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Client-specific litigation risk and audit quality differentiation

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Client-Specific Litigation Risk and Audit Quality Differentiation

Abstract

Purpose – The purpose of this study is to examine whether client-specific litigation risk affects the audit quality differentiation between Big N and non-Big N auditors. Specifically, we examine whether higher quality audits of Big N auditors relative to non-Big auditors is more pronounced for clients with high litigation risk than for clients with low litigation risk.

Design/methodology/approach – We develop the hypothesis based on auditors' potential monetary and reputational losses, collect the data of U.S. listed companies from the Compustat and CRSP databases, and conduct regression analyses.

Findings – We find that the higher effectiveness of Big N auditors over non-Big N auditors in constraining earning management is greater for high litigation risk clients than for low litigation risk clients, suggesting that clients' high litigation risk can force big auditors to perform more effectively.

Originality/value – This study contributes to the literature by providing novel evidence on the effect of client-specific litigation risk on the audit quality differentiation between Big N and non-Big N auditors. Our findings complement the extant research on the relationship between the audit quality differentiation and country-level litigation risk.

Keywords Litigation risk, Audit quality, Big auditors, Earnings management

Research type Research paper

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1. Introduction

Extant studies (e.g., Becker *et al*., 1998; Francis *et al.*, 1999; Krishnan, 2003; Behn *et al*., 2008) find that Big N auditors have higher audit quality than non-Big N auditors. There are two explanations for the higher audit quality of big auditors. DeAngelo (1981) explains that big auditors are more concerned with their brand name reputation protection, which motivates them to better perform their work. Alternatively, Dye (1993) indicates that big auditors work better in order to protect their large wealth (i.e., 'deep pockets') from the lawsuits against them. Recently, Khurana and Raman (2004) and Francis and Wang (2008) suggest that the audit quality differentiation between Big N and non-Big N auditors is positively affected by country-level litigation risk, which is consistent with the 'deep pockets' explanation. However, Choi *et al.* (2008) find that Big 4 fee premiums are lower in strong legal liability regimes than in weak legal liability regimes, inconsistent with the 'deep pockets' theory. To complement these studies, our study focuses on client-specific litigation risk.

There is rare research into the effect of client-specific litigation risk on the audit quality differentiation between Big N and non-Big N auditors. It is warranted to document such evidence because client-specific litigation risk more explicitly affects an auditor's legal liability for auditing a specific client than country-level litigation risk does. To fill in this research gap, our study examines whether client-specific litigation risk affects the higher audit quality of Big N auditors relative to non-Big N auditors. The 'deep pockets' theory shows that perceived audit quality is linked to auditors' wealth. Since big auditors have more wealth at risk, they have greater incentives, especially when

clients have high litigation risk, to effectively audit financial statements and monitor financial reporting system in order to avoid or reduce monetary losses. Moreover, big auditors may also care about reputational losses caused by litigation. Thus, we conjecture that big auditors provide higher quality audits to high litigation risk clients than to low litigation risk clients.

Using a large sample of 81,901 client-year observations for 1988-2006 in U.S., we find that the level of discretionary accruals of Big N auditors' clients is more likely to be lower than that of non-Big N auditors' clients when clients have high litigation risk. Further analyses indicate that Big N auditors more effectively constrain earnings management than non-Big auditors for high litigation risk clients but not for low litigation risk clients. We find similar results when we estimate the regression by clustering clients to control for the autocorrelation of time-series data.

In other additional analyses, we address a concern on auditors' self-selection bias. We use the self-selection model to deal with this issue. We find that the results still hold after correcting for the potential self-selection bias. We also test our hypothesis by using the frequency of small earnings increase, discretionary accruals based on the Jones model without the intercept term, and discretionary accruals based on the modified Jones model as alternative measures of earnings management, and find similar results. We examine whether client-specific litigation risk affects the higher audit quality of industry specialist auditors relative to non-specialist auditors. We also document that the audit quality differentiation between industry specialist auditors and non-specialist auditors is more pronounced for high litigation risk clients than for low litigation risk clients, suggesting

that client-specific litigation risk positively affects the audit quality of industry specialist auditors. As the enactment of the Sarbanes-Oxley Act (SOX) in 2002 may increase auditors' legal liability, we also examine whether the effect of client-specific litigation risk on the audit quality differentiation is stronger in the post-SOX period than in the pre-SOX period. We do not find significant evidence that big auditors have been more concerned with client-specific litigation risk after the SOX became effective.

