation risk (as an independent variable) and abnormal accruals (the dependent variable) as the "litigation avoidance" effect.

Separately, what triggers an auditor lawsuit? As discussed by Palmrose (1999), for public companies lawsuits are generally precipitated by shareholder losses, typically a large one-time drop in the stock price. In turn, these shareholder losses are generally linked to client events such as bankruptcy or financial distress. Further, plaintiffs (and their attorneys) attempt to link shareholder losses with allegations of material financial statement omissions and misstatements. Not surprisingly, prior research (e.g. Heninger 2001; Lys and Watts 1994; Shu 2000; Stice 2001) has modeled the probability of auditor litigation as a function of various client

[3] Since audits become less costly as the auditor gains experience with the client, renewal of audits (i.e., client retention) is a key profit driver for audit firms. Thus, in the face of ongoing client retention considerations, the auditor necessarily has to make cost-benefit assessments in deciding how much earnings management to allow taking into account litigation risk. Thus, liability considerations may be expected to influence auditor incentives to acquiesce to client demands for earnings management.

characteristics that increase plaintiffs' incentives to sue such as client size, stock price volatility, and closeness to financial distress.

To our knowledge, only Lys and Watts (1994), Heninger (2001), and DuCharme et al. (2004) include accruals as a client characteristic associated with the likelihood of auditor litigation. The supporting argument is that accruals can be used to portray an overly favorable impression of the company's financial performance and prospects, which in turn can be expected raise the risk of future auditor litigation. Empirically, Lys and Watts (1994) find essentially no relation between total accruals and auditor litigation. By contrast, Heninger (2001) indicates that the likelihood of litigation increases as the client reports higher abnormal accruals. DuCharme et al. (2004) examine earnings management in a specific context (around stock offerings), and suggest that pre-offer abnormal accruals subsequently attract lawsuits. Collectively, the findings of Heninger (2001) and DuCharme et al. (2004) suggest that earnings management is *positively* related to litigation risk, i.e., positive (income-increasing) abnormal accruals increase the likelihood of the auditor being involved in a lawsuit. We refer to this potential *positive* relation between abnormal accruals (as an independent variable) and litigation (the dependent variable) as the "litigation likelihood" effect.

Taken together, the findings of Lee and Mande (2003) and Heninger (2001) suggest potential endogeneity between abnormal accruals and litigation risk. In other words, a comparison of abnormal accruals across companies with varying levels of auditor litigation risk (using a single-equation model) could be problematic, when the probability of the auditor being sued is itself an endogenous variable that may depend on abnormal accruals. To control for endogeneity bias, we use a simultaneous equation methodology to examine the relation between abnormal accruals and litigation risk. By controlling for endogeneity, our study more clearly speaks to the issue of whether the auditor's restraining influence on earnings management -- to avoid future litigation – is greater when the risk of litigation is higher (the litigation avoidance effect), and whether earnings management increases the likelihood of auditor litigation (the litigation likelihood effect).

Our sample consists of 67 lawsuits against Big N auditors over the 1989-2007 time period, as well as a control sample of Big N audit clients that did not experience an auditor lawsuit.[4] Our sample period starts in 1989 since Francis and Krishnan (2002, p. 138) indicate that the auditing profession's public concern over litigation emerged during this time. Consistent with Heninger (2001), the abnormal accruals variable is signed performance-adjusted abnormal accruals such that the higher the metric, the higher the client's reported earnings.[5]

Consistent with the "litigation avoidance" effect discussed previously, our findings show a *negatively* signed relation between client-specific auditor litigation risk (as an independent variable) and the abnormal accruals reported by the client. To our knowledge, this finding is new to the literature and suggests that higher litigation risk lowers the auditor's incentive to acquiesce to client demands for earnings management. Further, this finding suggests that auditors believe that information markets are not perfect, i.e., auditors believe that users of accounting information are either unable or unwilling to unravel the effects of earnings management.[6]

Second, consistent with the "litigation likelihood" effect also discussed previously, we find evidence that abnormal accruals (as an independent variable) increases the likelihood of auditor litigation. Although auditor lawsuits are precipitated by shareholder losses which often are related to client events such as financial distress and bankruptcy (Palmrose 1999), clients may manage earnings in an attempt to delay the reporting of financial distress or failure.[7] Our findings suggest that despite the notion that Big N auditors are often sued more for their "deep pockets" than for their culpability for wrongdoing, there may

[4] We examine only Big N audit clients to avoid issues relation to auditor self-selection bias. Further, Palmrose (1999) -- from which we obtain a part of the auditor lawsuit sample as discussed below – examines Big N lawsuits only. Also, Lee and Mande (2003) document an increase in earnings management by Big N (but not non-Big N) audit clients in the years subsequent to the 1995 Litigation Reform Act.

[5] We thank a reviewer for suggesting that we examine signed abnormal accruals (consistent with Heninger 2001).

[6] As discussed by Dechow and Skinner (2000), the academic argument is that earnings management should not matter to investors in an efficient market as long as it is fully disclosed. By contrast, regulators and managers often have a different view (Fields et al. 2001; Graham et al. 2005). Our findings suggest that auditors share the view of their clients that information markets are not perfect and that earnings management matters to investors.

[7] We thank a reviewer for pointing out that the recent corporate accounting scandals and failures (such as Enron and WorldCom) all point to a relation between financial distress, failure, and earnings management.

be a link between abnormal accruals and litigation. Overall, our results suggest that earnings management is related to litigation.

Third, our results show that the client-specific auditor litigation risk decreased after the 1995 Litigation Reform Act. Although this outcome of the 1995 Act has been conjectured in the prior literature (e.g., Francis and Krishnan 2002; Lee and Mande 2003), to our knowledge ours is the first study to document empirically that the Act decreased auditors' legal exposure. Finally, our results suggest that the 1995 Reform Act did *not* have a direct, across the board effect in terms of increasing earnings management. Rather, the findings suggest that the increase in abnormal accruals in the post-1995 Act time period occurred indirectly through the decrease in client-specific litigation risk.

Our study contributes to the literature in several ways. First, we address potential endogeneity in prior studies by using a simultaneous equation (a two-stage instrumental variable) approach. Our research design provides a better specified test of the relation between litigation risk and abnormal accruals, and enables us to draw inferences about the relation with greater confidence. Second, by estimating client-specific auditor litigation risk over 1989-2007, we are able to directly examine whether litigation risk decreased after the 1995 Act.[8] Third, we are able to directly examine both dimensions of the litigation risk-abnormal accruals relation, i.e., whether auditors restrain earnings management to avoid future litigation (the litigation avoidance effect), as well as whether abnormal accruals is a factor that increases the likelihood of the auditor being involved in a lawsuit (the litigation likelihood effect).

The remainder of this paper is organized as follows: The next three sections describe the related literature, the methodology and data, and our empirical findings. The fifth and final section provides concluding remarks.

RELATED LITERATURE

Our paper contributes to the literature on the auditor-related determinants of abnormal accruals (earnings management) as well as the separate literature on the determinants of auditor litigation risk.

[8] The 1995 Act became effective January 1, 1996, and applies to all lawsuits filed on that date or later regardless of the year of alleged wrongdoing.

The first set of studies focus on auditor characteristics that are related to abnormal accruals reported by companies. Thus, Becker et al. (1998) and Francis et al. (1999) report that Big N audit clients report lower abnormal accruals than non-Big N audit clients, indicating that Big N auditors are more effective at restraining earnings management by the client. Separately, Ashbaugh et al. (2003) and Chung and Kallapur (2003) suggest that the auditor's economic dependence on the client for fees earned by providing non-audit services is not related to abnormal accruals, i.e., non-audit fees paid by the client to the incumbent auditor do not compromise the auditor's objectivity and independence. Also, Johnson et al. (2002) report that long auditor tenures are not related to abnormal accruals (financial reporting quality) for Big N clients although short tenures (3 years or less) appear to lower reporting quality possibly due to the learning curve in the early years of auditor tenure.

