

Internal Control Weaknesses and Client Risk Management

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Abstract

The Sarbanes-Oxley Act (SOX) has substantially increased the legal liability of auditors of public companies, and thus properly managing client-related risk has added significance for public accounting firms. Client-related risk can be classified into audit risk and client business risk; and audit risk can be further classified into inherent risk and control risk. Because information on a client's control risks was not publicly available prior to the enactment of SOX, previous studies on auditors' risk management strategies, such as Johnstone and Bedard (2003), used proprietary datasets from public accounting firms. Since public companies are now required to disclose information on their internal controls under SOX Section 404, this mandated disclosure on internal controls enables us to measure firms' control risk objectively, and study auditors' risk management strategies based on publicly available information.

Using a broad sample of 2,300 firms from AuditAnalytics, we document the empirical relations between internal control weaknesses and auditors' client risk management strategies. First, we find that clients with internal control weaknesses pay higher audit fees and experience larger increases in audit fees. Second, we find that clients with internal control weaknesses are more likely to be flagged with modified audit opinions. Third, we find that auditor turnover is more likely for firms with internal control weaknesses after controlling for audit fee. Since auditor turnover can be initiated by either the auditor or the client, we further classify auditor turnover into two categories: auditor resignation and auditor dismissal. In our multinomial logit analysis, we find that both auditor resignation and auditor dismissal are more likely for firms with internal control weaknesses.

Our comprehensive evidence suggests that auditors adopt an array of strategies to manage client-related risks. First, auditors price audit risk and client business risk into the audit fee, if they deem the risk/return is at an acceptable level. Second, auditors further protect themselves by issuing modified audit opinions to risky firms and thus reduce their exposure to potential litigations. Third, auditors resign from high-risk clients, if they assess that the risk/return is at an unacceptable level.

Internal Control Weaknesses and Client Risk Management

1. Introduction

The Sarbanes-Oxley Act (SOX) of 2002 has changed the regulatory landscape for the accounting profession, especially for auditors of public companies. The Public Accounting Oversight Board (PCAOB) was created to monitor auditors' work directly. In addition, conflicts of interest are prohibited and civil- and criminal liabilities are imposed for any violations. Consequently, SOX has substantially increased legal liability for accountants. Before SOX, auditors would typically face liability only after a client collapsed, but now they face significant legal consequences for any violations of SOX. For example, a PCAOB inspection could result in suspension or termination of an auditor's registration status, without which the auditor is prohibited from performing audits of public companies. In an extreme case, an accountant could be sentenced to 20 years for willfully destroying or altering documents (Wegman, 2005).

Since auditors now assume greater risk when performing audits of public companies, properly managing client-related risk has added significance for public accounting firms in this post-SOX era. Specifically, client-related risk can be classified into audit risk and client business risk. SAS No. 47 (AICPA, 1983) decomposes audit risk into three components: inherent risk, control risk, and detection risk.¹ In decisions related to client risk management, auditors should focus on inherent risk and control risk, because these two components equal the likelihood of error in clients' accounts prior to the auditors' testing (Elder and Allen, 2003).

¹ The Auditing Standards Board recently issued SAS No. 107, *Audit Risk and Materiality in Conducting an Audit*. The standard retains the concepts of inherent risk, control risk, and detection risk. Combined inherent risk and control risk is the risk of significant misstatement in the financial statements.

Because information on a client's control risks was not publicly available on a large scale prior to the enactment of SOX,² previous studies on auditors' client risk management strategies (i.e. Johnstone and Bedard, 2003, 2004; Bedard and Johnstone, 2004) use proprietary datasets from public accounting firms. Under SOX Section 404 (SOX 404), a firm is required to assess the effectiveness of its internal control structure and procedures for financial reporting, and disclose such information in its annual reports. The firm's auditor is required to provide an opinion on the assessment made by management, and the audit firm also needs to provide its own opinion on the effectiveness of internal control. Such mandatory disclosure on internal controls provides us with an objective and standardized measure of a firm's control risk, and enables us to study auditors' client risk management strategies based on this newly available public information.

Using a broad sample of 2,300 firms from AuditAnalytics, we document the empirical relations between internal control weaknesses and auditors' client risk management strategies. First, we find that clients with internal control weaknesses pay higher audit fees, and experience larger increases in audit fees in the first year of SOX 404 implementation.³ Second, we find that clients with internal control weaknesses are

² Prior to SOX, firms were only required to disclose their internal control problems in 8-Ks when they changed auditors. SAS No. 60 required that the auditor communicate internal control deficiencies to the client's audit committee. However, these communications were not generally publicly available (Krishnan, 2005).

³ The recent contemporaneous work of Raghunandan and Rama (2006) finds that audit fees are associated with internal control weaknesses. Our paper differs from their paper in three aspects. First, we investigate a broader and more general relation between internal control weaknesses and client risk management. Under our framework, pricing internal control weaknesses into audit fees is only one of the three client risk management strategies that we examine. Second, we find that firms with internal control weaknesses experience larger increases in audit fees in the first year of SOX 404 implementation. This finding is absent in their study. Third, Raghunandan and Rama (2006) restrict their study to a sample of 660 manufacturing firms (SIC codes 2000-3999). We do not impose this restriction. As a result, our sample is more comprehensive, covering COMPUSTAT firms from all industries that have SOX 404 disclosure on internal controls.

more likely to be flagged with modified audit opinions. Third, we find that auditor turnover is more likely for firms with internal control weaknesses after controlling for the audit fee variable. Since auditor turnover can be initiated by either the auditor or the client, we further classify auditor turnover into two categories: auditor resignation and auditor dismissal. In our multinomial logit analysis, we find that both auditor resignation and auditor dismissal are more likely for firms with internal control weaknesses.

Our comprehensive evidence suggests that auditors adopt an array of strategies to manage client-related risks. First, auditors price audit risk and client business risk into the audit fee if they deem the risk/return is at an acceptable level. Second, auditors further protect themselves by issuing modified audit opinions to risky firms and thus reduce their exposure to potential litigations. Third, auditors resign from high-risk clients if they assess that the risk/return is at an unacceptable level.

Our paper is related to Johnstone and Bedard (2003, 2004) and Bedard and Johnstone (2004) who study auditors' client risk management using internal client evaluation data from public accounting firms prior to the enactment of SOX. We extend and complement these previous studies in three aspects. First, we focus on the post-SOX period and fully take advantage of the wealth of information on internal controls unleashed by SOX. Since all public U.S. firms with an equity market capitalization over \$75 million are required to disclose information on internal controls under SOX 404 for their first fiscal year ending on or after November 15, 2004, we are able to utilize a larger and more comprehensive sample. Since such disclosure on internal control is mandated under SOX, we obtain and use a more objective measure of a client's control risk in our study, drawing stronger inferences. Second, consistent with these previous studies, we

find that audit fee and auditor turnover are associated with internal control weaknesses, a newly available measure of audit risk. However, different from these previous studies, we further find that modified audit opinions and changes in audit fees are related to internal control weaknesses. The latter evidence on changes in audit fees enables us to gauge the economic impact of SOX 404 on the auditing industry. Third, we expand the conceptual client acceptance model in Johnstone and Bedard (2003). They propose that auditors price audit risk and client business risk into the audit fee, if the risk/return is at an acceptable level, and resign from clients, if the risk/return is at an unacceptable level. Our empirical evidence suggests that auditors also use audit opinions to warn investors and thus mitigate their litigation risks.

