

THE UNIVERSITY OF TEXAS AT SAN ANTONIO, COLLEGE OF BUSINESS

# Working Paper SERIES

Date June 29, 2009

WP # 0098ACC-427-2009

## IS AUDIT QUALITY DIFFERENT FOR BIG 4 AND MID-TIER AUDITORS?

Jeff P. Boone  
Department of Accounting  
College of Business  
University of Texas at San Antonio

Inder K. Khurana  
School of Accountancy  
University of Missouri-Columbia

K. K. Raman  
Department of Accounting  
University of North Texas

Copyright © 2009, by the author(s). Please do not quote, cite, or reproduce without permission from the author(s).

**IS AUDIT QUALITY DIFFERENT FOR BIG 4 AND MID-TIER AUDITORS?**

**Jeff P. Boone**  
**Department of Accounting**  
**College of Business Administration**  
**University of Texas at San Antonio**  
**Jeff.Boone@utsa.edu**

**Inder K. Khurana**  
**School of Accountancy**  
**University of Missouri-Columbia**  
**Columbia, MO 65211**  
**573/882-3474**  
**[khurana@missouri.edu](mailto:khurana@missouri.edu)**

**K. K. Raman\*\*\***  
**Department of Accounting**  
**College of Business Administration**  
**University of North Texas**  
**P. O. Box 305219**  
**Denton, TX 76203**  
**940/565-3089**  
**[Raman@unt.edu](mailto:Raman@unt.edu)**

**\*\*\*Authors' names are listed alphabetically. Partial funding provided by The University of Texas at San Antonio College of Business.**

JEL classification: M42

## IS AUDIT QUALITY DIFFERENT FOR BIG 4 AND MID-TIER AUDITORS?

### Abstract

Prior research suggests that Big 4 auditors provide higher quality audits by virtue of their large size. Still, the recent reforms mandated by the Sarbanes Oxley Act – by increasing client and auditor incentives for accurate reporting – may have narrowed audit quality differences across auditor groups. In this paper, we examine audit quality for Big 4 and Mid-tier auditors during 2003-06 and include clients of other smaller audit firms for comparison purposes. We examine *actual* audit quality (as proxied by earnings management metrics) as well as *perceived* audit quality (as proxied by the client- and year-specific e-loading and ex ante equity risk premium metrics).

We include in our analysis only those Big 4 clients for whom the Mid-tier firms are potentially viable as auditors. Relative to other smaller audit firm clients, we find Big 4 and Mid-tier audit clients to have (1) *lower* levels of accrual management, (2) *higher* levels of real earnings management, and (3) *higher* levels of investor-perceived accruals quality. In each case, we were unable to reject the null that Big 4 and Mid-tier audits are similar. However, we find Big 4 audit clients to have a *lower* client-specific ex ante equity risk premium relative to both Mid-tier and other smaller audit firm clients. Collectively, our findings indicate that in situations where a Mid-tier auditor is potentially viable, Big 4 clients could utilize a Mid-tier firm without adversely affecting audit quality. Still, the results suggest that Big 4 clients have a lower ex ante cost of equity capital which is likely related to the insurance considerations (“deep pockets”) – rather than the audit quality -- associated with having a Big 4 auditor.

**Key Words:** Auditor concentration, Audit quality, Earnings management, Cost of equity capital.

# IS AUDIT QUALITY DIFFERENT FOR BIG 4 AND MID-TIER AUDITORS?

## 1. INTRODUCTION

In this paper, we investigate audit quality differentials across different auditor categories during 2003-06.<sup>1</sup> Specifically, we address two research questions. First, we examine whether “accrual-based” earnings management (as measured by the absolute value of asset-deflated performance-adjusted abnormal accruals) and “real activity-based” earnings management (as measured by a composite metric based on asset-deflated abnormal operating cash flows, abnormal production costs, and abnormal discretionary expenses) for Big 4 audit clients is different from that of Mid-tier audit firm clients.<sup>2</sup>

Second, we examine whether investors perceive Big 4 and Mid-tier audit quality to be different as reflected in the client- and year-specific loading on the information (accruals) quality factor in an augmented Fama-French three-factor model (i.e., the e-loading metric discussed by Ecker et al. 2006), and in the ex ante equity risk premium. Collectively, our two research questions address the *actual* as well as *perceived* audit quality of Big 4 and Mid-tier auditors.

Prior research has largely focused on the divide between Big 4 and non-Big 4 auditors as the basis for differential audit quality.<sup>3</sup> Simunic and Stein (1987) suggest that having spent heavily on building their brand names, the Big 4 have an incentive to protect their reputations by providing more credible financial reports. Becker et al. (1998) and Francis et al. (1999) link audit quality to earnings management, and suggest that Big 4 auditors are more effective at restraining earnings manipulations. They indicate that the net result of a Big 4 audit is *lower* abnormal accruals, i.e., reported earnings that are

---

<sup>1</sup> Essentially, we examine audit quality differentials since the passage of the Sarbanes Oxley Act in 2002. We focus on the 2003-06 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.

<sup>2</sup> The Big 4 consists of PwC, Deloitte & Touche, Ernst & Young, and KPMG. 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. For the purpose of this study, we classify the fifth through the eighth largest audit firms (Grant Thornton, BDO Seidman, Crowe Chizek, and McGladrey Pullen) as Mid-tier auditors. We categorize auditors who are neither Big 4 nor Mid-tier as other smaller auditors.

<sup>3</sup> For convenience, we use the term Big 4 to denote not only the extant four largest audit firms but also their predecessor firms which prior to their merger (or demise, in the case of Arthur Andersen) were referred to previously as the Big 8, Big 6, or Big 5.

more reflective of the client's underlying economics.<sup>4</sup> These findings are consistent with the notion (articulated by DeAngelo 1981) that audit firm size is an innate determinant of audit quality. Specifically, the argument is that the Big 4's large size (1) enables them 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 and restrain earnings management.

Still, the recent experience with Arthur Andersen suggests that it may no longer be valid to view audit firm size as an innate determinant of audit quality. Further, at this time, there may be reasons to expect Big 4 and Mid-tier audit quality to be similar. Specifically, 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 particular, the reforms apply to all registered audit firms and clients (at least initially) with annual revenues in excess of \$75 million.

With respect to *client* incentives for more accurate reporting, SOX's Section 302 requires CEOs/CFOs to certify that internal controls are effective and that the financial statements present fairly the firm's financial position and results. Further, CEOs/CFOs now face a variety of severe financial, criminal, and civil penalties in the event that their certifications are later proved incorrect. Thus, managers are now responsible for fair presentation (which goes beyond mere technical GAAP compliance) and can be visibly penalized for violations (Kinney 2005). Nelson (2006) suggests that these new requirements and penalties for CEOs/CFOs make it *less* likely that the client will misstate the financial statements, or pressure the auditor to allow aggressive earnings management.<sup>5</sup>

With respect to *auditor* incentives, SOX's Section 104 created the PCAOB and an ongoing program of quality inspections of audit firms. The PCAOB has broad investigative and disciplinary powers, and is required to conduct inspections of audit firms. Palmrose (2006) notes that closer monitoring (by the PCAOB) is likely to induce auditors to increase audit effort, tighten materiality, and

---

<sup>4</sup> Consistent with this view, Teoh and Wong (1993) document that the earnings surprises of Big 4 audit clients are valued more highly by the stock market, which is consistent with the notion that the perceived quality of reported earnings is higher when the auditor is a Big 4 firm. However, Ghosh and Moon (2005, p. 598) report that during 1990-2000 the ERC was *lower* for Big 4 clients which is inconsistent with Teoh and Wong (1993).

<sup>5</sup> Chang et al. (2006) report that CEO/CFO certifications are associated with positive abnormal stock returns.

make more conservative judgments and decisions in their audit engagements. Further, SOX Sections 104 and 404 require auditors to do more in terms of testing the control system and attesting to the accuracy of CEO/CFO certifications of the effectiveness of internal controls over financial reporting. Nelson (2006) suggests that these and other SOX-mandated reforms (such as independent audit committees and audit partner rotation) and the continuing threat of PCAOB annual inspections and sanctions, make it *more* likely that the auditor will detect financial statement misstatements and resist client pressure to allow opportunistic reporting.

Thus, the cumulative effect of the reforms – in terms of (1) *less* aggressive reporting by the client, (2) *less* client pressure to waive corrections to the misstatements, (3) *increased* auditor effort to identify misstatements, and (4) *greater* auditor resistance to client pressure to allow aggressive reporting – may be expected to narrow audit quality differences across auditor groups.

Still, the SOX-mandated reforms cannot realistically be expected to eliminate audit quality differences. Basically, these differences are likely to persist to the extent that auditors vary in their ability and willingness to “pushback” against client-driven earnings management. As a practical matter, accrual accounting allows preparers considerable discretion in estimating the future cash flow consequences associated with current period transactions and events. Put differently, accounting flexibility inherently allows earnings to be “managed” based on varying assumptions about an uncertain future. Thus, whether Big 4 and Mid-tier audit quality is different remains ultimately an empirical question.

In our study, we recognize that not all Big 4 clients are auditable by Mid-tier auditors.<sup>6</sup> Hence, in examining our two research questions, we “trim” our sample to include only those Big 4 clients for whom the Mid-tier firms are potentially viable as auditors. Specifically, we exclude Big 4 clients whose revenues exceed the revenues of the largest Mid-tier client in each of the four years.<sup>7</sup>

---

<sup>6</sup> The GAO (2008) notes that the very largest Big 4 clients have global businesses and complex operations that the Mid-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.

<sup>7</sup> For completeness, we also analyzed the “full” sample which includes all Big 4 clients. The results for the “full” sample were similar to those reported in the paper for the trimmed sample.

Our results indicate that both Big 4 and Mid-tier audit clients have *lower* levels of absolute performance-adjusted abnormal accruals relative to other smaller audit firm clients during 2003-06. More importantly, the levels of these abnormal accruals for Big 4 audit clients are no different than those for Mid-tier audit clients, suggesting that audit quality (as measured by clients' abnormal accruals) is similar for Big 4 and Mid-tier auditors.

By contrast, for real earnings management, we find the composite metric (based on asset-deflated abnormal operating cash flows, abnormal production costs, and abnormal discretionary expenses) to be higher for both Big 4 and Mid-tier clients relative to other smaller audit firm clients, suggesting that Big 4 and Mid-tier audit quality is potentially lower than that of the other smaller audit firms. As noted by Graham et al. (2005), real methods are more opaque and thus harder to detect.<sup>8</sup> Graham et al. (2005) also suggest that auditors are less likely to second-guess real economic decisions since these decisions are largely a matter of business (rather than accounting) judgment. Thus, in comparison to accrual management, real earnings management is less likely to face auditor scrutiny. For these reasons, managers may substitute real earnings management for accrual management. In any event, we find the composite metric for Big 4 audit clients to be no different than that for Mid-tier clients, suggesting that real earnings management is similar for Big 4 and Mid-tier audit clients.