As discussed previously, Francis and Krishnan (2002) suggest that the threat of private litigation provides auditors an incentive to be more conservative in issuing audit reports, i.e., the higher the litigation risk, the higher the probability of the auditor issuing a going concern qualification. Separately, in a recent study on initial public offerings (IPOs), Venkataraman et al. (2008) report that pre-IPO audited accruals were lower than post-IPO audited accruals over the 1960-93 time period. They suggest that legal exposure motivates auditors to restrain earnings management rather than acquiesce to issuer demands for income-increasing abnormal accruals in an attempt to increase the offer price.

However, to our knowledge, prior research has not directly examined the relation between client-specific auditor litigation risk and earnings management. As noted previously, although Lee and Mande (2003) report an increase in earnings management after the passage of the 1995 Act, the Act represents an event that affected all companies simultaneously. Hence, it is possible that the increase in abnormal accruals reported by Lee and Mande (2003) is related to some other factor besides litigation risk. Moreover, Lee and Mande (2003) do not control for client-specific litigation risk in their analysis. By contrast, in our study we directly examine the relation between the client-specific risk of auditor litigation (as an independent variable) and abnormal accruals (as the dependent variable).

The second set of studies in the prior literature focus on the determinants of auditor litigation risk (i.e., examine litigation risk as the dependent variable). As noted by Shu (2000), litigation risk captures the auditor's legal exposure, i.e., the likelihood (risk) that the client will involve the auditor in a lawsuit. Basically, these studies focus on client-related factors at the time of the alleged auditor wrongdoing. The purpose of these studies is to help auditors identify high-risk audit engagements in advance so that they can institute appropriate audit procedures or price their services to reflect the assessed higher risk of litigation. Stice (1991) examines a sample of 49 auditor lawsuit companies (and a matched sample of non-lawsuit companies) over the 1960-85 time period. His analysis does not include abnormal accruals as an explanatory variable. However, his multivariate analysis suggests that the client's ratios of accounts receivable and inventory to total assets, variance of abnormal returns, financial condition, and size are significantly associated with lawsuits against auditors.

Both Lys and Watts (1994) and Shu (2000) use essentially the same sample of litigation companies (40 auditor lawsuits with complete data) over the 1955-94 time period.[9] Lys and Watts (1994) utilize total accruals (rather than abnormal accruals) as an explanatory variable, and report that the probability of a lawsuit is increasing with income-increasing accruals, client size, and the fraction of audit revenues derived from the client (as a proxy for auditor independence). However, over the later sub-period (1983-94) of their multivariate analysis, they find no relation between accruals and the likelihood of auditor litigation. Shu (2000) does not include accruals (total or abnormal) as an explanatory variable in her analysis. Broadly consistent with Stice (1991), she finds the client's ratios of accounts receivable and inventory to total assets, leverage, sales growth, and size to be significantly associated with litigation against auditors.

By contrast, Heninger (2001) focuses directly on the relation between abnormal accruals and auditor litigation. His sample consists of 67 auditor lawsuit companies (and a control sample of 67 non-lawsuit companies) over the 1984-98 time period. As noted by Heninger (2001), the total levels of

[9] Lys and Watts (1994, p. 85) indicate that their multivariate analyses is based on a sample of 40 lawsuit clients with complete data.

accounts receivable and inventory (i.e., the explanatory variables used by Stice 1991 and Shu 2000) depend primarily on business fundamentals and do not represent proxies for earnings management. Controlling for client-related factors such as size and growth, Heninger (2001) finds that higher (i.e., income increasing) abnormal accruals are positively related to the likelihood of auditor litigation. He suggests that investors hold auditors responsible for curbing earnings management by their audit clients.

To the extent that auditors of companies reporting higher abnormal accruals have a greater probability of being sued, a positive relation is likely between abnormal accruals (as an independent variable) and auditor litigation risk (the dependent variable). However, if auditors facing higher expected litigation risk are less likely to acquiesce to client demands for earnings management, a negative relation is likely between litigation risk (as an independent variable) and abnormal accruals (the dependent variable). As noted previously, prior studies analyzing abnormal accruals and litigation risk potentially suffer from an endogeneity problem that could mask the actual relation between the two variables. As explained below, our analysis uses a simultaneous equation framework to take into account the endogenous relation between abnormal accruals and litigation risk.

METHODOLOGY AND DATA

As noted previously, there are two predictions concerning the relations between litigation risk and abnormal accruals. First, a higher level of legal exposure may be expected to tip the auditor's cost/benefit calculus in favor of allowing less earnings management. In other words, the higher the litigation risk in an audit engagement, the greater the auditor's restraining influence on abnormal accruals in an attempt to avoid future litigation, implying a *negative* relation between litigation risk and abnormal accruals in the model 1 below (the litigation avoidance effect). Second, as suggested by Heninger (2001), auditors who are more acquiescing of their clients' demands for earnings management may face an increased likelihood of a lawsuit, implying a *positive* relation between abnormal accruals and litigation risk in the model 2 below (the litigation likelihood effect). This interrelation between litigation risk and abnormal accruals is captured by the following equations:

Abnormal accruals model: $ABACC = f(LRISK, X, X1)$ (1)

Litigation risk model: LRISK = f(ABACC, X, X2) (2)

Where ABACC is the abnormal accruals (earnings management) metric; LRISK is the client-specific risk of auditor litigation; X is a vector of independent (exogenous) variables common to both models, i.e., they are related to both abnormal accruals and litigation risk; X1 is a vector of independent variables that are uniquely related to abnormal accruals, but not to litigation risk; and X2 is a vector of independent variables that are uniquely related to litigation risk, but not to abnormal accruals**.** As suggested by Larcker and Rusticus (2010), we use economic intution to assign independent variables to X, X1, or X2 as detailed below. [10]

All the variables are defined in Table 1 and discussed below. Specifically, the X vector represents the variables 1995ACT, SIZE, DISTRESS, GROWTH, LEV, INV, and AR common to both equations. Similarly, the X1 vector represents the variables AUDTEN, CFFO, FINANCE, IMPLICIT, ACCRUAL_FLEX, FIRST, and LAST unique to model (1), and the X2 vector represents the variables CR, ROA, RET, BETA, TURNOVER, DELIST, TECH, MIN, SKEWNESS, and KURTOSIS unique to model (2). The objective of the system of equations is to model the auditor's trade-off between litigation risk and abnormal accruals at the time of the alleged wrongdoing.

Equation (1), the abnormal accruals model, addresses whether litigation risk affects the auditor's acquiescence to the client's demands for earnings management. Note that because of the potential endogeneity discussed earlier, it would not be appropriate to substitute a dummy variable indicating the ex post occurrence of a lawsuit for litigation risk (variable LRISK) and to estimate the single equation using OLS. Rather, the occurrence of a lawsuit is not exogenous and may depend in part on the amount of abnormal accruals.[11] Similarly, equation (2), the litigation risk model, examines whether abnormal

[10] As noted by a reviewer, given that most accounting studies are empirical (rather than theoretical), it is difficult to decide which variables should be common independent variables and which variables should be unique to each of the two (abnormal accruals and litigation risk) models. We base our choice of these independent variables on prior research and reviewer suggestions.

[11] In statistical terms, the variable LRISK and the error term in equation (1) may not be independent, a violation of a fundamental assumption of OLS that may yield inappropriate inferences.

accruals affect litigation risk. Once again, due to potential endogeneity, it would not be appropriate to estimate the single equation by regular probit analysis. Rather, auditors facing higher litigation risk have a greater incentive to restrain earnings management as discussed above, leading to an endogeneity bias.

Hence, we follow a two-stage estimation method. In the first stage, we regress abnormal accruals (ABACC) and litigation risk (LRISK) on all the exogenous independent variables in the system (i.e., all variables in the X, X1, and X2 vectors), using OLS and probit, respectively.[12] In the second stage, we substitute the predicted values of ABACC and LRISK from the first-stage estimation, i.e., the instrument variables ABACC_I and LRISK_I, for variables ABACC and LRISK in equations (2) and (1), respectively. We then estimate the two second-stage equations using OLS and probit, respectively.

Below we discuss the accruals and litigation risk models in more detail.

The Abnormal Accruals Model

As defined in Table 1 (panel A), the dependent variable ABACC (consistent with Heninger 2001) represents the signed asset-deflated performance-adjusted abnormal accruals estimated using the cross-sectional modified Jones (1991) model. The higher the metric, the higher the earnings reported by the client.

