

## **Changes in Litigation Risk: An Analysis of Post-Sarbanes Oxley Audit Portfolios**

**Jerry L. Turner\***

The possibility of litigation is one of the many serious risks facing independent audit firms, both in the U.S. and internationally. The objective of this study is to examine the relative litigation risk of audit client portfolios of U.S. audit clients and to determine if the largest audit firms, known as the Big 4,<sup>1</sup> have reduced that risk since the passage of The Sarbanes-Oxley Act of 2002 (SarbOx 2002). The audit client portfolios of the two largest non-Big 4 audit firms<sup>2</sup> also are examined to determine if their audit client portfolios display a change in litigation risk, reflecting either movement of riskier clients from the large firms to the smaller firms or a change in the level of risk acceptable to those smaller firms.

This question is important since, as was the case over a decade ago, independent auditors again are seeking regulatory relief to limit court damages that investors and others can seek for flawed audits of public companies. Their argument is being championed by an influential group recently formed to study the competitiveness of U.S. financial markets with the encouragement of Treasury Secretary Henry Paulson. The group is expected to recommend that the government enact new protections for auditors. A panel set up within the U.S. Chamber of Commerce is sounding a similar theme (U.S. Chamber of Commerce 2006). In Europe, the European

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\* The author is Professor of Accountancy at the University of Memphis.

<sup>1</sup> The Big 4 firms are Deloitte Touche Tohmatsu (referred to hereafter as DT), Ernst & Young (EY), KPMG, and PricewaterhouseCoopers (PWC).

<sup>2</sup> Second-tier audit firms are BDO Seidman (BDO) and Grant Thornton (GT).

Commission is studying the issue and is likely to recommend limitations on the damages auditing firms can face (Reilly 2006a).

The CEOs of the six largest audit firms (the Big 4 plus BDO International and Grant Thornton International) also are requesting changes in the litigation environment. At the Global Public Policy Symposium in Paris in November 2006, the CEOs presented a policy paper, “Global Capital Markets and the Global Economy: a Vision from the CEOs of the International Audit Networks” (CEOs 2006). The heads of the accounting firms also used the policy paper to argue that, while emphasizing measures to protect investors, any changes to improve the functioning of global capital markets need to limit the liability audit firms face, both from criminal prosecution and civil litigation.

The desire for regulatory relief certainly can be understood. Despite the passage of the Private Securities Litigation Reform Act (PSLRA) of 1995, over the past decade the number and size of lawsuits against auditors has increased significantly. In the past three years, KPMG has agreed to pay out over \$700 million in fines and settlements related to criminal and civil actions. In 2000, EY settled a shareholder suit related to its work for Cendant Corp. for \$335 million. A study for the European Commission, released in September 2006, said the total costs of judgments, settlements, legal fees and related expenses for the U.S. audit practices of the Big 4 audit firms had risen to \$1.3 billion in 2004, or 14.2% of revenue, up from 7.7% in 1999. In addition, a separate study released by an insurance company identified 20 claims outstanding against U.S. auditors as of September 2005 where damages sought or estimated losses topped \$1 billion (Reilly 2006a). In 2005, each of the Big 4 firms had significant claims in excess of its capital (The American Assembly 2005, 16) and the level of claims is expected to increase as a result of the rapid collapse of seemingly sound financial institutions in 2008. As noted by Jeff

Mahoney, general counsel for the Council of Institutional Investors, “It is a given that they will be named in lawsuits” (Whitehouse 2008). A precursor to the anticipated lawsuits is seen in a \$97.5 million settlement by PWC related to the audit of American International Group (AIG) in October 2008 (Grant 2008). Also in 2008, KPMG and GT were named as defendants in a lawsuit related to audits of Countrywide Financial Corporation, a major mortgage lender (Mildenberg and Freifeld 2008).

The turmoil within the audit profession in the last five years has created both increased risks and increased opportunities to manage those risks. The failure of Arthur Andersen (Andersen), one of the largest auditing firms in the world, resulted in over 2,000 public audit clients selecting new auditors. According to the Government Accountability Office’s July 2003 Mandated Study on Consolidation and Competition (GAO 2003), 87 percent of the companies formerly audited by Andersen switched to a Big 4 auditor with the remaining 13 percent primarily selecting one of two next-tier audit firms. A July 2006 research report said 4,000 companies, about a third of all U.S. public companies, switched auditors in the period from 2003 to 2005. “The biggest beneficiaries of this trend have been non-Big Four accounting firms, which have picked up the bulk of the companies changing auditors,” the research company said (Reilly 2006b).

Concurrent with this major increase in Big 4 audit portfolios, passage of the Sarbanes-Oxley Act of 2002 (SarbOx) created a substantial increase in the workload for all auditors of public companies by requiring an extensive new report on internal controls, i.e., the Section 404 report. The sudden influx of new audit clients and addition of the new required report overburdened the ability of the large firms to staff existing engagements. As a result, each of the Big 4 has been evaluating its portfolio of audit clients with a more critical eye and declining to

stand for re-election as independent auditor for those clients deemed to be either unacceptably risky or less profitable. The clients effectively fired by the Big 4 have been forced by necessity to engage a smaller audit firm (The American Assembly 2005).

Auditors also may be requiring retained clients to reduce the risk of litigation. The confluence of both internal and external pressures on audit firms may have resulted in auditors being less willing to accept overly aggressive reporting and more willing to identify financially distressed companies. Geiger *et al.* (2005), for example, find that after 2001, an increase in going-concern report modifications for bankrupt companies was due to auditors deciding to issue more such opinions rather than from changes in client characteristics. All of these factors have presented a potential opportunity to rebalance audit firm client portfolios to reduce overall litigation risk.