Our paper is also related to the growing literature on internal control problems. One strand of the literature focuses on the determinants of internal control problems. Krishnan (2005) finds that independent audit committee characteristics are associated with internal control problems for the period prior to the enactment of SOX. Ge and McVay (2005) and Doyle, Ge, and McVay (2006a) find that material deficiencies in internal control are more likely for firms that are smaller, less profitable, more complex, growing rapidly, or undergoing restructuring. Ashbaugh-Skaife, Collins, and Kinney (2006) find that firms with more complex operations, recent changes in organization structure, more accounting risk exposure, and less investment in internal control systems are more likely to disclose internal control weaknesses. The other strand of the literature focuses on the consequences of internal control problems. Doyle, Ge, and McVay (2006b) find that firms with material deficiencies in internal control tend to have lower accruals quality, whereas Ashbaugh-Skaife, Collins, Kinney, and LaFond (2006) find that

internal control weaknesses are positively related to firm risk and cost of equity capital. Our finding that internal control problems are an important factor in auditors' client risk management strategies adds to the latter strand of literature.

The rest of the paper is organized as follows. Section 2 discusses the background and proposes the hypotheses. Section 3 describes the sample selection procedures. Section 4 presents the empirical results. Section 5 concludes the paper.

2. Background and Hypotheses

2.1 Disclosure on Internal Controls

SOX emphasizes internal control, which is defined as "a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives," according to the COSO framework.⁴ SOX Section 302 (hereafter SOX 302), which went into effect on August 14, 2003, requires management to disclose significant deficiencies in internal control when they certify annual or quarterly financial statements. Specifically, the signing officers, responsible for internal controls, have evaluated these internal controls within the previous ninety days and reported in their findings: (1) a list of all deficiencies in the internal controls and information on any fraud that involves employees who are involved with internal activities; (2) any significant changes in internal controls or related factors that could have a negative impact on the internal controls.

Section 404 not only requires management to provide an assessment of internal

⁴ COSO stands for the Committee of Sponsoring Organizations of the Treadway Commission, who undertook an extensive study of internal control to establish a common definition that would serve the needs of companies, independent public accountants, legislators and regulatory agencies, and to provide a broad framework of criteria against which companies could evaluate the effectiveness of their internal control systems. COSO published its Internal Control -- Integrated Framework in 1992.

control, but also requires auditors to provide an opinion on management's assessment. Specifically, issuers are required to disclose information concerning the scope and adequacy of the internal control structure and procedures for financial reporting in their annual reports. This statement shall also include an assessment of the effectiveness of such internal controls and procedures. The registered auditing firm shall, in the same report, attest to and report on the effectiveness of the internal control structure and procedures for financial reporting. According to the rulings of the Securities and Exchange Commission (SEC), a company that is an "accelerated filer" must comply with SOX 404 for its first fiscal year ending on or after November 15, 2004.⁵ A non-accelerated filer must begin to comply with these requirements for its first fiscal year ending on or after July 15, 2007. A foreign private issuer that files its annual report on Form 20-F or Form 40-F must begin to comply with the corresponding requirements in these forms for its first fiscal year ending on or after July 15, 2006.⁶

2.2. Client-Related Risks

Client-related risks can be classified into audit risk and client business risk. Audit risk is the risk that the auditor will fail to draw attention to a material misstatement, deficiency, abuse, or other unacceptable matter in an audit, and thus issue an incorrect audit opinion, whereas client business risk is "the risk that the client's economic condition will deteriorate in either the short term or long term" (Johnstone, 2000).

⁵ An "accelerated filer" is defined in Exchange Act Rule 12b-2. Generally, it refers to a U.S. company that has equity market capitalization over \$75 million and has filed an annual report with the SEC.

⁶ The SOX compliance information is from www.sec.gov, and the SOX summaries are from www.soxlaw.com.

SAS No. 47 (AICPA, 1983) decomposes audit risk into three components: inherent risk, control risk, and detection risk. Inherent risk is the perceived level of risk that a material misstatement may occur in a client's financial statements in the absence of internal control procedures. Control risk is the perceived level of risk that a material misstatement in the client's financial statements will not be detected and corrected by management's internal control procedures. Detection risk is the perceived level of risk that a material misstatement in the client's financial statements will not be detected by the auditor. Because inherent risk and control risk equal the likelihood of error in clients' accounts prior to the auditors' testing (Elder and Allen, 2003), we focus on these two components of audit risk, as they are most relevant to the auditors' client risk management decisions.

2.3 Hypothesis development

Johnstone and Bedard (2003) propose a conceptual model of client acceptance. An auditor evaluates a client's audit risk and business risk and the associated audit fee from the engagement.⁷ When the risk/return is at an acceptable level, the auditor prices audit risk and client business risk into the audit fee; when the risk/return is at an unacceptable level, the auditor abandons the high-risk client.

The extant literature on client risk management largely focuses on client business risk and related legal liability risk. The relation between audit fee and client business risk is well-documented. For example, Hill, Ramsey, and Simon (1994) find that client

⁷ In addition to audit risk and client business risk, Johnstone and Bedard also discuss auditor business risk, which is defined as "the risk that the auditor firm will suffer loss resulting from the engagement," and measure it with a dummy variable, which is equal to one, if a client is a public company and zero, if a client is a private company. Since our sample includes only public companies, we do not consider auditor business risk in our study.

business risks are positively related to independent auditors' audit fees in the savings and loan (S & L) industry from 1983-1988. Bell, Landsman, and Shackelford (2001) find that high business risk increases the number of audit hours, but not the fee per hour. Seetharaman, Gul, and Lynn (2002) find that U.K. auditors charge higher fees for their services when their clients access U.S., but not non-U.S., capital markets, suggesting that audit fees reflect differences in litigation risks across different liability regimes. The relation between auditor switches and client business risk is also supported. For example, Krishnan and Krishnan (1997) find that litigation risk motivates auditors to resign from their clients. Shu (2000) finds that auditor resignation is positively related to increased client legal exposure.

Recently, Ashbaugh-Skaife, Collins, Kinney, and LaFond (2006) find that firms with internal control weaknesses have higher idiosyncratic risk.⁸ The higher the idiosyncratic risk, the more likely a firm will experience a large drop in stock price which typically triggers shareholder class-action lawsuits. This suggests that firms with internal control weaknesses have additional exposure to litigation risks, and are more likely to inflict damages to their auditors' reputation. Because auditor reputation is used as an important collateral to ensure high-quality audits (DeAngelo, 1981), auditors have incentives to either increase the audit fee to take this idiosyncratic risk into account or withdraw from such clients if the increase in audit fee cannot justify the increase in risk.

Although audit risk factors are found to be more important in audit firm portfolio management decisions than financial risk factors (Johnstone and Bedard, 2004), few

⁸ Ashbaugh-Skaife, Collins, Kinney, and LaFond (2006) measure idiosyncratic risk as the standard deviation of the residuals from the model $EXRET = \beta_0 + \beta_1 RMRF + \varepsilon$, estimated over 2004 and the prior four years using daily returns, where EXRET is the firm's daily return minus the risk free rate and RMRF is the excess return on the market.

studies on client risk management examine the audit risk factors, because proxies for such variables were not publicly available. Using internal client evaluation data from public accounting firms, Johnstone and Bedard (2003, 2004) and Bedard and Johnstone (2004) examine audit risk factors when they study auditors' client risk management strategies. Johnstone and Bedard (2003) find that client acceptance likelihood is reduced in the presence of audit risk, client business risk, and auditor business risk. Selective personnel assignment and pricing strategies can moderate the effects of those risks on client acceptance likelihood and thus bring the risk/return for some potential clients to an acceptance level. Bedard and Johnstone (2004) find that planned audit personnel hours and planned hourly billing rates are significantly higher for firms with weak internal controls. Because the product of planned audit personnel hours and planned hourly billing rates is equal to total audit fee, we have the following hypothesis.

Hypothesis 1: Audit fees are higher for firms with internal control weaknesses.

Although audit fees are destined to increase substantially for all accelerated filers, due to SOX 404 compliance, firms with internal control weaknesses (ICW hereafter) are expected to experience greater audit fee increases, because auditors will incur more testing and more resources to manage the control risk to acceptable levels for these ICW firms. Thus, we propose the following hypothesis.

