Do the Big 4 and the Second-tier firms provide audits of similar quality?

Jeff P. Boone, Inder K. Khurana, K. K. Raman

ABSTRACT

In this paper, we examine audit quality for Big 4 and Second-tier auditors during 2003–2006. We utilize the auditor’s propensity to issue a going concern audit report for distressed clients as a measure of audit quality. In addition, since the purpose of an audit is to improve financial reporting quality, we utilize abnormal accruals as an observable proxy for audit quality. Further, we utilize the client- and year-specific ex ante equity risk premium as a proxy for audit quality as perceived by investors. We control for auditor self-selection bias using the matched-pairs sample approach discussed by Francis and Lennox (2008). We find weak evidence that the Big 4 have a higher propensity to issue going concern audit opinions for distressed companies. However, the level of performance-adjusted abnormal accruals for Big 4 and Second-tier audit firm clients appears to be similar. With respect to investor perceptions, we find the client-specific ex ante equity risk premium to be lower for Big 4 clients than for Second-tier audit firm clients. Overall, our findings suggest little difference in actual audit quality but a more pronounced difference in perceived audit quality. Collectively, the evidence we provide informs the current discourse on audit quality, auditor choice, and the viability of Second-tier auditors as an alternative to the Big 4.

© 2010 Elsevier Inc. All rights reserved.
1. Introduction

In recent years, a Second-tier of large international audit firms appear to have emerged as an alternative to the Big 4 (Byrnes, 2005; GAO, 2006; Jopson, 2006). The emergence of these Second-tier firms has been facilitated by the increase in workload (i.e., the increase in the number of hours required for a typical audit) and capacity constraints brought on by the enactment of the 2002 Sarbanes Oxley Act (GAO, 2006). Moreover, regulators (such as the PCAOB) and interest groups (such as the American Assembly and the US Chamber of Commerce) appear to be promoting these Second-tier firms as a viable alternative to the Big 4 based on the underlying belief that audit quality for Big 4 and Second-tier firms is similar. Still, whether or not the Second-tier firms provide audit quality similar to that of the Big 4 remains an interesting and open empirical question.

In this paper, we investigate audit quality differentials between Big 4 and Second-tier auditors during 2003–2006. Specifically, we examine whether the auditor’s propensity to issue a going concern audit opinion for distressed companies is similar for Big 4 and Second-tier auditors. Further, since the purpose of an external audit is to improve financial reporting quality, we examine whether abnormal accruals (as an observable proxy for accounting information quality) are similar for Big 4 and Second-tier audit firm clients. In addition, from an investor perspective, we examine whether the perceived accounting information quality of Big 4 and Second-tier firm audit clients is similar as reflected in the client- and year-specific ex ante equity risk premium. Collectively, our research attempts to address the actual as well as perceived audit quality of Big 4 and Second-tier auditors.

Prior theoretical and empirical research in auditing suggests that the two primary drivers of audit quality are litigation costs and reputation loss. Specifically, Palmrose (1988) and Simunic and Stein (1987) suggest that given their “deep pockets” and heavy spending on building their brand names, the large audit firms have an incentive to lower litigation risk and protect their reputational capital by providing more credible financial reports. Their findings are consistent with the notion (articulated by DeAngelo 1981) that audit firm size is an important determinant of audit quality. Specifically, the argument is that large size (1) enables auditors to spend heavily on training and audit technology (thereby contributing to their competence), and (2) makes them less dependent on an individual client, and thus better able to resist client pressure to issue a “clean” (unqualified) audit opinion and/or to restrain earnings management.

Further, DeAngelo (1981) argues that the value of an audit firm consists of the present value of future quasi rents, i.e., the excess of audit fees over marginal costs. Consequently, the auditor with a greater number of clients has more to lose in terms of aggregate quasi rents by failing to report a

---

1 We ranked all US audit firms in 2006 by market share, i.e., the totals of their audit clients’ assets or revenues. Either approach to measuring market share provided similar rankings. The four largest firms (the Big 4) are PwC, Deloitte & Touche, Ernst & Young, and KPMG. We classify the fifth and sixth largest audit firms (Grant Thornton and BDO Seidman) as Second-tier auditors. Relative to Grant Thornton and BDO Seidman, the seventh and eighth largest audit firms (Crowe Chizek, and McGladrey Pullen) are much smaller. i.e., during 2003–2006, the number of public audit clients for Crowe Chizek, and McGladrey Pullen was less than a 10th of the number of such clients for Grant Thornton and BDO Seidman. Further, as discussed below, Carson (2009) identifies Grant Thornton and BDO Seidman along with the Big 4 as comprising the six “global audit firm networks.” Hence, for the purpose of this study, we identify only Grant Thornton and BDO Seidman as Second-tier auditors.

2 Thus, Kayla Gillan, a member of the PCAOB has indicated that audit committees should “consider the so-called second-tier of audit firms. I dislike using that term because it implies that the firms are secondary in quality which I strongly believe is false . . . .” (Grant Thornton, 2007). Similarly, the PCAOB Chairman Mark Olson has noted “the growth in size and skill taking place in (audit) firms following the Big 4,” and Johnson (2007) suggests that the PCAOB’s inspection of the larger non-Big 4 firms found fewer deficiencies than those reported at the Big 4. Separately, the American Assembly (2005) indicates that “mid-tier firms could satisfactorily serve a large number of those companies that seem to be principally served by the Big 4” (p. 11). The US Chamber of Commerce (2006) suggests that “all parties should actively encourage public companies to consider high quality firms outside the Big 4 . . . .” (p. 18).

3 Essentially, we examine audit quality differentials since the demise of Arthur Andersen in 2002. We focus on the 2003–2006 time period to avoid the potentially confounding effects of various events (such as the stock market collapse, the various accounting scandals including Enron and WorldCom, and the criminal conviction of Arthur Andersen) during 2002.

4 In other words, we recognize that accrual choices are jointly affected by client and auditor preferences, and that it is difficult to distinguish audit quality from financial reporting quality. Consistent with prior research (e.g., Francis et al., 1999; Khurana and Raman, 2004), since higher audit quality implies more credible financial reporting, we view accounting information quality as a consequence of audit quality.
discovered breach, i.e., subsequent detection of the failure to report might entail loss of reputation and clients and/or lower future audit fees. Her argument is that this collateral aspect of the auditor–client relationship raises the penalty for compromising independence in proportion to the size of the auditor. Consequently, audit quality is higher for large auditors. Put differently, litigation costs and reputation loss (and the resulting loss of aggregate quasi rents) provide large auditors the necessary market-based incentive to maintain their independence and provide audit quality consistent with their brand name reputation.

It is worth noting that the theory discussed above was developed in the 1980s and draws on the (then) distinction between the Big 8 and other smaller audit firms. By contrast, the Second-tier auditors today represent the fifth and sixth largest audit firms in the US and worldwide, with correspondingly developed significant national and international brand name reputation capital. Also, as discussed by Carson (2009, p. 363), the two Second-tier firms – along with the Big 4 – comprise the extant six “global audit firm networks” defined as the founding members of the international Forum of Firms which operates as the Transnational Auditors Committee of IFAC. Moreover, the Second-tier firms today are likely of the size contemplated by Palmrose (1988) and Simunic and Stein (1987) for the Big 8 in the 1980s. Potentially, the Second-tier firms today have an incentive level (based on litigation costs and reputation loss) similar to the Big 4 to maintain auditor independence and audit quality. Further, Nelson (2006) indicates that reforms mandated by the 2002 Sarbanes Oxley Act (SOX) have increased both client and auditor incentives for accurate financial reporting. In turn, stronger client and auditor incentives for accurate reporting may be expected to contribute to more uniform audit quality generally. For all these reasons, Big 4 and Second-tier firm audit quality today could be similar.

However, there is also an important reason why Big 4 and Second-tier audit quality may not be similar. Specifically, differences in audit quality between Big 4 and Second-tier auditors may exist to the extent that these auditors vary in their independence, i.e., their ability and willingness to withstand client pressure for a clean (unqualified) audit opinion or to allow aggressive reporting. As noted by the GAO (2008) and the US Department of the Treasury (2008), the largest Second-tier firm is less than one-third the size of the smallest Big 4 firm as measured by aggregate revenues and/or the number of partners, professional staff, and public company clients. By virtue of their much smaller size, the Second-tier firms are likely to have considerably less invested capital (partner equity) and smaller aggregate quasi rents than the Big 4 firms. Hence, to the extent that the Big 4 – by virtue of their considerably larger size – continue to have “deeper pockets” (and are subject to greater scrutiny for those reasons) and considerably larger aggregate quasi rents than the Second-tier firms, the Big 4 could very well have a greater market-based economic incentive to “pushback” harder against client pressures to allow aggressive and potentially opportunistic reporting. Consequently, differential audit quality...
between Big 4 and Second-tier auditors could exist. Hence, whether Big 4 and Second-tier audit quality is similar remains an interesting and ultimately an empirical question.

In our study, we recognize that not all Big 4 clients are auditable by Second-tier auditors. Hence, in examining our research questions, we focus on Big 4 clients for whom the Second-tier firms are potentially viable as auditors. Specifically, we exclude Big 4 clients whose revenues exceed the revenues of the largest Second-tier client in each of the four years. Also, as discussed below, in our analyses we control for auditor self-selection by using the matched-pairs sample approach discussed by Francis and Lennox (2008).

Our results broadly suggest that financial reporting quality is similar for Big 4 and Second-tier audit firm clients. Specifically, we find weak evidence that Big 4 auditors have a higher propensity to issue a going concern audit opinion for distressed clients relative to Second-tier auditors. Also, we find the level of performance-adjusted abnormal accruals for Big 4 audit clients to be no different from those of Second-tier audit firm clients.