This paper contributes to the literature on auditor litigation risk in two important ways. First, it examines a time period not previously examined and during which there were numerous frauds revealed and numerous large lawsuits filed. Following the Enron, Worldcom and HealthSouth frauds, there was a heightened level of scrutiny of public companies, Andersen failed, and there was a substantial realignment of audit clients among the remaining firms. Examination of how auditors and their clients responded to the heightened scrutiny and increased risk is important to our understanding of the audit profession. Second, because no one surrogate for litigation risk has emerged as being the best indicator, this paper uses three different measures to compare audit client portfolios—measures of earnings management by clients, risk of restatement of previously issued financial statements, and degree of client financial distress.

Results show that as hypothesized, litigation risk in 2002 was higher for the two non-Big 4 firms examined, BDO and GT, than for the Big 4 audit firms. In examining changes in

litigation risk over time, all three surrogate measures indicate litigation risk was lower in 2005 than in 2002. However, the reduction in risk was not significant for all audit firms across all three measures. When results for all three measures are considered in combination, it appears that there is sufficient support to conclude that the audit portfolios of all firms examined except BDO were significantly lower in 2005 than in 2002. Finally, combined results of the three measures indicate that the litigation risk for BDO remained higher in 2005 than any of the Big 4 audit firms. Results for GT were less certain, so no conclusion is drawn for that firm. These results appear to be consistent with the results of Landsman *et al.* (2009), who find that Big N auditors rebalanced their audit client portfolios in response to post-Enron capacity constraints arising from the supply of former Arthur Andersen clients and the audit demands imposed by Sarbanes-Oxley rather than increasing their sensitivity to client risk.

In the next section, results of prior research are highlighted and hypotheses are developed. This is followed by a discussion of the three models used as surrogates for litigation risk. Empirical results for each model then are presented, followed by a comparison of results and conclusions in regard to hypotheses. The final section summarizes the results.

## **PRIOR RESEARCH AND DEVELOPMENT OF HYPOTHESES**

Although there has been considerable research on the changes in litigation liability pressure on auditors over the years (e.g., Kothari *et al.* 1988; Lys 1993; Lys and Watts 1994), only a few prior studies directly investigate the link between the riskiness of audit firm clienteles and changes in litigation risk and none have examined the post-2002 period. Jones and Raghunandan (1998) find that the likelihood of large auditors serving small manufacturing firms was lower in 1994 than in 1987, a result they interpret as being consistent with increasing litigation pressure making larger auditors more cautious in accepting risky clients. Francis and

Reynolds (2000) examine large audit firm clienteles during 1976-96 and find no consistent evidence that Big 6 firms implemented stricter screening criteria (that is, were associated with less risky clients) during the post-1990 period. Choi *et al.* (2004) extend Jones and Raghunandan (1998) by examining a larger sample of audit clients over a longer window and using multiple risk measures in addition to industry membership. They find some evidence of risk decreases during 1985-1989, strong evidence of risk decreases during 1990-1994, and strong evidence of risk increases during 1995-1999.

## **Hypotheses**

As suggested by Simunic and Stein (1980), audit firms must compete for clients through a bidding process and must consider accepting clients with differing levels of risk. Of the population of available audit clients, each audit firm is able to obtain only some of the lower risk clients. This results in each firm having a portfolio of audit clients with degrees of assessed engagement risk ranging from lower to higher, but with all below an established threshold of acceptable risk-to-return ratio for the individual audit firm.

The demise of Andersen created an intense competition for its clients, as Andersen's overall client portfolio likely was similar in risk to that of the remaining Big 4 (e.g., see Turner and Sennetti 2001). However, as noted previously, the Big 4 acquired only 87 percent of Andersen's clients. The remaining 13 percent may not have been acquired either because smaller audit firms were acceptable and made lower bids or because the Big 4 elected to not pursue those companies because of perceived risk, lack of sufficient audit staff, or other reasons. The possibility of the Big 4 "cherry-picking" from Andersen's client portfolio could be exhibited in an immediate lowering of overall engagement risk for each of the Big 4. The impact on the second-tier audit firms that acquired the remaining 13 percent is less predictable in terms of

average. By several measures, second-tier firms are seen to have overall audit portfolios with higher overall risk (e.g., see Francis and Reynolds 2000; Turner and Sennetti 2001).

Even after realignment of audit portfolios following Andersen's demise, political pressure and fear of litigation may have affected the risk tolerance both of auditors and of management of their clients as passage of SarbOx placed new or increased existing legal exposures on each (Commission 2003). In addition to increased requirements related to independence, both auditors and management began to be required to issue separate reports on internal controls over financial reporting. When faced with substantially increased workloads and increased external risks, the Big 4 had incentive to rebalance their audit client portfolios further to achieve a lower overall risk. If indeed they did so by electing to not continue with higher risk clients, those rejected clients may have been forced to hire non-Big 4 audit firms, thus either maintaining or increasing the overall risk of the smaller audit firm portfolios. Auditors also may have attempted to reduce external risk by becoming less tolerant of aggressive accounting policies used by the retained clients. Similarly, audit client management may have reduced their own risk by opting to use less aggressive accounting policies.

The realignment of audit clients may have allowed Big 4 audit firms to be more selective about the clients they chose to accept or retain and litigation risk likely was an important factor in that decision (e.g., see Bell *et al.* 2002). Those clients not retained by a Big 4 firm selected second-tier audit firms (GAO 2003). If those clients not retained by a Big 4 firm were riskier on average, then it is likely that the audit portfolios for the non-Big 4 audit firms had an initial litigation risk greater than that of the Big 4 firms. This likelihood results in the first hypothesis:

**H1: Litigation risk of second-tier (non-Big 4) audit firms was greater in 2002 than litigation risk for the Big 4 audit firms.**

While the internal processes involved in reducing engagement risk can't be observed, the end result of less aggressive financial reporting policies and/or increased auditor pressure can be seen in the audited financial statements. Given that both Big 4 auditors and their audit client management should make rational decisions to control increased risks, the second hypothesis tested will be:

**H2: Litigation risk of the Big 4 audit firms was lower for fiscal year 2005 than litigation risk for those firms for fiscal year 2002**

While the litigation risk of the non-Big 4 firms initially may have been greater than that of the Big 4 firms as hypothesized in H2, the non-Big 4 were impacted by the same external pressures as the Big 4. Therefore, in a period of heightened scrutiny and increased litigation, it would be rational for the non-Big 4 and their audit clients to reduce the risk of litigation if possible. This leads to the third hypothesis:

**H3: Litigation risk of audit clients of second-tier audit firms was lower for fiscal year 2005 than for fiscal year 2002**

Finally, while both the Big 4 and non-Big 4 audit portfolios likely exhibit lower litigation risk in 2005 than in 2002, it is possible that the clients of the non-Big 4 remained as being riskier. For example, Turner and Sennetti (2001) find the non-Big 4 exhibiting a consistently and significantly higher risk of restatement over the period from 1988 to 1995. Thus, the fourth hypothesis:

**H4: Litigation risk of clients of the Big 4 audit firms was lower for fiscal year 2005 than litigation risk of clients of the second-tier audit firms for the same year.**

## **METHODOLOGY**

Despite the financial and reputational exposure to an audit firm due to potential litigation, to date no single reliable measure of litigation risk has been developed. Prior literature, however, has identified certain surrogates that appear strongly correlated to litigation. Among those



surrogates are the degree of earnings management, the risk of restatement of published financial statements, and the degree of financial distress exhibited by the audit client. To test the proposed hypotheses, litigation risk as measured by each of these surrogates will be evaluated.

### **Earnings management**

Within a portfolio of accepted clients, some clients may be more inclined than others to engage in earnings management. As noted by the Panel on Audit Effectiveness, the term earnings management represents a wide continuum of activities ranging from legitimate managerial activities at one end to fraudulent financial reporting at the other (POB 2000, ¶ 3.13). Included between the two endpoints are various accruals necessary to comply with generally accepted accounting principles. While some accruals result from timing or other non-discretionary reasons, other accruals often involve a substantial degree of management discretion. Depending on perceived pressures and/or incentives, management may apply that discretion conservatively or aggressively. Lobo and Zhou (2006), for example, conclude that immediately following the passage of SarbOx, management of public companies exhibited greater conservatism and reported lower discretionary accruals. Similarly, Krishnan (2007) examines whether earnings conservatism increased for Andersen audit clients that had to switch to Big 4 auditors. He finds that their earnings conservatism increased from the last year with Andersen and was more conservative than companies that did not switch auditors. Neither Lobo and Zhou nor Krishnan, however, examine the persistence of that increased conservatism, nor do they investigate the auditor side of the financial reporting process.

Aggressive accounting policies can be related to the auditor's litigation risk. Heninger (2001) provides evidence that auditors are more likely to be sued when their clients have discretionary accruals that are income-increasing. DuCharme *et al.* (2004) find the incidence of

lawsuits involving stock offers and settlement amounts are significantly and positively related to abnormal (discretionary) accruals around the time of the offer. Further, DeFond and Subramanyam (1998) suggest that litigation risk can motivate auditors to prefer income-reducing accounting choices. They refer to this preference as auditor conservatism and show that discretionary accruals are lower when litigation risk is perceived to be high. Consistent with these findings, in an archival study of three large audit firms, Manry *et al.* (2007) find that higher discretionary accruals are associated with clients considered to have a higher auditor-assigned pre-audit level of engagement risk, which includes litigation risk. Based on this research and consistent with Lee and Mande (2002), estimated discretionary accruals are used as one proxy for litigation risk.

Total accruals and the subcomponent discretionary accruals are not separately observable from other balances included in the audited financial statements. As a result, many recent studies estimate post-audit discretionary accruals using a cross-sectional model based on Jones (1991), DeFond and Jiambalvo (1994), and Dechow *et al.* (1995), with definitions of earnings and cash flows used by Subramanyam (1996) and Xie (2001).

In the Jones (1991) model, discretionary accruals (DAs) for each company in industry  $j$  are defined as the residual from the regression of total accruals (the difference between cash from operations and net income) on two factors that explain nondiscretionary accruals, the change in revenue and the level of fixed assets subject to depreciation. All variables are deflated by total opening assets to reduce heteroscedasticity.

$$ACC_{ijt} = \alpha_0 \left( 1/TA_{ijt-1} \right) + \alpha_1 \left( \Delta REV_{ijt}/TA_{ijt-1} \right) + \alpha_2 \left( PPE_{ijt}/TA_{ijt-1} \right) + \varepsilon \quad (1)$$

where:  $ACC_{ijt}$  = Total accruals in year  $t$ , deflated by  $TA_{ijt-1}$ ;  
 $TA_{ijt-1}$  = Total assets at the end of year  $t-1$   
 $\Delta REV$  = Change in revenue between years  $t-1$  and  $t$

$$\begin{aligned} PPE_{ijt} &= \text{Gross property, plant and equipment in year } t \\ \varepsilon &= \text{Estimated discretionary accruals (DAs)} \end{aligned}$$

A separate portfolio of public clients is formed from the complete set of public companies on Compustat with fiscal year-ends between 2002 and 2005 and audited either by one of the Big 4 audit firms or one of the two largest second-tier audit firms. Eliminations from the complete set are described below. Discretionary accruals then are estimated for each audit client in each portfolio using (1), above. Within each portfolio, the mean estimated discretionary accruals are determined for each audit firm portfolio. Higher values of estimated discretionary accruals proxy for greater litigation risk.

### **Risk of Restatement Due To Error**

Another source of litigation risk results from restatement of published financial statements due to error. As noted by Whalen (2004), a restatement is “a public admission and correction of non-GAAP earnings reports” and may lead to economic losses to stakeholders. The extent of such losses was estimated by a former SEC Chairman testifying before a Senate Subcommittee in 2000. In his testimony, he said, “in recent years, countless investors have suffered significant losses as market capitalizations have dropped by billions of dollars due to restatements of audited financial statements” (Levitt 2000).