Hypothesis 2: Audit fee increases are greater for firms with internal control weaknesses.

Our focus on the first year of SOX 404 implementation provides us with a unique opportunity to test Hypothesis 2. While an auditor might be aware of a client's internal control problems prior to SOX, the audit fees in the pre-SOX period would not reflect the ICW, because the auditor did not need to perform the elaborate testing on internal controls required under SOX 404. Consequently, ICW-related risks are priced into the audit fee increases from the year prior to SOX 404 to the first year of SOX 404 implementation. Note that we will not be able to test Hypothesis 2 using the audit fee change information for the second year of SOX 404 implementation and onwards, because the audit fees for the post SOX 404 period will reflect the ICW.

In addition to charging ICW firms higher audit fees, auditors can also manage clients' internal control risk by exercising more caution and issuing modified opinions to ICW firms. Following Bradshaw, Richardson, and Sloan (2001), we define modified audit opinion (OPINION) as an indicator variable, which takes a value of zero for a standard unqualified opinion and a value of one for any other modified opinion, including qualified, adverse, or unqualified with explanatory language.⁹ Krishnan and Krishnan (1996) find that auditors are more likely to issue modified opinions for firms with higher litigation risk, and Blacconiere and DeFond (1997) find that auditors render going-concern reports to the savings and loans that are most likely to fail ex ante. Moreover, Francis and Krishnan (1999), Bartov, Gul, and Tsui (2000), and Bradshaw et al. (2001) find that modified audit opinions are influenced by earnings management, though Butler, Leone, and Willenborg (2004) argue that the documented relation between modified opinions and abnormal accruals in these papers only rests with companies with going-

⁹ COMPUSTAT has six codes for the audit opinion: 0 = unaudited, 1 = unqualified, 2 = qualified opinion, 3 = no opinion, 4 = unqualified with explanatory language, and 5 = adverse. We do not have any firm with an audit opinion code of zero in our sample.

concern opinions or under financial distress. Since these findings indicate that audit opinions are sensitive to various sources of risk, we propose that auditors are more likely to issue modified opinions for firms with internal control weaknesses. We expand the conceptual client acceptance model proposed in Johnstone and Bedard (2003), by incorporating the issuance of modified audit opinions as one of the risk management strategies. Summarizing the discussions in this paragraph, we have the following hypothesis.

Hypothesis 3: Auditors are more likely to issue modified opinions for firms with internal control weaknesses.

Auditor changes can be initiated by either clients or auditors. With regard to client-initiated auditor changes, Williams (1988) argues that companies change auditors, when the contracting environment of the corporation changes, when a company desires a more effective auditor or different services, when a company wants to upgrade a tarnished image, or when a company wants to reduce audit fees. Most of the empirical studies on client-initiated auditor changes tend to focus on audit opinion shopping. For example, Chow and Rice (1982) and Smith (1986) find that companies change auditors more frequently following qualified opinions. Because ICW firms may have incentives to seek more lenient opinions on their internal controls or reduce the ICW-related audit fee increases, we propose the following hypothesis.

Hypothesis 4a: Clients with internal control weaknesses are more likely to dismiss their auditors.

With regard to auditor-initiated auditor changes, the focus is on controlling risk.

Johnstone and Bedard (2003) find that client acceptance likelihood is reduced in the presence of audit risk, client business risk, and auditor business risk; Johnstone and Bedard (2004) find that riskier clients are dropped from an audit firm's client portfolio and newly accepted clients are less risky than the auditor's continuing clients. Therefore, we have the following hypothesis.

Hypothesis 4b: Auditors are more likely to resign from firms with internal control weaknesses.

Since H4a and H4b point toward the same direction, we have combined these two hypotheses and conjecture the following.

Hypothesis 4: Auditor changes are more likely for firms with internal control weaknesses.

SOX offers us a unique opportunity to study auditors' client risk management strategies using public information and test the above hypotheses, because the mandatory disclosure on internal controls under Section 404 provides us with a standardized and objective measure of control risk, a key component of audit risk. In our study of auditors' client risk management strategies, we focus on this newly available public information on internal controls, and use internal control weaknesses to proxy for a firm's control risk.

2.4. Measures of risk variables

Control risk is the perceived level of risk that a material misstatement in a client's financial statements will not be detected and corrected by the management's internal control procedures. Johnstone and Bedard (2003) use data from a public accounting firm's evaluations of prospective clients. Engagement teams in this public accounting firm complete a "yes" or "no" checklist containing fraud risk factors, such as management's characteristics and influence over the control environment, and error risk factors, such as the client's control environment, the complexity of its transactions, and indications of a client's inability to prepare accurate and timely financial reports. They create the fraud risk variable by summing approximately 20 fraud risk factors and the error risk variable by summing five error risk factors for each prospective client. Consequently, control risk is partially embedded in those two measures.

Bedard and Johnstone (2004) and Johnstone and Bedard (2004) use data from a public accounting firm's client continuance and client acceptance decisions. In making these decisions, engagement partners and the firm's risk-management personnel assess the risks associated with their prospective and current clients, including a one-question assessment of the client's overall internal control effectiveness. Bedard and Johnstone (2004) code internal control quality as a dummy variable, using the engagement team's judgment of whether the client has any significant internal control weaknesses, whereas Johnstone and Bedard (2004) measure internal control quality, using the engagement team's assessment on a scale from 1 (high effectiveness) to 5 (low effectiveness). Since SOX requires a firm to disclose internal control assessments in its periodic financial statements, we use this mandated internal control disclosure to measure a firm's control risk. Specifically, we create an ICW variable, which is equal to one, if a firm has a

material weakness in internal control and zero, otherwise. When a firm has such a material weakness, its internal control over financial reporting is deemed to be ineffective.

We control for inherent risk, as it is a component of audit risk. Inherent risk is the perceived level of risk that a material misstatement may occur in the client's unaudited financial statements in the absence of internal control procedures. Johnstone and Bedard (2004) use financial reporting risk, and Bedard and Johnstone (2004) use earnings management risk to capture this concept. Measures of both variables are summed over the responses to various dichotomous questions. Following previous literature such as Xie, Davidson, and DaDalt (2003), we use discretionary accruals (DTACC) to measure financial reporting quality, and hence inherent risk.

We further control for client business risk, as it is part of client-related risks. Since client business risk is "the risk that the client's economic condition will deteriorate in either the short term or long term" (Johnstone, 2000), we control for leverage (LEV), return on assets (ROA), and loss (LOSS) (Johnstone and Bedard, 2003 and 2004; Francis, Reichelt, and Wang, 2005). LEV is the ratio of long-term debt to total assets, ROA is income before extraordinary items divided by average total assets, and LOSS is an indicator variable that is equal to one, if there is a loss in the current year and zero, otherwise.

3. Sample selection

Table 1 describes the sample selection procedures. We retrieve our information on internal control, audit fee, and auditor change from AuditAnalytics and the rest of the information from 2004 COMPUSTAT. AuditAnalytics is a commercial vendor that

delivers detailed auditing-related information, including auditors, audit fees, auditor changes, audit opinions, and SOX 404 internal control disclosures for all publicly registered companies. The internal control dataset provided by AuditAnalytics covers all SEC registrants who have disclosed their assessments of internal controls over financial reporting in electronic filings since November 2004. The data have been principally extracted from the following form types: 10-K, 10-K/A, 20-F and 40-F's. Each observation indicates whether the auditor and management found the SEC registrant's internal controls over financial reporting to be effective under SOX 404. A registrant's internal controls were deemed ineffective if material weaknesses were found in either the auditor's attestation report or the management's report on internal controls. We code our ICW dummy as one, if a firm's internal controls are deemed ineffective and zero, otherwise.