With respect to investor perceptions, we find the client-specific ex ante equity risk premium to be lower for Big 4 clients than for Second-tier audit firm clients. This finding is consistent with the notion that investors perceive Big 4 audit quality (and by implication the accounting information quality of Big 4 clients) to be higher. An alternative explanation is that investment bankers and institutional investors prefer Big 4 auditors (for their own clients and investees) primarily for insurance reasons, i.e., possible access to the Big 4’s greater financial resources in the event of an audit failure (GAO, 2008, p. 44). Put differently, underwriters and investors prefer Big 4 auditors primarily for their “deeper pockets” and resulting greater ability to share more of the settlement costs and shareholder losses in the event the deal falters or the client fails. In turn, this preference appears to be translated into a lower cost of equity capital for Big 4 clients.

Overall, the evidence we document in this study suggests little difference in actual audit quality but a more pronounced difference in perceived audit quality. This suggests that the choice between Big 4 and Second-tier auditors is not primarily a quality-based choice but, rather, is primarily driven by cost savings in the form of lower ex ante equity risk premiums due to hiring a Big 4 auditor. Thus, clients of Second-tier auditors potentially trade off higher ex ante equity risk premiums for possibly lower audit fees. From the perspective of public policy, the ability to choose between Big 4 and Second-tier audit firms is beneficial because it allows firms to enhance economic efficiency (by matching marginal costs and benefits) while still obtaining largely similar audit quality. Collectively, our findings are important and timely, and inform the discourse on audit quality and auditor choice (i.e., the viability of Second-tier auditors as an alternative to the Big 4) both of which appear to be of significant public policy concern at this time for regulators as well as users of financial statements.

The rest of the paper proceeds as follows: Section 2 describes and develops our hypotheses. Section 3 discusses our methodology and sample. The empirical findings are reported in Section 4, and Section 5 concludes the paper.

2. Hypotheses

2.1. Going concern audit opinion

Consistent with prior research (e.g., Carey and Simnett, 2006; Reynolds and Francis, 2001), we utilize the auditor’s propensity to issue a going concern audit report for distressed clients as a measure of

---

9 As noted previously, the largest Second-tier firm is about a third the size of the smallest Big 4 firm. The GAO (2008) indicates that the very large Big 4 clients have global businesses and complex operations that the Second-tier firms may not have the capacity to audit due to their lack of geographical reach and the necessary depth in staff resources and technical expertise. Specifically, it is not uncommon for an audit of a very large client to require hundreds of staff, and it may be difficult (given limited staff resources) for a Second-tier firm to commit hundreds of employees to a single client.

10 Our results are not sensitive to this imposed rule. Our findings are similar if the rule is based on assets (rather than revenues) or if we simply exclude the top 10% of Big 4 audit clients.

11 As noted previously, despite their emergence in recent years as a possible alternative to the Big 4, the Second-tier auditors remain considerably smaller in size than the Big 4 and thus are likely to have to have less financial resources (partner equity) invested in the firm.
audit quality. Since the issuance of SAS No. 59, the auditor is required to evaluate the client’s ability to continue as a going concern for one year beyond the date of the financial statements. Indeed, as noted by DeFond et al. (2002), the auditor’s failure to issue a going concern opinion to a client who subsequently files for bankruptcy is typically referred to as a case of audit failure.

Understandably, the issuance of a going concern audit report is viewed unfavorably by clients. Put differently, clients view a going concern audit opinion as an adverse development, i.e., as a potential self-fulfilling prophecy that is likely to cause bankruptcy because of the report’s possible adverse effects on investors, creditors, and suppliers. Consequently, it is important for the auditor to objectively evaluate a client’s financial circumstances and to withstand client pressure to issue a clean (unqualified) opinion.

Prior research (e.g., DeFond et al., 2002) also suggests that the decision to issue a going concern opinion is more salient for financially distressed companies. Consequently, prior research (e.g., Carey and Simnett, 2006; Reynolds and Francis, 2001) has focused on financially distressed clients, and suggests a correlation between the issuance of a going concern report for distressed clients and auditor independence. Stated differently, after controlling for other factors that are likely to influence the propensity to issue a going concern audit report for a client, the higher the auditor’s probability of issuing a going concern report, the higher the auditor’s independence and (by implication) audit quality.

Consistent with the notion (discussed previously) that audit quality for Big 4 and Second-tier auditors could be similar, our first hypothesis (stated in the null form) is as follows:

\[ H_1. \text{Ceteris paribus, the propensity of Big 4 auditors to issue a going concern audit report for distressed clients is not different from that of Second-tier auditors.} \]

2.2. Accruals-based earnings management

Prior research (e.g., Becker et al., 1998; Francis et al., 1999) has sought to link audit quality to earnings management, and suggests – consistent with the theory discussed previously (DeAngelo, 1981; Palmrose, 1988; Simunic and Stein, 1987) – that large audit firms are more effective at constraining the client’s ability to manipulate earnings. These studies indicate that the net result of a large firm audit is lower abnormal accruals, i.e., reported earnings that are more reflective of the client’s underlying economics. In essence, prior research suggests that large auditors provide audits of higher quality relative to other auditors.

Put differently, prior research views the auditor’s role as one of limiting the potential for client-driven opportunistic management of accrual-based earnings. Given managers’ incentives to manipulate reported earnings for private gain (such as executive compensation contracts) or to meet or beat earnings benchmarks (Bartov et al., 2002; Graham et al., 2005), investors may be expected to be uncertain as to whether or not the reported earnings are the outcome of a reasonable and unbiased application of GAAP. In this milieu, prior research suggests that large auditors are more effective in restraining managerial opportunism in terms of accruals-based earnings management, and thus are able to lend greater credibility to reported earnings. Consistent with this view, Becker et al. (1998) report lower abnormal accruals for Big 6 clients than for non-Big 6 audit clients. Further, Francis et al. (1999) partition their sample into three auditor groups (Big 6, mid-tier firms, and other audit firms) during 1988–1994, and find significant differences in abnormal accruals across all three auditor groups.

Once again, consistent with the notion (discussed previously) that audit quality for Big 4 and Second-tier auditors could be similar, our second hypothesis (stated in the null form) is as follows:

\[ H_2. \text{Ceteris paribus, the level of accruals-based earnings management by Big 4 audit clients is not different from that of Second-tier audit firm clients.} \]

2.3. Investor-perspective analysis

As noted by Dopuch and Simunic (1982), the higher the perceived quality of the audit, the more credible the client’s reported earnings “as judged by users” (p. 407). In turn, more credible earnings
may be expected to be associated with higher information (accruals) quality, i.e., increased likelihood that the reported earnings map well with the client’s underlying economic performance.

In recent research, Bhattacharya et al. (2003, pp. 643–644) argue that although investors in an efficient market can rationally anticipate earnings management, they cannot “see through” it, i.e., they cannot undo the effects of earnings manipulations to arrive at the underlying (but unobservable) economic earnings number. In other words, information asymmetry persists. Further, the information asymmetry created by earnings management is not completely resolved through other communication mechanisms such as disclosures. For these reasons, earnings manipulations can be expected to lower information quality for investors.

Separately, traditional asset-pricing theory takes the position that information quality is diversifiable and should not affect expected returns. More recently, Lambert et al. (2007) suggest that although accounting information quality may not be an independent risk factor, it can affect the cost of equity capital because higher information quality reduces a firm’s beta by dampening the conditional covariance of the firm’s cash flows with the market. They indicate that this effect on the assessed covariance of the firm’s cash flows is not diversifiable and is thus priced.

Consistent with the theory of Lambert et al. (2007), empirical work presents evidence that information quality matters for expected returns. Both Francis et al. (2005) and Core et al. (2008) find accrual quality to be priced in the ex ante cost of equity capital. Other research (e.g., Botosan, 1997; Botosan and Plumlee, 2002; Bhattacharya et al., 2003) also shows that firms with lower information quality exhibit a higher cost of equity financing.

Stein (1989) argues that investors rationally expect earnings management, but cannot completely undo its effects, and therefore price the expected earnings manipulation. Given this pricing behavior, i.e., the fact that rational investors anticipate and price earnings manipulation, it is optimal for managers to manage earnings. Put differently, managers may be expected to continue to manage earnings even when investors cannot be systematically fooled (Stein 1989, p. 668).12 Consistent with the notion of rational investors, Bhattacharya et al. (2003), Core et al. (2008), Francis et al. (2005) show that lower earnings quality is priced by investors in a higher cost of equity capital for the firm.

To the extent that investors are cognizant of the linkage between audit quality and earnings management and perceive Big 4 and Second-tier firm audit quality to be similar, Big 4 and Second-tier audit firm clients may be expected to be associated with similar client-specific ex ante equity risk premiums. By contrast, to the extent that investors expect differentials in earnings management across Big 4 and Second-tier audit firm clients, and to the extent that they cannot undo (or diversify away) the adverse effects of increased earnings management for individual clients, they may be expected to respond with price protection by demanding differentials in the expected returns going forward, e.g., a higher ex ante equity risk premium for accepting lower information quality, and vice versa.13

Once again, consistent with the notion (discussed previously) that audit quality for Big 4 and Second-tier auditors could be similar, our third (and final) hypothesis (stated in the null form) is as follows:

**H3.** Ceteris paribus, the ex ante equity risk premium for Big 4 clients is not different from that of Second-tier audit firm clients.

### 3. Research design and data

#### 3.1. Going concern opinion model

To test Hypothesis 1, we estimate the following going concern opinion probit model:

---

12 Similarly, Graham et al. (2005) suggest that investors are rational and assume (and price the notion) that companies manage earnings. Consequently, they suggest that it is rational for managers to manage earnings to meet or beat earnings benchmarks particularly to avoid the severe negative stock price reaction typically associated with an earnings disappointment.