In studying restatements, Palmrose and Scholz (2004) examine the association of certain restatements and company characteristics with the likelihood of litigation against companies, management, boards of directors, outside auditors and others for a sample of 492 companies that announced restatements from 1995 to 1999. They find that companies with core restatements, driven primarily by revenue misstatements, have more negative security price reactions to restatement announcements, and more negative security price changes over the six months

preceding and following restatement announcements. They conclude there is a significant association between the restatement of financial statements and litigation.

While no predictive model of future restatements exists, Turner and Sennetti (2001) use ex ante, uncorrected audited financial reports to identify specific financial characteristics of companies that subsequently restated due to an error. From that data set, they generate a parsimonious model to estimate comparative restatement risk. The resulting model is applied for an eight year period (1988-1995) to individual audit client portfolios for Big 6 (B6) audit firms and to a composite portfolio of Non-Big 6 (NB6) audit firms to identify the mean relative restatement risk for each. They find for the years examined not only did a smaller percentage of B6 audit clients restate, but B6 audit clients were less likely to restate, i.e., had lower mean relative restatement risk than did NB6 clients. Further, no difference in this risk is found among portfolios of the B6.

For this study, the complete, before eliminations separate portfolios of companies formed to examine estimated discretionary accruals for each year from 2002 to 2005 are used. The estimated relative risk of restatement, and by proxy litigation risk, then is calculated for each company in each portfolio using the Turner and Sennetti (2001) model:

$$\text{Logit(RR)} = -0.0213 + 13.1542 * \text{NIAT} - 11.4571 * \text{NIEQ} + 54.4958 * \frac{\text{NI}^2}{\text{AT} * \text{EQ}} \quad (2)$$

where the variables are defined as:

Logit(RR) = Logit of the probability of an error occurring and being restated

NIAT = Net income/total assets

NIEQ = Net income/total equity

NI = Net Income

AT = Total assets

EQ = Total equity

Within each portfolio, the Logit(RR) estimate for each individual audit client is calculated and for each company, the predicted relative probability of restating,  $p$ , is calculated using the standard logit equation,

$$p = \frac{e^{\text{Logit(RR)}}}{1 + e^{\text{Logit(RR)}}} \quad (3)$$

Individual company values then are aggregated by year for each audit firm. Higher values of relative risk of restatement proxy for greater litigation risk.

### **Financial Distress**

Although financial distress measures do not directly capture auditor litigation exposure, auditor litigation has been found to be associated with client financial failure or significant distress. Palmrose (1987) notes that when auditors are sued after a business failure, the assertion usually is that the company's financial information was materially false or misleading and that the auditor failed either to detect, or to reveal if detected, the misleading information. Thus, the degree of financial distress was unexpected when finally disclosed. Stice (1991), finds that poor financial condition provides plaintiffs with an incentive to attempt to recover losses from whomever has the "deepest pockets," such as auditors.<sup>3</sup>

Incentive for including misleading information is identified by Kinney and McDaniel (1989) who indicate that "managements of firms in weak financial condition are more likely to window dress in an attempt to disguise what may be temporary difficulties." Similarly, Kreutzfeldt and Wallace (1986) find that companies with profitability or liquidity problems tend

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<sup>3</sup> Conversely, Defond (2004) argues that financial distress is a noisy indicator of litigation risk and that other less noisy indicators might be developed as a more reliable surrogate. To date, surrogates other than those examined here have not been developed or instantiated.

to have significantly more financial statement errors than do companies not exhibiting signs of financial distress.

Based on the previously identified linkage between financial distress and litigation, the third measure used to proxy for litigation risk is Zmijewski's financial distress score (ZDS) (Zmijewski 1984). ZDS is based on book values of return on assets, debt to assets, and the current ratio and is widely used as a metric for assessing bankruptcy risk (Choi *et al.* 2004).

$$ZDS = -4.336 - 4.513 \text{ EBITA} + 5.679 \text{ TLTA} + 0.004 \text{ CR} \quad (4)$$

where the variables are defined as:

ZDS = Zmijewski's financial distress score  
EBITA = Earnings before interest and taxes divided by total assets  
TLTA = Total liabilities divided by total assets  
CR = Current assets divided by current liabilities

Again, for this study the complete, before eliminations separate portfolios of companies formed for examination of discretionary accruals for each year from 2002 to 2005 are used. The estimated level of financial distress, and by proxy litigation risk, then is calculated for each company in each portfolio using (4), above. Higher values of ZDS indicate greater financial distress.

## RESULTS

Separate portfolios have been created for each year examined. Sample companies in each portfolio are from the complete set of public companies on Compustat with fiscal year-ends between 2002 and 2005 and audited either by one of the Big 4 audit firms or one of the two largest second-tier audit firms. Hypotheses are tested using Tukey's HSD test and all results indicated as significant are at an experimentwise significance level of 0.05.

## **Earnings Management as a Surrogate for Litigation Risk**

To estimate discretionary accruals (referred to hereafter as DAs), the Jones (1991) model requires estimation of a cross-sectional regression for each industry (two-digit SIC codes), so industries including fewer than ten firms are eliminated. Companies from the financial (SIC 6000 to 6900) sector, and the government (SIC 9900) sector also have been eliminated because their special accounting practices make generalizations problematic. Consistent with Subramanyam (1996), companies have been deleted where operating cash flows, DAs, or non-DAs are more than three standard deviations from their respective means.

As both DeFond and Subramanyam (1998) and Heninger (2001) find a relationship between income-increasing accruals and litigation risk, only income-increasing DAs are examined here. Table 1 shows for the years 2002-2005, the number of companies included for each firm and the mean income-increasing DAs in each year (see Table 1). The values are plotted in Figure 1 (see Figure 1).