Insert Table 1 here

According to the internal control dataset from AuditAnalytics, 3737 firms submitted SEC filings between November 1, 2004 and December 31, 2005.¹⁰ We exclude 163 firms not in COMPUSTAT¹¹ and 174 firms not in CRSP. We further require that firms be common stocks of domestic U.S. firms (CRSP share code = 10 or 11) and exclude 340 firms that are non-U.S. or non-common stock, such as American Depository Receipts, limited partnerships, closed-end funds, or Real Estate Investment Trusts. Since an accelerated filer must comply with SOX 404 for its first fiscal year

¹⁰ We exclude 6 duplicate observations.

¹¹ AuditAnalytics only provides ticker symbols for sample firms. We retrieve the Cusip information for our sample firms from COMPUSTAT. We first merge our initial sample with COMPUSTAT by the ticker symbol, and hand-adjust any incorrect matches. We then manually search through COMPUSTAT to locate the Cusip information for firms without ticker symbols or firms that cannot be matched to COMPUSTAT by the ticker symbol.

ending on or after November 15, 2004, we focus on the first year of SOX 404 implementation and thus restrict our sample firms to have fiscal year ending between November 15, 2004 and November 14, 2005. We exclude 15 firms whose audit fee information is missing. We also exclude two firms with no SOX 404 disclosure on internal controls. Moreover, we experience data attrition due to missing information in COMPUSTAT. We lose 250 firms for missing necessary information in computing leverage, sales growth, or return-on-assets, 453 firms for missing necessary information in computing discretionary accruals,¹² and 2 firms for missing information on audit opinion. Because a non-accelerated filer needs to comply with the requirements in SOX 404 only for its first fiscal year ending on or after July 15, 2007, we also exclude 38 such firms whose equity market capitalizations were less than \$75 million as of December 31, 2004. Our final sample thus consists of 2,300 accelerated filers with fiscal year ending between November 15, 2004 and November 14, 2005.

Among the 2,300 observations, 71 firms have more than one auditor in a given year. Specifically, 3 firms have three auditors and 68 firms have two auditors. In calculating a firm's fee variables, we aggregate the audit fee, non-audit fee, and total fee across different auditors in a given year for these 71 firms.

In Table 6, we study the relation between audit fee change and internal control weaknesses. For information on audit fee and internal control, we use the current year to denote the first year of SOX 404 implementation, where the fiscal year ends between November 15, 2004 and November 14, 2005, and the previous year to denote the year prior to SOX 404 implementation, where firms' fiscal years end between November 15,

¹² Among the 453 firms that have missing accruals, 410 firms have missing gross property, plant, and equipment (PPE), and 43 firms do not have sufficient information on other variables to calculate accruals.

2003 and November 14, 2004. The audit fee change is thus defined as the difference between the audit fee for the current year and the audit fee for the previous year, divided by the audit fee for the previous year. Because we need two years of audit fee information to calculate audit fee change, we use a slightly smaller sample of 2,270 firms to conduct analyses related to audit fee change.

In Tables 8 and 9, we analyze the impact of internal control weaknesses on auditor changes, and thus require the auditor change information to be either contemporaneous with or after the disclosure of internal control weaknesses. We retrieve the auditor change information from the auditor change dataset provided by AuditAnalytics. During the process, we exclude 10 firms that changed their auditors for their benefit plans, but not for financial reporting.¹³ Out of 2,300 sample firms, we obtain a total of 193 auditor changes (146 dismissals and 47 resignations) between November 15, 2004 and January 31, 2006.

4. Empirical results

4.1. Univariate analyses

Table 2 provides summary statistics for our sample firms. Panel A presents the variables used in the audit fee model in Table 5, audit opinion model in Table 7, and auditor change models in Tables 8 and 9. Among the 2,300 sample firms, 14.0%

¹³ The following is an excerpt from Fulton Financial Corporation's 8K filed on May 7, 2004. "On May 6, 2004, Fulton Financial Corporation ('Fulton') signed an engagement letter dated April 30, 2004, with Crowe Chizek and Company LLC ('Crowe Chizek') to act as independent auditor of the following Fulton Financial Corporation benefit plans: Fulton Financial Affiliates' 401(k) Savings Plan, Fulton Financial Corporation Profit Sharing Plan, Premier Bank 401(k) Savings Plan, Dearden, Maguire, Weaver & Barrett 401(k) Plan, Fulton Financial Affiliates Defined Benefit Pension Plan, and Drivers Defined Benefit Plan (together, the 'Benefit Plans'). Crowe Chizek succeeds Smith Elliott Kearns & Company, LLC, which resigned as independent auditor of the Benefits Plans by letter dated February 4, 2004 (as reported on the Current Report on Form 8-K filed with the Commission on February 6, 2004)."

disclosed internal control weaknesses, 35.2% had a modified audit opinion,¹⁴ 8.4% changed auditors between November 15, 2004 and January 31, 2006, 22.3% incurred losses, and 92.3% were audited by Big 4 firms. The mean (median) audit fee for the sample firms is \$2,520,293 (\$1,219,370); the mean (median) non-audit fee is \$754,615 (\$222,233), and the mean (median) total fee is \$3,274,908 (\$1,488,050). The mean (median) firm size measured by total assets is \$6,119 (\$654) million, and the mean (median) number of business segments is 2.4 (1.0). The mean (median) discretionary accruals is -1.5% (-1.1%) of the lagged total assets. The mean (median) leverage, the ratio of the long-term debt to total assets, is 0.18 (0.12), the mean (median) return on assets is 1.5% (4.4%), and the mean (median) sales growth is 39.1% (13.2%).

Panel B presents the variables used in the audit fee change model in Table 6. We need two years of audit fee data to calculate audit fee change. Since an accelerated filer must comply with SOX 404 for its first fiscal year ending on or after November 15, 2004, we classify a sample firm's audit fee information as the current year's information, if it is for the fiscal year ending between November 15, 2004 and November 14, 2005, and the previous year's information, if it is for the fiscal year ending between November 15, 2003 and November 14, 2004. Because some firms have missing audit fee for the previous year, the number of observations is 2,270 for the Panel B, and hence Table 6. In the first year of SOX 404 implementation, 14% of our sample firms are flagged with ICW under this new regulation. The mean (median) audit fee increase is \$1,160,967 (\$647,422) or 138.5% (115.5%), whereas the mean (median) non-audit fee decrease is \$150,222

¹⁴ Butler, Leone, and Willenborg (2004) report that unqualified opinions with explanatory language became more common when SAS 58 (AICPA, 1988) became effective for reports issued after January 1, 1989, because "subject to" material uncertainties and lack of consistency due to a change in accounting method are no longer considered qualified opinions. According to their study, 27.5% of the firms in Compustat had modified opinions between 1988-1999, compared to 13.8% between 1980 and 1987.

(\$17,833).¹⁵ On the one hand, SOX prohibits a public accounting firm from providing a wide range of non-audit services to an audit client and thus causes a large decrease in the average non-audit fee. On the other hand, the implementation of SOX 404 leads to a substantial increase in the audit fee. For example, Advanced Micro Devices Inc disclosed the following in its 2005 proxy statement.

Audit fees of Ernst & Young LLP during the 2004 and 2003 fiscal years were associated with the annual audit of our consolidated financial statements, statutory audits required internationally, reviews of our quarterly reports filed with the Securities and Exchange Commission and fees related to other regulatory filings. In addition, in 2004, audit fees included those fees related to Ernst & Young LLP's audit of the effectiveness of the Company's internal control pursuant to Section 404 of the Sarbanes-Oxley Act. Audit fees for 2004 were \$10.4 million, \$7 million of which were Sarbanes-Oxley Act Section 404 fees. Audit fees for 2003 were \$2.6 million.

As we can see, the SOX 404 fee is \$7 million for Advanced Micro Devices, resulting in a 300% increase in the audit fee. Without the SOX 404 fee, the audit fee would have been \$3.4 million, representing a more modest increase of 31% over that in 2003.