Consistent with prior research (e.g., DeFond and Jiambalvo 1994; Subramanyam 1996), to estimate the normal accruals we utilize the modified Jones (1991) model below in the cross-section by industry:

$$\frac{TA_{it}}{Assets_{i,t-1}} = \alpha \frac{1}{Assets_{i,t-1}} + \beta_1 \frac{\Delta SALES_{it} - \Delta AR_{it}}{Assets_{i,t-1}} + \beta_2 \frac{PPE_{it}}{Assets_{i,t-1}} + \varepsilon_{i,t}$$

In this model, TA is total accruals calculated as income from continuing operations less operating cash flows from continuing operations; ΔSALES is change in sales revenue, ΔAR is the change in accounts receivables, PPE is gross property and equipment, and the subscripts i and t denote firm and year,

[12]In the context of our accruals and litigation risk models, Maddala (1983, p. 246) indicates that the appropriate solution is to use two-stage estimation with the discrete choice (litigation risk) model estimated by probit. DeFond et al. (2002) make a similar point, i.e., probit (rather than logistic) regression is appropriate because the simultaneous system requires normally distributed residuals.

respectively. The abnormal accruals represent the difference between total accruals and the estimated normal accruals. As suggested by Kothari et al. (2005) and consistent with Francis et al. (2005), we array firms in each industry (by 2-digit SIC code) into deciles based on the prior year return on assets (ROA), and obtain the performance-adjusted abnormal accruals by subtracting from each firm's abnormal accrual the median abnormal accrual from the corresponding ROA-industry decile to which the firm belongs.

Endogenous Test Variable

The endogenous test variable LRISK is a dummy variable that is equal to 1 for observation (company-year) of wrongdoing as alleged in the lawsuit against the auditor, and 0 otherwise. As discussed previously, in the second-stage regression, the instrument variable is LRISK_I which is the predicted value obtained from a first-stage probit model in which LRISK is the dependent variable and the independent variables are all the exogenous variables in both the accruals and litigation risk models. Based on the notion (discussed previously) that the higher the expected litigation risk, the greater the auditor's restraining influence on abnormal accruals in an attempt to avoid future litigation, the predicted sign for LRISK_I is negative.

Independent Variables Common to Both Models

The common independent variables (1995ACT through AR) are defined in Table 1 panel A. Variable 1995ACT is a dummy variable equal to 1 if the 1995 Litigation Reform Act applies to the observation (company-year), and 0 otherwise. Consistent with Lee and Mande (2003), to the extent that the 1995 Act was followed by an increase in earnings management, the predicted sign for variable 1995ACT is positive. The other independent variables included in the model are based on recent research (Geiger and North 2006; Cahan and Zhang 2006). Lang and Lundholm (1993) suggest that larger firms have an incentive to report more accurately in an attempt to avoid litigation. In the regressions, variable SIZE is a proxy for the size of the audit client, and the predicted sign for this variable is negative. Variable DISTRESS represents the firm's financial condition based on Zmijewski (1984), such that higher values of the variable represent higher levels of financial distress for the firm. Prior research (e.g., Healy and Palepu 1990; Sweeney 1994; Watts and Zimmerman 1986) suggests that more troubled firms

tend to manage earnings upward in an attempt to avoid violation of debt covenants. However, (DeAngelo et al. 1994) report that more troubled firms tend to manage earnings downward to facilitate debt renegotiation. Hence, we do not predict the sign for variable DISTRESS in the regression.

We control for growth (variable GROWTH), since prior research (e.g., Menon and Williams 2004) suggests that the firm's growth is positively associated with abnormal accruals. Also, Barth et al. (1999) and Dechow and Skinner (2000) suggests that growth firms have a strong incentive to manage earnings in an attempt to meet or beat earnings benchmarks and thus sustain the stock price. Hence, the predicted sign for GROWTH in the regressions is positive. Prior research (DeFond and Jiambalvo 1994) suggests that more leveraged firms are more likely to use income-increasing accruals to avoid violating debt covenants. Hence, the predicted sign of leverage (variable LEV) is positive. Finally, variables INV and AR represent the scaled values of the client's inventory and accounts receivable. As pointed out by Heninger (2001), the levels of inventory and accounts receivable are related primarily to business fundamentals and do not represent proxies for earnings management. Hence, we do not predict the sign for variables INV and AR in the regressions.[13]

Independent Variables in Abnormal Accruals Model Only

The control variables (AUDTEN through LAST) unique to the accruals model are also defined in Table 1 panel A. Prior research suggests that auditor tenure (i.e., the number of years for which the current audit firm has audited the client) affects auditor learning and auditor independence, i.e., potentially improves auditor learning and effectiveness in the early years, but adversely affects auditor independence and objectivity in later years (GAO 2003b; Johnson et al. 2002; Myers et al. 2003; POB 2002). Hence, we control for auditor tenure (AUDTEN) in the regressions although we do not predict the sign for this variable. Variable CFFO represents the cash flow from operations scaled by total assets. Based on prior research (Ashbaugh et al. 2003; Chung and Kallapur 2003), CFFO is expected to be

[13] We thank a reviewer for suggesting that we include variables INV and AR as control variables common to both models.

negatively related to abnormal accruals. Hence, the predicted sign for this variable in the regressions is negative.

We also control for significant changes in company financing (variable FINANCE), since prior research (Ashbaugh et al. 2003; Chung and Kallapur 2003; Rangan 1998; Teoh et al. 1998) suggests that this variable is positively related to the client's incentive to manage earnings. Hence, the predicted sign for the variable FINANCE is positive. Variable IMPLICIT represents the implicit claims that firms have with their stakeholders including customers, suppliers, and employees (Bowen et al. 1995). Following Matsumoto (2002), this variable is created by factor analyzing three measures related to production, R&D spending, and labor intensity. Consistent with Cahan and Zhang (2006), the predicted sign for variable IMPLICIT is negative.

Potentially, managers in industries with more flexible GAAP are more likely to manage earnings. Consistent with Lu (2007), we proxy this flexibility (variable ACCRUAL_FLEX) by the root mean squared error of the cross-sectional model used to estimate abnormal accruals, and the predicted sign is positive. Finally, we control for the effect of auditor changes. Both the first year (variable FIRST) with the successor auditor and the last year (variable LAST) with the predecessor auditor are included as dummy control variables.[14] DeFond and Subramanyam (1998) indicate that abnormal accruals are income decreasing during the last year and insignificant during the first year of auditor tenure, although they suggest that these findings may be related to litigation risk and client financial distress. Hence, in our analysis we do not predict the signs for these variables.

The Litigation Risk Model

As defined in Table 1 (panel B), the dependent variable LRISK is a dummy variable equal to 1 for the observation (company-year) of wrongdoing as alleged in the auditor lawsuit, and 0 otherwise.

Endogenous Test Variable

As noted previously, the endogenous test variable ABACC represents the signed asset-deflated performance-adjusted abnormal accruals estimated using the cross-sectional modified Jones (1991)

[14] We thank a reviewer for suggesting that we include both FIRST and LAST as control variables.

model. The higher the metric, the higher the earnings reported by the client. In the second-stage regression, the instrument variable is ABACC_I is the predicted value obtained from the first stage where ABACC is regressed on all the exogenous (independent) variables in both the accruals and litigation risk models. To the extent that abnormal accruals are associated with an increased risk of auditor litigation, the predicted sign for ABACC_I is positive.

Independent Variables Common to Both Models

As discussed previously, the independent variables common to both the accruals and litigation risk models are 1995ACT through AR. For convenience, their definitions are repeated in Table 1 panel B. Since the predicted signs for these variables in the litigation risk model may differ from their predicted signs in the accruals model, we re-discuss these variables briefly. Once again, variable 1995ACT is a dummy variable equal to 1 if the 1995 Litigation Reform Act applies to the observation (company-year), and 0 otherwise. To the extent that the 1995 Reform Act lowered litigation risk for auditors, the predicted sign for variable 1995ACT is negative. Variable SIZE is a proxy for the size of the audit client. As discussed by Stice (1991) and Heninger (2001), a larger client implies a larger potential damage award and a greater incentive for plaintiffs to pursue litigation. Hence, the predicted sign for SIZE in the regression is positive.