As seen in Figure 1, there were apparent differences in 2002 between the six audit firms. A comparison of the means of income-increasing DAs for 2002 indicates that GT clients had significantly higher estimated DAs for that year than did any of the other five audit firms. Unexpectedly, BDO clients had significantly lower income-increasing DAs than the clients of both KPMG and GT. There were no significant differences between any other combinations of two firms. Thus hypothesis H1 is supported only partially.

Hypothesis H2 is tested using Tukey's HSD test, which indicates that clients of EY, KPMG and PWC have significantly lower mean income-increasing DAs in 2005 than in 2002. There was no significant difference in mean income-increasing DAs between the two years for clients of DT. Thus, H2 is supported for three of the four Big 4 audit firms.

For hypothesis H3, Tukey's HSD results indicate that GT clients exhibit a significantly lower level of mean income-increasing DAs for 2005 than in 2002, while the difference for BDO is not significant. Thus, H3 is supported for only one of the two non-Big 4 firms.

Hypothesis H4, which compares the Big 4 to the two non-Big 4 find no significant differences between any of the six firms examined. Thus, using estimated discretionary accruals as a surrogate for litigation risk, the non-Big 4 is not found to have an overall greater risk of litigation than the corresponding risk for Big 4 firms and H4 is not supported.

Additional tests of the four hypotheses, not reported in detail here, use absolute values of the estimated discretionary accruals instead of only those that were income increasing. This results in a larger sample for each audit firm and accounts for transitory values of accruals that may reverse from year to year. Comparison of mean absolute values of estimated DAs find exactly the same results for all four hypotheses as those comparisons using income increasing DAs alone reported above.

### **Restatement Risk as a Surrogate for Litigation Risk**

The Turner and Sennetti (2001) model offers three advantages over estimated discretionary accruals using the Jones (1991) model. First, the Turner and Sennetti model is not sensitive to industry so the financial (SIC 6000 to 6900) sector can be included. Second, the model can estimate the relative rate of restatement regardless of whether a company reported net income or net loss. These two advantages result in a substantially greater population of companies that can be examined. Third, the model is intended to estimate the relative risk of restatement for a given period, thereby allowing comparisons both between audit firms in a particular period, and also over time (see Table 2).



As shown in Figure 2, there were clear differences in relative mean risk of restatement in 2002 (see Figure 2). The mean risk of restatement for GT was significantly higher than that of any of the Big 4 audit firms while the mean risk of restatement for BDO was significantly higher than that of DT and PWC. These results provide strong, but not absolute support for H1.

Between 2002 and 2005 the mean risk of restatement declined for all of the Big 4 firms. Tukey's HSD indicates that these declines were significant in all cases so H2 is supported fully.

For the two non-Big 4 firms, while the mean risk of restatement declined for both firms, the decline was not significant for either. Thus, H3 is not supported for either of the two non-Big 4 audit firms.

For hypothesis H4, DT, KPMG and PWC each has a significantly lower mean risk of restatement than do BDO and GT. EY is not significantly different than the two non-Big 4, indicating that H4 is supported for three of the four Big 4 firms.

### **Financial Distress as a Surrogate for Litigation Risk**

As a surrogate for litigation risk, the Zmijewski financial distress score (ZDS) offers all three advantages over estimated discretionary accruals described above for the Turner and Sennetti (2001) model for relative risk of misstatement. Table 3 shows for the years 2002-2005, the number of companies included for each firm and the mean Zmijewski financial distress score (ZDS) in each year and the values are plotted in Figure 3 (see Table 3 and Figure 3).

As can be seen in Figure 3, in 2002 audit clients of both BDO and GT exhibited a significantly higher mean level of financial distress than that exhibited by clients of the Big 4. Thus, H1 is supported fully. There were no significant differences within the Big 4 or between BDO and GT.

For the Big 4, only EY clients show a significant decline in financial stress between 2002 and 2005. The other three Big 4 firms—DT, KPMG and PWC—also show declines in financial stress, but not significantly so for experiment wise comparisons. Each of the Big 4 shows a significant decline when controlling for the comparison wise error rates. Thus, hypothesis H2 is supported only partially.

Figure 3 shows that clients of the two non-Big 4 firms experienced much steeper declines in financial distress over the three year period from 2002 to 2005. However, while the decline for GT clients was significant while controlling for both experiment wise and comparison wise error rates, BDO was significant only for comparison wise tests. As with H2, therefore, H3 is partially supported.

In comparing the Big 4 to the two non-Big 4 audit firms, financial distress for GT clients dropped by 2005 to a level almost identical with that of DT and not significantly different than any of the Big 4. Clients of BDO, however, although lowering from 2002, continued to exhibit financial distress at a significantly higher level than any of the other five audit firms, resulting in H4 being partially supported.

## **COMPARISON OF RESULTS**

A comparison of results for the three different surrogates for litigation risk indicates differences between the three approaches. However, there is an overall downward trend for all three surrogates and comparison does show enough similarities that some conclusions can be drawn. Results for tests using the three surrogates are summarized in Table 4 (see Table 4).

In 2002, the base year for the comparison, all three surrogate models find GT clients displaying a significantly greater risk of litigation than that for any of the Big 4 audit firms and, for DAs, significantly greater than BDO, the other non-Big 4. Differences for BDO are not as

clear as there is no difference between litigation risk between BDO and the Big 4 when measured by DAs. When measured by RR, however, BDO is significantly higher in litigation risk than either KPMG or PWC, and for the ZDS measure, BDO has higher values than any of the Big 4 firms. These results provide strong, but not absolute support for hypothesis H1.

In testing hypothesis H2, all three measures find EY having an audit portfolio of public companies with a significantly reduced risk of litigation by 2005. Both the DAs and RR surrogates find KPMG and PWC with a significantly lower litigation risk associated with their public audit clients, and RR indicates a lower such risk for DT. Based on these results, it is reasonable to accept H2 as being sufficiently supported and conclude that the Big 4 firms had audit portfolios of public companies that presented lower litigation risk in 2005 than did their portfolios in 2002.