With respect to our second research question, i.e., whether investors *perceive* Big 4 and Mid-tier audit quality to be different, we find that investors perceive both Big 4 and Mid-tier audits to be of higher quality (as reflected in the client-specific loading on the information quality factor) relative to other smaller firm audits. Further, we find the e-loading metric for Big 4 audit clients to be no different than that of Mid-tier audit clients, suggesting that investor-perceived audit quality is similar for Big 4 and Mid-tier auditors. This finding is consistent with our earlier result -- from a preparer perspective -- that the level of abnormal accruals is similar for Big 4 and Mid-tier clients.

By contrast, we find the client-specific ex ante equity risk premium metric to be *lower* for Big 4 clients relative to that of both Mid-tier and other smaller audit firm clients. Further, we find the equity

---

<sup>8</sup> As an example, investors may find it hard to discriminate between real earnings management and normal cost-cutting activities intended to improve operating efficiency.

risk premium to be similar for Mid-tier and other smaller audit firm clients. Prior research (Khurana and Raman 2004) suggests that differentials in the ex ante cost of equity capital across Big 4 and non-Big 4 clients is driven by litigation risk and insurance benefits (i.e., the “deep pockets” of Big 4 auditors) rather than by auditor reputation for audit quality. Consistent with this view, the GAO (2008) indicates that investment bankers and institutional investors are motivated by insurance reasons to prefer Big 4 auditors for their own clients and investees. Put differently, underwriters and investors prefer Big 4 auditors primarily for their financial resources (“deep pockets”) and resulting ability to share more of the settlement costs and losses in the event the deal falters or the client fails.

Overall, our evidence on audit quality differentials across auditor groups adds to the literature on audit quality and auditor concentration. In recent years, regulators have focused on auditor concentration and the risks posed by Big 4 dominance of the audit market (Paulson 2007; Solomon 2007).<sup>9</sup> The two commonly provided explanations for the Big 4’s market dominance are: (1) their geographic reach and depth of expertise which makes them indispensable to their very largest clients (GAO 2003, 2008), and (2) their brand name reputation for higher audit quality (Simunic and Stein 1987). An implication of our finding that accrual-based earnings management, real-activity based earnings management, and investor perception of information quality are all similar for Big 4 and Mid-tier auditors is that in situations where a Mid-tier auditor is potentially viable, Big 4 clients could utilize a Mid-tier firm as auditor -- and thereby reduce Big 4 market dominance and auditor concentration -- without adversely affecting audit quality.

Since the collapse of Arthur Andersen in 2002, regulators have been concerned about the potential loss of yet another one of the Big 4 firms (due, for example, to catastrophic legal claims), and the likely severe repercussions for auditor competition and auditor choice for audit clients (Committee on Capital Market Regulation 2006; US Chamber of Commerce 2006, 2007). At this time, regulators appear to view the Big 4 as potentially “too few to let any fail” (Johnson 2007, D1).<sup>10</sup> Thus, recent initiatives

---

<sup>9</sup> As pointed out by the GAO (2003), the Big 4 audit 78 percent of all publicly owned US companies. “Is this intense concentration in the market for large public company auditing services good for America? If you believe, as I do, that genuine competition is essential to the proper functioning of any market, then the answer is no,” (Cox 2005, p. 3).

<sup>10</sup> The US Chamber of Commerce (2006, p. 5) quotes William McDonough, a former PCAOB chair, as stating that “None of us (regulators) has a clue what to do if one of the Big 4 failed.” Reilly (2007) suggests that in 2005



have sought to place limits on auditor liability in order to avoid a possible liability-induced bankruptcy of a Big 4 firm (The American Assembly 2005; Committee on Capital Market Regulation 2006; Johnson 2007; Reilly 2006a, 2006b).<sup>11</sup> In this study, we document that Big 4 clients enjoy a lower cost of equity capital than Mid-Tier clients, a finding consistent with investment bankers' and institutional investors' preference for Big 4 auditors (for their own clients and investees) primarily for insurance reasons, i.e., possible access to the Big 4's "deep pockets" in the event of failure (GAO 2008, p. 44). Potentially, any cap on the legal liability of the Big 4 could limit the insurance-based attractiveness of these auditors. In turn, this may induce more clients to take a "fresh look" at Mid-tier auditors as a viable alternative to the Big 4. Thus, an unintended consequence of litigation reform, i.e., a cap on the liability of Big 4 auditors, could be a decrease in auditor concentration as more clients find greater acceptance among their bankers and institutional investors for Mid-tier auditors.<sup>12</sup>

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 Audit Quality from a Preparer Perspective (Earnings Management Model)**

As noted previously, prior research has sought to link audit quality to earnings management. In other words, given managers' incentives to manipulate reported earnings in order to meet or beat earnings benchmarks (Bartov et al. 2002; Graham et al. 2005), the auditor's role is viewed as one of lending

---

federal prosecutors were reluctant to press criminal charges over tax shelters sold by KPMG since such an indictment would have effectively been a death sentence for the firm by irreparably damaging its reputation. Thus, rather than press a criminal indictment, the government offered KPMG a deferred-prosecution arrangement and settled for a fine of \$456 million.

<sup>11</sup> In the US, these suggestions basically involve arrangements whereby auditors with satisfactory quality control would be provided a measure of protection from legal liability by the SEC and the PCAOB (The American Assembly 2003; US Chamber of Commerce 2006, 2007; Committee on Capital Market Regulation 2006). In the UK and the EU, the suggestion is that auditors be allowed to reach agreements with their audits clients (with shareholder approval) on liability caps (Buck 2006; Buck and Jopson 2006; Michaels and Parker 2004).

<sup>12</sup> Prior research (Lee and Mande 2003), suggests that a reduced level of legal exposure for Big 4 auditors could lower their incentives to maintain audit quality by increasing their acquiescence in earnings management by audit clients. However, as discussed previously, the evidence suggests that Big 4 audit quality is no better than Mid-tier audit quality during 2003-06.

credibility to financial statements by restraining earnings management. Consistent with this view, Becker et al. (1998) and Francis et al. (1999) report lower abnormal accruals for Big 4 clients than for non-Big 4 audit clients.<sup>13</sup>

Separately, Graham et al. (2005) suggest that given the stigma associated with accrual management, earnings manipulations are now more likely to be achieved through “real” economic actions (such as cutting discretionary expenses). In particular, they suggest that managers believe that in attempting to meet or beat earnings targets, auditors are more likely to challenge accounting judgments but less likely to second-guess real economic decisions. Further, there is also the fear that an overzealous regulator may conclude ex post, and with the benefit of hindsight, that an appropriate accounting treatment at the time was actually driven by an attempt to manage earnings (Graham et al. 2005, p. 36). Consistent with these arguments, Cohen et al. (2008) document a decline in accrual management and a rise in real earnings management.

To the extent that real earnings management detracts from fair reporting (i.e., disguises the client’s underlying economic performance) and is used as a substitute for accrual management, audit quality could potentially be judged by the auditor’s ability to restrain both forms of earnings management. However, as noted previously, real earnings management methods are more opaque and harder to detect, and the underlying real economic decisions could be perceived as based on business (rather than accounting) judgment and thus less likely to be questioned by the auditor. Put differently, auditors may believe that they do not have the ability or the responsibility to restrain real earnings management. Still, for the sake of completeness, in our study we examine both accrual management and real earnings management metrics. Our first set of hypotheses (stated in the null form) are as follows:

H1a: Earnings management for Big 4 clients is not different from that of other smaller audit firm clients.

H1b: Earnings management for Mid-tier clients is not different from that of other smaller audit firm clients.

H1c: Earnings management for Big 4 clients is not different from that of Mid-tier audit clients.

---

<sup>13</sup> In additional analysis, Francis et al. (1999) partition their sample into three auditor groups (Big 4, second-tier national firms, and other audit firms) during 1988-1994, and find significant differences in accrual management across all three auditor groups.

## 2.2 Audit Quality from an Investor Perspective (E-loading Model)

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 quality, i.e., increased likelihood that the reported earnings map well with the client's underlying economic performance. Consistent with recent research (e.g., Aboody et al. 2005; Ecker et al. 2006; Chen et al. 2007), we utilize the e-loading metric as a market-based representation of investor-perceived information quality.<sup>14</sup>

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.

In our study, we examine whether the three auditor groups (Big 4, Mid-tier, and other) are perceived by investors as being associated with differential information quality for their audit clients. To the extent that investors are cognizant of the linkage between audit quality and earnings management, the three auditor groups' clients may be expected to be associated with differentials in their investor-perceived information quality as proxied by the e-loading metric. Thus, we examine the differentials in clients' e-loading metric across the three auditor groups during the 2003-06 time period.

Our second set of hypotheses (stated in the null form) are as follows:

H2a: The e-loading metric for Big 4 clients is not different from that of other smaller audit firm clients.

H2b: The e-loading metric for Mid-tier clients is not different from that of other smaller audit firm clients.

H2c: The e-loading metric for Big 4 clients is not different from that of Mid-tier clients.

---

<sup>14</sup> Whether information quality is a priced risk factor remains controversial (Core et al. 2008; Francis et al. 2008, fn. 9). In this section, we do not take a position on this issue.

### 2.3 Audit Quality from an Investor Perspective (Ex Ante Equity Risk Premium Model)

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).<sup>15</sup> 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, the three auditor groups (Big 4, Mid-tier, and other) may be expected to be associated with differentials in perceived information quality for their audit clients, and differentials in the client-specific ex ante equity risk premium. Stated differently, investors may rationally expect differentials in earnings management across the three auditor groups, and to the extent that they cannot undo (or diversify away)

---

<sup>15</sup> 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.

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.<sup>16</sup>

However, as noted previously, prior research (Khurana and Raman 2004) suggests that differentials in the client-specific equity risk premium across auditor groups may be driven not by differentials in perceived information quality but by litigation risk and insurance considerations, i.e., the “deep pockets” of Big 4 auditors. Potentially, these insurance-related considerations may outweigh information quality differences in the pricing of the client-specific ex ante equity risk premium across auditor groups.

Because of these conflicting arguments, the relation between auditor group and the client-specific equity risk premium remains an open and unanswered empirical question. Our third set of hypotheses (stated in the null form) are as follows:

- H3a: The ex ante equity risk premium for Big 4 clients is not different from that of other smaller audit firm clients.
- H3b: The ex ante equity risk premium for Mid-tier clients is not different from that of other smaller audit firm clients.
- H3c: The ex ante equity risk premium for Big 4 clients is not different from that of Mid-tier clients.