Variable DISTRESS represents the firm's financial condition based on Zmijewski (1984), such that higher values of the variable represent higher levels of financial distress for the firm. Prior research (e.g., Stice 1991; Heninger 2001) suggests that distressed clients are more likely to be associated with litigation against auditors. Hence, the predicted sign for this variable is positive. Both Stice (1991) and Heninger (2001) suggest that higher growth firms have more difficulty in maintaining adequate internal control systems leading to an increased likelihood of an auditor lawsuit. Hence, the predicted sign for variable GROWTH is positive. To the extent that the more leveraged firms have more volatile stock prices, these firms are more likely to experience litigation. Consistent with Shu (2000), the predicted sign of leverage (variable LEV) is positive. Finally, firms with greater levels of inventory and accounts

receivable may be more subject to unexpected losses and litigation risk. Hence, the predicted sign for variables INV and AR is positive.

Independent Variables in Litigation Risk Model Only

The independent variables (CR through KURTOSIS) unique to the litigation risk model are defined in Table 1 panel B. Variables CR (the current ratio) and ROA (return on assets) are proxies for financial condition. Consistent with Stice (1991) and Heninger (2001), the better the client's financial condition, the lower the likelihood of an auditor lawsuit. Hence, the predicted sign for these variables in negative. Shu (2000) suggests that higher stock returns lower the likelihood of litigation. Hence, the predicted sign for variable RET is negative. Variables BETA (the stock beta) and TURNOVER (a measure of stock trading and turnover) relate to the characteristics of the client's stock. Shu (2000) and Stice (1991) suggest that higher values of these metrics provide more opportunities for investors to allege losses. Hence, the predicted sign for these variables is positive. Also, if the stock is delisted usually due to financial difficulties, it is easier for investors to incur losses and allege auditor wrongdoing. Hence, variable DELIST has an expected positive sign. Also, technology firms are more likely to be involved in an auditor lawsuit. Hence, the predicted sign for variable TECH is also positive. Finally, variables MIN, SKEWNESS, and KURTOSIS represent daily return characteristics for the client during the fiscal year. Consistent with Lu (2007), the predicted sign for these variables in the regressions is negative.

Data and Sample

Table 2 panel A summarizes the sample selection process for lawsuit companies. We obtain our sample of Big N auditor lawsuits over the 1989-2007 period from Palmrose (1999) and Audit Analytics. Our sample of auditor lawsuit companies is formed from the intersection of the (a) merged Compustat annual industrial file, including the primary, secondary, tertiary and full coverage research files, and (b) return files from the Center for Research in Security Prices (CRSP). We exclude observations in the utility and financial services industries, and in industries (2-digit SIC code) with fewer than 10 firm-year

observations available to estimate the industry-specific modified Jones model.[15] Our sample consists of 67 Big N lawsuits.[16] Since a plaintiff can allege auditor wrongdoing in multiple years, our lawsuit sample consists of 146 alleged wrongdoing company-years.

To obtain a control sample of non-lawsuit companies, prior research has utilized what Maddala (1991) calls a choice-based sampling approach. Thus, Heninger (2001), Lys and Watts (1994), and Stice (1991) use a matched sample approach, i.e., an equal number of lawsuit and non-lawsuit observations (company-years). However, since only a very small percentage of companies are involved in auditor lawsuits in any given year, the lawsuit sample is necessarily over-represented in any matched sample. Hence, rather than use a matched sample, Shu (2000) randomly selects 10 control companies for each alleged wrongdoing company-year. Still, she (2000, p. 189, fn. 16) notes that "compared to the population composition, the lawsuit sample is over-represented." Further, Maddala (1991, p.793) indicates that in the context of probit analysis (which we use for our litigation risk model) a choice-based sampling approach could yield biased coefficient estimates.[17]

Consequently, in our study, we use all non-lawsuit observations (company-years) over the 1989-2007 time period as our control sample. Table 2 panel B summarizes the selection process for the 146 lawsuit company-years and 28,143 non-lawsuit ("control sample") company-years for a total of 28,289 observations over the 1989-2007 time period. Since companies may have similar characteristics in the years prior to or after the year of litigation, we exclude non-litigation years for lawsuit companies (n=928), i.e., drop from the control sample clients that have been sued even for years where they are not sued.[18]

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[15] We exclude utilities and financial institutions (i.e., firms with SIC codes 4000-4999 and 6000-6999) from our sample because of their unique regulatory and operating characteristics (Fields et al. 2004).

[16] By way of comparison, Stice (1991) and Heninger (2001) examined 49 (over 1960-1985) and 67 (over 1984-98) auditor lawsuits, respectively. Lys and Watts (1994) and Shu (2000) examined basically the same sample of 40 auditor lawsuits (over 1955-94) for which they had complete data for their multivariate analysis.

[17] As noted previously (fn. 12), Maddala (1983, p. 246) indicates that probit is appropriate for the two-stage estimation of a discrete choice (i.e., our litigation risk) model.

[18] We thank a reviewer for the suggestion that we drop these observations.

EMPIRICAL FINDINGS

Descriptive Statistics

Table 3 presents descriptive statistics (mean, median, and standard deviation) for the dependent and independent variables for the lawsuit sample (n=146) and the control sample of all company-years not involved in an auditor lawsuit (n=28,143). These statistics indicate that the observations in the lawsuit sample have higher (i.e., more income-increasing) abnormal accruals than the observations (company-years) in the control sample of non-lawsuit audit clients.

Table 4 reports the correlation coefficients between the dependent and independent variables for our sample of lawsuit company-years and the control sample of non-lawsuit company years. In Table 4, the pairwise correlations between any one of the two dependent variables (ABACC and LRISK) and any of the independent variables are generally low.[19] In our multivariate analyses discussed below, we control for concurrent changes in the control variables as well as endogeneity in examining the relation between abnormal accruals and litigation risk.

Regression Results *without* Control for Endogeneity

To provide a benchmark for our simultaneous equation approach, we present and discuss briefly the single-equation regression results *without* controlling for simultaneity. For the accruals model, we estimated a single-equation OLS regression with variable ABACC (abnormal accruals) as the dependent variable and variables LRISK through LAST as the independent variables. These regression results are presented in the first-set of columns in Table 5 panel A titled "OLS (DV=ABACC)." In this regression, note that the variable 1995ACT is significant with a positive sign indicating (consistent with Lee and Mande 2003) that the 1995 Litigation Reform Act – by lowering litigation risk – was associated with an increase in abnormal accruals. However, the results indicate that the test variable LRISK (litigation risk) is *not* significant at conventional levels, suggesting that litigation risk has no effect on the auditor's

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[19] In multiple regression analysis, problems with collinearity depend on correlations among sets of variables rather than simple pairwise correlations. Hence, although we show pairwise correlations for completeness, we diagnose collinearity in the regressions using variance inflation factors (VIFs) as discussed below.

incentive to restrain earnings management by the client.[20] As discussed earlier, the coefficient for LRISK in this single-equation analysis may be biased because LRISK is potentially an endogenous variable. Consistent with this argument, note that the null hypothesis of no endogeneity is rejected based on the Hausman (1978) Chi-square reported at the bottom of Table 5 panel A.

Similarly, for the litigation risk model, we estimated a single-equation probit regression with variable LRISK (litigation risk) as the dependent variable and the variables ABACC through KURTOSIS as the independent variables. These regression results are presented in the first-set of columns in Table 5 panel B titled "Probit (DV=LRISK)." In this regression, note that 1995ACT variable is significant with a negative sign indicating that the 1995 Litigation Reform Act lowered the client-specific litigation risk for auditors. Also, consistent with Heninger (2001), the test variable ABACC is significant with a positive sign indicating that higher (i.e., income-increasing) abnormal accruals increase the likelihood of auditor litigation. [21] Once again, we hesitate to draw any inferences since the coefficient for ABACC in the single-equation analysis is potentially affected by endogeneity bias. Consistent with this argument, the null hypothesis of no endogeneity is rejected based on the Smith and Blundell (1986) Chi-square reported at the bottom in Table 5 panel B.