A major contribution of this study to the literature is to provide more explicit evidence on the relationship between litigation risk and the audit quality differentiation between Big N and non-Big N auditors. Although Khurana and Raman (2004) and Francis and Wang (2008) document evidence on the positive impact of litigation risk on the audit quality differentiation, they focus on country-level litigation exposure. Moreover, Choi *et al.* (2008) suggest that Big 4 auditors are not more concerned with country-level legal liability, inconsistent with the findings of and Raman (2004) and Francis and Wang (2008). Thus, it is warranted to conduct further tests to clarify this issue. Unlike these studies, our study tests this issue at the client level of litigation risk. We are interested in client-specific litigation risk because it more explicitly affects an auditor's legal liability for auditing a specific client than country-level litigation risk does. Our findings can complement the extant research that focuses on country-level litigation risk.

The rest of this paper is organized as follows. Section 2 reviews the related studies and develops the hypothesis. Section 3 discusses the research design. Section 4 presents the empirical results. We conclude in Section 5.

2. Related studies and hypothesis

2.1 Big auditors and audit quality

There is a stream of research on the relationship between auditor size and audit quality. DeAngelo (1981) argues that auditor size is positively related to audit quality because big auditors have greater incentives to protect their reputations by providing high quality audit services to clients. Francis (1984), Palmrose (1986), and Craswell *et al.* (1995) find that audit prices are positively associated with auditor size. Palmrose (1988) finds that non-Big 8 auditors have higher litigation occurrence than Big 8 auditors. These studies suggest that big auditors may have higher audit quality. Beatty (1989) documents an inverse relation between IPO firms' auditor size and initial returns earned by investors, and argues that Big 8 auditors have higher reputations than non-Big 8 auditors.

Teoh and Wong (1993) find that earnings response coefficient is higher for Big 8 auditors' clients than for non-Big 8 auditors' clients, suggesting that big auditors' high audit quality or reputations can increase investors' response to earnings surprises. Davidson and Neu (1993) find that management earnings forecasts are more accurate when clients are audited by large accounting firms. Schwartz and Soo (1996) document that the time to file the Form 8-K and the frequency of late filings increase significantly when clients are audited by non-Big 6 auditors, which supports the argument on the higher audit quality of big auditors. Becker *et al.* (1998) examine the effect of audit quality on earnings management. They document that clients of non-Big 6 auditors report more income-increasing discretionary accruals than clients of Big 6 auditors. Their findings indicate that big auditors are more effective in constraining earnings

management than non-big auditors. Francis *et al.* (1999) also examine the association between auditor size and discretionary accruals. They find that Big 6 auditor clients have lower levels of discretionary accruals even though they have higher levels of total accruals.

Krishnan (2003) examines the effect of audit quality on the informativeness of discretionary accruals. He finds that stock returns and future profitability are more positively associated with discretionary accruals for firms audited by Big 6 auditors than for firms audited by non-Big 6 auditors, suggesting that discretionary accruals of Big 6 auditor clients are less opportunistic and more efficient. Behn *et al.* (2008) investigate whether audit quality affects the predictability of accounting earnings. They find that analysts' earnings forecast accuracy is higher and the forecast dispersion is lower for firms audited by Big 5 auditors. Thus, the higher audit quality of big auditors can increase analysts' forecasting performance. Chang *et al.* (2009) examine the effect of auditor quality on companies' financing decisions. Their analytical analyses show that higher audit quality reduces the impact of market conditions on financial decisions. Consistent with the theoretical predictions, they document evidence that clients of Big 6 auditors are more likely to issue equity as opposed to debt than clients of non-Big 6 auditors. They also find that clients of Big 6 auditors make larger equity issues than clients of non-Big 6 auditors. In summary, many extant studies suggest that Big N auditors provide higher quality audit than non-Big N auditors.

2.2 Auditor litigation

Auditor litigation risk has been an ongoing concern to auditors for many years. Auditor litigation costs are increasingly higher in the U.S. For example, Free (1999) indicates that litigation costs in the U.S. were 14% of gross audit fees in 1992. Pratt and Stice (1994) report that the cost level of auditor litigation has been increased 300% from 1985 to 1994. Recently, the potential liability of auditors has been highlighted by the demise of Arthur Andersen. Thus, it is important for auditors to mitigate the possibility of lawsuits against them.

Prior research on auditor litigation focuses on identifying the factors that may affect the likelihood of auditor litigation. St. Pierre and Anderson (1984) analyze 129 cases that were filed against auditors. Their results indicate that the legal risk for auditors increases when they are dealing with new clients, but not increases when they rigidly adopt conservatism that leads to errors in undervaluing assets, recognizing inadequate amounts of revenue, or recognizing excessive expenses. Stice (1991) examines the association between pre-audit engagement characteristics of the client and the subsequent filing of a lawsuit against the auditor. He finds that the ratios of accounts receivable and inventory to total assets, variance of abnormal returns, financial condition, and market value are significantly associated with auditor litigation. Carcello and Palmrose (1994) investigate the effect of modified audit reports issued prior to bankruptcy on auditors' legal liability including both lawsuits claiming audit failure and payments made to resolve the lawsuits. Their findings suggest that issuing modified audit reports can reduce auditor litigation when clients declared bankruptcy.