For hypothesis H3, GT, which had the portfolio with the highest risk of litigation in 2002, had lowered its risk significantly by 2005 when measured by DAs and ZDS. No significant reduction in litigation risk was indicated by the RR measure. While the risk of litigation was lower for BDO for all three surrogate measures, there was no significant reduction between 2002 and 2005. Accordingly, H3 appears to be supported only for GT.

Tests for H4 also have mixed results. When measured by DAs, both BDO and GT exhibit a risk of litigation in 2005 virtually identical to that of the Big 4 audit firms. However, the RR measure indicates that both BDO and GT exhibited a higher litigation risk in 2005 than that exhibited by three of the Big 4 firms. The ZDS measure finds no difference between GT and the Big 4 firms, but a significantly higher risk for BDO than that of the larger firms. Given that two of the three measures find BDO with a higher litigation risk than that of the Big 4, H4 is

supported partially and it is likely that the non-Big 4 audit portfolios had a significantly higher litigation risk than corresponding portfolios of the Big 4.

## **SUMMARY AND CONCLUSIONS**

Although the Private Securities Litigation Reform Act of 1995 was intended to shield auditors from excessive litigation, auditors once more are seeking additional protections, both in the U.S. and internationally. The perceived need for additional protection results from an increased number of extremely large lawsuits that threaten the continuing existence of many audit firms, including all of the Big 4. In addition, passage of the Sarbanes-Oxley Act of 2002 has added increased legal exposure both to auditors and their clients.

Another major event in 2001 was the demise of Andersen. The migration of Andersen's extensive portfolio of clients to surviving audit firms may have allowed the Big 4 audit firms not only to "cherry pick" from that portfolio, but to divest themselves of existing clients by electing to not continue as auditors for those considered to have an unacceptable risk-to-return ratio. A substantial number of the clients not obtained by the Big 4, along with clients rejected by the Big 4, selected the next two largest audit firms, GT and BDO, as their new auditor. This realignment of auditor/client relationships may have resulted in a measurable change in overall portfolio litigation risk for all six firms, with the Big 4 litigation risk being reduced while the two non-Big 4 firms risk possibly increasing. This paper investigates whether there is any evidence that such changes in litigation risk did occur.

Assuming controlling litigation risk is important both to the client and the auditor, in the absence of or in combination with additional legal protections, a rational response by auditors and their clients would be to reduce the likelihood of litigation if possible. As the likelihood of litigation is a joint condition depending on the quality of the independent audit, the reliability of

the resulting financial statements, and the financial success of the client, several different measures may be used as indicators of reduced litigation risk.

The quality of the independent audit often is associated with the extent of earnings management employed by management (e.g., see Becker *et al.* 1998; Johnson *et al.* 2002; Krishnan 2003; Nagy 2005), where earnings management is measured by estimating discretionary accruals (Schipper and Vincent 2003). Accordingly, as with Heninger (2001) and DeFond and Subramanyam (1998), this paper uses discretionary accruals estimated using the Jones (1991) model as one surrogate for litigation risk.

The quality of the issued financial statements can be measured by the likelihood that the statements contain a material error and must be restated subsequent to initial issuance. Such restatements have been found to be associated with litigation (Palmrose and Scholz 2004; Whalen 2004). Turner and Sennetti (2001) offer a model of relative risk of restatement and that model is used as a second surrogate for litigation risk.

Finally, prior research (e.g., Palmrose 1987; Stice 1991) shows a positive association between financial distress and litigation so the client simply may become stronger financially. The third surrogate for litigation risk used in this paper is Zmijewski's financial distress score (Zmijewski 1984), which has been used in a similar context, but for an earlier period, by Choi *et al.* (2004).

Results show that all three surrogates for litigation risk declined between 2002 and 2005 for all six audit firms examined. However, the decline was not significant for every audit firm across all three surrogates. In terms of earnings management, GT exhibited significantly higher estimated discretionary accrual in 2002, but by 2005, there were no significant differences in litigation risk between any of the six audit firms. In terms of relative risk of restatement, all Big 4

firms were significantly lower in 2005 than in 2002, while the two non-Big 4 firms show no significant reduction over that period. In 2002, both BDO and GT audit clients exhibited financial distress significantly higher than clients of any of the Big 4 firms. Between 2002 and 2005, only clients of GT and EY reduced the level of financial stress significantly, while BDO clients remained significantly higher in stress than any of the Big 4.

As with prior studies examining auditor litigation risk, this paper has certain limitations. Because of a lack of an adequate model, financial statement fraud risk has not been considered although fraud risk may be a more reliable surrogate for litigation risk than the surrogates used here (DeFond 2004). Also, because the data are limited to public sources, it is not feasible to determine if changes in audit portfolio litigation risk result from actions by the audit client, by the auditor, or by some combination of both. Changes in earnings management, for example, may result from client management voluntarily electing to use more conservative interpretations of GAAP or from auditors applying pressure for them to do so. Also, as audit portfolios are affected by changes in the specific clients included, it is not possible to determine if clients removed from a portfolio chose to leave by their own volition or were screened out by the auditor because of an unacceptable risk-to-return ratio (e.g., see Bell *et al.* 2002). Finally, portfolio litigation risk may be affected by exogenous factors, such as the overall economy. Such factors were not considered in this study.

Despite these limitations, the questions researched here and the results are important because assessing whether auditors manage risk at the client portfolio level provides additional insights into auditor and audit client behavior and is a useful way of testing whether our beliefs are empirically valid. The analysis is timely because it examines changes in client risk around a period in which large lawsuits resulted from numerous audit failures, new legislation such as

SarbOx created possible new exposures, and Andersen, one of the largest audit firms in the world, failed.