First-Stage Regression Results

In the first-stage regressions, the dependent variables ABACC and LRISK are regressed on all the exogenous independent variables in both models. Thus, the second-set of columns in Table 5 panel A present the first-stage regression with the dependent variable LRISK regressed on the independent variables 1995ACT through KURTOSIS. We note that in most instances the signs of the first-stage coefficients are in the predicted direction.

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[20] As noted previously, Lee and Mande (2003) did *not* include the client-specific litigation risk (LRISK) as an explanatory variable in their study. In other words, they did not examine the relation between client-specific litigation risk (LRISK) and abnormal accruals as we do in our study. Separately, in this regression, the highest VIF for any variable was 1.88 and the VIF for the test variable LRISK was only 1.00. Hence, the lack of significance for LRISK cannot be attributed to collinearity.

[21] In this regression, the highest VIF for any variable was 2.25 and the VIF for the test variable LRISK was only 1.11. Hence, collinearity is not expected to be an issue in interpreting the results.

As discussed below, the predicted (fitted) value of the dependent variable from this regression is used as the test variable (LRISK_I) in the second-stage regression reported in the third-set of columns in panel A. Separately, the partial Chi-square reported in panel A indicates that the independent variables unique to the litigation risk model (variables CR through KURTOSIS) add explanatory power to the first-stage model, i.e., the coefficients of these explanatory variables are *not* jointly equal to zero.[22] We also compute the Basmann (1960) over-identifying restriction test as a means of assessing the exogeneity of the instruments, i.e., the unique independent variables. The Basmann (1960) Chi-square reported in panel A is statistically significant indicating that one or more of these independent variables unique to the litigation risk model are not exogenous. Given the strength of our instruments, the compelling theoretical basis for expecting strong endogeneity between litigation risk and accruals, and the weak theoretical basis for expecting endogeneity in the instruments, we believe that the instrumental variable estimator is preferred to the OLS estimator in Panel A. However, we acknowledge that this is a judgment call and thus we caution the reader to interpret the second stage estimates with caution.

Similarly, the second-set of columns in Table 5 panel B present the first-stage regression with the dependent variable ABACC regressed on the control variables 1995ACT through KURTOSIS. As discussed below, the predicted (fitted) value of the dependent variable from this regression is used as the test variable (ABACC_I) in the second-stage regression reported in the third-set of columns in panel B.

In most cases, the coefficient estimates in the first-stage regression are in the predicted direction.

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[22] We tested for weak instruments as follows. First, we estimate the first-stage model (reported in the columns titled first stage (DV = LRISK) and first-stage (DV = ABACC) panel A and B, respectively of Table 5) and calculate the statistic testing the null hypothesis that the instruments are jointly equal to zero. We then compare that statistic to the critical values reported in Table 2 of Stock and Yogo (2002), which defines an instrumental variable set as "weak" if a nominal 5% two-stage t-test exceeds 15% (i.e., the actual alpha risk exceeds the nominal 5% alpha risk by a factor of three). Based on this definition of instrument weakness, the instruments are considered weak if the first stage test statistic falls below the tabulated critical values.

The first-stage test statistics are $\chi 2$ =45.03 and F=3404.71 (reported at the bottom of Table 5 Panels A and B, respectively). In Table 5 Panel A the $\chi 2$ =45.03 (ten degrees of freedom) is approximately equal to F=4.51 with degrees of freedom in the numerator and denominator of 10 and 28,278, respectively. Based on Stock and Yogo (2002) Table 2, the null of weak instruments cannot be rejected unless F>20.88 (k=10, n=1, r=.15). Because F=4.51 < F=20.88, the instruments for LRISK are deemed weak, implying that the actual significance level on the test of LRISK_I in Table 5 Panel A may be overstated.

Separately, the partial F-statistic reported in panel B indicates that the independent variables unique to the abnormal accruals model (variables AUDTEN through LAST) add explanatory power to the first-stage model, i.e., the coefficients of these explanatory variables are *not* jointly equal to zero. Thus, our instruments for ABACC are strong.[23] The Amemiya-Lee-Newey (Lee 1992) test of overidentifying restrictions rejects the null, indicating that one or more of these independent variables unique to the abnormal accruals model are not exogenous. However, the large partial R^2 of the instruments (45.74%) implies that any endogeneity within these instruments could be almost half as large as the endogeneity between ABACC and LRISK and still the instrumental estimator will have lower bias than the uncorrected probit estimates reported in the first column. Once again, we believe the instrumental variable estimator in panel B is appropriate because of the strength of our instruments, the compelling arguments for expecting strong endogeneity between litigation risk and accruals, and the weak theoretical basis for expecting endogeneity in the instruments. Again, we acknowledge that this is a judgment call and caution the reader to interpret the second stage estimates with caution.

Second-Stage Regression Results

In Table 5 panel A, the third-set of columns present the second-stage regression results for the abnormal accruals model. In this regression, the test variable LRISK is now substituted by the instrument variable LRISK_I representing the fitted values from the first-stage regression with LRISK as the dependent variable. Although we do not report variance inflation factors (VIFs) due to space limitations, they are quite low (no more than 3.25, for any variable in the regression) indicating that collinearity is not likely to be a problem in interpreting the regression results. Also, note that the statistical inferences are based on "robust" t-statistics that are corrected for cross-sectional correlation and heteroskedasticity (Gow et al. 2010).

In this regression, in most instances the signs of the coefficients on the independent variables 1995ACT through LAST are in the predicted direction. Also, note that the instrument variable LRISK_I

[23] In Table 5 panel B, the F=3404.71 easily exceeds the critical value of 17.38 reported in Stock and Yogo (2002) Table 2 (k=7, n=1, r=.15). Thus, the null of weak instruments is rejected for the analysis reported in Table 5 Panel B.

is significant at the 0.01 level with a *negative* sign. This finding is new to the literature, and is consistent with the "litigation avoidance" effect discussed previously, i.e., the notion that the higher the client-specific risk of auditor litigation, the greater the auditor's incentive to avoid future litigation by restraining the abnormal accruals reported by the client.

Separately, the variable 1995ACT has the predicted positive sign but is not significant. This finding suggests that the 1995 Litigation Reform Act did *not* have a direct, across the board effect of increasing abnormal accruals (earnings management). Rather, the post-Act increase in abnormal accruals occurred indirectly via the reduction in client-specific litigation risk. In other words, rather than result in an equal across the board increase in abnormal accruals for all clients, the 1995 Act increased abnormal accruals in proportion to the decrease in the client-specific litigation risk. We believe this to be a more credible finding, i.e., there is no reason why litigation reform should increase abnormal accruals equally for all clients. Since auditor litigation risk is not the same for all clients, the increase in abnormal accruals following litigation reform may be expected to be in proportion to the reduction in the litigation risk specific to the client.

In Table 5 panel B, the third-set of columns present the second-stage regression results for the litigation risk model. In this regression, the test variable ABACC is now substituted by the instrument variable ABACC_I representing the fitted values from the first-stage regression with ABACC as the dependent variable. Once again, although we do not report variance inflation factors (VIFs) due to space limitations, they are quite low (no more than 2.26, for any variable in the regression) indicating that collinearity is not likely to be a problem in interpreting the regression results. Also, the statistical inferences are based on "robust" t-statistics that are corrected for cross-sectional correlation and heteroskedasticity (Gow et al. 2010).

Once again, in most instances the signs of the coefficients on the independent variables 1995ACT through KURTOSIS are in the predicted direction. In particular, note that variable 1995ACT is significant with a *negative* sign. To our knowledge, this empirical finding is also new to the literature, i.e., although prior research has conjectured that the 1995 Reform Act lowered litigation risk, our study

documents that effect. Finally, note that the instrument variable ABACC_I is significant with a positive sign, a finding consistent with the "litigation likelihood" effect discussed previously, i.e., the notion that positive (income-increasing) abnormal accruals are associated with an increased risk of auditor litigation. This finding is consistent with the single-equation OLS result in the first-set of columns discussed earlier and also with Heninger (2001).