### 3. RESEARCH DESIGN AND DATA

#### 3.1 Preparer Perspective “Earnings Management” Model

To test Hypothesis 1, we estimate the following preparer perspective model:

$$\text{Earnings management metric} = f(\text{Test variables}, \text{Control variables}) \quad (1)$$

In model (1), we utilize two separate earnings management metrics as the dependent variable. These metrics (variables ABAM and RM\_PROXY) are defined in Table 1 panel A.

The first metric -- variable ABAM -- represents the absolute value of performance-adjusted abnormal accruals estimated using the cross-sectional modified Jones (1991) model.<sup>17</sup> The higher the

---

<sup>16</sup> 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.

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

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

In this model, TA is total accruals calculated as income from continuing operations less operating cash flows from continuing operations,  $\Delta SALES$  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.

The second metric -- variable RM\_PROXY – represents a composite measure of real earnings management. Consistent with prior research (e.g., Cohen et al. 2008; Roychowdhury 2006), the metric focuses on real activity manipulations that impact the signed abnormal levels of operating cash flows (CFO), production costs (PROD), and discretionary expenses (DISCEXP).<sup>18</sup> Specifically, it considers (1) the acceleration of sales through more lenient credit terms or increased price discounts, (2) the lowering of cost of goods sold (COGS) through increased production, and (3) the manipulation of discretionary expenses such as R&D and SG&A (including advertising).

Consistent with Cohen et al. (2008) and Roychowdhury (2006), we first estimate the normal level of cash flow from operations (CFO), production costs (PROD), and discretionary expenses (DISCEXP).

---

<sup>17</sup> Since accruals reverse over time, earnings management behavior is better captured by absolute (rather than by income-increasing) accruals. Levitt (1998) makes a similar point in referring to cookie-jar accounting.

<sup>18</sup> Unlike accruals, real-activity manipulations may not reverse over time. Hence, consistent with prior research we examine signed real-activity manipulations. Cohen et al. (2008) note that the RM\_PROXY variable captures the effects of real earnings management through the three individual component variables in a “comprehensive measure” (p. 16). Consistent with Cohen et al. (2008, p. 16), “we acknowledge that the three individual variables have different implications for earnings which may dilute any results using RM\_PROXY alone.”

First, normal CFO is expressed as a linear function of sales and change in sales, and the model is estimated in the cross-section by industry and year:

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

Here, CFO is cash flow from continuing operations, SALES is sales revenue,  $\Delta SALES$  is change in sales revenue, and the subscripts  $i$  and  $t$  denote firm and year, respectively. Abnormal CFO (ABCFO) is then calculated as actual CFO less normal CFO estimated using the coefficients from the above model.

Second, production costs are defined as the sum of COGS and change in inventory during the year. COGS is modeled as a linear function of contemporaneous sales, while inventory change is modeled as a function of the change in current year and prior year sales. Thus, normal production costs are expressed as a linear function of sales, and change in current year and prior year sales, and is estimated in the cross-section by industry and year:

$$\frac{PROD_{it}}{Assets_{i,t-1}} = \alpha \frac{1}{Assets_{i,t-1}} + \beta_1 \frac{SALES_{it}}{Assets_{i,t-1}} + \beta_2 \frac{\Delta SALES_{it}}{Assets_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{it}$$

Here, PROD is production costs calculated as the sum of cost of goods sold and change in inventory, SALES is sales revenue,  $\Delta SALES$  is change in sales revenue, and the subscripts  $i$  and  $t$  denote firm and year, respectively. Abnormal production costs (ABPROD) is then calculated as actual PROD less normal PROD estimated using the coefficients from the model above.

Third, normal discretionary expenses are expressed as a function of lagged sales:

$$\frac{DISCEXP_{it}}{Assets_{i,t-1}} = \alpha \frac{1}{Assets_{i,t-1}} + \beta_1 \frac{SALES_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{it}$$

Here, DISCEXP represents discretionary expenses measured as the sum of R&D and SG&A (including advertising) expenditures, SALES is sales revenue, and the subscripts  $i$  and  $t$  denote firm and year, respectively. Once again, abnormal discretionary expenses (ABDISCEXP) is then calculated as actual DISCEXP less normal DISCEXP estimated using the coefficients from the above model. Finally, consistent with Cohen et al. (2008), we compute RM\_PROXY as the sum of the standardized variables ABCFO, ABPROD, and ABDISCEXP.

### ***3.1.1 Test Variables***

The test variables BIG4 and MIDTIER are defined in Table 1 panel A. Basically, variable BIG4 is equal to 1 if the auditor is a Big 4 firm, and 0 otherwise. Similarly, variable MIDTIER is equal to 1 if the auditor is a Mid-tier audit firm, and 0 otherwise. In the regressions, when both variables BIG4 and MIDTIER are equal to 0, the auditor is an other smaller audit firm. Separately (and as noted previously), given the prior experience with Arthur Andersen, it may no longer be valid to view audit firm size as an innate determinant (or indicator) of audit quality. Hence, in the regressions with ABAM and RM\_PROXY as dependent variables, we do not predict the sign for the BIG4 and MIDTIER test variables.

### ***3.1.2 Control Variables***

The control variables (AUDTEN through SDCFFO) are defined in Table 1 panel A. 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 (Casterella et al. 2002; Davis et al. 2003; 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 firms 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 is negative.

In the regressions, variable DISTRESS represents the firm's financial condition based on Zmijewski (1984), such that higher values of the variable represent higher levels of financial distress for the firm. Prior research (e.g., 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; Teoh et al. 1998) suggests that significant 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.

Although DeFond and Jiambalvo (1994) suggest that more leveraged firms are more likely to use income-increasing accruals to avoid violating debt covenants, Hribar and Nichols (2006) report that leverage is negatively related to absolute abnormal accruals. Hence, in the regressions, we do not predict the sign of variable LEVERAGE. 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. Separately, 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. Prior research suggests that accrual volatility may be related to firm-specific operating characteristics as measured by the volatility of the firm's sales, earnings, and cash flows (Hribar and Nichols 2006). Hence, in the regressions, we include SDSALES, SDROA, and SDCFFO as control variables.

Finally, in the model with RM\_PROXY as the dependent variable, we control for accrual management (variable AM). Since (consistent with Cohen et al. 2008) variable RM\_PROXY is a signed metric, variable AM is also a signed measure. Potentially, managers may substitute real earnings

management for accrual management, although this remains an empirical question. Hence, in the regression we do not predict the sign of variable AM.

### 3.2 Investor Perspective “e-loading” Model

To test Hypothesis 2, we estimate the following investor perspective (e-loading) model:

$$\text{E-loading metric} = f(\text{Test variables, Control variables}) \quad (2)$$

The dependent and independent variables in model (2) are defined in Table 1 panel B. The dependent variable e-loading is a returns-based representation of a client’s information (accruals) quality (Aboody et al. 2005; Ecker et al. 2006; Chen et al. 2007). We follow Ecker et al. (2006) in computing the e-loading metric, i.e., we estimate asset-pricing regressions that correlate daily client-specific returns with the Fama and French (1993) three factor (market, size, and book-to-market) returns as well as an information (accruals) quality factor return. The coefficient estimate on the information quality factor represents the e-loading metric.<sup>19</sup> Consistent with Ecker et al. (2006), e-loading is a client- and year-specific estimate of information quality, such that the *higher* the e-loading metric, the *lower* the client-specific information quality.

#### 3.2.1 Test Variable

The test variables BIG4 and MIDTIER are defined in Table 1 panel B. As before, variable BIG4 is equal to 1 if the auditor is a Big 4 firm, and 0 otherwise. Similarly, variable MIDTIER is equal to 1 if the auditor is a Mid-tier audit firm, and 0 otherwise. In the regressions, when both variables BIG4 and MIDTIER are equal to 0, the auditor is an other smaller audit firm.

To the extent that investors are cognizant of the linkage between audit quality and earnings management, investors may perceive differentials in client-specific information quality across auditor groups, i.e., the client-specific e-loading metric may be expected to be associated with the type of auditor (Big 4, Mid-tier, or other). Once again, as noted previously, it may no longer be valid to view audit firm

---

<sup>19</sup> Daily Fama and French (1993) three factor (market, size, and book-to market) returns and the information (accruals) quality factor returns are obtained from Professor Francis’ website. Francis et al. (2005) report that information quality is based on a modified version of the Dechow and Dichev (2002) model that maps accruals into cash flows. The information quality factor returns are formed by taking the difference between the monthly excess returns of the top two quintiles (implying lower information quality and higher expected returns) and the bottom two quintiles.

size as a determinant or indicator of audit quality. Hence, in the regression with e-loading as the dependent variable, we do not predict the sign for the BIG4 and MIDTIER test variables.

### 3.2.2 Control Variables

In the regressions, we control for other factors that may be expected to affect the e-loading metric. These control variables, i.e., SIZE through NEGEARN, are defined in Table 1 panel B and represent client-specific characteristics. As discussed by Ecker et al. (2006), the e-loading metric (the dependent variable in the model) is expected to be related negatively with firm size (variable SIZE) and positively with the variability of cash flows and sales, the length of the operating cycle, and the incidence of negative earnings (variables SDCFFO, SDSALES, OPCYCLE, and NEGEARN, respectively). Hence, in the regressions, the predicted sign for variable SIZE is negative while the predicted sign for variables SDCFFO through NEGEARN is positive.

### 3.3 Investor Perspective “Ex Ante Equity Risk Premium” Model

To test Hypothesis 3, our investor-perspective ex ante equity risk premium regression is based on the following model:

$$r_{\text{avg}} = f(\text{Test variables, Control variables}) \quad (3)$$

In model (3), the dependent variable  $r_{\text{avg}}$  is the client-specific ex ante equity risk premium, and is defined in Table 1 panel C. Variable  $r_{\text{avg}}$  is essentially an ex ante metric, i.e., a measure of expected rather than realized returns, and thus not directly observable.<sup>20</sup> 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  $r_{\text{gls}}$ ,  $r_{\text{ct}}$ ,  $r_{\text{ojn}}$ , and  $r_{\text{mpeg}}$ , 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

---

<sup>20</sup> 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.”

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.<sup>21</sup>

### **3.3.1 Test Variables**

The test variables BIG4 and MIDTIER are defined in Table 1 panel C. As before, variable BIG4 is equal to 1 if the auditor is a Big 4 firm, and 0 otherwise. Similarly, variable MIDTIER is equal to 1 if the auditor is a Mid-tier audit firm, and 0 otherwise. When both variables BIG4 and MIDTIER are equal to 0, the auditor is an “other” smaller audit firm.

Once again, to the extent that investors are cognizant of the linkage between audit quality and earnings management, investors may perceive client-specific information quality differentials across auditor groups. To the extent that information quality is a priced risk factor, the client-specific ex ante equity risk premium may be expected to be associated with the type of auditor (Big 4, Mid-tier, or other). However, since audit firm size may no longer be a valid indicator of audit quality, we do not predict the sign of the test variables BIG4 and MIDTIER in the regression.