Lys and Watts (1994) test the predictions based on the variables derived from a qualitative analysis of both the legal conditions and the economic incentives to bring a lawsuit. They find that lawsuits against auditors are more likely to occur for clients with larger size, income-increasing accruals, financial difficulties, poor stock price performance, or qualified audit reports. They also find a higher likelihood of lawsuit if the auditor employs an unstructured audit technology and if the client represents a relatively large proportion of the auditor's revenues. Shu (2000) comprehensively examines the determinants of auditor litigation risk by incorporating previous studies' findings in developing her model. She documents that auditor litigation is positively related to client size, the ratios of accounts receivable and inventory to total assets, return on assets, financial leverage, sales growth, beta, stock turnover, delisting, high-tech industry, and qualified opinion, and is negatively related to stock returns.

There is some extant research that examines the relationship between auditor litigation risk and audit quality. Dye (1993) develops an analytical model showing that the perceived quality of an audit is linked to the auditor's wealth. Based on this "deep pocket" theory, big auditors provide higher quality audit because they have more wealth at risk in case of litigation. Lennox (1999) documents evidence that big auditors are more likely to be sued and criticized and that criticized auditors do not suffer client losses, which supports the litigation explanation for the audit quality differentiation between Big N and non-Big N auditors. Khurana and Raman (2004) examine whether the higher audit quality of big auditors is related to country-level litigation risk. Using ex ante cost of equity capital as a proxy for financial reporting credibility, they find that Big

4 audits are associated with a lower ex ante cost of equity capital in the U.S. where litigation risk is high, but not in Australia, Canada, or the U.K. where litigation risk is lower than in the U.S. Francis and Wang (2008) investigate the association between Big 4 audits and earnings quality across countries. They document significant difference in earnings quality between clients of Big 4 auditors and clients of non-Big 4 auditors in strong legal regimes but not in weak legal regimes. These results suggest that country-level litigation exposure affects the audit quality differentiation between Big 4 and non-Big 4 auditors. Choi et al. (2008) examine the difference in Big 4 fee premiums across 15 countries. They find that Big 4 fee premiums decrease in the strength of a legal regime, inconsistent with Francis and Wang (2008). In summary, these studies focus on country-level litigation risk, and there is rare research into the effect of client-specific litigation risk on the higher audit quality of big auditors.

2.3 Hypothesis

Prior research (e.g., Becker et al., 1998; Francis et al., 1999) finds that Big N auditors provide high quality auditors than non-Big N auditors. This is because Big N auditors may have greater incentives to provide high quality audits than non-Big N auditors. One explanation for the audit quality differentiation between Big N and non-Big N auditors is that Big N auditors may have higher demand for reputation protection as they have more valuable reputations (DeAngelo, 1981). An alternative explanation for the audit quality differentiation is that Big N auditors may suffer more losses in case of litigation since they have more wealth at risk (Dye, 1993). Consistent with the litigation explanation, Khurana and Raman (2004) and Francis and Wang (2008) provide evidence

that Big N auditors provide higher quality audits in high litigious jurisdictions but not in low litigious jurisdictions.

This study focuses on client-specific litigation risk within the U.S. context which has a higher litigation exposure environment. We examine whether client-specific litigation risk is related to the audit quality differences between Big N and non-Big N auditors. Since big auditors have more wealth, they are more likely to be attractive targets for lawsuits (Dye, 1993). Big N auditors will suffer more monetary and reputational losses from lawsuits than non-Big N auditors. Thus, big auditors have greater incentives to avoid or mitigate potential litigation. When clients' litigation risk is high, big auditors are motivated to expend more efforts and execute more expertise and specialization in auditing the clients' financial statements and overseeing their financial reporting system. Hence, we predict that big auditors provide higher quality audits to clients with high litigation risk than to clients with low litigation risk. Our hypothesis is formulated as follows:

H1. Audit quality differences between Big N and non-Big N auditors are more pronounced for clients with high litigation risk than for clients with low litigation risk.

3. Research design

3.1 Data

We collect financial statement data from the Compustat database over the period 1988 to 2006. Since Hribar and Collins (2002) show that accruals calculated using the "balance-sheet approach" are more prone to measurement error and could lead to

incorrect conclusions regarding firms' earnings management activities, we calculated accruals via the statement of cash flows, which became available in 1988. Thus, our sample period begins in 1988. We also collect stock market data from the CRSP database for the sample period. After excluding observations with missing data for the analyses, the final sample consists of 81,901 firm-year observations for 1988 to 2006. Table 1 reports the distribution of observations across years. The highest frequency is 5,184 firm-year observations for 1997, while the lowest frequency is 3,139 firm-year observations for 2006.