In summary, our results provide support for the notion that the threat of private litigation affects auditor behavior, i.e., the higher the client-specific risk of auditor litigation, the stronger the auditor's restraining influence on the abnormal accruals reported by the client. Our results also provide support for the notion that income-increasing abnormal accruals increase the likelihood of auditor litigation. Finally, we find empirical support for the idea that the 1995 Act lowered litigation risk for auditors.

CONCLUDING REMARKS

In this paper, we investigate whether litigation risk influences auditor behavior in terms of acquiescing to the client's demands for earnings management, and whether abnormal accruals increase the likelihood of auditor litigation. Our examination of the relation between litigation risk and abnormal accruals controls for endogeneity, i.e., we jointly model abnormal accruals and litigation risk in a simultaneous equation system.

We find that litigation risk (as an independent variable) is negatively related to abnormal accruals (the dependent variable), i.e., the higher the client-specific risk of auditor litigation, the greater the auditor's restraining influence on abnormal accruals in an attempt to avoid future litigation. This empirical finding is new to the literature. We also find that the client-specific risk of auditor litigation declined after the 1995 Litigation Reform Act. While this outcome of the 1995 Reform Act has been conjectured in the prior literature, ours is the first study to present supporting empirical evidence. Moreover, we find no evidence of an across the board increase in earnings management associated with the 1995 Reform Act. Rather, we find that the increase in abnormal accruals in the post-1995 Act time period was in proportion to the decrease in the client-specific litigation risk.

Finally, we find that abnormal accruals increase the likelihood of future auditor litigation. Intuitively, earnings management may be linked to future litigation. In other words, although auditor lawsuits may be precipitated by shareholder losses related to client events such as financial distress and bankruptcy (Palmrose 1999), these events may be preceded by earnings management as the client attempts to overstate future prospects and otherwise delay the reporting of financial distress and failure. Litigation reform remains a topic of ongoing interest (GAO 2003a; US Chamber of Commerce 2006; US Department of the Treasury 2008). Collectively, our findings contribute to an understanding of the effects of litigation reform and change in litigation exposure on auditor incentives and earnings management.

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Table 1. Definition of Variables

Panel A. Abnormal Accruals Model

Variable	Definition
Dependent Variable	
ABACC	Earnings management metric based on signed asset-deflated performance-adjusted abnormal accruals estimated using the cross-sectional modified Jones (1991) model. The higher the metric, the higher the client's reported earnings.
Endogenous Independent Variable	
LRISK	Risk of auditor litigation; = 1 for company-year of alleged wrongdoing as identified in the auditor lawsuit; 0 otherwise. In the first-stage of the simultaneous equation analysis, variable LRISK is the dependent variable in a probit model containing all the exogenous variables in the Accruals and Litigation Risk models. In the second-stage, the fitted value of LRISK from the first-stage probit model (i.e., the instrument variable LRISK_I) is substituted for LRISK in the Accruals model.
Independent Variables Common to Both Models	
1995ACT	=1 if the 1995 Act applies to the company-year; =0 otherwise.
SIZE	Natural log of total assets (in millions of $) at the balance sheet date.
DISTRESS	Financial distress measure based on Zmijewski (1984).
GROWTH	Two-year sales growth measured for the two-year interval ending in year t-1 (i.e., Sales[t-1]/Sales[t-3] -1).
LEV	The ratio of liabilities to total assets at the balance sheet date.
INV	Total inventory deflated by assets at the balance sheet date.
AR	Total trade accounts receivable deflated by total assets at the balance sheet date.
Other Independent Variables in Abnormal Accruals Model Only	
AUDTEN	Auditor tenure, i.e., the number of years for which the current audit firm has audited the client.
CFFO	Cash flow from operations deflated by total assets.

Table 1. Definition of Variables – Continued

Variable	Definition
IMPLICIT	Factor score based on factor analysis of measures related to production, R&D spending, and labor intensity, consistent with Matsumoto (2002).
ACCRUAL_FLEX	Root mean squared error of the accruals model used to estimate ABACC.
FIRST	=1 if first year of auditor tenure; =0 otherwise.
LAST	=1 if last year of auditor tenure; =0 otherwise.

Panel B. Litigation Risk Model

Variable	Definition
Dependent Variable	
LRISK	Risk of auditor litigation; = 1 for company-year of alleged wrongdoing as identified in the auditor lawsuit; 0 otherwise.
Endogenous Independent Variable	
ABACC	Earnings management metric based on signed asset-deflated performance-adjusted abnormal accruals estimated using the cross-sectional modified Jones (1991) model. The higher the metric, the higher the client's reported earnings. In the first-stage of the simultaneous equation analysis, variable ABACC is regressed on all the exogenous variables in the Accruals and Litigation Risk models. In the second-stage, the fitted value of ABACC from the first-stage regression (i.e., the instrument variable ABACC_I) is substituted for variable ABACC in the Litigation Risk model.
Independent Variables Common to Both Models	
1995ACT	=1 if the 1995 Act applies to the company-year; =0 otherwise.
SIZE	Natural log of total assets (in millions of $) at the balance sheet date.
DISTRESS	Financial distress measure based on Zmijewski (1984).
GROWTH	Two-year sales growth measured for the two-year interval ending in year t-1 (i.e., Sales[t-1]/Sales[t-3] -1).
LEV	The ratio of liabilities to total assets at the balance sheet date.
INV	Total inventory deflated by assets at the balance sheet

	date.
AR	Total trade accounts receivable deflated by total assets at the balance sheet date.
Other Independent Variables in Litigation Risk Model Only	
CR	Current assets divided by total current liabilities at the balance sheet date.
ROA	Net income deflated by the average of beginning-of-year and end-of-year total assets.
RET	Compounded annual stock return for the fiscal year.
BETA	Slope coefficient of a regression of daily stock returns on equal-weighted market return index over the fiscal year.
TURNOVER	Stock turnover for the fiscal year, calculated as $1 - \prod_t (1 - \text{daily turnover on day t})$, where daily turnover is number of shares traded on day t/total shares outstanding.
DELIST	=1 if the firm is delisted because of financial difficulties within the next year; =0 otherwise.
TECH	=1 if the firm's SIC code is in the 2830s, 3570s, 7370s, 8730s, or between 3825 and 3839; =0 otherwise.
MIN	Minimum daily return during the fiscal year.
SKEWNESS	Skewness of daily returns during the fiscal year.
KURTOSIS	Kurtosis of daily returns during the fiscal year.

Table 2. Sample Selection

Panel A. Lawsuit Companies[1]

Identified Big N auditor lawsuits 1989-2007 (from Palmrose 1999 and Audit Analytics)	233
Less, utility and financial sector companies	-49
Less, companies with missing data on control variables	-117
Lawsuit companies	67

Panel B. Lawsuit Sample and Non-Lawsuit Control Population[2]

Company-year observations during 1989-2007 (excluding utility and financial services firms) with performance-adjusted abnormal accruals data estimable.	109,396
Exclude non-Big N audit clients	-25,544
Not in CRSP	-10,878
Exclude company-year observations with missing data on control variables	-43,757
Exclude non-litigation years for lawsuit companies.	-928
Number of observations used in estimating accruals and litigation risk models	28,289
Lawsuit sample company-years	146
Non-lawsuit control population company-years	28,143
	28,289

Notes

[1] Lawsuit companies are clients involved in a shareholder lawsuit against the auditor. The 67 lawsuits alleged auditor wrongdoing in 146 company-years.

[2] The lawsuit sample consists of 146 company-years. The "non-lawsuit control population" consists of all 1989-2007 company-years (in CRSP and Compustat) not involved in an auditor lawsuit.