However, an alternative view (discussed previously) is that the client-specific ex ante equity risk premium is driven by insurance-related considerations rather than by perceived audit quality (Khurana and Raman 2004). Put differently, a Big 4 audit (relative to Mid-tier or other smaller firm audits) may be associated with a lower client-specific ex ante equity risk premium by virtue of the Big 4 auditor’s financial resources (“deep pockets”). From this alternative perspective, the predicted sign for the BIG4 test variable in the regression is negative.

---

<sup>21</sup> Consistent with Gebhardt et al. (2001, p. 143), the fourth month is chosen to facilitate alignment between IBES and Compustat.

### 3.3.2 Control Variables

Model (3) controls for factors that may be expected to affect the client-specific ex ante equity risk premium. These control variables (BM through REC\_RET) 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 leverage (variable LEVERAGE) is expected to raise the perceived risk and increase the firm's equity risk premium (Gebhardt et al. 2001). Hence, variable LEVERAGE 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 ERP. Consistent with Guay et al. (2005), the predicted sign for variable REC\_RET is negative.<sup>22</sup>

---

<sup>22</sup> "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).

Finally, our regressions include dummy variables to control for the firm's industry membership (variable  $INDUSTRY_{xx}$ , based on 2-digit SIC classifications).

### 3.4 Econometric Estimations

To estimate the models (1) through (3) above, 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 (Cameron et al. 2006; Petersen 2006; Thompson 2005).

### 3.5 Data and Sample

Table 2 panel A summarizes the sample selection process. For the preparer-perspective earnings management model, the sample is formed from the merged Compustat annual industrial files, including the primary, secondary, tertiary and full coverage 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.<sup>23</sup> After excluding observations with missing data on control variables, we are left with a sample of 12,726 client-years. For the investor-perspective e-loading and ex ante equity risk premium ( $r_{avg}$ ) models, we begin with the sample for the preparer-perspective earnings management model (12,726 observations), and exclude observations (client-years) not found in IBES and CRSP. The final sample for the investor-perspective models consists of 5,868 observations.

Table 2 panel B provides information on sample composition by year and auditor group for both the preparer- and investor-perspective regressions. 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 2 panel C provides similar information for our “trimmed” sample. As discussed previously, we seek to include in our analysis only those Big 4 clients for whom the Mid-tier firms are potentially viable as

---

<sup>23</sup> Consistent with prior research (e.g., Fields et al. 2004), utilities and financial institutions are excluded because of their unique regulatory and operating characteristics.

auditors. During 2003 through 2006, the *largest* Mid-tier client had revenues of \$5.27 billion, \$5.95 billion, \$6.17 billion, and \$7.86 billion, respectively. Our trimmed sample omits Big 4 clients with revenues exceeding these threshold amounts in each of those years. Another advantage of using the trimmed sample is that it minimizes differences in client characteristics (such as growth opportunities, company size, and risk) across auditor categories.<sup>24</sup> Because of this size cap on Big 4 clients, our “trimmed” sample is reduced to 11,849 and 5,225 observations for the preparer- and investor-perspective analyses, respectively. Finally, to reduce the influence of outliers, all variables are truncated at the 1st and 99th percentiles.

## 4. EMPIRICAL FINDINGS

### 4.1 Preparer Perspective (“Earnings Management”) Model

#### 4.1.1 Descriptive Statistics

Table 3 provides descriptive statistics and correlation coefficients for the dependent and explanatory variables in the preparer-perspective earnings management regressions. Panel A reports the mean, median, and standard deviation for the earnings management dependent variables (ABAM and RM\_PROXY), as well as the independent variables. The mean and median values of both earnings management dependent variables are within the range reported in prior studies (e.g., Cohen et al. 2008). For the test variables BIG4 and MIDTIER, the mean for the BIG4 (MIDTIER) dummy variable is 0.6814 (0.1149), indicating that approximately 68 (11) percent of our pooled observations have a Big 4 (Mid-tier) auditor.<sup>25</sup> Thus, the remaining observations (approximately 21 percent) are audited by other smaller auditors. As for the other independent variables, we control for these client characteristics in our multiple regressions (discussed below).

---

<sup>24</sup> The remaining differences in client characteristics are controlled for in our multivariate analyses (discussed later in the paper). Separately, we did not pursue a research design focusing on a sample of audit clients that switched from a Big 4 auditor to a mid-tier auditor for two reasons: First, the sample size for auditor changes is limited. Second, the problem of drawing any inferences without controlling for the reasons underlying the auditor change are potentially insurmountable.

<sup>25</sup> As noted previously, our “trimmed” sample excludes Big 4 clients (observations) whose revenues exceed the revenues of the largest Mid-tier client. Hence, for the Big 4, the 68 percent market share we report is somewhat lower than the 78 percent market share of all publicly owned US companies reported by the GAO (2003).

Panel B reports the correlation coefficients between the earnings management metrics (ABAM and RM\_PROXY) and the independent variables in the regressions. Although we show the correlation matrix for completeness, we diagnose multicollinearity in the regressions using variance inflation factors (VIFs) as discussed below.

#### ***4.1.2 Tests of Hypothesis 1***

Table 4 reports regression results with the accrual-based and real-activity based earnings management metrics ABAM and RM\_PROXY as the dependent variables. As discussed previously, the test variables BIG4 and MIDTIER represent the type of auditor, with other smaller auditors as the omitted category.

In both regressions in Table 4, the VIFs are fairly low which suggests that collinearity is not likely to be a problem in interpreting the results. Also, the control variables AUDTEN through AM -- where predicted and significant -- have the anticipated 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.

As discussed previously, our Hypothesis 1 examines whether earnings management varies across clients depending on the type of auditor. In the ABAM regression, both test variables BIG4 and MIDTIER are significant at the 0.01 level with a *negative* sign, indicating that Big 4 and Mid-tier audit clients have *lower* levels of accrual management relative to other audit clients. An F-test that the coefficients for the BIG4 and MIDTIER test variables are equal could not be rejected ( $F = 0.010$ ,  $p = 0.917$ ). These results suggest that during 2003-06, the level of accrual management was similar for Big 4 and Mid-tier audit clients.

By contrast, in the regression with RM\_PROXY as the dependent variable, the test variables BIG4 and MIDTIER are significant at the 0.01 level with a *positive* sign, indicating that Big 4 and Mid-tier audit clients have *higher* levels of real earnings management relative to other smaller audit firm clients. Once again, in the regression with RM\_PROXY as the dependent variable, an F-test that the coefficients for the BIG4 and MIDTIER test variables are equal could not be rejected ( $F = 0.217$ ,  $p =$



0.641). These results suggest that the level of real earnings management is similar for Big 4 and Mid-tier audit clients during 2003-06. Collectively, the evidence for both accrual and real earnings management leads us to reject Hypotheses 1A and 1B, but not Hypothesis 1C. In other words, during 2003-06, we find that the level of earnings management varies across clients by type of auditor, but that it is similar for clients of Big 4 and Mid-tier auditors.

## **4.2 Investor Perspective (“E-loading” and “Ex ante equity risk premium”) Models**

### ***4.2.1 Descriptive Statistics***

Table 5 reports descriptive statistics and correlation coefficients for the dependent and independent variables in our investor perspective regressions. Specifically, Panels A and B report descriptive statistics and correlation coefficients for the e-loading analysis (i.e., the regressions with the returns-based representation of information quality – the e-loading metric -- as the dependent variable). For variable e-loading, the mean value reported in panel A is comparable to the mean value reported by Ecker et al. (2006). Separately, the clients included in the investor perspective analysis have analyst following (and IBES coverage) and thus tend to be larger in size. For the test variables BIG4 and MIDTIER, the mean values of 0.8963 and 0.0660 indicate that approximately 89.6 percent and 6.6 percent of the pooled observations have a Big 4 or Mid-tier auditor, respectively. For completeness, panel B reports the correlation matrix, although we diagnose multicollinearity in the regressions using VIFs as discussed later.

Table 5 panels C and D report similar information for the  $r_{avg}$  analysis (i.e., the regressions with the ex ante equity risk premium as the dependent variable). Panel C reports the mean, median, and standard deviation for the four client-specific ex ante equity risk premium metrics ( $r_{gls}$ ,  $r_{ct}$ ,  $r_{ojn}$ , and  $r_{mpeg}$ ) as well as our dependent variable  $r_{avg}$  (the average of the four ex ante equity risk premium metrics). These descriptive statistics are comparable to those reported by Dhaliwal et al. (2006). Panel D reports the correlation coefficients among the four ex ante equity risk premium metrics ( $r_{gls}$ ,  $r_{ct}$ ,  $r_{ojn}$ , and  $r_{mpeg}$ ) as well as the dependent and explanatory variables in the equity risk premium regression. The pair-wise correlations among the ex ante equity risk premium metrics ( $r_{gls}$ ,  $r_{ct}$ ,  $r_{ojn}$ ,  $r_{mpeg}$ , and  $r_{avg}$ ) are similar to those

reported by Dhaliwal et al. (2006). To diagnose multicollinearity in the regressions, we report VIFs below.

#### **4.2.2 Tests of Hypothesis 2**

Table 6 panel A reports regression results with variable e-loading (i.e., the client- and year-specific returns-based representation of information quality) as the dependent variable. In the regression, the low VIFs suggest that multicollinearity is not likely to be a problem in interpreting the regression findings. Also, the control variables in the model (SIZE through NEGEARN) are significant with the predicted signs.

In terms of our Hypothesis H2, the test variables BIG4 and MIDTIER are of interest. In Table 6 panel A, both variables BIG4 and MIDTIER are statistically significant with a *negative* sign. Recall that a *higher* e-loading metric indicates *lower* investor-perceived information quality. Also recall that given the auditor's role of lending credibility to reported earnings by restraining earnings management (so that reported earnings are more reflective of the client's underlying economics), the higher the perceived quality of the audit, the more likely that the client's information (accrual) quality is captured in a lower client-specific e-loading metric. Hence, in Table 6 panel A, the negative sign for the test variables BIG4 and MIDTIER suggests that Big 4 and Mid-tier clients are perceived by investors as reporting higher quality (accrual) information relative to clients of other smaller audit firms. These findings are consistent with the notion that investors are cognizant of the linkage between auditor type and accrual-based earnings management by clients, and view Big 4 and Mid-tier auditors as providing audits of higher quality relative to other smaller auditors.

Separately, note that an F-test that the coefficients for the BIG4 and MIDTIER test variables are equal could not be rejected ( $F = 0.77$ ,  $p = 0.379$ ). These results suggest that investors perceive the Big 4 and Mid-tier firms as providing audits of similar quality, and is consistent with our earlier finding (from a preparer perspective) that the level of accrual-based earnings management is similar for Big 4 and Mid-tier audit clients. Collectively, these findings lead us to reject Hypotheses 2A and 2B, but not Hypothesis 2C. In other words, during 2003-06, we find that the investor-perceived information (accruals) quality varies across clients by type of auditor, but that it is similar for clients of Big 4 and Mid-tier auditors.