13 Note that price protection benefits potential shareholders but adversely affects current shareholders. Other things being equal, an increase in the ex ante equity risk premium (i.e., higher expected returns going forward) implies a lower share price and a loss of wealth for current shareholders.
### Table 1
Definition of variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
</table>

**Panel A. Going concern analysis**

**Dependent variable**

- **GC** = 1 if the auditor issued a going concern opinion in the current year; 0 otherwise

**Test variable**

- **BIG4** = 1 if auditor is a Big 4 auditor; 0 if auditor is a Second-tier auditor

**Control variables**

- **AUDTEN**: Auditor tenure, i.e., the number of years for which the current audit firm has audited the client
- **SIZE**: Natural log of total assets (in millions of $) at the balance sheet date
- **LEV**: The ratio of debt to total assets at the balance sheet date
- **ALEV**: Change in LEV (i.e., LEV in year $t$ less LEV in year $t-1$)
- **AGE**: Age of the firm based on the listing date reported in CRSP
- **DISTRESS**: Financial distress measure based on Zmijewski (1984)
- **RET**: Market-adjusted stock return for the 12 month period ending on the balance sheet date
- **PRIORLOSS**: = 1 if net income in the prior year was <0; 0 otherwise
- **INVEST**: Asset-deflated value of investments, calculated as total current assets less trade receivables and total inventory, divided by total assets
- **CFFO**: Cash flow from operations deflated by total assets
- **FEE**: The ratio of non-audit to audit fees
- **LAGGC**: = 1 if the auditor issued a going concern opinion in the prior year; 0 otherwise

**Panel B. Earnings management analysis**

**Dependent variable**

- **ABACC**: Accruals-based 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 reported earnings

**Test variable**

- **BIG4** = 1 if auditor is a Big 4 auditor; 0 if auditor is a Second-tier auditor

**Control variables**

- **AUDTEN**: Auditor tenure, i.e., the number of years for which the current audit firm has audited the client
- **SIZE**: Natural log of total assets (in millions of $) at the balance sheet date
- **BM**: Book-to-market ratio at the balance sheet date
- **DISTRESS**: Financial distress measure based on Zmijewski (1984)
- **CFFO**: Cash flow from operations deflated by total assets
- **GROWTH**: Change in sales from prior year to current year deflated by prior year sales
- **FINANCE**: = 1 if number of shares outstanding increased by at least 10% or long-term debt increased by at least 20% during the year; 0 otherwise
- **LEV**: The ratio of debt to total assets at the balance sheet date
- **LITIGATION**: = 1 if SIC is 2833–2836, 3570–3577, 7370–7374, 3600–3674, 5200–5961, 8731–8734; 0 otherwise
- **IMPLICIT**: Factor score based on factor analysis of measures related to production, R&D spending, and labor intensity, consistent with Matsumoto (2002)

**Panel C. Ex ante equity risk premium ($r_{avg}$) analysis**

**Dependent variable**

- **$r_{avg}$**: Average of four client-specific ex ante equity risk premium metrics ($r_{gls}$, $r_{ct}$, $r_{ojn}$, and $r_{mpe}$) measured four months after fiscal year-end. The equity risk premium is the excess of the ex ante cost of equity capital over the yield on the 10-year US Treasury bond. The four ex ante cost of equity capital estimates are based on Gebhardt et al. (2001), Claus and Thomas (2001), Code and Mohanram (2003), and Easton (2004), respectively. The higher the metric, the higher the client-specific equity risk premium

**Test variable**

- **BIG4** = 1 if auditor is a Big 4 auditor; 0 if auditor is a Second-tier auditor

**Control variables**

- **BM**: Book-to-market ratio at the balance sheet date
- **LEV**: The ratio of debt to total assets at the balance sheet date
- **SIZE**: Natural log of total assets (in millions of $) at the balance sheet date
- **BETA**: Systematic risk (stock beta, obtained from firm-specific regressions of weekly stock returns on the equal-weighted market index across the 52 week period ended on the balance sheet date
- **SDROA**: Standard deviation of asset-deflated earnings before extraordinary items and discontinued operations,
Consistent with prior research (e.g., Carey and Simnett, 2006; DeFond et al., 2002; Reynolds and Francis, 2001), we model the auditor’s probability of issuing a going concern opinion to a financially distressed client. The dependent and independent variables are defined in Table 1 panel A, and discussed below. Specifically, the dependent variable GC is a dummy variable equal to 1 for clients with a going concern audit opinion, and 0 otherwise.

In the probit regression, the test variable BIG4 is a dummy variable equal to 1 if the auditor is a Big 4 firm, and 0 if the auditor is a Second-tier auditor. As hypothesized previously, Big 4 and Second-tier auditors could be similar in their ability to withstand client pressure to issue a clean audit opinion (when in fact a going concern qualification is appropriate). Hence, we do not predict the sign for variable BIG4. Separately, the variables AUDTEN through LAGGC represent control variables in the model. Specifically, AUDTEN is the auditor’s tenure in years. To the extent that tenure impairs auditor objectivity, variable AUDTEN is expected to have a negative sign. Variable SIZE is the size of the client (as measured by the log of total assets). The expected sign for this variable is negative, since larger clients are less likely to end up in bankruptcy given their greater negotiating power. Variables LEV and ΔLEV capture the client’s leverage (as measured by the debt to total assets ratio) and change in leverage. The greater the leverage (and increase in leverage), the higher the probability of bankruptcy. Hence, the predicted signs for LEV and ΔLEV are positive.

Variable AGE measures the age of the client company, and the expected sign for this variable is negative since younger companies are more likely to encounter bankruptcy. Variable DISTRESS measures the client’s financial distress based on Zmijewski (1984), such that higher values of the variable represent higher levels of financial distress for the company. The predicted sign for DISTRESS is positive, since the greater the financial distress, the higher the probability of failure. Variable RET is a market-based measure of risk and client performance. The predicted sign is negative, since the lower the client’s market-adjusted stock return, the greater the risk of failure and the higher the probability that the auditor will issue a going concern opinion. Variable PRIORLOSS is a dummy variable that captures whether the client reported a loss in the prior year. Since clients with continued losses are more likely to fail, the predicted sign for this variable is positive. Separately, the greater the client’s ability to quickly raise cash and/or operating cash flows, the lower the risk of failure. Hence, the expected sign for variables INVEST and CFFO is negative. Variable FEE captures the ratio of non-audit fees paid to the incumbent auditor to audit fees. To the extent that non-audit fees impair auditor objectivity, the expected sign for FEE is negative. Finally, variable LAGGC is a dummy variable equal to 1 if the auditor issued a going concern opinion in the prior year. Consistent with Reynolds and Francis (2001), the predicted sign for LAGGC in the regression is positive.14

### Table 1 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTG</td>
<td>calculated over the current and prior 4 years</td>
</tr>
<tr>
<td>REC_RET</td>
<td>Mean analysts’ forecast of long-term earnings growth (in percent) as reported by IBES</td>
</tr>
<tr>
<td>GC</td>
<td>Recent one-year stock return calculated over the 12 month period preceding the measurement of the dependent variable $r_{avg}$</td>
</tr>
</tbody>
</table>

Consistent with prior research (e.g., Carey and Simnett, 2006; DeFond et al., 2002; Reynolds and Francis, 2001), we model the auditor’s probability of issuing a going concern opinion to a financially distressed client. The dependent and independent variables are defined in Table 1 panel A, and discussed below. Specifically, the dependent variable GC is a dummy variable equal to 1 for clients with a going concern audit opinion, and 0 otherwise.

In the probit regression, the test variable BIG4 is a dummy variable equal to 1 if the auditor is a Big 4 firm, and 0 if the auditor is a Second-tier auditor. As hypothesized previously, Big 4 and Second-tier auditors could be similar in their ability to withstand client pressure to issue a clean audit opinion (when in fact a going concern qualification is appropriate). Hence, we do not predict the sign for variable BIG4. Separately, the variables AUDTEN through LAGGC represent control variables in the model. Specifically, AUDTEN is the auditor’s tenure in years. To the extent that tenure impairs auditor objectivity, variable AUDTEN is expected to have a negative sign. Variable SIZE is the size of the client (as measured by the log of total assets). The expected sign for this variable is negative, since larger clients are less likely to end up in bankruptcy given their greater negotiating power. Variables LEV and ΔLEV capture the client’s leverage (as measured by the debt to total assets ratio) and change in leverage. The greater the leverage (and increase in leverage), the higher the probability of bankruptcy. Hence, the predicted signs for LEV and ΔLEV are positive.

Variable AGE measures the age of the client company, and the expected sign for this variable is negative since younger companies are more likely to encounter bankruptcy. Variable DISTRESS measures the client’s financial distress based on Zmijewski (1984), such that higher values of the variable represent higher levels of financial distress for the company. The predicted sign for DISTRESS is positive, since the greater the financial distress, the higher the probability of failure. Variable RET is a market-based measure of risk and client performance. The predicted sign is negative, since the lower the client’s market-adjusted stock return, the greater the risk of failure and the higher the probability that the auditor will issue a going concern opinion. Variable PRIORLOSS is a dummy variable that captures whether the client reported a loss in the prior year. Since clients with continued losses are more likely to fail, the predicted sign for this variable is positive. Separately, the greater the client’s ability to quickly raise cash and/or operating cash flows, the lower the risk of failure. Hence, the expected sign for variables INVEST and CFFO is negative. Variable FEE captures the ratio of non-audit fees paid to the incumbent auditor to audit fees. To the extent that non-audit fees impair auditor objectivity, the expected sign for FEE is negative. Finally, variable LAGGC is a dummy variable equal to 1 if the auditor issued a going concern opinion in the prior year. Consistent with Reynolds and Francis (2001), the predicted sign for LAGGC in the regression is positive.14

#### 3.2. Accruals-based earnings management model

To test Hypothesis 2, we estimate the following accruals-based earnings management model:

$$
ABACC = \alpha + \beta_1 BIG4 + \beta_2 AUDTEN + \beta_3 SIZE + \beta_4 BM + \beta_5 DISTRESS + \beta_6 CFFO + \beta_7 GROWTH + \beta_8 FINANCE + \beta_9 LEV + \beta_{10} LITIGATION + \beta_{11} IMPLICIT + \beta_{12} SDSALES + \beta_{13} SDROA + \beta_{14} SDCFIFO + \varepsilon
$$

---

14 As discussed later in the paper, we separately also examine first-time going-concern audit opinions.
The dependent and independent variables in the earnings management model are defined in Table 1 panel B. The dependent variable ABACC 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 reported earnings.