Table 3 presents the mean and median comparisons for ICW firms and non-ICW firms. Panel A presents the variables used in the audit fee model in Table 5, audit opinion model in Table 7, and auditor change models in Tables 8 and 9. The mean (median) audit fee for ICW firms is higher than that for non-ICW firms. However, the difference is not significant, as we have not controlled for the size effect.¹⁶ The median total assets figure is significantly smaller for ICW firms, though the mean is somewhat larger. This suggests that the ICW subsample has some extremely large observations and we indeed find that AIG, Morgan Stanley, and GE are among the firms flagged with ICW. To minimize the impact of outliers, we take the natural logarithm of audit fee and

¹⁵ We are unable to calculate the percentage change in non-audit fee for some firms, because they have zero non-audit fee in the previous year.

¹⁶ The difference becomes significant after we control for size in our multivariate analysis in Table 4.

total assets in our multivariate regression analyses. Compared to 33.4% of the non-ICW firms, 46.4% of the ICW firms received modified audit opinions. Moreover, 18.7% of the ICW firms changed auditors between November 15, 2004 and January 31, 2006, whereas only 6.7% of the non-ICW firms changed auditors during that time period. The significant differences in modified audit opinion and auditor turnover between these two groups provide preliminary support for Hypothesis 3, that ICW firms are more likely to receive modified audit opinions, and for Hypothesis 4, that ICW firms are more likely to experience auditor turnover. Compared to non-ICW firms, ICW firms tend to have significantly poorer performance (-2.0% mean ROA for ICW firms vs. 2.1% for non-ICW firms). In addition, ICW firms are, on average, more likely to incur a loss (39.6% ICW firms incurred a loss vs. 19.5% for non-ICW firms), more likely to experience lower sales growth (22.9% for ICW firms vs. 41.7% for non-ICW firms), and less likely to be audited by a Big 4 (84.1% for ICW firms vs. 93.6% for non-ICW firms). These differences are significant at the one-percent level. Our univariate results on ROA, LOSS, and firm size are consistent with those in Ge and McVay (2005) and Doyle, Ge, and McVay (2006a) because they find that internal control weaknesses are more likely for firms that are smaller and less profitable.

Panel B presents the variables used in the audit fee change model in Table 6. The average audit fee increase is \$1,334,846 or 182.7% for ICW firms, and \$1,132,640 or 131.3% for non-ICW firms. While audit fees more than doubled for all firms due to the implementation of SOX 404, the increase for ICW firms is significantly greater than that for non-ICW firms. This provides initial support for Hypothesis 2. An average of 1.3% more ICW firms changed from profit to loss from the previous year, whereas an average

of 6.5% more non-ICW firms turned from loss into profit from the previous year.

Compared to non-ICW firms, ICW firms have a significantly smaller average increase in ROA (0.2% for ICW firms vs. 2.0% for non-ICW firms) and in total assets (18.1% for ICW firms and 20.4% for non-ICW firms).

Table 4 provides information on audit opinions and auditor changes conditioned on ICW between November 15, 2004 and January 31, 2006. Panel A presents the frequency of standard unqualified audit opinion and modified audit opinion. 46.4% of the ICW firms and 33.4% of the non-ICW firms received modified audit opinions. This provides an early indication that ICW firms are more likely to have modified audit opinions.

Panel B tabulates the frequency of auditor changes, including dismissal and resignation. 18.7% of the ICW firms and 6.7% of the non-ICW firms changed auditors. More specifically, 9.7% of the ICW firms dismissed their auditors, and 9.0% of the ICW firms had auditor resignations, whereas only 5.8% of the non-ICW firms dismissed their auditors, and 0.9% of the non-ICW firms had auditor resignations. Therefore, the univariate comparisons offer preliminary evidence that ICW may be related to auditor turnover, or more specifically, auditor dismissal and auditor resignation. For example, Metasolv Inc. disclosed that it dismissed KPMG and engaged Grant Thornton on April 5, 2005. The following is an excerpt from its 8-K filed on April 11, 2005.

KPMG's audit report on the effectiveness of internal control over financial reporting as of December 31, 2004, expressed an opinion that MetaSolv, Inc. did not maintain effective internal control over financial reporting as of December 31, 2004 ...

Myers Industries Inc. disclosed that it received the resignation from Ernst & Young on April 13, 2005, and hired KPMG as its new auditor on June 9, 2005. The following is an excerpt from its 8-K filed on June 9, 2005.

As disclosed in the Company's Form 10-K/A filed on May 2, 2005, management concluded that the Company's disclosure controls and procedures were not effective as of December 31, 2004 due to material weaknesses identified in the business segment reporting process, the financial statement close process and the income tax process. E&Y issued an adverse opinion on the effectiveness of internal controls over financial reporting because of these material weaknesses as of December 31, 2004.

These two excerpts from firms' 8-K filings provide further evidence, supporting the relation between auditor turnover, including dismissal and resignation, and internal control weaknesses. We analyze this relation more rigorously in Tables 8 and 9.

Panel C further classifies auditor changes into four categories. Out of 193 auditor changes identified in Panel A, we find successor auditor information for 190 firms. Among these 177 Big 4 clients with auditor changes, 57 firms (12 ICW firms and 45 non-ICW firms) chose Big 4 auditors, and 120 firm (41 ICW firms and 79 non-ICW firms) chose non-Big 4 auditors. Among these 13 non-Big 4 clients with auditor changes, 4 firms (0 ICW firms and 4 non-ICW firms) chose Big 4 auditors, and 9 firms (7 ICW firms and 2 non-ICW firms) chose non-Big 4 auditors. This provides some indications that Big 4 clients with ICW are more likely to switch to a non-Big 4 auditor, and non-Big 4 clients with ICW are less likely to switch to a Big 4 auditor.

4.2. Audit fee and internal control weaknesses

4.2.1. Audit fee

We use the Ordinary Least Square (OLS) model in Equation (1) to test the relation between audit fee and internal control weaknesses (ICW). Specifically, we

model the natural logarithm of auditor fee (AUDFEE) as a function of audit risk (control risk and inherent risk), client business risk, and a set of control variables. All variable definitions are in the Appendix. For firm i in year t ,

$$\begin{aligned} \text{LOG}(\text{AUDFEE})_{it} = & \beta_0 + \beta_1 \text{ICW}_{it} + \beta_2 \text{DTACC}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{LOSS}_{it} \\ & + \beta_6 \text{LOG}(\text{TA})_{it} + \beta_7 \text{SALEGR}_{it} + \beta_8 \text{LOG}(\text{BUS})_{it} + \beta_9 \text{BIG4} + \sum_{j=10}^{14} \text{INDUSTRY}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

Our main variable of interest is ICW, a proxy for a firm's control risk. We expect the coefficient on ICW to be positive, as ICW firms are likely to pay higher audit fees. This is because a firm with weak internal controls has a greater amount of risk and thus requires more testing from its auditor (Arens, Elder, and Beasley, 2006). For example, for any significant account or any phase of financial operations in which controls are weak, the auditors need to expand the nature and extent of their tests of the account balances. Moreover, part of the audit fee is the SOX 404 fee, which will certainly be higher where a weakness exists. Because auditors expend more resources for ICW firms, they need to charge higher audit fees to cover their additional costs.

We control for other sources of client-related risk. We use discretionary accruals (DTACC) to measure financial reporting quality and thus proxy for the firm's inherent risk. We expect that the audit fee is positively related to discretionary accruals, as auditors will charge higher audit fees for firms with poor financial reporting quality. We use leverage (LEV), return on assets (ROA), and loss (LOSS) to capture client business risk. Consistent with Francis, Reichelt, and Wang (2005), we expect that firms with high leverage (LEV), losses (LOSS), and poor performance (ROA) to pay higher audit fees.