Insert Table 1 about here

3.2 Discretionary accruals

We choose earnings management to reflect audit quality because Heninger (2001) finds that higher earnings management leads to more ex post auditor litigation. Discretionary accruals are usually used to measure earnings management in the literature (e.g., Klein, 2002; Chung and Kallapur, 2003). Following Kothari *et al.* (2005), we compute performance-matched discretionary accruals because they suggest that discretionary accruals adjusted for a performance-matched firm's discretionary accruals are less misspecified than other measures of discretionary accruals.[1] First, we estimate the following Jones model within each two-digit SIC industry-year:

$$ACC/TA_{-1} = a_0\ 1/TA_{-1} + a_1\ \Delta SALES/TA_{-1} + a_2\ PPE/TA_{-1} + \varepsilon \qquad (1)$$

where

ACC = total accruals, measured as the difference between earnings before extraordinary items and discontinued operations and cash flows from operations,

TA_{-1} = total assets at the beginning of the year,

$\Delta SALES$ = change in sales from the previous year to the current year,

PPE = gross property, plant, and equipment.

To estimate the parameters in equation (1), we run the no-intercept regression for each two-digit SIC industry-year by using all firm-year observations on the Compustat in the industry-year.[2] After estimating equation (1), we measure discretionary accruals as the residual value (i.e., the difference between total accruals and non-discretionary accruals) from equation (1) for each sample observation.

Second, we identify performance-matched observations by matching each firm-year observation in the sample to a firm-year observation from the population by the same two-digit SIC industry-year and the closest return on assets (*ROA*) to control for the effect of firm performance on the estimate of discretionary accruals (Kothari *et al.*, 2005). The performance-matched discretionary accruals for each sample observation are computed by subtracting the discretionary accruals of the matched observations from the discretionary accruals of the sample observations. Since managers manipulate earnings not only upward but also downward (Levitt, 1998), we use the absolute value of the performance-matched discretionary accruals as the measure of earnings management.

3.3 Litigation risk

As auditor litigation risk is associated with many factors,[3] it is necessary to use a comprehensive measure of litigation risk. Shu (2000) explains auditor litigation using 14

firm characteristics. Based on Shu's (2000) findings, Krishnan and Zhang (2005) develop a summary measure of litigation score:

$$LITSCORE = 0.276*SIZE + 1.153*INV + 2.075*REC + 1.251*ROA + 1.501*LEV + 0.301*GROWTH - 0.371*RET + 0.235*BETA + 1.464*TURNOVER + 1.060*DELIST + 0.928*TECH + 0.463*OPINION - 10.049 \quad (2)$$[4]

where

LITSCORE = litigation score,

SIZE = natural log of total assets at the end of the year,

INV = inventory divided by lagged total assets at the end of the year,

REC = receivables divided by lagged total assets at the end of the year,

ROA = net income in the year deflated by average total assets,

LEV = total liabilities divided by total assets at the end of the year,

GROWTH = change in sales from the previous year to the current year divided by the previous year's sales,

RET = compounded stock returns over the year ending with the last day of the fiscal year,

BETA = slope coefficient of a regression of daily stock returns on equally weighted market returns over the year ending with the last day of the fiscal year,

TURNOVER = proportion of shares that were traded at least once during the year ending with the last day of the fiscal year, computed as $(1- \Pi_t[1 - \text{turnover rate at day t}])$,

DELIST = 1 if the company is delisted because of financial difficulties within the next year, and 0 otherwise,

TECH = 1 if the company's SIC code is in the 2830s, 3570s, 7370s, 8730s, and between 3825 and 3839, and 0 otherwise,

OPINION = 1 if the company received a going concern opinion in the previous year, and 0 otherwise.

We use equation (2) to compute litigation score and then categorize each year's sample firms into high litigation risk group and low litigation risk group where high (low) litigation risk firms are firms whose litigation scores are (not) greater than the median litigation score of the year's sample firms.

3.3 Model

We test the hypothesis based on the following regression model:

$$ADAC = b_0 + b_1 LITRISK + b_2 BIGAUD + b_3 LITRISK*BIGAUD + b_4\, MB + b_5 ACNI + b_6 DEBT + b_7 ASSETS + b_8\, LOSS + Year\ dummies + \varepsilon \quad (3)$$

where

ADAC = absolute value of the performance-matched discretionary accruals,

LITRISK = litigation risk, coded "1" for high litigation risk firms and "0" for low litigation risk firms,

BIGAUD = big auditors, coded "1" for Big 8 auditors (1988-1989), Big 6 auditors (1989-1998), Big 5 auditors (1998-2002), and Big 4 auditors (2002-2006), and "0" otherwise,

MB = market-to-book ratio, measured as the ratio of the market value of the common equity to the book value of the common equity,

ACNI = absolute value of changes in net income from the previous year to the current year deflated by total assets,

DEBT = ratio of long-term debt to total assets,

ASSETS = natural log of total assets,

LOSS = a dummy coded "1" if net income is negative for both the previous year and the current year, and "0" otherwise.