To estimate normal accruals (consistent with DeFond and Jiambalvo (1994) and Subramanyam (1996)), we utilize the modified Jones (1991) model below in the cross-section by industry.

\[
\frac{TA_{it}}{Assets_{it-1}} = \alpha - \frac{1}{Assets_{it-1}} + \beta_1 \frac{\Delta SALES_{it}}{Assets_{it-1}} + \beta_2 \frac{PPE_{it}}{Assets_{it-1}} + \epsilon_{it}
\]

In this model, TA is total accruals calculated as income from continuing operations less operating cash flows from continuing operations. \(\Delta SALES\) is change in sales revenue, \(\Delta AR\) is the change in accounts receivables, PPE is gross property and equipment, and the subscripts \(i\) and \(t\) denote firm and year, respectively. The abnormal accruals represent the difference between total accruals and the estimated (fitted) normal accruals. As suggested by Kothari et al. (2005) and consistent with Francis et al. (2005), we array firms in each industry (based on 2-digit SIC codes) 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.

In the regression, the test variable BIG4 is equal to 1 if the auditor is a Big 4 firm, and 0 if the auditor is a Second-tier firm. As hypothesized previously, Big 4 and Second-tier auditors could be equally effective in restraining managerial opportunism in terms of accruals-based earnings management by the client. Hence, we do not predict the sign for variable BIG4. Also in the regression, the variables AUDTEN through IMPLICIT represent control variables. Prior research suggests tenure may affect the auditor’s objectivity and knowledge of the client favorably in the early years, but also adversely in later years (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.

The other control variables included in the model are also based on prior research. Lang and Lundholm (1993) suggest that larger clients have an incentive to manage earnings less (report more accurately) in an attempt to avoid litigation. We utilize variable SIZE as a proxy for the size of the audit client, and the predicted sign for this variable is negative. Consistent with prior research (e.g., Ashbaugh et al., 2003), the book-to-market ratio (variable BM) represents the inverse of the firm’s growth opportunities, and the predicted sign in negative.

In the regressions, variable DISTRESS represents the firm’s financial condition based on Zmijewski (1984). Prior research (e.g., DeFond and Jiambalvo, 1994; Reynolds and Francis, 2000; Sweeney, 1994) suggests that financial distress is positively associated with abnormal accruals. However, DeAngelo et al. (1994) find that more troubled firms tend to manage earnings downwards to facilitate debt renegotiation. Hence, in the regressions, we do not predict the sign for variable DISTRESS. Based on prior research (Ashbaugh et al., 2003; Chung and Kallapur, 2003), the audit client’s cash flow from operations is expected to be negatively related to abnormal accruals. In the regressions, variable CFFO represents the cash flow from operations scaled by total assets, and the predicted sign for this variable is negative.

Menon and Williams (2004) suggest that the client’s growth is positively associated with abnormal accruals. Also, Barth et al. (1999) and Dechow and Skinner (2000) suggest 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. Also, prior research (Ashbaugh et al., 2003; Chung and Kallapur, 2003; Rangan, 1998) suggests that significant

---

15 We thank the reviewers for suggesting that we examine signed accruals. Also, Hribar and Nichols (2007) suggest that researchers examine signed (rather than absolute) abnormal accruals to mitigate the threat of bias in favor of rejecting the null hypothesis of no earnings management. Separately, Kothari et al. (2005) indicate that accruals are affected by the client’s performance as measured by the return on assets (ROA). Hence, we examine performance-adjusted accruals as discussed below.

As discussed later in the paper, we separately also examine positive (i.e., income increasing) performance-adjusted abnormal accruals, i.e., observations with ABACC > 0, since the prior literature suggests that managing earnings upward is more of a concern for auditors, i.e., that the auditor’s legal exposure primarily emanates from firms overstating income (e.g., Heninger, 2001).
changes in company financing are positively related to the client’s incentive to manage earnings. Hence, in the regressions, the predicted sign for the variable FINANCE is positive.

Separately, Defond and Jiambalvo (1994) suggest that more leveraged firms are more likely to use income-increasing accruals to avoid violating debt covenants. Hence, in the regressions, the predicted sign of variable LEV is positive. Also, firms in certain industries (such as biotechnology or electronics) have a higher incidence of shareholder litigation (Francis et al., 1994). We utilize an indicator variable LITIGATION to represent firms in high litigation risk industries, and consistent with Heninger (2001) the predicted sign for variable LITIGATION is positive. Finally, Bowen et al. (1995) suggest that firms have implicit claims with their stakeholders including customers, suppliers, and employees. Following Matsumoto (2002), we create variable IMPLICIT by factor analyzing three measures related to production, R&D spending, and labor intensity.

3.3. Investor perspective (ex ante equity risk premium) analysis model

Finally, to test Hypothesis 3, our investor-perspective analysis is based on the following model:

\[ r_{avg} = \alpha + \beta_1 \text{BIG4} + \beta_2 \text{BM} + \beta_3 \text{LEV} + \beta_4 \text{SIZE} + \beta_5 \text{BETA} + \beta_6 \text{SDROA} + \beta_7 \text{LTG} + \beta_8 \text{REC_RET} + \sum_{xx} \delta_{xx} \text{INDUSTRYxx} + \varepsilon \]

In this model, the dependent variable \( r_{avg} \) is the client-specific ex ante equity risk premium, defined as the average of four client-specific ex ante equity risk premium metrics (\( r_{fsh} \), \( r_{ct} \), \( r_{ojn} \), and \( r_{mpe} \)) measured four months after fiscal year-end. The equity risk premium is the excess of the ex ante cost of equity capital over the yield on the 10-year US Treasury bond. Variable \( r_{avg} \) is essentially an ex ante metric, i.e., a measure of expected rather than realized returns, and thus not directly observable.16 The higher the metric, the higher the client-specific equity risk premium.

As noted by Dhaliwal et al. (2006), there are four alternative approaches discussed in the prior literature for estimating the ex ante cost of equity capital based on Gebhardt et al. (2001), Claus and Thomas (2001), Gode and Mohanram (2003), and Easton (2004). We refer to these estimates as \( r_{fsh} \), \( r_{ct} \), \( r_{ojn} \), and \( r_{mpe} \), respectively. All four approaches utilize models based on forecasted earnings, dividends, and book values to estimate the return required by shareholders as implied by the observed share price. The details of each of the four models (and their underlying definitions and assumptions) is discussed in the appendix in Dhaliwal et al. (2006), and we refer the reader to that summary for convenience.

Given the lack of consensus as to which approach (model) is superior in estimating the cost of equity, we follow Dhaliwal et al. (2006) and Hail and Leuz (2006) in using the average (\( r_{avg} \)) of the four estimates in our empirical tests to mitigate the effects of particular assumptions that underlie each model on our results. Consistent with prior research (Gebhardt et al., 2001; Dhaliwal et al., 2006), we focus on the equity risk premium (i.e., the excess of the ex ante cost of equity capital over the yield on the 10-year US Treasury bond) as our research metric.17

As before, the test variable BIG4 is equal to 1 if the auditor is a Big 4 firm, and 0 if the auditor is a Second-tier firm. As hypothesized previously, Big 4 and Second-tier auditors could be perceived by investors as similarly effective in constraining managerial opportunism in terms of accruals-based earnings management (and thus equally effective in lending greater credibility to reported earnings for their clients). Hence, we do not predict the sign for variable BIG4.

In the regression, we control for factors that may be expected to affect the client-specific ex ante equity risk premium. These control variables (BM through REC_RET) are based on prior research (e.g., Khurana and Raman 2004, 2006) and are defined in Table 1 panel C. Consistent with Fama and French (1997), we control for the book-to-market ratio (variable BM) as an equity risk factor. Variable BM is predicted to have a positive sign in the regressions. Also, a higher degree of financial

16 Consistent with the prior literature (Basu, 2004; Botosan and Plumlee, 2005; Francis et al., 2004), Dhaliwal et al. (2006, p. 699) notes that “at a theoretical level, ex ante estimation is more appropriate for estimating the return demanded by stockholders than methods that rely on ex post realizations.”

17 Consistent with Gebhardt et al. (2001, p. 143), the fourth month is chosen to facilitate alignment between IBES and Compustat.
leverage (variable LEV) is expected to raise the perceived risk and increase the firm’s equity risk premium (Gebhardt et al., 2001). Hence, variable LEV is also expected to have a positive sign in the regressions.

Other things being equal, the larger the client, the greater the information available about the client, the more liquid the stock, and the lower the perceived risk (Brennan and Subrahmanyam, 1996; Fama and French, 1997; Gebhardt et al., 2001). Hence, we control for the size of the client. Variable SIZE is predicted to have a negative sign in the regressions. Also, in the context of the capital asset pricing model, systematic risk (as measured by the stock beta) is predicted to be positively correlated with the equity risk premium. Consequently, variable BETA is expected to have a positive sign.

Separately, Gebhardt et al. (2001) suggest that the volatility in reported earnings may be perceived as a source of risk in valuing stocks. Hence, variable SDROA (the standard deviation of asset-deflated earnings) is predicted to have a positive sign in the regressions. Also, as suggested by Beaver et al. (1970) and La Porta (1996), there may be a positive association between growth and equity risk since growth opportunities are more uncertain than normal earnings. Hence, variable LTG (based on the mean analysts’ forecast of long-term earnings growth as reported by IBES) is expected to have a positive sign. Further, to control for sluggishness in analysts’ earnings forecasts, we include the recent one-year stock return (variable REC_RET) calculated over the 12 months preceding the measurement of the dependent variable $r_{avg}$. Consistent with Guay et al. (2005), the predicted sign for variable REC_RET is negative. Finally, our regressions include dummy variables to control for the client’s industry membership (variable INDUSTRYxx, based on 2-digit SIC classifications).