We further control for other variables related to the audit fee variable. We expect that audit fees will be higher for large clients and thus control for size, measured as the

natural logarithm of total assets (TA). We hypothesize that Big 4 auditors (BIG4) will be able to charge a premium for their perceived high-quality services, and thus introduce a dummy variable, indicating whether a firm is audited by a Big 4. We conjecture that audit fees will be higher for clients with complex operations and thus control for the natural log of the number of business segments (BUS). Audit fees may also be related to sales growth (SALEGR), which is equal to the change in sales divided by the sales for the previous year. On the one hand, firms with strong sales growth are expected to pay higher fees, since there is more demand for audit work. On the other hand, firms with strong sales growth are expected to pay lower fees, since these firms are performing well and pose less risk for auditors. Therefore, we do not provide a directional prediction for the coefficient on sales growth.

Finally, following Johnstone and Bedard (2003) and Francis, Reichelt, and Wang (2005), we control for industry effects. We set the cutoff points at five percent of total observations and introduce the following industry dummies designated by their two-digit SIC codes: 28, 35, 36, 38, and 73 to our regression models in Tables 5-9. The coefficients on these dummy variables are not reported in Tables 5-9 for the sake of brevity.¹⁷

We test the relation between audit fee and ICW in Table 5. As expected, audit fees are significantly higher for ICW firms, supporting Hypothesis 1.¹⁸ Bedard and Johnstone (2004) find that planned audit personnel hours and planned hourly billing rates are significantly higher for firms with weak internal controls. Since the product of

¹⁷ We later report in the robustness check section that our results in Tables 5-9 are unchanged, if we exclude these industry dummy variables from our regression models.

¹⁸ In unreported tests, we do not find any relation between non-audit fees and ICW, suggesting that ICW, a measure of control risk, is priced only into the audit fee.

planned audit personnel hours and planned hourly billing rates is equal to the total audit fee, our results are consistent with those in Bedard and Johnstone (2004). The coefficient on discretionary accruals is significantly positive. For client risk variables, we find that audit fees are significantly smaller for high ROA firms and higher for firms with losses. However, the coefficient on LEV is not significant. For control variables, we find that audit fees are significantly higher for large firms, multiple business segment firms, and Big 4 clients. The coefficient on SALEGR is not significant.

We further measure the economic significance of our results. Following prior literature, such as Lyon and Maher (2005), we estimate an audit fee premium associated with an ICW indicator variable to be $(e^a - 1)$, where a is the coefficient on the ICW indicator variable in Table 5. Since the coefficient on the ICW indicator variable is 0.34, the audit premium for ICW firms is 40.5%. This is a significant premium, but it appears to be in line with the findings in prior studies. For example, Seetharaman, Gul, and Lynn (2002) find that the audit fee premium for U.K. companies listed on U.S. stock exchanges is 20%; Lyon and Maher (2005) find that the audit fee premium for firms that reported payments of bribes is 43%.

4.2.2. Audit fee change

We further use the Ordinary Least Square (OLS) model in Equation (2) to test the relation between audit fee change and ICW. Specifically, we model audit fee changes as a function of changes in audit risk (control risk and inherent risk), changes in client business risk, and changes in a set of control variables. All variable definitions are in the Appendix. For firm i in year t ,

$$\begin{aligned}
AUDFEECG_{it} = & \beta_0 + \beta_1 ICW_{it} + \beta_2 DTACCCG_{it} + \beta_3 LEVCG_{it} + \beta_4 ROACG_{it} + \beta_5 LOSSCG_{it} \\
& + \beta_6 TACG_{it} + \beta_7 SALEGRCG_{it} + \beta_8 BUSCG_{it} + \sum_{j=9}^{13} \beta_j INDUSTRY + \varepsilon_{it} \quad (2)
\end{aligned}$$

Table 6 presents the regression analysis on the relation between audit fee change and the disclosure of internal control weaknesses. We expect that ICW firms will experience a larger increase in audit fee. The dependent variable is the audit fee change. We define audit fee change as the difference between the audit fee for the current year and the audit fee for the previous year divided by the audit fee for the previous year. We define other independent variables used in Table 6 in similar fashion and provide the details in the Appendix.

The regression results in Table 6 show that ICW firms experience a larger increase in audit fee, confirming Hypothesis 2. The coefficient on ICW is highly significant at the 1% level. Combined with the results in Table 5, these results demonstrate that ICW firms pay significantly higher audit fees and they also report significantly larger increases in audit fees. Firms with increases in leverage, firms changing from a profit to loss situation, and firms with increases in total assets report significantly larger increases in audit fees.¹⁹

4.3. Modified audit opinion and internal control weaknesses

We use a logit model to test the relation between modified audit opinion and ICW. Specifically, we model modified audit opinions as a function of audit risk (control

¹⁹ Our results in Table 6 remain unchanged when we add four dummy variables to capture the different types of auditor changes among the Big 4 and non-Big 4 auditors. These four dummy variables represent auditor changes from a Big 4 to another Big 4, a Big 4 to a non Big 4, a non Big 4 to a Big 4, and a non Big 4 to another non Big 4.

risk and inherent risk), client business risk, and a set of control variables. All variable definitions are in the Appendix. For firm i in year t ,

$$\begin{aligned}
 OPINION_{it} = & \beta_0 + \beta_1 ICW_{it} + \beta_2 DTACC_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 LOSS_{it} \\
 & + \beta_6 LOG(TA)_{it} + \beta_7 SALEGR_{it} + \sum_{j=8}^{12} \beta_j INDUSTRY_{it} + \varepsilon_{it} \quad (3)
 \end{aligned}$$

Table 7 presents the logit analysis on the relation between modified audit opinion and the disclosure of internal control weaknesses. Since auditors are more likely to issue modified opinions for firms with high litigation risk (Krishnan and Krishnan, 1996) or render going concern opinions for firms with bankruptcy risk, we hypothesize that ICW firms are also more likely to be flagged by modified audit opinions.

We control for discretionary accruals (DTACC), another source of client-related risk. While Francis and Krishnan (1999), Bartov et al. (2000), and Bradshaw et al. (2001) suggest that modified audit opinions are influenced by earnings management, Butler et al. (2004) find that the documented relation between modified opinions and abnormal accruals in these papers rests only with firms with going-concern opinions. For the latter reason, we do not provide a directional prediction for this variable. We further control for leverage (LEV), return on assets (ROA), and loss (LOSS) to capture the impact of client business risk. We expect that firms with high leverage or losses are more likely to receive modified opinions, whereas firms with high return on assets are less likely to receive modified opinions. Finally, we control for size (LOG(TA)) and sales growth (SALEGR).

The results in Table 7 support Hypothesis 3 that ICW firms are more likely to be flagged with modified opinions by auditors. The coefficient on ICW is highly significant

at the 1% level. The coefficient on discretionary accruals is insignificant, perhaps because we have only 22 firms (less than 1% of our sample) with going concern opinions. This result is consistent with the finding in Butler et al. (2004) that modified opinions are not influenced by discretionary accruals for firms without going concern opinions. As predicted, high leverage firms and less profitable firms are more likely to be flagged with modified opinions. Finally, large firms and low-growth firms are more likely to be flagged with modified opinions.²⁰

4.4. Auditor change and internal control weaknesses

4.4.1. A logit analysis of auditor change

We conduct a logit analysis to examine the relation between auditor change and ICW. Specifically, we model auditor change as a function of audit risk (control risk and inherent risk), client business risk, audit fee, and a set of control variables. All variable definitions are in the Appendix. For firm i in year t ,

$$AUDCHG_{it} = \beta_0 + \beta_1 ICW_{it} + \beta_2 DTACC_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 LOSS_{it} + \beta_6 LOG(AUDFEE)_{it} + \beta_7 LOG(TA)_{it} + \beta_8 SALEGR_{it} + \sum_{j=9}^{14} \beta_j INDUSTRY_{it} + \varepsilon_{it} \quad (4)$$

Johnstone and Bedard (2004) identify audit risk and client business risk as determinants of audit firm portfolio management decisions. We are particularly interested in the internal control aspect of audit risk. Since ICW firms are likely to have greater audit risk than non-ICW firms, we expect that audit firms are more likely to stop serving those ICW firms, due to risk avoidance.