In equation (3), the coefficient on the interaction term of *LITRISK* and *BIGAUD* (i.e., b_3) reflects the effect of client-specific litigation risk on the audit quality differentiation between Big N and non-Big N auditors. A negative and significant b_3 indicates that the discrepancy in audit quality between big auditors and small auditors is more pronounced for clients with high litigation risk than for clients with low litigation risk. Thus, b_3 is expected to be negative and significant if the hypothesis is supported. Auditors may work harder when clients have high litigation risk. However, they may not be effective in constraining discretionary accruals as they are more likely to fail in auditing these clients. Otherwise, these clients' litigation risk may not be high for auditors. Thus, we expect that the coefficient on *LITRISK* could be either negative or positive. We also expect a negative coefficient on *BIGAUD* as big auditors provide higher quality services than small auditors.

We include several other variables in the model to control for the possible effect of these firm characteristics on earnings management.[5] Since Skinner and Sloan (2002) suggest that earnings management is higher for firms with high growth opportunities (measured by market-to-book ratio) than for firms with low growth opportunities, we expect a positive coefficient on *MB*. Dechow *et al.* (1996) and Klein (2002) find that the absolute value of change in net income is positively related to the absolute value of discretionary accruals. Thus, the coefficient on *ACNI* is expected to be positive. Klein (2002) suggests that firms with high financial leverage may have higher discretionary accruals. However, Jensen and Mecking (1976) argue that financial leverage can reduce agency costs. Therefore, the coefficient on *DEBT* could be either positive or negative.

We expect a negative coefficient on *ASSETS* because large firms may have higher earnings quality (Armstrong *et al*., 2010). As earnings quality is lower when firms incur losses (Francis *et al.*, 2004), the coefficient on *LOSS* is expected to be positive. In addition, we also include year dummies in the model to control for fixed year effects.

4. Empirical results

Table 2 provides descriptive statistics. The mean and median of the absolute value of the performance-matched discretionary accruals are 0.116 and 0.074, respectively. Eighty-six percent of the sample firms were audited by Big N auditors. Table 3 presents the Pearson correlations between independent variables. The highest correlation coefficient is 0.46 between *LITRISK* and *ASSETS*. To examine whether multicollinearity is a concern in this study, we compute the regression model's variance inflation factor (VIF) scores. We find that all VIF scores are less than 10. Thus, multicollinearity is not a substantive issue.

Insert Tables 2 and 3 about here

We report the results of the main test in Table 4. The coefficient on *LITRISK*BIGAUD* is negative and significant (*t*-statistic = -2.79, *p*-value <0.01), which supports our hypothesis. The results show that the effectiveness of big auditors in constraining earnings management is higher for clients with high litigation risk than for clients with low litigation risk. Our findings indicate that the audit quality differentiation is positively related to client-specific litigation risk, consistent with the 'deep pockets' theory. The results at the client level of litigation risk are also consistent with the Khurana and Raman's (2004) and Francis and Wang's (2008) findings that the higher

audit quality of Big 4 auditors is positively related to country-level litigation exposure. Moreover, the coefficient on *BIGAUD* is insignificant. Since the coefficient on *BIGAUD* reflects the effectiveness of big auditors of low litigation risk clients in constraining earnings management, the results indicate that there is no significant difference in audit quality between Big N and non-Big N auditors when clients have low litigation risk. Taken together, our findings are consistent with the Khurana and Raman's (2004) argument that the higher audit quality of big auditors is driven by litigation risk rather than brand name reputation protection. In addition, we find that earnings management is positively associated with litigation risk. This suggests that the effect of high litigation risk clients' incentive to manage earnings may dominate over the effect of their auditors' incentive to constrain earnings management. We also find that the absolute value of discretionary accruals is higher for firms with high *MB*, *ACNI*, or *LOSS*, and is lower for firms with high *DEBT* or *ASSETS*.

Insert Table 4 about here

We conduct several additional analyses to test the robustness of our main results. First, we examine the effectiveness of big auditors in constraining earnings management for high litigation risk firms and low litigation risk firms separately by running the following regression:

$$ADAC = b_0 + b_1 BIGAUD + b_2\, MB + b_3 ACNI + b_4 DEBT + b_5 ASSETS + b_6\, LOSS + Year\ dummies + \varepsilon \quad (4)$$

Columns 3 and 4 of Table 5 include the results for high litigation risk firms, and Columns 5 and 6 of Table 5 include the results for low litigation risk firms. We find that the

coefficient on *BIGAUD* is negative and significant for high litigation risk clients (*t*-statistic = -3.39, *p*-value < 0.01), but is insignificant for low litigation risk clients. These results suggest that compared to non-Big N auditors, Big N auditors provide higher quality audits to high litigation risk clients, but not when they have low litigation risk clients, which corroborates our main results.