3.4. Control for self-selection bias and econometric estimations

In a recent paper, Francis and Lennox (2008) examine the pitfalls associated with using the two-step procedure developed by Heckman (1979) to control for auditor self-selection bias. They document that the Heckman (1979) two-step procedure often results in (1) severe collinearity problems, and (2) inferences that are extremely fragile even when collinearity is not a problem. By contrast, they show that OLS results are much more robust. Hence, Francis and Lennox (2008) recommend that researchers report OLS results. To control for selection bias, they (p. 27) recommend that researchers also report OLS results based on a matched-pairs sample technique (developed by Rosenbaum and Rubin 1983) using “matched propensity scores.”

To implement the matched-pairs sample technique, we follow exactly the approach used by Francis and Lennox (2008, p. 28) by first estimating the auditor choice model for each sample year. Based on the model, for each client we predict the propensity to choose a Big 4 auditor and sort the sample by the predicted propensity (probability) score of selecting a Big 4 firm. For each Big 4 client, we identify the two client companies that have the closest predicted probabilities (as per the sorted scores) and adopt the following matching rule: (a) if only one of the two potential matches is a Second-tier auditor client, we choose that client as the match, (b) if both potential matches are Second-tier auditor clients, we choose the client whose predicted probability is nearest, and (c) if both potential matches are Big 4 clients, we determine that there is no suitable match. This rule ensures that we obtain extremely close matches, implying that the scored distributions are virtually identical for Big 4 and Second-tier clients. We follow this approach for testing each of our three hypotheses. However, as noted by Francis and Lennox (2008), this rule is also quite costly in the sense that many Big 4 clients lack such close matches. As an example, for the going concern audit opinion analysis (discussed below), the full sample of 2219

18 “If recent stock returns have been high (low), and if analysts’ forecasts of future earnings are too low (high) due to sluggish updates of the information that has been recently impounded in stock price, the imputed discount rate will be artificially low (high) in order to maintain the pricing equation” (Guay et al. 2005, p. 18). Hence, in the regressions, the predicted sign for recent stock returns (REC_RET) is negative. Note also that variables BM and SIZE in the model (discussed previously) may be expected to control for any systematic optimism in analysts’ earnings forecasts (Guay et al. 2005, p. 25).

19 Our probit auditor choice model (based on Francis et al. (1999)) is as follows: $BIG4 = a + b_1TA + b_2 \ln SALES + b_3LEV + b_4E/P + b_5ISSUE + b_6LOSS + \epsilon$, where $BIG4 = 1$ if the client uses a Big 4 auditor; 0 if auditor is a Second-tier auditor; $TA$ is the absolute value of total accruals, scaled by sales; $SALES$ is sales revenues in millions of dollars; $LEV$ is the ratio of debt to total assets; $E/P$ is the inverse of the price-earnings ratio; $ISSUE = 1$ if change in equity $> 10\%$, 0 otherwise; and, $LOSS = 1$ if current net income is $< 0$ and the absolute change in income $> 10\%$; 0 otherwise.
observations drops to a matched-pairs sample of 656. As suggested by Francis and Lennox (2008), in our study we report OLS results for the full (unmatched) sample as well as OLS results for the matched-pairs sample.

Separately, to estimate the various models discussed previously, we utilize a pooled time-series, cross-sectional approach. Statistical inferences for the pooled regressions are based on “robust” t-statistics that are adjusted for residual correlation arising from pooling cross-sectional observations across time, i.e., the t-statistics are based on White (1980) heteroskedasticity-adjusted robust variance estimates that are adjusted for within-cluster correlation where the firm and fiscal year comprise the cluster (Petersen, 2009).

### 3.5. Data and sample

Table 2 panel A summarizes the sample selection process. The sample is formed from the merged Compustat annual industrial files, including the primary, secondary, tertiary and full coverage

---

**Table 2**

Sample selection and composition.

<table>
<thead>
<tr>
<th></th>
<th>Going concern opinion analysis</th>
<th>Earnings management analysis</th>
<th>Investor perspective (ex ante equity risk premium) analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A. Sample selection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client-year observations during 2003–2006 (excluding utilities and financial services firms) with complete data on control variables</td>
<td>12,726</td>
<td>12,726</td>
<td>12,726</td>
</tr>
<tr>
<td>Exclude observations not in IBES or CRSP</td>
<td>–2539</td>
<td>–2539</td>
<td>–6858&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Exclude clients not using a Big 4 or Second-tier auditor (Grant Thornton or BDO Seidman)</td>
<td>–7902&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclude clients not financially distressed of the largest Second-tier client in that year</td>
<td>0.66&lt;sup&gt;c&lt;/sup&gt;</td>
<td>–877&lt;sup&gt;c&lt;/sup&gt;</td>
<td>–643&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Full sample</td>
<td>2219</td>
<td>9310</td>
<td>5012</td>
</tr>
<tr>
<td><strong>Panel B. Sample composition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Going concern analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big 4 clients</td>
<td>653</td>
<td>457</td>
<td>415</td>
</tr>
<tr>
<td>Second-tier clients</td>
<td>88</td>
<td>79</td>
<td>109</td>
</tr>
<tr>
<td>Full sample</td>
<td>741</td>
<td>536</td>
<td>524</td>
</tr>
<tr>
<td>Earnings management analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big 4 clients</td>
<td>2376</td>
<td>2171</td>
<td>1921</td>
</tr>
<tr>
<td>Second-tier clients</td>
<td>281</td>
<td>307</td>
<td>346</td>
</tr>
<tr>
<td>Full sample</td>
<td>2657</td>
<td>2478</td>
<td>2267</td>
</tr>
<tr>
<td>Investor-perspective analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big 4 clients</td>
<td>1201</td>
<td>1230</td>
<td>1166</td>
</tr>
<tr>
<td>Second-tier clients</td>
<td>40</td>
<td>66</td>
<td>100</td>
</tr>
<tr>
<td>Full sample</td>
<td>1241</td>
<td>1296</td>
<td>1266</td>
</tr>
</tbody>
</table>

<sup>a</sup> Client-years for which analysts’ earnings forecasts (required for estimating ex ante cost of equity capital) not available on IBES; also, consistent with Easton (2004), we exclude client-years in which the restriction EPS2 > EPS1 > 0 is not met, where EPS2 and EPS1 are mean analysts’ earnings forecasts for year t + 2 and t + 1.

<sup>b</sup> Consistent with Reynolds and Francis (2001) and Carey and Simnett (2006), financially distressed clients are those with negative earnings and/or negative cash flows from operations. Thus, non-distressed clients are those with both positive earnings and positive cash flows from operations.

<sup>c</sup> As discussed in the paper, all tabulated analyses are based on a sample which excludes Big 4 audit clients whose revenues exceed the revenues of the largest Second-tier audit client in that year. For 2003 through 2006, the largest Second-tier client revenues were $5.27 billion, $5.95 billion, $6.17 billion, and $7.86 billion, respectively. Thus, the Big 4 clients in our sample are potentially auditable by Second-tier auditors.
research files. Excluded from our sample are utility and financial services clients, and industries (2-digit SIC code) with fewer than 10 client-year observations available to estimate the industry-specific modified Jones (1991) model. After excluding observations with missing data on control variables, we are left with a sample of 12,726 client-years.

For the investor-perspective ex ante equity risk premium ($r_{avg}$) analysis, we exclude observations (client-years) not found in IBES and CRSP. We then exclude clients not using a Big 4 or Second-tier auditor. For the going concern opinion analysis, we also exclude clients that are not financially distressed.

As discussed previously, we seek to include in our analysis only those Big 4 clients for whom the Second-tier firms are potentially viable as auditors. During 2003 through 2006, the largest Second-tier client had revenues of $5.27 billion, $5.95 billion, $6.17 billion, and $7.86 billion, respectively.

### Table 3
Descriptive statistics (going concern opinion analysis).

<table>
<thead>
<tr>
<th></th>
<th>Full sample</th>
<th>Differences in means (Big 4 vs. Second-tier)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Big 4 ($n = 1859$)</td>
<td>Second-tier ($n = 360$)</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>GC</td>
<td>0.0580</td>
<td>0.0000</td>
</tr>
<tr>
<td>AUDTEN</td>
<td>8.5644</td>
<td>7.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>5.1290</td>
<td>5.0823</td>
</tr>
<tr>
<td>LEV</td>
<td>0.2116</td>
<td>0.1514</td>
</tr>
<tr>
<td>ΔLEV</td>
<td>0.0183</td>
<td>0.0154</td>
</tr>
<tr>
<td>DISTRESS</td>
<td>0.1164</td>
<td>0.0029</td>
</tr>
<tr>
<td>RET</td>
<td>0.1235</td>
<td>-0.1423</td>
</tr>
<tr>
<td>PRIORLOSS</td>
<td>0.4829</td>
<td>0.0000</td>
</tr>
<tr>
<td>INVEST</td>
<td>0.2277</td>
<td>0.2554</td>
</tr>
<tr>
<td>CFFO</td>
<td>-0.0727</td>
<td>-0.0184</td>
</tr>
<tr>
<td>FEE</td>
<td>0.1262</td>
<td>0.2269</td>
</tr>
<tr>
<td>LAGGC</td>
<td>0.0371</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Notes: GC = 1 if the auditor issued a going concern opinion in the current year; = 0 otherwise. Please see Table 1 (panel A) for other variable definitions.

Consistent with Francis and Lennox (2008), the matched-pairs sample is formed by matching each Big 4 audit client with a Second-tier audit client whose probability of selecting a Big 4 auditor is similar.

* Denotes significant difference in the means in a two-tailed test at the 0.10 levels.
** Denotes significant difference in the means in a two-tailed test at the 0.05 levels.
*** Denotes significant difference in the means in a two-tailed test at the 0.01 levels.

20 Consistent with prior research (e.g., Fields et al., 2004), utilities and financial institutions are excluded because of their unique regulatory and operating characteristics.