²⁰ An alternative proxy of the OPINION variable is “qualified opinion,” which takes a value of zero for standard unqualified opinions and unqualified opinions with explanatory language and a value of one, otherwise. However, there are only two firms with qualified opinions in our sample.

We control for other sources of client-related risk and include discretionary accruals (DTACC). We do not provide directional prediction to this variable, because auditor changes can be initiated by either auditors or clients. Auditors are more likely to resign from clients with high abnormal accruals, but less likely to be dismissed from such clients. We use leverage (LEV), return on assets (ROA), and loss (Loss) to capture client business risk. We expect that auditors are less likely to shy away from high ROA firms (Johnstone and Bedard, 2004). However, we do not provide directional predictions on LEV and LOSS, because auditors are more likely to resign from clients with high leverage or losses, and less likely to be dismissed by such clients.

Following Johnstone and Bedard (2004), we include the natural logarithm of audit fee as a control variable in our logit model. On the one hand, audit firms assess whether expected revenues are sufficient to cover the costs of managing risks to acceptable levels. This indicates that audit firms are less likely to resign from clients if audit fees are large. On the other hand, clients assess whether audit fees are justified for the amount of services that they receive from auditors. This implies that clients are more likely to dismiss auditors, if audit fees are large. Given that there are two competing forces, we do not provide a directional prediction for the audit fee variable.

Following Landsman, Nelson, and Rountree (2005), we include two other control variables. We control for size (LOG(TA)) and predict that auditor switches are less likely for large firms because DeAngelo (1981) argues that large clients incur higher costs of auditor changes. We also control for sales growth (SALEGR) because high growth clients may face higher litigation risk (Stice, 1991).

We test the relation between auditor change and ICW in Table 8. The dependent variable auditor change (AUDCHG) takes a value of one, if a firm changed its auditor between November 15, 2004 and January 31, 2006. As expected, auditor changes are significantly more likely for ICW firms, supporting Hypothesis 4. This result is consistent with that in Bedard and Johnstone (2004), as they find clients with control risk are more likely to be classified in the auditor's discontinued client portfolio. The coefficient on discretionary accruals is not significant. For client risk variables, the coefficients on LEV, ROA, and LOSS are not significant, consistent with those in Bedard and Johnstone (2004).

For control variables, we find that auditor changes are significantly more likely for clients who pay large audit fees. To gain more insights, we perform a multinomial logit analysis to separate the dismissal effect from the resignation effect in the next subsection. In addition, we find that auditor changes are significantly less likely for large firms, probably due to the high auditor change costs for such firms. The coefficient on SALEGR is not significant.

4.4.2. A multinomial logit analysis of auditor dismissal and auditor resignation

Since auditor turnover can be initiated by the auditor or by the client, we further classify auditor turnover into two categories: auditor resignation and auditor dismissal. We perform a multinomial logit regression analysis that permits separate coefficient estimates for auditor dismissal and auditor resignation by using firms without auditor changes as the reference group. The model can be written as follows.

$$\log\left(\frac{P_k}{P_{keep}}\right) = X_i' \beta_k \quad (5)$$

where P_k is the probability that auditor change outcome falls into category k ($k =$ dismissal, resignation) and P_{keep} is the probability that there is no auditor change for a given firm between November 15, 2004 and January 31, 2006. The probabilities are modeled as a function of characteristics X and coefficient vector of β . Because there are three categories to be modeled, two sets of coefficients are estimated. The algebraic transformation of equation (3) implies that the probability generated by a multinomial logit model can be written as follows.

$$P_k = \frac{e^{x_i' \beta_k}}{1 + \sum_{j=1}^2 e^{x_i' \beta_j}}, \quad P_{keep} = \frac{1}{1 + \sum_{j=1}^2 e^{x_i' \beta_j}}$$

The vector of the characteristics consists of the same explanatory variables used in our logit model in Table 8, and thus includes variables on audit risk, client business risk, audit fee, and other control variables. While the sign predictions for ICW, ROA, LOG(TA), and SALEGR are the same as those in Table 8, we provide separate directional predictions for DTACC, LEV, LOSS and LOG(AUDFEE), since auditor dismissals and auditor resignations can be driven by different forces. Auditors are more likely to resign from clients with high accruals, high leverage or losses, and less likely to be dismissed by such clients. Moreover, when audit fees are high, auditors are less likely to resign from clients, but more likely to be dismissed by clients.

Table 9 presents the results from the multinomial logit regression. The choice variables are auditor dismissal, resignation, and continuous auditor appointment, respectively. Consistent with Hypotheses 4a and 4b, we find that auditors are significantly more likely to resign from or be dismissed by ICW clients and significantly less likely to resign from or be dismissed by large clients. Auditors are also significantly

more likely to resign from than to keep those clients with high leverages or losses. Moreover, auditors are significantly more likely to be dismissed than to be kept by those clients who pay high audit fees. The coefficient on audit fee is not significant for the auditor resignation choice variable. Our analysis in Table 9 adds depth to our pooled logit analysis in Table 8, strengthening our findings.

4.5. Robustness checks

We perform the following additional tests to verify that our results in Tables 5-9 are robust.

- (1) We replace total assets with either sales or market value of equity as of December 31, 2004 as a measure of size.
- (2) Because we lose 453 firms that have missing accruals, we add these 453 firms to our sample and run all the regression models in Tables 5-9 without the discretionary accruals variable.
- (3) We include 38 non-accelerated filers in our analyses.
- (4) We winsorize discretionary accruals, leverage, and return on assets at the 1% and 99% levels to minimize the impact of extreme values.
- (5) We exclude the industry dummy variables in our regression models in Table 5-9.²¹

In all these cases, our results are robust to these alternative specifications, adding credence to our findings.

²¹ We use five percent of observations as cutoff points and introduce the following industry dummies designated by their two-digit SIC codes: 28, 35, 36, 38, and 73 to our regression models in Tables 5-9.

5. Conclusions

In this paper, we study auditors' client risk management strategies in the post SOX era. Because information on clients' control risks were not publicly available prior to the enactment of SOX, previous studies (Johnson and Bedard, 2003 and 2004; Bedard and Johnstone, 2004) on auditors' risk management strategies use internal datasets from public accounting firms. Since public companies are now required to disclose information on their internal controls under Section 404, this mandated disclosure on internal controls enables us to measure a firm's control risk objectively, and to study auditors' risk management strategies based on this newly available public information.

Using a broad sample of 2,300 firms from AuditAnalytics, we document the empirical relations between internal control weaknesses and auditors' client risk management strategies. First, we find that clients with internal control weaknesses pay higher audit fees, and experience larger increases in audit fees. Second, we find that clients with internal control weaknesses are more likely to be flagged with modified audit opinions. Third, we find that auditor turnover is more likely for firms with internal control weaknesses after controlling for the audit fee variable. Since auditor turnover can be initiated by either the auditor or the client, we further classify auditor turnover into two categories: auditor resignation and auditor dismissal. In our multinomial logit analysis, we find that both auditor resignation and auditor dismissal are more likely for firms with internal control weaknesses.

Our comprehensive evidence suggests that auditors adopt an array of strategies to manage client related risks. First, auditors price audit risk and client business risk into the audit fee if they deem the risk/return is at an acceptable level. Second, auditors

further protect themselves by issuing modified audit opinions to risky firms and thus reduce their exposure to potential litigations. Third, auditors resign from high-risk clients if they assess that the risk/return is at an unacceptable level. Since our empirical evidence suggests that auditors also use audit opinions to warn investors and thus mitigate their litigation risks, we expand the conceptual client acceptance model in Johnstone and Bedard (2003), who propose that auditors price audit risk and client business risk into the audit fee if the risk/return is at an acceptable level, and resign from clients if the risk/return is at an unacceptable level.