### 4.2.3 Tests of Hypothesis 3

Table 6 panel B reports regression results with variable  $r_{avg}$  (the client-specific ex ante equity risk premium) as the dependent variable. Once again, the low VIFs suggest that multicollinearity is not likely to be a problem in interpreting the regression findings. Also, the control variables in the model (BM through REC\_RET) are significant with the predicted signs. Note that the model also includes industry dummies, although the industry-specific intercepts are not reported in the Table for brevity.

In terms of our Hypothesis H3, the test variables once again are BIG4 and MIDTIER. As discussed previously, to the extent that investors are aware of the linkage between audit quality and earnings management, investors may perceive client-specific information quality differentials across auditor groups. Further, to the extent that information quality is a priced risk factor, the client-specific ex ante equity risk premium may be expected to be associated with the type of auditor (Big 4, Mid-tier, or other). However, as noted previously, given the recent experience with Arthur Andersen, it may no longer be valid to view audit firm size as an indicator of audit quality. From this perspective, the sign for the test variables BIG4 and MIDTIER in the regression cannot be predicted.

However, an alternative view (also discussed previously) is that the client-specific ex ante equity risk premium is driven by insurance-related considerations rather than by differences in perceived information quality (Khurana and Raman 2004). Put differently, a Big 4 audit (relative to audits by Mid-tier and other smaller audit firms) is expected to be associated with a lower client-specific ex ante equity risk premium by virtue of the Big 4 auditor's financial resources ("deep pockets"). Based on this view, the predicted sign for the BIG4 test variable is negative.

In Table 6 panel B, variable BIG4 is significant with a *negative* sign. By contrast, variable MIDTIER is not significant. Also, an F-test that the coefficients for the BIG4 and MIDTIER test variables are equal is rejected ( $F = 18.51$ ,  $p = 0.001$ ). Thus, although our earlier findings (from a preparer perspective) was that the Big 4 and Mid-tier firms provide audits of similar quality, in Table 6 panel B we find that only Big 4 audits are associated with a lower ex ante equity risk premium. Consistent with Khurana and Raman (2004), these findings suggest that what is being priced in the ex ante equity risk premium for audit clients is not audit quality but rather the insurance-related considerations associated

with the type of auditor, i.e., the Big 4 auditor's financial resources ("deep pockets"). Collectively, the evidence leads us to reject Hypotheses 3A and 3C, but not Hypothesis 3B. In other words, during 2003-06 we find that the ex ante equity risk premium varies across clients by type of auditor, but that it is similar for clients of Mid-tier and other smaller firm auditors.

### 4.3 Additional Analysis

In examining the Mid-tier auditors in our sample, we noticed that the two smaller audit firms in this group (Crowe Chizek and McGladrey Pullen) accounted for only 125 observations (out of a total of 1,361 Mid-tier observations) during 2003-06.<sup>26</sup> In additional analysis, we narrowed the definition of Mid-tier to only the two larger auditors in this group (Grant Thornton and BDO Seidman). The results from this alternative analysis were similar to those reported in the paper, i.e., we found Big 4 and Mid-tier audit clients to have *lower* levels of accrual-based earnings management and *higher* levels of real-activity based earnings management (relative to other smaller audit firm clients) during 2003-06. In both cases, as before, we were unable to reject the null that the level of earnings management (whether accrual-based or real-activity based) is similar for Big 4 and Mid-tier audit clients. With respect to the e-loading metric, the findings again were similar, i.e., the investor-perceived information (accruals) quality is *higher* for Big 4 and Mid-tier audit clients (relative to other smaller audit firm clients). Once again, we were unable to reject the null that the e-loading metric is similar for Big 4 and Mid-tier audit clients. Finally, with respect to the client-specific ex ante equity risk premium, we found this metric to be *lower* for Big 4 clients (relative to both Mid-tier and other smaller audit firm clients). Also, we found the equity risk premium to be similar for Mid-tier and other smaller audit firm clients. Thus, our findings (both individually and collectively) were robust to re-defining the Mid-tier auditor group as consisting of only Grant Thornton and BDO Seidman.

## 5. CONCLUDING REMARKS

Our study examines audit quality differences across Big 4, Mid-tier, and other smaller auditors during 2003-06. We include in our analyses only those Big 4 clients for whom the Mid-tier firms are

---

<sup>26</sup> As noted previously (fn. 2), we identified four firms (Grant Thornton, BDO Seidman, Crowe Chizek, and McGladrey Pullen) as Mid-tier firms for our study.

potentially viable as auditors. Prior research views the auditor's role as one of enhancing the credibility of financial reporting by restraining earnings management, i.e., reporting earnings that are more reflective of the client's underlying economics. Thus, higher audit quality is viewed as being associated with less opportunistic reporting. We examine both accrual-based as well as real-activity based earnings management. Our findings suggest that relative to clients of other smaller auditors, both Big 4 and Mid-tier auditor clients have (1) *lower* (but similar) levels of accrual management, and (2) *higher* (but also similar) levels of real earnings management. Collectively, the evidence suggests that the level of earnings management is similar for Big 4 and Mid-tier clients, implying that Big 4 and Mid-tier auditors provide audits of similar quality.

From an investor perspective, our analysis indicates that the e-loading metric – a measure of investor-perceived information (accruals) quality -- is similar for Big 4 and Mid-tier audit clients, which suggests that investors perceive Big 4 and Mid-tier auditors as providing audits of similar quality. However, we find the ex ante equity risk premium to be lower only for Big 4 clients. Consistent with prior research (GAO 2008, Khurana and Raman 2004), this latter finding appears to be driven by the insurance role of the audit rather than by audit quality considerations. Put differently, the lower equity risk premium for Big 4 clients is explained by the auditor's "deep pockets," i.e., the Big 4 auditor's financial resources and greater ability to share more of the investor losses in the event of client failure.

Our findings have implications for the ongoing debate about auditor concentration and Big 4 dominance of the audit market (Committee on Capital Market Regulation 2006; US Chamber of Commerce 2006, 2007). Our finding that Big 4 and Mid-tier auditors provide audits of similar quality suggests that in situations where a Mid-tier auditor is viable, Big 4 clients could utilize a Mid-tier auditor – and thereby reduce auditor concentration – without adversely affecting audit quality. Separately, since the demise of Arthur Andersen, various initiatives have sought to limit auditor liability to avoid the potential loss of another Big 4 firm. To the extent that the lower equity risk premium for Big 4 clients is driven by insurance considerations, any limit on auditor liability is likely to lower the insurance-related attractiveness of Big 4 auditors. Thus, a cap on Big 4 auditor liability could have the unintended effect of

lowering Big 4 market dominance by making Mid-tier auditors more acceptable to investment bankers, institutional investors, and audit clients.

**REFERENCES**

- Aboddy, D., J. Hughes, and J. Liu. 2005. Earnings quality, insider trading, and cost of capital. *Journal of Accounting Research* 43(5): 651-673.
- Ashbaugh, H., R. LaFond, and B. Mayhew. 2003. Do nonaudit services compromise auditor independence? Further evidence. *The Accounting Review* 78(3): 611-639.
- Barth, M., J. Elliott, and M. Finn. 1999. Market rewards associated with increasing earnings patterns. *Journal of Accounting Research* 37: 387-413.
- Bartov, E., D. Givoly, and C. Hayn. 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33: 173-204.
- Basu, S. 2004. What do we learn from two new accounting-based stock market anomalies? *Journal of Accounting and Economics* 38: 333-348.
- Beatty, R. 1989. Auditor reputation and the pricing of initial public offerings. *The Accounting Review* (October): 693-709.
- Beaver, W., P. Kettler, and M. Scholes. 1970. The association between market determined and accounting determined risk measures. *The Accounting Review* (October): 654-681.
- Becker, C., M. Defond, J. Jiambalvo, and K. Subramanyam. 1998. The effects of audit quality on earnings management. *Contemporary Accounting Research* 15(1): 1-24.
- Bhattacharya, U., H. Daouk, and M. Welker. 2003. The world price of earnings opacity. *The Accounting Review* 78(3): 641-678.
- Botosan, C. 1997. Disclosure level and the cost of equity capital. *The Accounting Review* 72: 323-349.
- Botosan, C., and M. Plumlee. 2005. Assessing alternative proxies for the expected risk premium. *The Accounting Review* 80(1): 21-54.
- Botosan, C., and M. Plumlee. 2002. A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research* 40: 21-40.
- Bowen, R., L. DuCharme, and D. Shores. 1995. Stakeholders' implicit claims and accounting method choice. *Journal of Accounting and Economics* 20(December): 255-295.
- Brennan, M., and A. Subrahmanyam. 1996. Market microstructure and asset pricing: on the compensation for illiquidity in stock returns. *Journal of Financial Economics* 41(3): 441-464.
- Buck, T. 2006. Accountancy Big 4 merit liability cap. *Financial Times* (October 27): p. 2.
- Buck, T., and B. Jopson. 2006. Brussels study backs cap on auditor liabilities. *Financial Times* (October 4): p. 2.
- Cahan, S., and W. Zhang. 2006. After Enron: auditor conservatism and ex-Andersen clients. *The Accounting Review* 81(1): 49-82.
- Cameron, A., J. Gelbach, and D. Miller. 2006. Robust inference with multi-way clustering. Working paper: University of California-Davis.

Casterella, J., W. Knechel, and P. Walker. 2002. The relationship of audit failures and auditor tenure. Working paper: Colorado State University.

Chang, H., J. Chen, W. Liao, and B. Mishra. 2006. CEOs'/CFOs' swearing by the numbers: Does it impact share price of the firm? *The Accounting Review* 81(1): 1-27.

Chen, S., T. Shevlin, and Y. Tong. 2007. Does the pricing of financial reporting quality change around dividend changes? *Journal of Accounting Research* 45(1): 1-40.

Chung, H., and S. Kallapur. 2003. Client importance, nonaudit services, and abnormal accruals. *The Accounting Review* 78(4): 931-956.

Claus, J., and J. Thomas. 2001. Equity premia as low as three percent? Empirical evidence from analysts' earnings forecasts for domestic and international stock markets. *Journal of Finance* (October): 1629-1665.

Cohen, D., A. Dey, and T. Lys. 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes Oxley periods. *The Accounting Review* (forthcoming).

Committee on Capital Markets Regulation. 2006. *Interim Report*. (November 30): Washington, D.C. <http://www.capmksreg.org/research.html>.

Core, J., W. Guay, and R. Verdi. 2008. Is accruals quality a priced risk factor? *Journal of Accounting and Economics* (in press).