Insert Table 5 about here

Second, we examine whether the results hold after controlling for the autocorrelation of time-series data. We estimate equation (3) by clustering firms. Table 6 presents the results of the regression based on clustered standard errors. We also document that the coefficient on *LITRISK*BIGAUD* is negative and significant (*t*-statistic = -2.22, *p*-value < 0.05), while the coefficient on *BIGAUD* is insignificant. Thus, the results are not driven by the time series correlation.

Insert Table 6 about here

Third, we examine whether the results hold after controlling for auditors' self-selection bias. Similar to Khurana and Raman (2004), we first estimate the following auditor selection model:[6]

$$BIGAUD = c_0 + c_1 SHORT + c_2 LONG + c_3 PE + c_4 ISSUE + c_5 DEBT + c_6 ASSETS + c_7 LOSS + \text{Year dummies} + \varepsilon \quad (5)$$

where

SHORT = absolute value of short-term accruals in income deflated by sales,

LONG = absolute value of long-term accruals in income deflated by sales,

P/E = ratio of price to earnings per share,

ISSUE = new equity issue, coded "1" if change in equity is greater than 10% and "0" otherwise.

We run logistic regression to estimate equation (5) and then use the fitted values from the logistic regression to compute the inverse Mills ratio (Heckman, 1979).[7] Next, the inverse Mills ratio (λ) is included in equation (3) to correct for potential self-selection bias. Table 7 provides the results after allowing for auditors' self-selection bias. The results show that the higher audit quality of big auditors is positively associated with litigation risk (*t*-statistic = -3.45, *p*-value < 0.01), which also supports our hypothesis.

Insert Table 7 about here

Fourth, we examine whether the results are driven by the potential noise of using the Shu's (2000) litigation score in our long sample period. To deal with this concern, we test the hypothesis using data over the period 1988 to 1996, which is almost contemporaneous to the period 1987 to 1996 used in Shu (2000). We still find that the coefficient on *LITRISK*BIGAUD* is negative and significant (*t*-statistic = -1.96, *p*-value < 0.05). Thus, the results are less likely to be driven by the long sample period.

Fifth, we test the robustness of the results to several alternative measures of earnings management. Following Ashbaugh *et al.* (2003), we measure earnings management using an earnings benchmark dummy, which is coded "1" if the change in earnings scaled by the beginning total assets lies in the interval of [0, 0.01) and "0" otherwise.[8] We then run logistic regression to estimate equation (3) in which *ADAC* is replaced with the earnings benchmark dummy. We find that the coefficient on *BIGAUD*LITRISK* is negative and significant (non-tabulated chi-square = 3.01, *p*-value

<0.05). When we include a constant term in the Jones model or use the modified Jones model, respectively, to measure discretionary accruals, we also find a negative and significant coefficient on *BIGAUD*LITRISK* (non-tabulated *t*-statistic = -2.68, *p*-value < 0.01; *t*-statistic = -3.15, *p*-value < 0.01). Thus, the results still hold when we measure earnings management in alternative ways.

Sixth, we examine whether the higher audit quality of industry specialist auditors (relative to non-specialist auditors) is positively related to client-specific litigation risk. We measure auditor industry specialization as the ratio of the sum of the sales of the clients of an auditor in a two-digit SIC industry to the total sum of the sales of all companies in that industry (Dunn and Mayhew, 2004). We estimate equation (3) by using auditor industry specialization instead of *BIGAUD*. The coefficient on the interaction of auditor industry specialization and *LITRISK* is negative and marginally significant (non-tabulated *t*-statistic = -1.44, *p*-value < 0.10). This suggests that the difference in audit quality between industry specialist auditors and non-specialist auditors is more pronounced for high litigation risk clients than for low litigation risk clients.

Finally, we examine whether the Sarbanes-Oxley Act (SOX) affects the relationship between client-specific litigation risk and the audit quality differentiation. We are interested in this question because the enactment of the SOX may increase auditors' legal liability. For example, Section 802 of the Act imposes increased criminal penalties for auditors involved in accounting fraud. The Act created the Public Company Accounting Oversight Board (PCAOB), which oversees the audits of public companies in order to protect the interests of investors. The passage of the SOX may increase big

auditors' sensitivity to client-specific litigation risk as the SOX imposes new responsibilities and lowers the threshold for duty of care. Thus, we conjecture that the effect of litigation risk on the audit quality differences between Big N and non-Big N auditors is stronger in the post-SOX period than in the pre-SOX period. To test this conjecture, we run the following regression:

$$\begin{aligned} ADAC = {} & b_0 + b_1 LITRISK + b_2 BIGAUD + b_3 LITRISK*BIGAUD + b_4 SOX \\ & + b_5 SOX*LITRISK + b_6 SOX*BIGAUD + b_7 SOX*LITRISK*BIGAUD \\ & + b_8 MB + b_9 ACNI + b_{10} DEBT + b_{11} ASSETS + b_{12} LOSS + \varepsilon \end{aligned} \quad (6)$$