21 In other words, as discussed previously (Footnote 9), the Second-tier firms may not have the capacity to audit the very large Big 4 clients.
Thus, we exclude Big 4 clients with revenues exceeding these threshold amounts in each of those years. Our full (unmatched) sample consists of 2219, 9310, and 5012 observations for the going concern opinion, earnings management, and investor-perspective (e.g., ante equity risk premium) analyses, respectively. As discussed previously, to control for auditor self-selection bias, we follow the approach used by Francis and Lennox (2008, p. 28) which reduces our matched-pairs sample to 656, 2154, and 618 observations for the going concern opinion, earnings management, and investor-perspective analyses, respectively. Finally, to reduce the influence of outliers, all variables are truncated at the 1st and 99th percentiles.

Table 2 panel B provides information on sample composition by year and auditor group for all three of our analyses. Consistent with the notion that the Big 4 dominate the audit market (GAO, 2003, 2008), a large majority of our observations have a Big 4 firm for auditor.

Table 4
Probit regression results (going concern opinion analysis) \( GC = \alpha + \beta_1 \text{BIG4} + \beta_2 \text{AUDTEN} + \beta_3 \text{SIZE} + \beta_4 \text{LEV} + \beta_5 \Delta \text{LEV} + \beta_6 \text{AGE} + \beta_7 \text{DISTRESS} + \beta_9 \text{RET} + \beta_{10} \text{PRIORLOSS} + \beta_{11} \text{INVEST} + \beta_{12} \text{FEE} + \beta_{13} \text{LAGGCC} + \sum_{r=1}^{3} \delta_{r} Y \text{RXX} + \epsilon \).

<table>
<thead>
<tr>
<th>Expected sign</th>
<th>Full sample</th>
<th>Matched-pairs sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>z-Stat</td>
</tr>
<tr>
<td><strong>Panel A. All observations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.8699</td>
<td>-3.33</td>
</tr>
<tr>
<td>BIG4</td>
<td>0.1954</td>
<td>1.68</td>
</tr>
<tr>
<td>AUDTEN</td>
<td>-0.0071</td>
<td>-0.74</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.1716</td>
<td>-3.69</td>
</tr>
<tr>
<td>LEV</td>
<td>0.5834</td>
<td>1.78</td>
</tr>
<tr>
<td>\Delta \text{LEV}</td>
<td>0.0254</td>
<td>0.09</td>
</tr>
<tr>
<td>AGE</td>
<td>-0.0026</td>
<td>-0.43</td>
</tr>
<tr>
<td>DISTRESS</td>
<td>0.5689</td>
<td>2.23</td>
</tr>
<tr>
<td>RET</td>
<td>-0.4780</td>
<td>-4.92</td>
</tr>
<tr>
<td>PRIORLOSS</td>
<td>0.0369</td>
<td>0.30</td>
</tr>
<tr>
<td>INVEST</td>
<td>-1.2867</td>
<td>-4.34</td>
</tr>
<tr>
<td>\text{CFO}</td>
<td>-0.7841</td>
<td>-2.74</td>
</tr>
<tr>
<td>FEE</td>
<td>-0.1599</td>
<td>-0.97</td>
</tr>
<tr>
<td>\text{LAGGCC}</td>
<td>1.9971</td>
<td>12.21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nobs</th>
<th>2219</th>
<th>656</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo R²</td>
<td>40.51%</td>
<td>51.56%</td>
</tr>
</tbody>
</table>

**Panel B. First-time going concern opinions only**

| Intercept | -1.0666 | -3.77 | 0.000 | 0.00 | -0.3073 | -0.57 | 0.569 | 0.00 |
| BIG4 | 0.1833 | 1.05 | 0.294 | 1.25 | 0.5314 | 1.93 | 0.053 | 1.48 |
| AUDTEN | -0.0070 | -0.68 | 0.248 | 1.39 | -0.0186 | -0.73 | 0.230 | 1.46 |
| SIZE | -0.1731 | -3.42 | 0.000 | 1.62 | -0.4658 | -3.67 | 0.000 | 1.35 |
| \text{LEV} | 0.6782 | 1.86 | 0.032 | 2.85 | 1.0733 | 1.45 | 0.074 | 2.78 |
| \Delta \text{LEV} | 0.0073 | 0.10 | 0.547 | 1.37 | -0.1975 | -0.33 | 0.632 | 1.37 |
| \text{AGE} | -0.0019 | -0.28 | 0.387 | 1.35 | -0.0013 | -0.10 | 0.463 | 1.26 |
| \text{DISTRESS} | 0.5753 | 1.98 | 0.024 | 2.70 | 0.9462 | 1.66 | 0.049 | 2.87 |
| \text{RET} | -0.5900 | -4.10 | 0.001 | 1.16 | -0.8919 | -2.78 | 0.003 | 1.14 |
| \text{PRIORLOSS} | 0.0786 | 0.58 | 0.279 | 1.15 | 0.0654 | 0.24 | 0.400 | 1.18 |
| \text{INVEST} | -1.3710 | -4.14 | 0.001 | 1.42 | -0.8759 | -1.58 | 0.057 | 1.48 |
| \text{CFO} | -0.8838 | -2.70 | 0.004 | 1.87 | -0.3696 | -0.62 | 0.270 | 1.92 |
| FEE | -0.2246 | -1.25 | 0.106 | 1.16 | -0.1303 | -0.40 | 0.345 | 1.13 |

<table>
<thead>
<tr>
<th>Nobs</th>
<th>2124</th>
<th>615</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo R²</td>
<td>24.30%</td>
<td>23.43%</td>
</tr>
</tbody>
</table>

Notes: The dependent variable GC = 1 if the auditor issued a going concern opinion in the current year; = 0 otherwise. Please see Table 1 (panel A) for other variable definitions. The probit model is estimated by maximum likelihood from cross-sectional observations for the period 2003–2006. Reported significance levels are based on two-tailed tests (where the sign is not predicted) and one-tail otherwise. VIF denotes the variance inflation factor. Coefficient estimates for yearly dummies are omitted for brevity. Results reported in Panel A are based on all observations, while results in Panel B are based on first-time going concern opinions only (i.e., excludes recurring going concern opinions).

Consistent with Francis and Lennox (2008), the matched-pairs sample is formed by matching each Big 4 audit client with a Second-tier audit client whose probability of selecting a Big 4 auditor is similar.
4. Empirical findings

4.1. Going concern audit opinion analysis

Table 3 provides descriptive statistics for the dependent and explanatory variables in the going concern opinion regressions for the full and matched-pair samples. Variable GC, the dependent variable in this analysis, is an indicator variable equal to 1 if the auditor issued a going concern audit opinion in the current year, and 0 otherwise. For variable GC, the mean is smaller for Big 4 clients than for Second-tier clients in both the full and matched-pair samples, indicating (on an univariate basis) that Big 4 firms have a lower propensity to issue a going concern opinion (although the difference in means is not significant in the matched-pairs sample). Similarly, for a number of the control variables AUDTEN through LAGGC in the model, the univariate means are different for Big 4 and Second-tier clients, although the difference in means is significant for fewer of these control variables in the matched-pairs sample than in the full sample. In our multivariate analysis discussed below, we control for these differences in client characteristics in examining the difference (if any) in the propensity of Big 4 and Second-tier auditors to issue a going concern opinion for distressed clients.

For brevity, we do not show correlation matrices. However, the highest pairwise correlation between the test variable BIG4 and any of the control variables (in either the full or matched-pair samples) was only 0.28 (with variable SIZE). As discussed below, we diagnose multicollinearity in the regressions using variance inflation factors (VIFs).

Table 4 panel A reports the regression results used to test Hypothesis 1. In both regressions in Table 4, the VIFs are very low (all below 3) which suggests that collinearity is not likely to be a problem in interpreting the results. The control variables AUDTEN through LAGGC, where significant, have the predicted signs and are consistent with prior research (e.g., Carey and Simnett, 2006; Reynolds and Francis, 2001). The test variable BIG4 is statistically significant at the 0.10 and 0.025 levels, with a positive sign in the regressions for the full and matched-pair samples. Since the matched-pair sample results (unlike the full sample results) control for auditor self-selection bias, we place more reliance on the matched-pair findings. The statistically significant results are also economically meaningful, i.e., for audit clients, the use of a Big 4 auditor translates into a nearly 3-fold increase in the likelihood of receiving a going concern qualification in the matched-pair analysis.

Separately, as part of sensitivity analysis, we also examine first-time going concern audit opinions. Table 4 panel B reports the regression results used to test Hypothesis 1 based on first-time going concern modifications only. Once again, the control variables AUDTEN through FEE, where significant, have the predicted signs. The test variable BIG4 is not significant in the regression for the full sample but is significant at the 0.06 level with a positive sign in the regression for the matched-pair sample. Once again, since the matched-pair sample results (unlike the full sample results) control for auditor self-selection bias, we place more reliance on the matched-pair findings. The statistically significant results are also economically meaningful, i.e., for audit clients, the use of a Big 4 auditor translates into a nearly 3-fold increase in the probability of receiving a going concern qualification in the matched-pair analysis.

---

22 In the full sample, the means for variable GC indicate that 5.8 (8.89) percent of Big 4 (Second-tier) distressed clients received a going concern opinion. The difference in means is statistically significant at the 5% level, indicating that on an univariate basis Big 4 auditors have a lower propensity to issue a going concern opinion. By contrast, in the matched-pairs sample, the means for variable GC indicate that 7.93 (8.84) percent of Big 4 (Second-tier) distressed clients received a going concern opinion. Here, the difference is not statistically significant. Although we discuss the univariate findings for completeness, note that univariate comparisons are potentially misleading without controlling for other client characteristics that are likely to influence the auditor’s decision to issue a going concern opinion. Our multivariate analysis (which controls for differences in other client characteristics) is discussed below.

23 In the matched-pair analysis, the probability of receiving a going concern opinion for a Big 4 audit is 0.043 whereas the probability for a Second-tier auditor is only 0.0108. The 0.043 equals \( \Phi(y) \), where \( \Phi(\cdot) \) is the standard normal cumulative probability distribution function and \( y \) is the fitted value of the probit model determined using all estimated coefficients and the mean values of the control variables. The 0.0108 equals \( \Phi(y) \), where \( y \) is the fitted value of the probit model using all estimated coefficients (except the BIG4 coefficient) and the mean values of the control variables. The increase in the probability is 0.0322, which represents a nearly 3-fold increase in the probability of receiving a going concern opinion.