Cox, C. 2005. Speech by SEC Chairman. Remarks Before the 2005 AICPA National Conference on Current SEC and PCAOB developments. (December 5): [www.sec.gov](http://www.sec.gov).

Davis, L., B. Soo, and G. Trompeter. 2003. Auditor tenure, auditor independence, and earnings management. Working paper: Boston College.

DeAngelo, L. 1981. Auditor size and audit quality. *Journal of Accounting and Economics* (December): 183-199.

DeAngelo, H., L. DeAngelo, and D. Skinner. 1994. Accounting choice in troubled companies. *Journal of Accounting and Economics* 18: 113-143.

Dechow, P., and I. Dichev. 2002. The quality of accruals and earnings: the role of accrual estimation errors. *The Accounting Review* 77(Supplement): 35-59.

Dechow, P., and D. Skinner. 2000. Earnings management: Rconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons* 14(2): 235-250.

DeFond, M., and J. Jiambalvo. 1994. Debt covenant effects and the manipulation of accruals. *Journal of Accounting and Economics* 17: 145-176.

Dhaliwal, D., S. Heitzman, and O. Li. 2006. Taxes, leverage, and the cost of equity capital. *Journal of Accounting Research* 44(4): 691-723.

Dopuch, N., and D. Simunic. 1982. Competition in auditing research: An assessment. *Fourth Symposium on Auditing Research*. (University of Illinois): 403-450.



- Easton, P. 2004. PE Ratios, PEG Ratios, and Estimating the implied expected rate of return on equity capital. *The Accounting Review* 79: 73-95.
- Ecker, F., J. Francis, I. Kim, P. Olsson, and K. Schipper. 2006. A returns-based representation of earnings quality. *The Accounting Review* 81(4): 749-780.
- Fama, E., and K. French. 1997. Industry costs of equity. *Journal of Financial Economics* (43): 153-193.
- Fama, E., and K. French. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* (33): 3-56.
- Fields, L., D. Fraser, and M. Wilkins. 2004. An investigation of the pricing of audit services for financial institutions. *Journal of Accounting and Public Policy* 23: 53-77.
- Francis, J., D. Nanda, and P. Olsson. 2008. Voluntary disclosure, earnings quality, and cost of capital. *Journal of Accounting Research* 46(1): 53-99.
- Francis, J., D. Philbrick, and K. Schipper. 1994. Shareholder litigation and corporate disclosures. *Journal of Accounting Research* 32 (Autumn): 137-164.
- Francis, J., R. La Fond, P. Olsson, and K. Schipper. 2004. Cost of capital and earnings attributes. *The Accounting Review* 79(4): 967-1010.
- Francis, J., R. La Fond, P. Olsson, and K. Schipper. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39: 295-327.
- Francis, J., E. Maydew, and H. Sparks. 1999. The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice and Theory* 18(2): 17-34.
- General Accounting Office (GAO). 2008. *Audits of Public Companies: Continued Concentration in Audit Market for Large Public Companies Does Not Call for Immediate Action*. Washington DC: GAO.
- General Accounting Office (GAO). 2003. *Public Accounting Firms: Mandated Study on Consolidation and Competition*. Washington DC: GAO.
- Gebhardt, W., C. Lee, and B. Swaminathan. 2001. Toward an implied cost of capital. *Journal of Accounting Research* 39(1): 135-176.
- Ghosh, A., and D. Moon. 2005. Auditor tenure and perceptions of audit quality. *The Accounting Review* 80: 585-612.
- Gode, D., and P. Mohanram. 2003. Inferring the cost of capital using the Ohlson-Juettner model. *Review of Accounting Studies* 8: 399-433.
- Graham, J., C. Harvey, and S. Rajagopal. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40: 3-73.
- Guay, W., S. Kothari, and S. Shu. 2005. Properties of implied cost of capital using analysts' forecasts. Working paper: University of Pennsylvania.
- Gunny, K. 2005. What are the consequences of real earnings management? Unpublished paper: University of Colorado.

- Hail, L., and C. Leuz. 2006. International differences in cost of equity: Do legal institutions and securities regulation matter? *Journal of Accounting Research* 44: 485-531.
- Heninger, W. 2001. The association between auditor litigation and abnormal accruals. *The Accounting Review* 76(1): 111-126.
- Hribar, P., and D. Nichols. 2006. The use of unsigned earnings quality measures in tests of earnings management. Cornell University: Working paper.
- Ittner, C., D. Larcker, D., R. Lambert. 2003. The structure and performance consequences of equity grants to employees of new economy firms. *Journal of Accounting and Economics* 34 (1-3): 89-127.
- Johnson, C. 2007. Accounting for the future. *The Washington Post* (March 9): D1.
- Johnson, V., I. Khurana, and J. Reynolds. 2002. Audit-firm tenure and the quality of financial reports. *Contemporary Accounting Research* 19(4): 637-660.
- Jones, J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29(2): 193-228.
- Jopson, B. 2007. Unknown auditor? Not in my backyard, thank you. *Financial Times* April 26: p. 20.
- Jopson, B. 2006. Audit firms fight back against Big 4. *Financial Times* March 27: p. 20.
- Khurana, I., and K. Raman. 2004. Litigation risk and the financial reporting credibility of Big 4 versus non-Big 4 audits: Evidence from Anglo-American countries. *The Accounting Review* 79(2): 473-495.
- Kinney, W. 2005. The auditor as gatekeeper: A perilous expectation gap. In: Lorsch, J., L. Berlowitz, and A. Zelleke (eds.). *Restoring Trust in American Business*. MIT Press: Cambridge, MA, pp. 99-108.
- Kothari, S., A. Leone, and C. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39(1): 163-197.
- La Porta, R. 1996. Expectations and the cross-section of stock returns. *Journal of Finance* 51: 1715-1742.
- Lambert, R., C. Leuz, and R. Verrecchia. 2007. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research* 31 (May): 385-420.
- Lang, M., and R. Lundholm. 1993. Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research* 31 (Autumn): 246-271.
- Lee, H., and V. Mande. 2003. The effect of the Private Securities Litigation Reform Act of 1995 on accounting discretion of client managers of Big 6 and non-Big 6 auditors. *Auditing: A Journal of Practice and Theory* 22(1): 93-108.
- Levitt, A. 1998. *The Numbers Game*. Unpublished remarks of the Chairman of the US Securities and Exchange Commission delivered at the New York University Center for Law and Business (September): [www.sec.gov](http://www.sec.gov).
- Matsumoto, D. 2002. Management's incentives to avoid negative earnings surprises. *The Accounting Review* 77(3): 483-514.

- Menon, K., and D. Williams. 2004. Former audit partners and abnormal accruals. *The Accounting Review* 79(4): 1095-1118.
- Michaels, A., and A. Parker. 2004. Seeking protection: as legal risks grow amid corporate scandals, auditing's Big 4 plead for limits to liability. *Financial Times* (May 21): 11.
- Myers, J., L. Myers, and T. Omer. 2003. Exploring the term of auditor-client relationship and the quality of earnings: a case for mandatory auditor rotation? *The Accounting Review* 78(3): 779-799.
- Nelson, M. 2006. Ameliorating conflicts of interest in auditing: Effects of recent reforms on auditors and their clients. *Academy of Management Review* 31(1): 30-42.
- Nusbaum, E. 2005. Manager's Journal: We need more than the Big 4. *Wall Street Journal* (January 25): B2.
- O'Hara, M. 2003. Presidential address: Liquidity and price discovery. *Journal of Finance* 58: 1335-1354.
- Ohlson, J., and B. Juettner-Nauroth. 2000. Expected EPS and EPS growth as determinants of value. New York University: Working paper.
- Palmrose, Z. 2006. Maintaining the value and viability of auditors as gatekeepers under SOX: An auditing master proposal. In: Fuchita, Y., and R. Litan (eds.). *Financial Gatekeepers: Can They Protect Investors?* Brookings Institution: Washington, D.C., pp. 103-135.
- Paulson, H. 2007. The key test of accurate financial reporting is trust. *Financial Times* (May 17): 11.
- Petersen, M. 2006. Estimating standard errors in finance panel data sets: Comparing approaches. Working paper: Northwestern University and NBER.
- Public Oversight Board (POB). 2002. *Final Annual Report 2001*. Stamford, CT: POB.
- Rangan, S. 1998. Earnings management and the performance of seasoned equity offerings. *Journal of Financial Economics* 50: 101-122.
- Reilly, D. 2007. How a chastened KPMG got by tax-shelter crisis. *Wall Street Journal* Feb 15: A1.
- Reilly, D. 2006a. Booming audit firms seek shield from suits. *Wall Street Journal* (November 1): C1.
- Reilly, D. 2006b. Panel seeks cap on liability of accounting firms. *Wall Street Journal* (November 30): C2.
- Reynolds, J., and J. Francis. 2000. Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics* (30): 375-400.
- Roychowdhury, S. 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42: 335-370.
- Simunic, D., and M. Stein. 1987. *Product Differentiation in Auditing: Auditor Choice in the Market for Unseasoned New Issues*. Vancouver, Canada: The Canadian Certified General Accountants' Research Foundation.
- Solomon, D. 2007. Treasury targets financial fixes. *Wall Street Journal* (May 18): A2

Stein, J. 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behavior. *The Quarterly Journal of Economics* (November): 655-669.

Subramanyam, K. 1996. The pricing of discretionary accruals. *Journal of Accounting and Economics* 22: 249-281.

Sweeney, A. 1994. Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics* 17(3): 281-308.

Teoh, S., and T. Wong. 1993. Perceived auditor quality and the earnings response coefficient. *The Accounting Review* 68(2): 346-366.

Teoh, S., I. Welch, and T. Wong. 1998. Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics* 50: 63-99.

The American Assembly. 2003. *The Future of the Accounting Profession*. Columbia University: New York, NY.

The American Assembly. 2005. *The Future of the Accounting Profession: Auditor Concentration*. Columbia University: New York, NY.

Thompson, S. 2006. Simple formulas for standard errors that cluster by both firm and time. Working paper: Harvard University.

US Chamber of Commerce. 2006. *Auditing: A Profession at Risk*. Washington, DC: US Chamber of Commerce.

US Chamber of Commerce. 2007. *Commission on the Regulation of US Capital Markets in the 21<sup>st</sup> Century*. Washington, DC: US Chamber of Commerce.

Warfield, T. D., J. J. Wild, and K. L. Wild. 1995. Managerial ownership, accounting choices, and informativeness of earnings. *Journal of Accounting and Economics* 20 (1): 61-91.

White, H. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48: 817-838.

Zmijewski, M. 1984. Methodological issues related to the estimation of financial distress. *Journal of Accounting Research* 22(Supplement): 59-82.