where *SOX* is a dummy coded "1" for observations in the post-SOX period (2003-2006) and "0" for observations in the pre-SOX period (1988-2002).[9] In equation (6), the coefficient on *LITRISK*BIGAUD* captures the effect of litigation risk on the audit quality differentiation in the pre-SOX period. The coefficient on *SOX*LITRISK*BIGAUD* captures the difference in the effect of litigation risk on the audit quality differentiation between the post-SOX period and the pre-SOX period. We expect b_6 to be negative and significant if our conjecture is supported. We find a negative and significant coefficient on *LITRISK*BIGAUD* (non-tabulated *t*-statistic = -2.22, *p*-value < 0.05). We also find that the coefficient on *SOX*LITRISK*BIGAUD* is negative but insignificant (non-tabulated *t*-statistic = -1.25). Thus, there is no significant evidence to support the conjecture.

5. Conclusion

There are two arguments on the reasons for the audit quality differentiation between Big N and non-Big N auditors. DeAngelo (1981) explains that big auditors are

more motivated to protect their brand name reputations by providing high quality audit services. However, Dye (1993) suggests that big auditors suffer more monetary losses from lawsuits against them than small auditors because they have more wealth (i.e., 'deep pockets'), which leads to their higher audit quality. Khurana and Raman (2004) and Francis and Wang (2008) find that the audit quality differentiation between Big N and non-Big N auditors is positively associated with country-level litigation risk, however, Choi *et al.* (2008) suggest that Big auditors may not be concerned with country-level litigation risk. This study addresses this issue by focusing on client-specific litigation risk. We examine whether client-specific litigation risk is related to the higher audit quality of big auditors. We find that the audit quality differentiation Big N and non-Big N auditors is more evident when client-specific litigation risk is high, consistent with Khurana and Raman (2004) and Francis and Wang (2008).

This study contributes to the literature by providing more explicit evidence on testing the relationship between litigation risk and the audit quality differentiation between Big N and non-Big N auditors. Unlike Khurana and Raman (2004), Francis and Wang (2008), and Choi *et al.* (2008), this study focuses on client-specific litigation risk. It is worth clarifying this issue at the client level of litigation risk because client-specific litigation risk more explicitly affects an auditor's legal liability for auditing a specific client. This study complements the extant research that only uses countries' legal environments to measure auditors' litigation risk.

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Table 1
Sample breakdown by year

Year	Frequency	Percent (%)
1988	3,617	4.42
1989	3,795	4.63
1990	3,810	4.65
1991	3,798	4.64
1992	3,978	4.86
1993	4,249	5.19
1994	4,648	5.67
1995	4,834	5.90
1996	4,982	6.08
1997	5,184	6.33
1998	5,103	6.23
1999	4,863	5.94
2000	4,661	5.69
2001	4,641	5.67
2002	4,369	5.33
2003	4,222	5.16
2004	4,022	4.91
2005	3,986	4.87
2006	3,139	3.83
Total	81,901	100.00

Table 2
Descriptive statistics

Variable	N	Mean	Median	Std	Q1	Q3
ADAC	81,901	0.116	0.074	0.129	0.031	0.151
LITRISK	81,901	0.500	0.000	0.500	0.000	1.000
BIGAUD	81,901	0.860	1.000	0.347	1.000	1.000
MB	81,901	2.818	1.841	3.954	1.104	3.252
ACNI	81,901	0.084	0.035	0.134	0.013	0.091
DEBT	81,901	0.177	0.126	0.187	0.007	0.288
ASSETS	81,901	5.296	5.124	2.179	3.711	6.742
LOSS	81,901	0.209	0.000	0.407	0.000	0.000

Notes:
ADAC = absolute value of the performance-matched discretionary accruals,
LITRISK = litigation risk, coded "1" for high litigation risk firms and "0" for low litigation risk firms,
BIGAUD = big auditors, coded "1" for Big 8 auditors (1988-1989), Big 6 auditors (1989-1998), Big 5 auditors (1998-2002), and Big 4 auditors (2002-2006), and "0" otherwise,
MB = market-to-book ratio, measured as the ratio of the market value of the common equity to the book value of the common equity,
ACNI = absolute value of changes in net income from the previous year to the current year deflated by total assets,
DEBT = ratio of long-term debt to total assets,
ASSETS = natural log of total assets,
LOSS = a dummy coded "1" if net income is negative for both the previous year and the current year, and "0" otherwise.

Table 3
Pearson correlations

Variable	*BIGAUD*	*MB*	*ACNI*	*DEBT*	*ASSETS*	*LOSS*
LITRISK	0.167***	0.024***	-0.068***	0.170***	0.460***	-0.148***
BIGAUD		-0.005	-0.089***	0.071***	0.312***	-0.086***
MB			0.176***	-0.088***	-0.063***	0.095***
ACNI				-0.113***	-0.313***	0.302***
DEBT					0.266***	-0.001
ASSETS						-0.306***

Notes:
*** denotes the significance at the level of 1% (two-tailed tests).