24 We thank a reviewer for suggesting the additional analysis discussed here.
4.2. Earnings management analysis

Table 5 provides descriptive statistics for the dependent and explanatory variables in the earnings management regressions for the full and matched-pair samples. Variable ABACC, the dependent variable in this analysis, is the signed value of the asset-deflated performance-adjusted abnormal accruals. Other things being equal, the higher the metric, the higher the reported earnings (and earnings management). For variable ABACC, the mean is smaller (more negative) for Big 4 clients than for Second-tier clients in both the full and matched-pair samples, indicating (on an univariate basis) that Big 4 clients report lower abnormal accruals than Second-tier audit firm clients. For a number of the control variables AUDTEN through IMPLICIT also, the univariate means are different for Big 4 and Second-tier clients, although (once again) the difference in means is significant for fewer of these control variables in the matched-pairs sample than in the full sample. In our multivariate analyses discussed below, we control for these differences in client characteristics in examining the difference (if any) in abnormal accruals for Big 4 and Second-tier audit clients.

Once again, for brevity, we do not show correlation matrices. However, the highest pairwise correlation between the test variable BIG4 and any of the control variables (in either the full or matched-pair samples) was only 0.35 (with variable SIZE). As discussed below, we diagnose multicollinearity in the regressions using variance inflation factors (VIFs).

Table 6 panel A reports the regression model results used to test Hypothesis 2. Once again, in both the regressions in Table 6 panel A, the VIFs are low which suggests that collinearity is not likely to be a problem in interpreting the results. In particular, the VIFs for the test variable BIG4 are very low (below 2). The control variables AUDTEN through IMPLICIT, where significant, have the predicted signs. The findings for the control variables are consistent with prior research (e.g., Ashbaugh et al., 2003; Warfield et al., 1995) which basically suggests that the relation between earnings management metrics and the control variables are not always clear cut with coefficients differing in signs across studies.

In the regressions for both the full and matched-pair samples, the test variable BIG4 is not significant. These results indicate that after controlling for various client characteristics that are likely to influence abnormal accruals, Big 4 audit clients have signed abnormal accruals that are no different from those of Second-tier audit clients. Thus, the findings suggest that Big 4 auditors and Second-tier auditors auditor translates into a nearly 3-fold increase in the likelihood of receiving a going concern qualification in the matched-pair analysis.25

Collectively, the findings from panels A and B indicate that after controlling for the various client factors that are likely to influence the auditor’s propensity to issue a going concern report, Big 4 auditors have a higher probability than Second-tier auditors for issuing a going concern opinion for distressed clients. Thus, the results based on the matched-pair sample do not support our first null hypothesis (H1), and indicate that Big 4 auditors are better able to objectively evaluate a client’s financial circumstances and withstand client pressure to issue a clean (unqualified) opinion, i.e., Big 4 auditors demonstrate greater auditor independence and (by implication) higher audit quality than Second-tier auditors.

25 In this analysis, the probability of receiving a going concern opinion for a Big 4 audit is 0.034 whereas the probability for a Second-tier auditor is only 0.009. The increase in the probability is 0.024, which represents a nearly 3-fold increase in the probability of receiving a going concern opinion. The probability values were derived by evaluating the standard normal cumulative probability distribution model at the fitted value of the probit model as described in fn. 23 above.

26 We evaluate the non-rejection of the null hypothesis using the approach described in Greenwald (1975). This approach entails specifying a null hypothesis range based on the treatment effect magnitude that would be considered non-trivial, then calculating the area under the posterior distribution that lies within the null range. This area represents the posterior probability of accepting the null range (i.e., the probably that the null is true). In our case, we specify the null range based on a $-0.015$ to 0 range, where the minimum value of $-0.15$ represents the treatment effect documented in prior research (i.e., Becker et al., 1998) and the maximum value of 0 was chosen under the assumption that any adverse Big 4 treatment effect (i.e., greater earnings management among Big 4 as compared to Second-tier) would be non-trivial. For the matched-pair sample regression in Table 6 Panel A the area under the posterior distribution that lies within the null range was 0.34 (i.e., a 0.34 probability in support of the null). Based on this analysis, we conclude that our non-significant results potentially are due to sampling error or inadequate power.
For completeness, Table 6 panel B presents a separate analysis of income-increasing abnormal accruals, i.e., observations with $ABACC > 0$ only. Managing earnings upward to meet or beat benchmarks may be more common, and (as noted previously) may be of more concern to auditors. Note that in Table 6 panel B, the model is estimated using a truncated regression approach since only observations with a positive value of the dependent variable $ABACC$ are included (Greene, 1997).

In panel B also, the VIFs are low, and the control variables AUDTEN through IMPLICIT, where significant, have the predicted signs. In the regressions for both the full and matched-pair samples, the test variable BIG4 is not significant. Once again, these results indicate that after controlling for various client characteristics that are likely to influence abnormal accruals, Big 4 audit clients have income-increasing abnormal accruals that are no different from those of Second-tier firm audit clients. Thus, the findings suggest that Big 4 auditors and Second-tier auditors are similar at restraining the client's ability to manipulate reported earnings, i.e., in restraining managerial opportunism in terms of accruals-based earnings management.

For completeness, Table 6 panel B presents a separate analysis of income-increasing abnormal accruals, i.e., observations with $ABACC > 0$ only. Managing earnings upward to meet or beat benchmarks may be more common, and (as noted previously) may be of more concern to auditors. Note that in Table 6 panel B, the model is estimated using a truncated regression approach since only observations with a positive value of the dependent variable $ABACC$ are included (Greene, 1997).

In panel B also, the VIFs are low, and the control variables AUDTEN through IMPLICIT, where significant, have the predicted signs. In the regressions for both the full and matched-pair samples, the test variable BIG4 is not significant. Once again, these results indicate that after controlling for various client characteristics that are likely to influence abnormal accruals, Big 4 audit clients have income-increasing abnormal accruals that are no different from those of Second-tier firm audit clients. Thus, the findings suggest that Big 4 auditors and Second-tier auditors are similar at restraining the client's ability to manipulate reported earnings, i.e., in restraining managerial opportunism in terms of accruals-based earnings management.
ability to increase reported earnings, i.e., in restraining managerial opportunism in terms of income-increasing earnings management. It is worth noting that recent research by Cohen et al. (2008) documents a decline in accruals-based earnings management and a shift towards real earnings management in the post-SOX era which covers the time period of our study (2003–2006). Potentially, this shift may explain our finding of no significant difference in accruals-based earnings management between Big 4 and Second-tier auditors during 2003–2006.

4.3. Investor perspective (ex ante equity risk premium) analysis

Table 7 provides descriptive statistics for the dependent and explanatory variables in the ex ante equity risk premium regressions for the full and matched-pair samples. Variable \( r_{avg} \), the dependent variable in this analysis, is the client-specific ex ante equity risk premium, i.e., the excess of the ex ante
cost of equity capital over the yield on the 10-year US Treasury bond. The descriptive statistics for variable \( r_{avg} \) reported in Table 7 are comparable to those reported by Dhaliwal et al. (2006).28

Other things being equal, the higher the \( r_{avg} \) metric, the lower the client’s accounting information quality as perceived by investors. For variable \( r_{avg} \), the mean is smaller for Big 4 clients than for Second-tier clients in both the full and matched-pair samples, indicating (on an univariate basis) that investors perceive Big 4 clients as reporting higher quality accounting information. For a number of the control variables BM through REC_RET also, the univariate means are different for Big 4 and Second-tier clients, although (once again) the difference in means is significant for fewer of these control variables in the matched-pairs sample than in the full sample. In our multivariate analyses (discussed below), we control for these differences in client characteristics in examining the difference (if any) in the \( r_{avg} \) metric for Big 4 and Second-tier audit clients.

Once again, for brevity, we do not show correlation matrices. However, the highest pairwise correlation between the test variable BIG4 and any of the control variables in the ex ante equity risk premium analysis (for either the full or matched-pair samples) was only 0.18 (with variable SIZE). As discussed below, we diagnose multicollinearity in the regressions using variance inflation factors (VIFs).

Table 8 reports the regression results used to test Hypothesis 3. Once again, in both the regressions in the Table, the VIFs are very low (below 2) which suggests that collinearity is not likely to be a problem in interpreting the results. The control variables BM through REC_RET, where significant, have the

---

Table 7
Descriptive statistics (investor-perspective ex ante equity risk premium analysis).

<table>
<thead>
<tr>
<th></th>
<th>Full sample</th>
<th>Differences in means (Big 4 vs. Second-tier)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Big 4 (n = 4683)</td>
<td>Second-tier (n = 329)</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>( r_{avg} )</td>
<td>0.0567</td>
<td>0.0503</td>
</tr>
<tr>
<td>BM</td>
<td>0.4348</td>
<td>0.3883</td>
</tr>
<tr>
<td>LEV</td>
<td>0.1632</td>
<td>0.1330</td>
</tr>
<tr>
<td>SIZE</td>
<td>6.4232</td>
<td>6.4589</td>
</tr>
<tr>
<td>BETA</td>
<td>1.3433</td>
<td>1.2554</td>
</tr>
<tr>
<td>SDROA</td>
<td>0.1110</td>
<td>0.0452</td>
</tr>
<tr>
<td>LTG</td>
<td>0.2044</td>
<td>0.1638</td>
</tr>
<tr>
<td>REC_RET</td>
<td>0.3404</td>
<td>0.1860</td>
</tr>
</tbody>
</table>

Matched-pairs sample

<table>
<thead>
<tr>
<th></th>
<th>Big 4 (n = 309)</th>
<th>Second-tier (n = 309)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>( r_{avg} )</td>
<td>0.0562</td>
<td>0.0511</td>
</tr>
<tr>
<td>BM</td>
<td>0.4128</td>
<td>0.3780</td>
</tr>
<tr>
<td>LEV</td>
<td>0.1185</td>
<td>0.0459</td>
</tr>
<tr>
<td>SIZE</td>
<td>5.7025</td>
<td>5.7087</td>
</tr>
<tr>
<td>BETA</td>
<td>1.2830</td>
<td>1.1768</td>
</tr>
<tr>
<td>SDROA</td>
<td>0.1201</td>
<td>0.0621</td>
</tr>
<tr>
<td>LTG</td>
<td>0.2405</td>
<td>0.1833</td>
</tr>
<tr>
<td>REC_RET</td>
<td>0.3084</td>
<td>0.1475</td>
</tr>
</tbody>
</table>

Notes: \( r_{avg} \) is the client- and year-specific ex ante equity risk premium. Please see Table 1 panel C for other variable definitions. Consistent with Francis and Lennox (2008), the matched-pairs sample is formed by matching each Big 4 audit client with a Second-tier audit client whose probability of selecting a Big 4 auditor is similar.