**Table 1. Definition of Variables****Panel A. Preparer Perspective “Earnings Management” Model**

<b>Variable</b>	<b>Definition</b>
<b>Dependent Variable</b>	
ABAM	Accrual-based earnings management metric, based on the absolute value of asset-deflated performance-adjusted abnormal accruals estimated using the cross-sectional modified Jones (1991) model. The <i>higher</i> the metric, the <i>higher</i> the earnings management.
RM_PROXY	Composite real activity-based earnings management metric, based (consistent with Cohen et al. 2008) on the sum of the standardized abnormal operating cash flows, abnormal production costs, and abnormal discretionary expenses. Consistent with Cohen et al. (2007), the higher the metric, the higher the earnings management.
<b>Test Variables</b>	
BIG4	=1 if auditor is a Big 4 auditor; 0 otherwise.
MIDTIER	=1 if auditor is a Mid-tier auditor (Grant Thornton, BDO Seidman, Crowe Chizek, or McGladrey & Pullen); 0 otherwise.
<b>Control Variables</b>	
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.
LEVERAGE	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).
SDSALES	Standard deviation of asset-deflated sales, calculated over the current and prior four years.
SDROA	Standard deviation of asset-deflated earnings before extraordinary items and discontinued operations, calculated over the current and prior four years.
SDCFFO	Standard deviation of asset-deflated cash flow from operations, calculated over the current and prior four years.
AM	Accrual-based earnings management metric, based on the signed value of asset-deflated performance-adjusted abnormal accruals estimated using the cross-sectional modified Jones (1991) model. This control variable appears only in the model with variable RM_PROXY (real-activity based earnings management) as the dependent variable.

Table 1. Definition of Variables (Contd.)

## Panel B. Investor Perspective “e-loading” Model

Variable	Definition
<b>Dependent Variable</b>	
e-loading	Returns-based client- and year-specific measure of accounting information quality based on Ecker et al. (2006). The <i>higher</i> the metric, the <i>lower</i> the information quality.
<b>Test Variable</b>	
BIG4	=1 if auditor is a Big 4 auditor; 0 otherwise.
MIDTIER	=1 if auditor is a Mid-tier auditor (Grant Thornton, BDO Seidman, Crowe Chizek, or McGladrey & Pullen); 0 otherwise.
<b>Control Variables</b>	
SIZE	Natural log of total assets (in millions of \$) at the balance sheet date.
SDCFFO	Standard deviation of asset-deflated cash flow from operations, calculated over the current and prior four years.
SDSALES	Standard deviation of asset-deflated sales, calculated over the current and prior four years.
OPCYCLE	Natural log of the sum of days receivables and days inventory.
NEGEARN	=1 if earnings are negative, 0 otherwise.

Table 1. Definition of Variables (Contd.)

Panel C. Investor Perspective “Ex Ante Equity Risk Premium ( $r_{avg}$ )” Model

Variable	Definition
<b>Dependent Variable</b>	
$r_{avg}$	Average of four client-specific ex ante equity risk premium metrics ( $r_{gls}$ , $r_{ct}$ , $r_{ojn}$ , and $r_{mpeg}$ ) 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), Gode and Mohanram (2003), and Easton (2004), respectively. The <i>higher</i> the metric, the <i>higher</i> the client-specific equity risk premium.
<b>Test Variables</b>	
BIG4	=1 if auditor is a Big 4 auditor; 0 otherwise.
MIDTIER	=1 if auditor is a Mid-tier auditor (Grant Thornton, BDO Seidman, Crowe Chizek, or McGladrey & Pullen); 0 otherwise.
<b>Control Variables</b>	
BM	Book-to-market ratio at the balance sheet date.
LEVERAGE	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, calculated over the current and prior four years.
LTG	Mean analysts’ forecast of long-term earnings growth (in percent) as reported by IBES.
REC_RET	Recent one-year stock return calculated over the 12 month period preceding the measurement of the dependent variable $r_{avg}$ .



**Table 2. Sample Selection and Composition****Panel A. Sample Selection**

Firm-year observations during 2003-2006 (excluding utilities and financial services firms) with performance-adjusted abnormal accruals data estimable.	16,499
Exclude firm-year observations with missing data on control variables	-3,773
<b>Subtotal - observations for preparer perspective model</b>	12,726
Exclude observations with $r_{avg}$ not estimable	-6,858 *
<b>Subtotal - observations for investor perspective model</b>	5,868

\*Firm-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 firm-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  $t+1$ .

**Panel B. Sample Composition by Year (All Observations)**

Year	Preparer perspective model				Investor perspective model			
	Big 4	Mid-tier	Other	Total	Big 4	Mid-tier	Other	Total
2003	2,595	311	493	3,399	1,360	42	25	1,427
2004	2,400	333	628	3,361	1,397	69	47	1,513
2005	2,164	376	708	3,248	1,340	103	56	1,499
2006	1,792	341	585	2,718	1,229	131	69	1,429
	8,951	1,361	2,414	12,726	5,326	345	197	5,868

**Panel C. Sample Composition by Year (Trimmed Sample)\*\***

Year	Preparer perspective model				Investor perspective model			
	Big 4	Mid-tier	Other	Total	Big 4	Mid-tier	Other	Total
2003	2,376	311	493	3,180	1,201	42	25	1,268
2004	2,171	333	628	3,132	1,230	69	47	1,346
2005	1,921	376	708	3,005	1,166	103	56	1,325
2006	1,606	341	585	2,532	1,086	131	69	1,286
	8,074	1,361	2,414	11,849	4,683	345	197	5,225

\*\* As discussed in the paper, all tabulated analyses are based on the "trimmed" sample which excludes Big 4 audit clients whose revenues exceed the revenues of the largest Mid-tier audit client in that year. For 2003 through 2006, the largest Mid-tier client revenues were \$5.27 billion, \$5.95 billion, \$6.17 billion, and \$7.86 billion, respectively. Because of this size cap on Big 4 clients, we lose a total of 877 and 643 Big 4 observations (over the 4 year period) for the preparer and investor perspective models, respectively. The remaining Big 4 clients in the trimmed sample are potentially auditable by Mid-tier auditors, i.e., for all Big 4 clients in the trimmed sample, the Mid-tier firms are potentially viable as auditors. The results for the "untrimmed" or "full" sample were similar to those reported in the paper for the "trimmed" sample.

**Table 3. Descriptive Statistics and Pearson Correlation Matrix  
(Preparer Perspective “Earnings Management” Model )**

**Panel A. Descriptive Statistics<sup>1</sup> (n=11,849)**

	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>
ABAM	0.0874	0.0509	0.1104
RM_PROXY	0.0233	0.0211	0.2335
BIG4	0.6814	1.0000	0.4660
MIDTIER	0.1149	0.0000	0.3189
AUDTEN	7.9177	5.0000	8.0950
SIZE	4.9322	5.0679	2.0884
BM	0.3262	0.4054	1.2444
DISTRESS	0.0979	0.0003	0.2591
CFFO	0.0097	0.0697	0.3205
GROWTH	0.1769	0.0964	0.5003
FINANCE	0.3308	0.0000	0.4705
LEVERAGE	0.2361	0.1356	0.3991
LITIGATION	0.4064	0.0000	0.4912
IMPLICIT	0.0130	0.0044	0.9330
SDSALES	0.4237	0.2352	0.6757
SDROA	0.2829	0.0768	0.9071
SDCFFO	0.1844	0.0738	0.4752
AM	-0.0033	0.0003	0.1408

<sup>1</sup> ABAM is the accrual-based earnings management metric based on absolute asset-deflated performance-adjusted abnormal accruals. RM\_PROXY is the composite real activity-based earnings management metric based on Cohen et al. (2007). Please see Table 1 (panel A) for other variable definitions.

**Table 3. Descriptive Statistics and Pearson Correlation Matrix  
(Preparer Perspective “Earnings Management” Model) - Continued**

**Panel B. Correlation Matrix<sup>2</sup>**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>
1 ABAM	1.00	0.04	-0.27	0.04	-0.14	-0.41	-0.17	0.36	-0.29	0.12	0.21	0.18	0.07	0.13	0.22	0.20	0.23	-0.08
2 RM_PROXY		1.00	0.11	0.01	-0.02	0.10	0.04	-0.04	0.05	0.31	0.07	-0.17	0.12	0.25	0.02	0.04	0.04	-0.26
3 BIG4			1.00	-0.53	0.31	0.60	0.09	-0.25	0.25	-0.05	-0.13	-0.18	0.00	-0.02	-0.20	-0.18	-0.19	-0.09
4 MIDTIER				1.00	-0.22	-0.17	0.00	0.02	-0.01	-0.02	0.02	0.00	0.04	0.02	0.01	-0.02	-0.01	0.00
5 AUDTEN					1.00	0.29	0.05	-0.11	0.11	-0.04	-0.10	-0.04	-0.12	-0.07	-0.13	-0.10	-0.11	-0.01
6 SIZE						1.00	0.14	-0.41	0.44	-0.02	-0.14	-0.23	-0.10	-0.19	-0.28	-0.30	-0.33	-0.13
7 BM							1.00	-0.42	0.15	-0.01	-0.06	-0.43	-0.02	-0.02	-0.08	-0.14	-0.11	0.05
8 DISTRESS								1.00	-0.56	0.02	0.20	0.67	0.05	0.09	0.19	0.33	0.33	-0.16
9 CFFO									1.00	-0.11	-0.27	-0.44	-0.08	-0.24	-0.20	-0.46	-0.46	-0.11
10 GROWTH										1.00	0.19	0.01	0.00	0.04	0.17	0.20	0.22	-0.01
11 FINANCE											1.00	0.17	0.01	0.04	0.13	0.17	0.16	0.01
12 LEVERAGE												1.00	-0.06	-0.07	0.13	0.28	0.26	-0.02
13 LITIGATION													1.00	0.25	0.05	0.08	0.08	-0.02
14 IMPLICIT														1.00	0.05	0.11	0.13	-0.05
15 SDSALES															1.00	0.49	0.53	-0.02
16 SDROA																1.00	0.87	-0.06
17 SDCFFO																	1.00	-0.04
18 AM																		1.00

**Notes:**

<sup>2</sup> N=11,849 for all variables. Please see Table 1 (panel A) for variable definitions. Correlations of .01, .02, and .03 (in absolute value) are significant at the .10, .05, and .01 levels, respectively.