Table 4
Main regression

Variable	Predicted sign	Coefficient	*t*-statistic
Intercept	+/-	0.133	48.03***
LITRISK	+/-	0.032	13.20***
BIGAUD	-	0.000	0.06
*LITRISK*BIGAUD*	-	-0.007	-2.79***
MB	+	0.002	14.49***
ACNI	+	0.230	67.56***
DEBT	+/-	-0.030	-13.01***
ASSETS	-	-0.010	-38.43***
LOSS	+	0.032	28.36***
Year dummies			Included
N			81,901
F-statistic			587.99***
Adj. R^2			15.71%

Notes:

$$ADAC = b_0 + b_1 LITRISK + b_2 BIGAUD + b_3 LITRISK*BIGAUD + b_4\, MB + b_5 ACNI + b_6 DEBT + b_7 ASSETS + b_8\, LOSS + \text{Year dummies} + \varepsilon \quad (3)$$

where

ADAC = the absolute value of the performance-matched discretionary accruals.

*** denotes the significance at the level of 1% (one-tailed tests).

Table 5
High or low litigation risk

		High Litigation Risk		Low Litigation Risk	
Variable	Predicted sign	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Intercept	+/-	0.160	39.50***	0.136	35.01***
BIGAUD	-	-0.007	-3.39***	0.000	0.23
MB	+	0.001	7.12***	0.002	12.93***
ACNI	+	0.243	48.15***	0.219	47.08***
DEBT	+/-	-0.027	-8.91***	-0.033	-9.09***
ASSETS	-	-0.010	-31.03***	-0.010	-22.30***
LOSS	+	0.024	14.10***	0.036	23.92***
Year dummies			Included		Included
N			40,946		40,955
F-statistic			313.70***		325.78***
Adj. R^2			15.49%		15.99%

Notes:

$$ADAC = b_0 + b_1 BIGAUD + b_2\, MB + b_3 ACNI + b_4 DEBT + b_5 ASSETS + b_6\, LOSS + \text{Year dummies} + \varepsilon \quad (4)$$

*** denotes the significance at the level of 1% (one-tailed tests).

Table 6
Regression by clustering firms

Variable	Predicted sign	Coefficient	*t*-statistic
Intercept	+/-	0.133	42.96***
LITRISK	+/-	0.032	10.33***
BIGAUD	-	0.000	0.05
*LITRISK*BIGAUD*	-	-0.007	-2.22**
MB	+	0.002	9.03***
ACNI	+	0.230	39.30***
DEBT	+/-	-0.030	-10.29***
ASSETS	-	-0.010	-31.53***
LOSS	+	0.032	21.76***
Year dummies			Included
N			81,901
F-statistic			249.07***
R^2			15.73%

Notes:
*** denotes the significance at the level of 1% (one-tailed tests).
** denotes the significance at the level of 5% (one-tailed tests).

Table 7
Regression by allowing for auditors' self-selection bias

Variable	Predicted sign	Coefficient	*t*-statistic
Intercept	+/-	0.158	17.09***
LITRISK	+/-	0.034	11.51***
BIGAUD	-	-0.048	-2.86***
*LITRISK*BIGAUD*	-	-0.011	-3.45***
MB	+	0.002	12.96***
ACNI	+	0.231	59.83***
DEBT	+/-	-0.037	-11.95***
ASSETS	-	-0.008	-8.84***
LOSS	+	0.034	25.07***
λ	+/-	0.018	3.02***
Year dummies			Included
N			60,817
F-statistic			428.34***
Adj. R^2			15.95%

Notes:
*** denotes the significance at the level of 1% (one-tailed tests).

Notes:

[1] We include return on assets in the calculation of litigation score. As our litigation risk measure is correlated with firm performance, it is appropriate to use performance-matched discretionary accruals.

[2] There are at least eight firms in each two-digit SIC industry-year.

[3] See Stice (1991), Carcello and Palmrose (1994), Lys and Watts (1994), and Shu (2000).

[4] Equation (2) and related variable definitions all come from Krishnan and Zhang (2005, pp.122).

[5] All continuous variables are winsorized at 1% and 99%.

[6] The auditor selection model is discussed in Francis et al. (1999).

[7] The other variables in equation (6) have been defined in the section of research design.

[8] Since Burgstahler and Dichev (1997) document unusually low frequencies of small decreases in earnings and unusually high frequencies of small increases in earnings, the frequency of small earnings increase reflects the extent to which managers manipulate reported earnings.

[9] Since the SOX became in effect on July 30, 2002, we classify the sample period (1988-2006) into the pre-SOX period (1988-2002) and the post-SOX period (2003-2006).