Future research into auditor litigation risk has many interesting avenues to explore. Certainly one valuable contribution would be to identify and instantiate a model for assessing the risk of financial statement fraud. Another would be to relate actual litigation to the individual surrogates for litigation risk included in this study and to combinations of those surrogates. These suggestions and other studies would make a valuable contribution to our understanding of the auditor/client relationship and the ability of the auditor to control litigation risk.

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**Table 1: Number of Companies with Income-Increasing Estimated Discretionary Accruals (DA) and Mean Income-Increasing Estimated Discretionary Accruals by Audit Firm by Year**

	2002		2003		2004		2005	
Audit Firm	n	Mean DA	n	Mean DA	n	Mean DA	n	Mean DA
Deloitte & Touche	460	0.1946	460	0.1282	516	0.2327	438	0.1799
Ernst & Young	576	0.2822	552	0.1311	621	0.2328	480	0.1935
KPMG	416	0.3596	349	0.1446	433	0.2447	336	0.1636
PricewaterhouseCoopers	554	0.2616	519	0.1178	624	0.2026	446	0.1675
BDO Seidman	60	0.1860	70	0.1565	81	0.2640	92	0.1870
Grant Thornton	81	0.5086	89	0.2745	119	0.2739	111	0.2114

**Table 2: Number of Companies and Relative Risk of Restatement (RR) by Audit Firm by Year**

	2002		2003		2004		2005	
	n	RR	n	RR	n	RR	n	RR
Deloitte & Touche	1,143	0.5544	1,122	0.5323	1,111	0.5184	1,124	0.5057
Ernst & Young	1,479	0.6116	1,505	0.5902	1,376	0.5749	1,378	0.5545
KPMG	1,046	0.6083	1,051	0.5802	1,008	0.5607	1,071	0.5144
PricewaterhouseCoopers	1,357	0.5837	1,366	0.5557	1,276	0.5456	1,215	0.5313
BDO Seidman	153	0.6259	183	0.6527	231	0.6309	262	0.5931
Grant Thornton	244	0.6448	242	0.5981	268	0.6154	312	0.5907

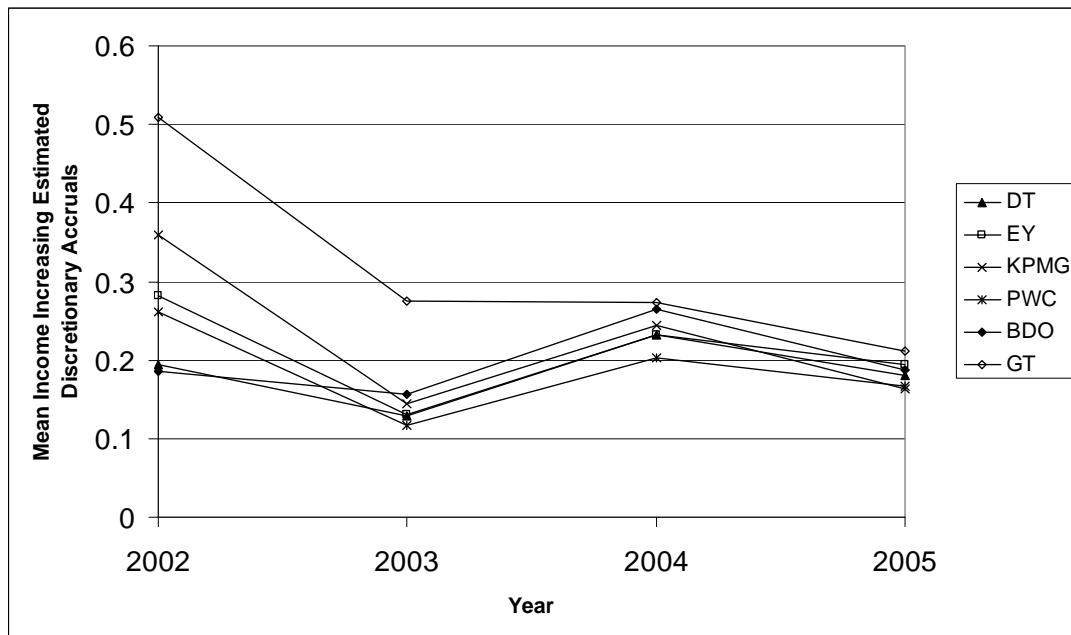
**Table 3: Number of Companies and mean Zmijewski Financial Distress Score (ZDS) by Audit Firm by Year**

	2002		2003		2004		2005	
	n	ZDS	n	ZDS	n	ZDS	n	ZDS
Deloitte & Touche	981	-0.6206	975	-0.8964	992	-1.0398	946	-1.1552
Ernst & Young	1,253	-0.6033	1,270	-0.9974	1,198	-1.1437	1,163	-1.3891
KPMG	867	-0.6180	875	-1.1986	876	-1.2337	819	-1.3011
PricewaterhouseCoopers	1,173	-0.9408	1,177	-1.0865	1,142	-1.3638	1,048	-1.4079
BDO Seidman	133	0.9188	163	0.0984	204	-0.1509	228	-0.4024
Grant Thornton	209	1.2831	209	0.6483	242	-0.6855	260	-1.1476