**Table 4. Regression Results (Preparer Perspective “Earnings Management” Model)**

$$y = \alpha + \beta_1 \text{BIG4} + \beta_2 \text{MIDTIER} + \beta_3 \text{AUDTEN} + \beta_4 \text{SIZE} + \beta_5 \text{BM} + \beta_6 \text{DISTRESS} \\ + \beta_7 \text{CFFO} + \beta_8 \text{GROWTH} + \beta_9 \text{FINANCE} + \beta_{10} \text{LEVERAGE} + \beta_{11} \text{LITIGATION} + \beta_{12} \text{IMPLICIT} \\ + \beta_{13} \text{SDSALES} + \beta_{14} \text{SDROA} + \beta_{15} \text{SDCFFO} + \varepsilon$$

**Accrual-based and real activity-based earnings management metrics (ABAM and RM\_PROXY) as dependent variables**

	Expected Sign	ABAM				RM_PROXY			
		Coef.	t-stat	P-value	VIF	Coef.	t-stat	P-value	VIF
Intercept	?	0.11572	28.30	0.000		-0.0551	-5.70	0.000	
BIG4	?	-0.01023	-3.34	0.001	2.30	0.0414	4.72	0.000	2.30
MIDTIER	?	-0.01005	-3.08	0.002	1.50	0.0381	2.79	0.005	1.50
AUDTEN	?	-0.00005	-0.87	0.384	1.16	-0.0007	-2.77	0.006	1.16
SIZE	-	-0.00896	-8.52	0.000	2.10	-0.0062	-5.28	0.000	2.15
BM	-	-0.00321	-4.45	0.000	1.31	0.0003	0.12	0.901	1.31
DISTRESS	?	0.07353	11.36	0.000	2.43	0.0514	2.93	0.003	2.68
CFFO	-	-0.00341	-0.63	0.526	1.98	-0.0325	-1.91	0.056	2.09
GROWTH	+	0.01088	37.12	0.000	1.10	0.1213	19.81	0.000	1.10
FINANCE	+	0.01736	12.25	0.000	1.13	0.0223	6.92	0.000	1.13
LEVERAGE	?	-0.02031	-9.24	0.000	2.08	-0.0832	-7.62	0.000	2.10
LITIGATION	+	0.00174	1.15	0.252	1.10	0.0201	3.61	0.000	1.10
IMPLICIT	?	0.00264	2.87	0.004	1.20	0.0474	14.98	0.000	1.21
SDSALES	?	0.00907	14.67	0.000	1.46	-0.0011	-0.30	0.762	1.46
SDROA	?	-0.0056	-1.86	0.062	4.38	0.0065	1.82	0.069	4.40
SDCFFO	?	0.00739	1.98	0.048	4.67	-0.0074	-0.94	0.349	4.67
AM	?					-0.4024	-12.23	0.000	1.17
Nobs		11,849				11,849			
Adj. R2		25.32%				25.43%			
H <sub>0</sub> : $\beta_1 = \beta_2$									
F-stat		0.010				0.217			
p-value		0.917				0.641			

**Note:**

Please see Table 1 (panel A) for variable definitions. The model is estimated from cross-sectional observations for 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 within-cluster correlation where the audit client and fiscal year comprise the cluster (Cameron et al. 2006; Petersen 2006; Thompson 2005). Where the coefficient sign is not predicted, the reported significance levels are based on two-tailed tests. VIF denotes the variance inflation factor.

**Table 5. Descriptive Statistics and Pearson Correlation Matrix  
(Investor Perspective “e-loading” and “Ex Ante Equity Risk Premium” Models)**

**Panel A. Descriptive Statistics<sup>1</sup> (“e-loading” Model, n=5,225)**

	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>
e-loading	0.1093	0.0361	0.5015
BIG4	0.8963	1.0000	0.3049
MIDTIER	0.0660	0.0000	0.2484
SIZE	6.3021	6.3361	1.3054
SDCFFO	0.0931	0.0571	0.1872
SDSALES	0.3109	0.1954	0.4234
OPCYCLE	4.6031	4.7600	0.9457
NEGEARN	0.1560	0.0000	0.3629

**Panel B. Correlation Matrix<sup>2</sup> (“e-loading” Model, n=5,225)**

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1 e-loading	1.00	-0.13	0.06	-0.24	0.19	0.19	0.09	0.16
2 BIG4		1.00	-0.78	0.27	-0.03	-0.07	-0.03	-0.04
3 MIDTIER			1.00	-0.17	0.01	0.04	0.01	0.05
4 SIZE				1.00	-0.23	-0.23	-0.01	-0.13
5 SDCFFO					1.00	0.47	-0.02	0.10
6 SDSALES						1.00	-0.05	0.08
7 OPCYCLE							1.00	0.03
8 NEGEARN								1.00

<sup>1</sup> Please see Table 1 panel B for variable definitions.

<sup>2</sup> Correlations of .01, .02 and .03 (in absolute value) are significant at the .10, .05, and .01 levels, respectively.

**Table 5. Descriptive Statistics and Pearson Correlation Matrix  
(Investor Perspective “e-loading” and “Ex Ante Equity Risk Premium” Models)**

**Panel C. Descriptive Statistics<sup>1</sup> (“Ex Ante Equity Risk Premium” Model, n=5,225)**

	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>
r <sub>gls</sub>	0.0492	0.0478	0.0232
r <sub>ct</sub>	0.0491	0.0408	0.0402
r <sub>ojn</sub>	0.0656	0.0584	0.0304
r <sub>mpeg</sub>	0.0647	0.0554	0.0379
r <sub>avg</sub>	0.0577	0.0511	0.0302
BIG4	0.8963	1.0000	0.3049
MIDTIER	0.0660	0.0000	0.2484
BM	0.4342	0.3860	0.2581
LEVERAGE	0.1590	0.1247	0.1651
SIZE	6.3021	6.3361	1.3054
BETA	1.3401	1.2553	0.7534
SDROA	0.1172	0.0468	0.3691
LTG	0.2108	0.1667	0.1766
REC_RET	0.3412	0.1845	0.6557

**Panel D. Correlation Matrix<sup>2</sup> (“Ex Ante Equity Risk Premium” Model, n=5,225)**

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>
1 r <sub>gls</sub>	1.00	0.53	0.47	0.44	0.70	-0.05	0.04	0.43	0.13	-0.12	0.01	0.02	0.21	-0.16
2 r <sub>ct</sub>		1.00	0.73	0.54	0.82	-0.11	0.07	0.12	0.09	-0.17	0.03	0.02	0.75	-0.03
3 r <sub>ojn</sub>			1.00	0.87	0.92	-0.11	0.06	0.22	0.09	-0.22	0.09	0.06	0.54	-0.05
4 r <sub>mpeg</sub>				1.00	0.83	-0.10	0.06	0.24	0.07	-0.27	0.14	0.10	0.41	-0.04
5 r <sub>avg</sub>					1.00	-0.11	0.07	0.26	0.11	-0.22	0.08	0.06	0.58	-0.07
6 BIG4						1.00	-0.78	0.00	0.09	0.27	0.00	-0.05	-0.12	-0.01
7 MIDTIER							1.00	0.01	-0.06	-0.17	-0.01	0.02	0.07	0.00
8 BM								1.00	0.04	0.01	-0.05	-0.10	-0.04	-0.15
9 LEVERAGE									1.00	0.35	-0.11	-0.10	-0.11	-0.01
10 SIZE										1.00	-0.06	-0.17	-0.33	-0.16
11 BETA											1.00	0.12	0.08	-0.02
12 SDROA												1.00	0.13	0.15
13 LTG													1.00	0.11
14 REC_RET														1.00

<sup>1</sup> Please see Table 1 panel C for variable definitions.

<sup>2</sup> Correlations of .01, .02 and .03 (in absolute value) are significant at the .10, .05, and .01 levels, respectively.

**Table 6. Regression Results (Investor Perspective “e-loading” and “Ex Ante Equity Risk Premium” Models) <sup>1</sup>**

**Panel A. “E-loading” as Dependent Variable**

$$e - \text{LOADING} = \alpha + \beta_1 \text{BIG4} + \beta_2 \text{MIDTIER} + \beta_3 \text{SIZE} + \beta_4 \text{SDCFFO} + \beta_5 \text{SDSALES} \\ + \beta_6 \text{OPCYCLE} + \beta_7 \text{NEGEARN} + \varepsilon$$

	<b>Expected</b>		<b>Robust</b>		
	<b>Sign</b>	<b>Coef</b>	<b>t-stat</b>	<b>p-value</b>	<b>VIF</b>
Constant	?	0.4447	3.63	0.000	
BIG4	?	-0.2516	-2.71	0.007	2.71
MIDTIER	?	-0.2074	-3.68	0.000	2.58
SIZE	-	-0.0619	-4.89	0.000	1.18
SDCFFO	+	0.2584	4.99	0.000	1.32
SDSALES	+	0.1077	3.10	0.002	1.32
OPCYCLE	+	0.0457	6.23	0.000	1.01
NEGEARN	+	0.1687	13.30	0.000	1.02
Nobs		5225			
Adj. R2		11.66%			
H <sub>0</sub> : $\beta_1 = \beta_2$					
F-stat		0.77			
p-value		0.379			

The dependent variable e-loading is the client- and year-specific information quality metric based on Ecker et al. (2006). Please see Table 1 panel B 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 within-cluster correlation where the audit client and fiscal year comprise the cluster (Cameron et al. 2006; Petersen 2006; Thompson 2005). 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.

**Table 6. Regression Results (Investor Perspective “e-loading” and “Ex Ante Equity Risk Premium” Models) - continued <sup>1</sup>**

**Panel B. “Ex Ante Equity Risk Premium ( $r_{avg}$ )” as Dependent Variable**

$$r_{avg} = \alpha + \beta_1 BIG4 + \beta_2 MIDTIER + \beta_3 BM + \beta_4 LEVERAGE + \beta_5 SIZE + \beta_6 BETA + \beta_7 SDROA + \beta_8 LTG + \beta_9 REC\_RET + \sum_{xx=1}^{xx=40} \delta_{xx} INDUSTRY_{xx} + \varepsilon$$

	Expected Sign	Coef	Robust t-stat	p-value	VIF
INTERCEPT	?	0.0489	13.11	0.000	
BIG4	-	-0.0027	-1.84	0.033	2.76
MIDTIER	?	0.0007	0.50	0.617	2.62
BM	+	0.0258	20.66	0.000	1.14
LEVERAGE	+	0.0385	10.50	0.000	1.29
SIZE	-	-0.0035	-6.70	0.000	1.48
BETA	+	0.0017	3.05	0.002	1.16
SDROA	+	0.0019	3.15	0.002	1.10
LTG	+	0.1020	43.07	0.000	1.15
REC_RET	-	-0.0066	-3.34	0.001	1.10
Nobs		5225			
Adj. R2		52.90%			
H <sub>0</sub> : $\beta_1 = \beta_2$					
F-stat		18.51			
p-value		0.001			

The dependent variable  $r_{avg}$  is the client- and year-specific ex ante equity risk premium. Please see Table 1 panel C 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 within-cluster correlation where the audit client and fiscal year comprise the cluster (Cameron et al. 2006; Petersen 2006; Thompson 2005). Reported significance levels are based on two-tailed tests (where the sign is not predicted) and one-tail otherwise. Coefficient estimates for INDUSTRY<sub>xx</sub> are omitted for brevity. VIF denotes the variance inflation factor.