Table 3. Descriptive Statistics

	Lawsuit Sample (n=146)			Non-Lawsuit Control Population (n=28,143)		
	Mean	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**
Dependent variables						
ABACC	0.0060	0.0129	0.1237	-0.0011	-0.0029	0.1067
LRISK	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000
Independent Variables Common to Both Models						
1995ACT	0.7857	1.0000	0.4122	0.8282	1.0000	0.3772
SIZE	6.8141	6.7114	2.1457	5.7628	5.6831	1.9618
DISTRESS	0.0483	0.0011	0.1423	0.0496	0.0007	0.1633
GROWTH	0.4342	0.3482	0.5603	0.3139	0.1672	0.7376
LEV	0.5617	0.5186	0.2301	0.5081	0.5020	0.2214
INV	0.1846	0.1126	0.2045	0.1718	0.1439	0.1520
AR	0.2143	0.1776	0.1556	0.1915	0.1708	0.1380
Other Independent Variables in Abnormal Accruals Model Only						
AUDTEN	9.6518	6.0000	8.8131	10.7624	9.0000	8.0433
CFFO	0.0485	0.0500	0.0853	0.0680	0.0856	0.1316
FINANCE	0.4554	0.0000	0.5002	0.3193	0.0000	0.4662
IMPLICIT	-0.0426	-0.2564	0.7486	0.0084	-0.0452	0.8878
ACCRUAL_FLEX	0.1273	0.1317	0.0447	0.1240	0.1305	0.0401
FIRST	0.1161	0.0000	0.3218	0.0471	0.0000	0.2118
LAST	0.1518	0.0000	0.3604	0.0522	0.0000	0.2224
Other Independent Variables in Litigation Risk Model Only						
CR	2.1283	1.6415	1.6126	2.5102	2.0000	1.9363
ROA	-0.0026	0.0259	0.1368	0.0094	0.0419	0.1550
RET	0.1854	-0.0245	0.8428	0.1786	0.0743	0.6292
BETA	1.0892	0.9970	0.6459	0.7986	0.7272	0.6091
TURNOVER	0.7550	0.8114	0.2199	0.5887	0.5970	0.2761
DELIST	0.0179	0.0000	0.1330	0.0022	0.0000	0.0465
TECH	0.1964	0.0000	0.3991	0.1787	0.0000	0.3831
MIN	-0.1477	-0.1209	0.1090	-0.1294	-0.1065	0.0861
SKEWNESS	0.1177	0.2907	1.0249	0.3843	0.3407	0.9944
KURTOSIS	5.5856	2.2044	9.2206	5.6453	2.9432	8.0699

Table 4. Pearson Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	ABACC	1.00																									
2	LRISK	0.00	1.00																								
3	1995ACT	0.08	-0.01	1.00																							
4	SIZE	-0.01	0.03	0.20	1.00																						
5	DISTRESS	-0.13	0.00	0.00	-0.14	1.00																					
6	GROWTH	0.02	0.01	0.04	-0.03	0.06	1.00																				
7	LEV	-0.04	0.02	-0.02	0.20	0.51	-0.08	1.00																			
8	INV	0.12	0.01	-0.12	-0.15	-0.12	-0.03	0.01	1.00																		
9	AR	0.14	0.01	-0.10	-0.17	-0.17	0.06	0.00	0.18	1.00																	
10	AUDTEN	0.04	-0.01	0.06	0.33	-0.10	-0.13	0.07	0.04	0.01	1.00																
11	CFFO	-0.24	-0.01	-0.03	0.28	-0.40	-0.09	-0.10	-0.04	0.05	0.14	1.00															
12	FINANCE	0.10	0.02	0.02	-0.05	0.06	0.17	0.01	0.07	0.11	-0.08	-0.23	1.00														
13	IMPLICIT	-0.07	0.00	0.02	-0.20	0.09	0.12	-0.20	0.07	0.13	-0.07	-0.37	0.07	1.00													
14	ACCRUAL_FLEX	0.02	0.01	0.09	-0.17	0.05	0.11	-0.14	-0.20	0.19	-0.14	-0.13	0.07	0.32	1.00												
15	FIRST	0.00	0.02	0.03	-0.03	0.02	0.00	0.01	-0.02	-0.01	-0.30	-0.01	-0.01	-0.01	0.04	1.00											
16	LAST	0.01	0.03	0.04	-0.08	0.02	-0.01	0.01	-0.01	-0.01	-0.06	-0.03	0.01	0.01	0.04	0.05	1.00										
17	CR	0.04	-0.01	0.01	-0.22	-0.07	0.10	-0.51	0.03	-0.05	-0.09	-0.16	0.01	0.35	0.16	-0.01	-0.01	1.00									
18	ROA	0.24	0.00	-0.02	0.30	-0.56	-0.03	-0.19	0.15	0.21	0.16	0.74	-0.13	-0.30	-0.16	-0.04	-0.06	-0.05	1.00								
19	RET	0.09	0.00	0.02	-0.01	-0.11	0.09	-0.08	0.03	0.11	-0.02	0.14	0.04	0.02	0.01	-0.03	-0.01	0.05	0.21	1.00							
20	BETA	-0.05	0.03	0.07	0.27	0.00	0.16	-0.10	-0.09	-0.04	0.00	-0.03	0.06	0.24	0.14	-0.02	-0.04	0.15	-0.01	0.08	1.00						
21	TURNOVER	-0.02	0.04	0.26	0.30	0.00	0.22	-0.11	-0.12	-0.05	-0.06	-0.04	0.13	0.22	0.17	0.00	-0.02	0.13	-0.01	0.12	0.56	1.00					
22	DELIST	-0.02	0.02	0.00	-0.02	0.08	-0.01	0.08	0.01	-0.02	-0.01	-0.04	0.01	-0.01	-0.01	0.01	-0.01	-0.03	-0.07	-0.04	-0.02	-0.01	1.00				
23	TECH	-0.06	0.00	0.04	-0.11	0.09	0.12	-0.15	-0.21	0.03	-0.13	-0.21	0.06	0.41	0.44	0.01	0.02	0.22	-0.23	0.02	0.20	0.20	-0.01	1.00			
24	MIN	0.06	-0.01	-0.02	0.39	-0.24	-0.04	-0.04	0.01	0.00	0.25	0.28	-0.05	-0.19	-0.21	-0.06	-0.08	-0.08	0.36	0.20	-0.06	-0.12	-0.07	-0.18	1.00		
25	SKEWNESS	0.04	-0.02	-0.03	-0.20	0.07	-0.01	0.02	0.01	0.01	-0.06	-0.09	0.01	0.04	0.03	0.00	0.02	0.02	-0.09	0.26	-0.09	-0.11	0.01	0.01	0.21	1.00	
26	KURTOSIS	-0.02	0.00	0.01	-0.08	0.07	0.00	0.04	-0.01	-0.02	-0.04	-0.08	0.01	0.04	0.03	0.00	0.01	0.00	-0.09	-0.03	-0.05	0.06	0.01	0.05	-0.36	0.17	1.00

Notes

See Table 1 for variable definitions. Correlations of 0.010, 0.012 and 0.015 are significant at the 0.10, 0.05, and 0.01 levels, respectively (n=28,289).

Table 5. Regression Results

$$ABACC = \alpha + \alpha_1 LRISK\_I + \alpha_2 1995ACT + \alpha_3 SIZE + \alpha_4 DISTRESS + \alpha_5 GROWTH + \alpha_6 LEV + \alpha_7 INV + \alpha_8 AR + \alpha_9 AUDTEN + \alpha_{10} CFFO + \alpha_{11} FINANCE + \alpha_{12} IMPLICIT + \alpha_{13} ACCRUAL\_FLEX + \alpha_{14} FIRST + \alpha_{15} LAST + \varepsilon$$

Panel A. Analysis of ABACC (n=28,289)