**Table 4: Comparison of Results for Three Different Surrogates for Litigation Risk**

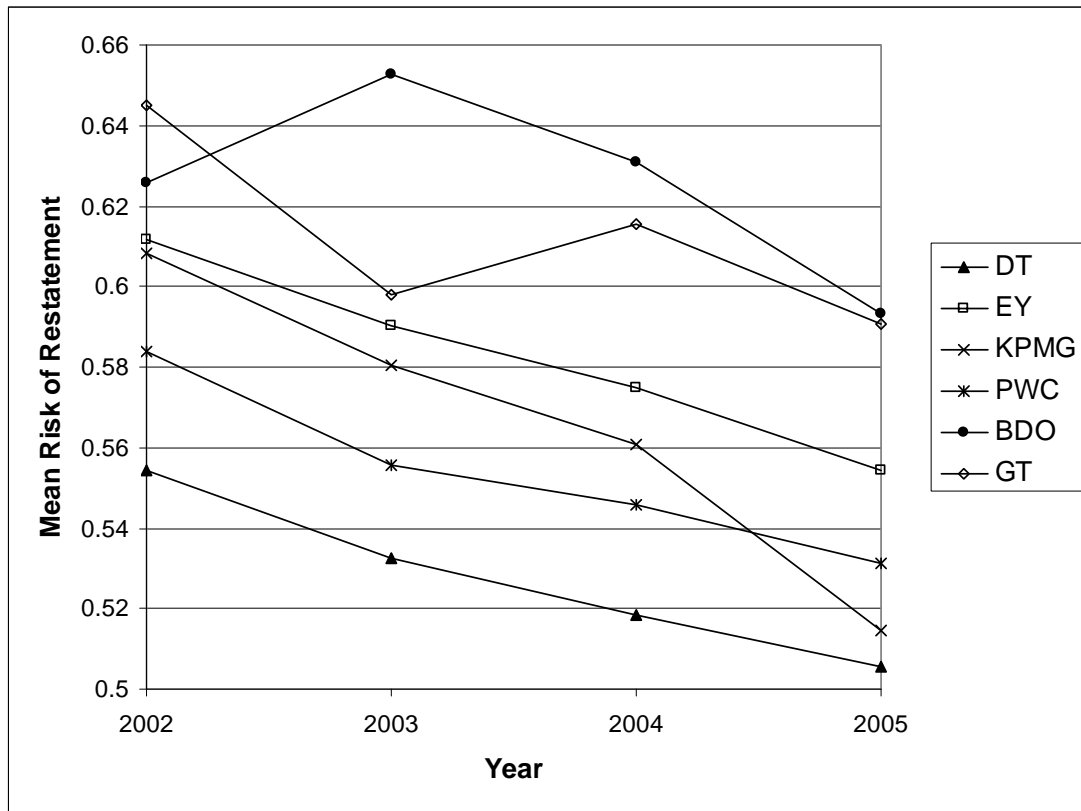
	DAs	RR	ZDS
H1	GT > B4 and BDO	GT > B4 BDO > KPMG, PWC	GT, BDO > B4
H2	EY, KPMG, PWC lower in 2005	All lower in 2005	EY lower in 2005
H3	GT lower in 2005	Neither lower in 2005	GT lower in 2005
H4	No differences in 2005	BDO, GT > DT, KPMG, PWC in 2005	BDO > B4 in 2005

**Figure 1: Plot of Mean Income-Increasing Estimated Discretionary Accruals (DA) by Audit Firm by Year**

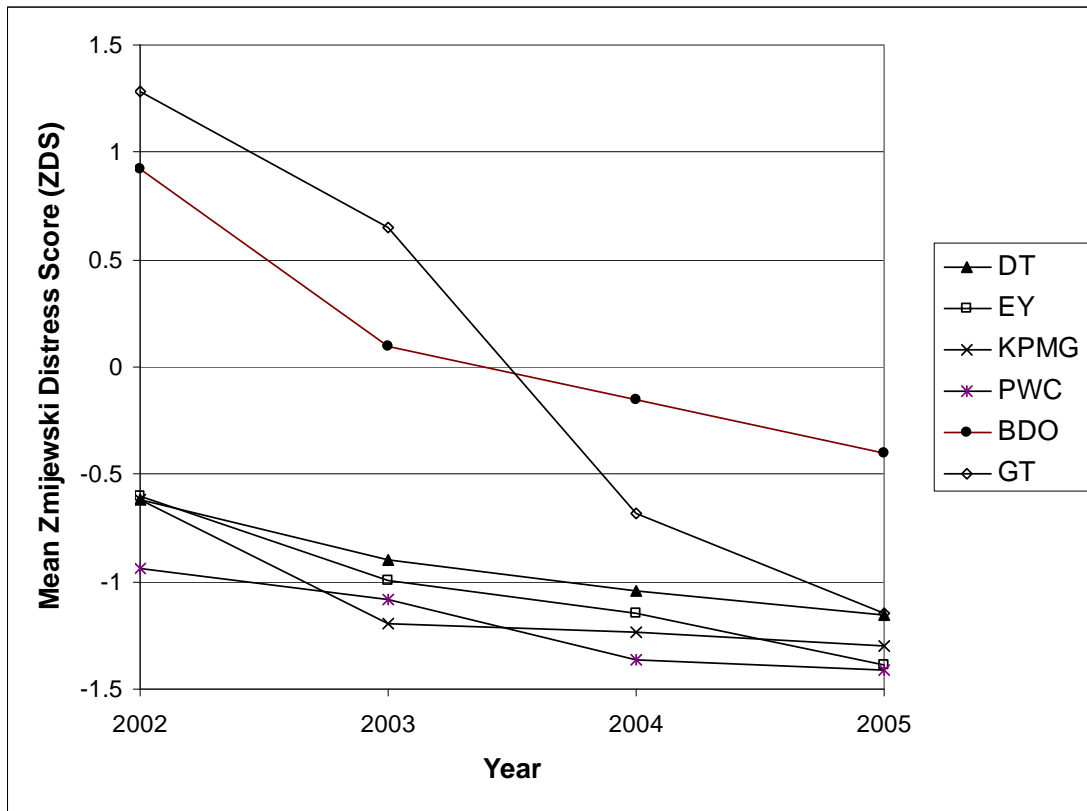




**Figure 2: Plot of Mean Relative Risk of Restatement (RR) by Audit Firm by Year**



**Figure 3: Plot of Mean Zmijewski Financial Distress Score (ZDS) by Audit Firm by Year**



*The opinions of the authors are not necessarily those of Louisiana State University, the E.J. Ourso College of business, the LSU Accounting Department, Roosevelt University, the Senior Editor, or the Editor.*