* Denotes significant difference in the means in a two-tailed test at the 0.10 levels.

** Denotes significant difference in the means in a two-tailed test at the 0.05 levels.

*** Denotes significant difference in the means in a two-tailed test at the 0.01 levels.

28 For brevity, we do not report the mean, median, and standard deviation for the four client-specific ex ante equity risk premium metrics (\( r_{gls} \), \( r_{ct} \), \( r_{ojn} \), and \( r_{mpg} \)). These descriptive statistics were comparable to those reported by Dhaliwal et al. (2006). The pairwise correlations among the ex ante equity risk premium metrics (\( r_{gls} \), \( r_{ct} \), \( r_{ojn} \), \( r_{mpg} \), and \( r_{avg} \)) were similar to those reported by Dhaliwal et al. (2006).
predicted signs and are consistent with prior research (e.g., Khurana and Raman, 2004, 2006). Note also that the model includes industry dummies, although the industry-specific intercepts are not reported in the Table for brevity. In the regressions, the test variable BIG4 is significant with a negative sign for both the full and matched-pairs samples. These findings appear to be economically significant, i.e., the slope coefficients for variable BIG4 imply a reduction in the ex ante equity risk premium of between 33 and 60 basis points for Big 4 (relative to Second-tier) audit clients. Overall, the results indicate that after controlling for various client characteristics that are likely to influence the client-specific ex ante equity risk premium, Big 4 audit clients have a lower equity risk premium than Second-tier audit clients. Thus, the findings suggest that Big 4 auditors are perceived by investors as providing more credible accounting information for their clients than Second-tier auditors. Alternatively, as discussed previously, the lower equity risk premium for Big 4 clients may reflect the "deeper pockets," i.e., the greater ability of the Big 4 auditor to share more of stockholder losses in the event of client failure.

5. Concluding remarks

In recent years, regulators and public interest groups have encouraged public companies to utilize Second-tier auditors as an alternative to the Big 4 as a way of increasing the number of suppliers of audit services for large clients. Still, whether or not Second-tier firm audit quality is similar to that of the Big 4 remains an empirical question.

Our study examines audit quality for Big 4 and Second-tier auditors during 2003–2006. We utilize the auditor’s propensity to issue a going concern audit report for distressed clients as a measure of auditor independence and, by implication, audit quality. In addition, since the purpose of an audit is to improve the credibility of financial reporting, we utilize measures of financial reporting quality as observable proxies for audit quality. Thus, we utilize the client’s signed performance-adjusted abnormal accruals as an observable proxy for auditor quality. In addition, we utilize a market-based

---

Table 8

Regression results (investor-perspective ex ante equity risk premium analysis) \( r_{avg} = \alpha + \beta_1 \text{BIG4} + \beta_2 \text{BM} + \beta_3 \text{LEV} + \beta_4 \text{SIZE} + \beta_5 \text{BETA} + \beta_6 \text{SDROA} + \beta_7 \text{LTG} + \beta_8 \text{REC_RET} + \sum \alpha_i \text{INDUSTRY}_xx + \varepsilon. \)

<table>
<thead>
<tr>
<th>Expected sign</th>
<th></th>
<th>Full sample</th>
<th>Matched-pairs sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coef. Robust t-stat p-Value VIF</td>
<td>Coef. Robust t-stat p-Value VIF</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>0.0461 16.12 0.000</td>
<td>-0.0101 -8.22 0.000</td>
</tr>
<tr>
<td>BIG4</td>
<td>?</td>
<td>-0.0033 -4.09 0.000 1.06</td>
<td>-0.0060 -6.07 0.000 1.20</td>
</tr>
<tr>
<td>BM</td>
<td>+</td>
<td>0.0259 21.41 0.000 0.13</td>
<td>0.0219 6.15 0.000 1.00</td>
</tr>
<tr>
<td>LEV</td>
<td>+</td>
<td>0.0385 11.16 0.000 1.24</td>
<td>0.0282 7.25 0.000 1.40</td>
</tr>
<tr>
<td>SIZE</td>
<td>–</td>
<td>-0.0035 -6.56 0.000 1.41</td>
<td>-0.0035 -4.45 0.000 1.72</td>
</tr>
<tr>
<td>BETA</td>
<td>+</td>
<td>0.0019 4.24 0.000 1.17</td>
<td>0.0017 3.79 0.000 1.22</td>
</tr>
<tr>
<td>SDROA</td>
<td>+</td>
<td>0.0018 3.35 0.001 1.11</td>
<td>-0.0009 -0.30 0.764 1.28</td>
</tr>
<tr>
<td>LTG</td>
<td>+</td>
<td>0.1031 32.37 0.000 1.15</td>
<td>0.1075 72.00 0.000 1.24</td>
</tr>
<tr>
<td>REC_RET</td>
<td>–</td>
<td>-0.0067 -2.89 0.004 1.10</td>
<td>-0.0086 -3.12 0.002 1.17</td>
</tr>
<tr>
<td>Nobs</td>
<td></td>
<td>5012</td>
<td>618</td>
</tr>
<tr>
<td>Adj. R²</td>
<td></td>
<td>53.37%</td>
<td>61.49%</td>
</tr>
</tbody>
</table>

Notes: The dependent variable \( r_{avg} \) is the client- and year-specific ex ante equity risk premium. Please see Table 1 panel D for other variable definitions. The model is estimated from cross-sectional observations pooled across the period 2003–2006. Statistical inferences are based on “robust” t-statistics that are adjusted for residual correlation arising from pooling cross-sectional observations across time, i.e., the t-statistics are based on White (1980) heteroskedasticity-adjusted robust variance estimates that are adjusted for client and time clustering (Petersen, 2009). Reported significance levels are based on two-tailed tests (where the sign is not predicted) and one-tail otherwise. Coefficient estimates for INDUSTRY\( xx \) are omitted for brevity. VIF denotes the variance inflation factor. Consistent with Francis and Lennox (2008), the matched-pairs sample is formed by matching each Big 4 audit client with a Second-tier audit client whose probability of selecting a Big 4 auditor is similar.

---

29 We also analyzed the results using annual regressions, and the results hold based on Fama-Macbeth t-statistics. In particular, the test variable BIG4 was significant with a negative sign at the 0.01 level in the annual regressions.
representation of accounting information quality – the client-specific ex ante equity risk premium – as an observable proxy for audit quality as perceived by investors. We control for auditor self-selection bias using the matched-pair sample approach discussed by Francis and Lennox (2008). Still, we recognize that our various regression models may not fully control for differences in client characteristics. Hence, one cannot fully discount the possibility that the differences identified are due to differences in client characteristics rather than auditor characteristics. We acknowledge this limitation of our paper.

Overall, our results suggest that financial reporting quality is broadly similar for Big 4 and Second-tier audit firm clients. We find some evidence that relative to Second-tier auditors, Big 4 auditors have a higher propensity to issue a going concern opinion for distressed clients. However, we find that signed (as well income-increasing) performance-adjusted abnormal accruals are similar for Big 4 and Second-tier audit firm clients. Consistent with prior research, this finding suggests that Big 4 and Second-tier auditors are equally effective in restraining aggressive and potentially opportunistic reporting, i.e., similar in terms of mitigating accruals-based earnings management by their audit clients.30

Finally, from an investor perspective, our analysis indicates that the ex ante equity risk premium is lower for Big 4 clients than for Second-tier audit clients. These findings imply that investors perceive accounting information quality to be higher for Big 4 clients than for Second-tier audit firm clients. Alternatively, the lower equity risk premium for Big 4 clients may be related to insurance reasons, i.e., the Big 4 auditor’s “deeper pockets” (greater financial resources) and ability to share more of the settlement costs and shareholder losses in the event of an audit failure.31 Collectively, the evidence we provide (albeit mixed) makes a contribution to the literature on audit quality and auditor choice, and informs the current discourse on the viability of Second-tier auditors as an alternative to the Big 4.

Acknowledgements

Authors’ names are listed alphabetically. We gratefully acknowledge the helpful comments and suggestions of two reviewers, Jere Francis, and participants at the 2008 AAA Annual Meeting, the 2008 EAA annual congress and workshops at the University of Missouri–Columbia, the University of North Texas, the University of Texas at San Antonio, Hong Kong Polytechnic University, and Chulalongkorn University.

References


30 Cohen et al. (2008) document that the passage of SOX in 2002 (which was intended to restore the integrity of financial statements and was followed by highly publicized enforcement action by the Department of Justice) resulted in a significant decline in accruals-based earnings management. The absence of a significant difference in accruals-based earnings management between Big 4 and Second-tier auditors during the period of our study (2003–2006) may be related to the fact that clients “shifted from using accruals-based to real earnings management after SOX” (p. 785).
31 As noted previously, although the Second-tier firms have emerged as large international firms with correspondingly developed brand name reputation capital, they are still less than a third the size of the smallest Big 4 firm. Consequently, their financial resources (such as invested partner equity) are likely considerably smaller than those of the Big 4 firms.


Johnson, S., October 1, 2007. PCAOB gives Crowe Chizek Higher Marks, CFO.Com.