	OLS (DV=ABACC)				First-Stage (DV=LRISK)				Second-Stage (DV=ABACC)			
	Exp.	**Coef.**	**t**	**pval**	**Exp.**	**Coef.**	**z**	**pval**	**Exp.**	**Coef.**	**Robust t**	**pval**
Intercept	?	-0.0555	-15.92	0.000	?	-4.1401	-14.69	0.000	?	-0.0976	-4.14	0.000
Endogenous variable												
LRISK	-	-0.0077	-0.85	0.198								
LRISK_I									-	-5.5347	-3.46	0.001
Variables in both models												
1995ACT	+	0.0215	13.68	0.000	-	-0.3495	-3.70	0.000	+	0.0050	0.61	0.272
SIZE	-	-0.0031	-8.73	0.000	+	0.1343	5.25	0.000	-	-0.0128	-3.82	0.000
DISTRESS	?	-0.1496	-31.27	0.000	+	-0.3915	-1.19	0.117	?	-0.1569	-6.99	0.000
GROWTH	+	0.0012	1.51	0.066	+	0.0048	0.10	0.459	+	0.0045	1.42	0.078
LEV	+	0.0121	3.58	0.000	+	0.0837	0.36	0.361	+	-0.0055	-0.28	0.391
INV	?	0.0651	15.99	0.000	+	0.4462	1.93	0.027	?	0.0891	2.51	0.012
AR	?	0.1109	24.19	0.000	+	0.5167	2.02	0.022	?	0.1462	4.52	0.000
Variables in abnormal accruals model only												
AUDTEN	?	0.0006	6.97	0.000	?	-0.0060	-1.22	0.224	?	-0.0001	-0.12	0.901
CFFO	-	-0.3591	-66.91	0.000	?	-0.6700	-1.59	0.113	-	-0.4160	-14.58	0.000
FINANCE	+	0.0024	1.87	0.031	?	0.0937	1.27	0.205	+	0.0112	1.96	0.025
IMPLICIT	-	-0.0298	-39.34	0.000	?	-0.0925	-1.86	0.063	-	-0.0329	-7.18	0.000
ACCRUAL_FLEX	+	0.1358	8.42	0.000	?	1.0515	1.07	0.287	+	0.2251	2.15	0.016
FIRST	?	0.0068	2.42	0.015	?	0.2718	2.12	0.034	?	0.0340	2.10	0.036
LAST	?	0.0021	0.80	0.421	?	0.4848	4.54	0.000	?	0.0496	2.60	0.009
Variables in litigation risk model only												
CR					-	-0.0224	-0.83	0.202				
ROA					-	-0.4312	-1.08	0.141				
RET					-	0.0452	0.85	0.199				
BETA					+	0.0839	1.24	0.107				
TURNOVER					+	0.6734	3.61	0.000				
DELIST					+	0.8465	2.50	0.006				
TECH					+	0.0041	0.04	0.485				
MIN					-	-0.9810	-1.84	0.033				
SKEWNESS					-	-0.0217	-0.52	0.303				
KURTOSIS					-	-0.0066	-1.22	0.112				
Adjusted R-squared		0.1959								0.2115		
Pseudo R-squared						0.1016						
Test for endogeneity												
Hausman Chi-sq		242.446 ***										
Partial Chi-squared						45.03 ***						
Over-identifying restrictions test												
Basmann Chi-sq						944.275 ***						

Table 5. Regression Results

Panel B. Analysis of LRISK

	Probit (DV=LRISK)				First-Stage (DV=ABACC)				econd-Stage Probit (DV=LRISK			
	Exp.	**Coef.**	**z**	**pval**	**Exp.**	**Coef.**	**t**	**pval**	**Exp.**	**Coef.**	**Robust z**	**pval**
Intercept	?	-3.9622	-16.00	0.000	?	0.0102	3.00	0.003	?	-3.9328	-10.61	0.000
Endogenous variable												
ABACC	+	0.4685	1.51	0.066								
ABACC_I									+	1.0647	1.83	0.034
Variables in both models												
1995ACT	-	-0.3257	-3.53	0.000	+	0.0190	15.10	0.000	-	-0.3399	-2.39	0.017
SIZE	+	0.1170	4.86	0.000	-	-0.0021	-6.12	0.000	+	0.1210	2.76	0.003
DISTRESS	+	-0.4130	-1.24	0.110	?	-0.0017	-0.44	0.662	+	-0.3980	-1.26	0.104
GROWTH	+	0.0259	0.60	0.274	+	0.0050	7.82	0.000	+	0.0238	0.63	0.263
LEV	+	0.1394	0.61	0.271	+	0.0048	1.59	0.056	+	0.1189	0.37	0.355
INV	+	0.4362	1.98	0.024	?	-0.0273	-8.25	0.000	+	0.3957	0.95	0.172
AR	+	0.5432	2.22	0.013	?	-0.0159	-4.26	0.000	+	0.5003	1.42	0.079
Variables in abnormal accruals model only												
AUDTEN					?	0.0006	9.82	0.000				
CFFO					-	-0.8320	-150.68	0.000				
FINANCE					+	0.0030	2.93	0.002				
IMPLICIT					-	-0.0204	-31.57	0.000				
ACCRUAL_FLEX					+	0.2818	21.09	0.000				
FIRST					?	0.0143	6.47	0.000				
LAST					?	0.0088	4.39	0.000				
Variables in litigation risk model only												
CR	-	-0.0328	-1.21	0.114	?	-0.0017	-5.82	0.000	-	-0.0352	-0.99	0.161
ROA	-	-0.8267	-2.69	0.004	?	0.6890	130.26	0.000	-	-0.9446	-3.03	0.001
RET	-	0.0341	0.64	0.260	?	0.0064	8.17	0.000	-	0.0329	0.70	0.243
BETA	+	0.0432	0.66	0.255	?	-0.0027	-2.93	0.003	+	0.0504	0.61	0.272
TURNOVER	+	0.7445	4.08	0.000	?	-0.0076	-3.42	0.001	+	0.7341	2.59	0.005
DELIST	+	0.7641	2.27	0.012	?	0.0019	0.20	0.839	+	0.7670	2.35	0.010
TECH	+	0.0029	0.03	0.488	?	-0.0064	-4.54	0.000	+	0.0000	0.00	1.000
MIN	-	-1.1925	-2.35	0.010	?	-0.0811	-11.00	0.000	-	-1.1814	-1.76	0.039
SKEWNESS	-	-0.0171	-0.41	0.340	?	0.0049	9.22	0.000	-	-0.0198	-0.40	0.345
KURTOSIS	-	-0.0080	-1.49	0.068	?	-0.0005	-8.01	0.000	-	-0.0080	-1.31	0.095
Adjusted R-squared						0.5087						
Pseudo R-squared		0.0778								0.0807		
Test for endogeneity												
Smith-Blundell Chi-sq		2.6000 *										
Partial F-stat						3404.7100 ***						
Partial R-squared						0.4574						
Over-identifying restrictions test												
Amemiya-Lee-Newey Chi-sq						36.4520 ***						

$$LRISK = \beta_0 + \beta_1 ABACC\_I + \beta_2 1995ACT + \beta_3 SIZE + \beta_4 DISTRESS + \beta_5 GROWTH + \beta_6 LEV + \beta_7 INV + \beta_8 AR + \beta_9 CR + \beta_{10} ROA + \beta_{11} RET + \beta_{12} BETA + \beta_{13} TURNOVER + \beta_{14} DELIST + \beta_{15} TECH + \beta_{16} MIN + \beta_{17} SKEWNESS + \beta_{18} KURTOSIS + \varepsilon$$

Notes:

In Panel A, results reported as "second-stage" are based on two step estimation in which the endogenous variable LRISK is replaced with its instrument, LRISK_I, which is the fitted value from the "first-stage" regression. Statistical inferences for the second-stage model are based on "robust" test statistics that are corrected for cross-sectional correlation and heteroskedasticity (Gow et al. 2010). The lower part of the panel shows results from (i) a test of the endogeneity of LRISK based on Hausman (1978), (ii) test of the null hypothesis that the coefficients on the LRISK instruments (i.e., explanatory variables that are unique to the LRISK model) are jointly equal to zero, and (iii) test of overidentifying restrictions based on Basmann (1960).

In Panel B, results reported as "second-stage" are based on two step estimation in which the endogenous variable ABACC is replaced with its instrument, ABACC_I, which is the fitted value from the "first-stage" regression. Statistical inferences for the second-stage model are based on "robust" test statistics that are corrected for cross-sectional correlation and heteroskedasticity (Gow et al. 2010). The lower part of the panel shows results from (i) a test of the endogeneity of ABACC based on Smith and Blundell (1986), (ii) test of the null hypothesis that the coefficients on the ABACC instruments (i.e., explanatory variables that are unique to the ABACC model) are jointly equal to zero, and (iii) test of overidentifying restrictions based on Lee (1992).

*, **, and *** denote significance at the .10, .05, and .01 levels, respectively. Significance levels are based on one-tailed tests when the coefficient sign is predicted, two-tailed otherwise.