Appendix Variable Definitions

Dependent variables:

AUDFEE: Total audit fee
NON-AUDFEE: Total non-audit fee
TOTFEE: Total fee
AUDCHG: 1 if the firm changed auditor between November 15, 2004 and January 31, 2006; 0 otherwise

Audit risk variables:

ICW: 1 if the firm has internal control weaknesses, 0 otherwise
DTACC: Residual from $TOTACC_{i,t} = \beta_0(1/TA_{i,t-1}) + \beta_1(\Delta SALES_{i,t} - \Delta AR_{i,t}) / TA_{i,t-1} + \beta_2(PPE_{i,t} / TA_{i,t-1})$, following Kothari, Leone, and Wasley (2005). Note that $TOTACC = [EBEI(\#123) - (CFO(\#308) - EIDO(\#124))] / \text{lagged total assets}$, following Hribar and Collins (2002); $\Delta SALES$ is the change in a firm's sales revenue (#12); ΔAR is the change in accounts receivable (#2); PPE is gross property, plant, and equipment (#7); and TA is total assets (#6). The regression is estimated for firms in a given two-digit SIC code each year

Client business risk variables:

LEV: Ratio of long-term debt (#9) to total assets (#6)
ROA: Income before extraordinary items (#18) divided by average total assets (#6)
LOSS: 1 if the firm incurred losses in the current fiscal year; 0 otherwise
OPINION: 1 if the firm received a modified opinion (Audit opinion code is between 2 and 5 for #149); 0 otherwise. Following Bradshaw, Richardson, and Sloan (2001).

Control variables:

- TA: Total assets (#6), in millions
SALEGR: Sales growth is the difference in sales (#12) between year t and year t-1 over the sales in year t-1
BUS: Number of business segment (Compustat segment file)
BIG4: 1 if the firm's auditor is a Big4 (#149); 0 otherwise

Change variables:

- AUDFEECG: Change in audit fee divided by the previous year's audit fee
DTACCCG: Change in discretionary accruals from the previous year divided by the previous year's discretionary accruals
LEVCG: Change in leverage divided by the previous year's discretionary accruals
ROACG: Change in return on assets divided by the previous year's return on assets
LOSSCG: Change in the LOSS dummy variable
TACG: Change in total assets divided by the previous year's total assets
SALEGRCG: Change in sales growth divided by the previous year's sales growth

Note:

COMPUSTAT item numbers are in parentheses.

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Table 1. Sample selection criteria

Sample Characteristics	Number of Firms
Total firms identified by <i>AuditAnalytics</i> as having internal control opinions from November 1, 2004 to December 31, 2005	3,737
Excluding firms not in Compustat	(163)
Excluding firms not in CRSP	(174)
Excluding non-U.S. or non-common stock	(340)
Excluding firms with missing audit fee information	(15)
Excluding firms with no SOX 404 internal control disclosure for fiscal year ending between November 15, 2004 and November 14, 2005	(2)
Excluding firms with missing necessary information in computing leverage, sales growth, or return-on-assets	(250)
Excluding firms with missing necessary information in computing discretionary accruals	(453)
Excluding firms with missing audit opinion	(2)
Excluding non-accelerated filers	(38)
Final Sample	2,300

Table 2. Descriptive statistics for variable measures*Panel A. Variables in fee model and auditor change model*

Variables	Mean	Q1	Median	Q3	Std dev
Dependent variables					
AUDFEE	2,520,293	688,829	1,219,370	2,512,365	4,453,539
NONAUDFEE	754,615	75,050	222,233	602,054	2,213,405
TOTFEE	3,274,908	826,926	1,488,050	3,132,397	6,264,622
OPINION	0.352	0.000	0.000	1.000	0.478
AUDCHG	0.084	0.000	0.000	0.000	0.277
Audit risk variables					
ICW	0.140	0.000	0.000	0.000	0.347
DTACC	-0.015	-0.049	-0.011	0.024	0.101
Business Risk Variables					
LEV	0.175	0.001	0.123	0.278	0.211
ROA	0.015	0.007	0.044	0.089	0.189
LOSS	0.223	0.000	0.000	0.000	0.416
Control variables					
TA	6,119	232	654	2,364	36,860
SALEGR	0.391	0.051	0.132	0.273	7.505
BUS	2.357	1.000	1.000	4.000	1.767
BIG4	0.923	1.000	1.000	1.000	0.267
N	2,300				

Table 2 (Continued)*Panel B. Variables in fee change model*

Variables	Mean	Q1	Median	Q3	Std dev
Dependent variables					
AUDFEECG (\$)	1,160,967	330,612	647,422	1,294,182	1,878,380
NONAUDFEECG (\$)	-150,222	-154,510	-17,833	62,000	1,163,170
TOTFEECG (\$)	1,010,744	267,500	599,000	1,183,340	1,883,533
AUDFEECG	1.385	0.674	1.155	1.785	1.112
OPINIONCG	-0.268	-1.000	0.000	0.000	0.533
Audit risk variables					
ICW	0.140	0.000	0.000	0.000	0.347
DTACCCG	0.005	-0.036	0.004	0.044	0.127
Business Risk Variables					
LEVCG	-0.003	-0.031	-0.002	0.002	0.108
ROACG	0.018	-0.008	0.010	0.035	0.121
LOSSCG	-0.054	0.000	0.000	0.000	0.378
Control variables					
TACG	0.201	0.014	0.098	0.220	0.589
SALEGRCG	0.015	-0.067	0.032	0.148	1.176
BUSCG	0.029	0.000	0.000	0.000	0.351
N	2,270				

Notes:

AUDFEECG (\$), NONAUDFEECG (\$), and TOTFEECG (\$) are the differences between a firm's audit fee, non-audit fee, and total fee for the first year of SOX 404 implementation and those for the previous year. All other variable definitions are in the Appendix.

Table 3. Mean and Median Comparison for Firms with Internal Control Weakness and Firms without Internal Control Weakness

Panel A. Variables in fee model and auditor change model

Variables	ICW Firms	Non- ICW Firms	Mean Comparison (<i>t</i> -statistic)	Median Comparison (<i>Z</i> -score)
	Mean	Mean		
	Median	Median		
AUDFEE	2,878,602	2,462,174	416,428 (1.08)	152,360 (1.43)
	1,361,020	1,208,660		
NONAUDFEE	588,332	781,586	-193,254* (-1.75)	-37,552** (-2.56)
	190,248	227,800		
TOTFEE	3,466,934	3,243,761	223,173 (0.46)	59,559 (0.79)
	1,537,000	1,477,441		
OPINION	0.464	0.334	0.131*** (4.57)	0.000*** (4.55)
	0.000	0.000		
AUDCHG	0.187	0.067	0.120*** (5.32)	0.000*** (7.17)
	0.000	0.000		
DTACC	-0.014	-0.015	0.002 (0.25)	0.000 (0.09)
	-0.011	-0.011		
LEV	0.162	0.178	-0.015 (-1.21)	-0.057** (-2.23)
	0.075	0.132		
ROA	-0.020	0.021	-0.041*** (-4.14)	-0.034*** (-7.90)
	0.014	0.048		
LOSS	0.396	0.195	0.201*** (6.98)	0.000*** (8.01)
	0.000	0.000		
TA	7,149	5,953	1,196 (0.34)	-361*** (-6.14)
	377	738		
SALEGR	0.229	0.417	-0.188 (-1.01)	-0.029*** (-3.01)
	0.107	0.136		
BUS	2.349	2.359	-0.010 (-0.09)	-0.000 (-0.07)
	1.000	1.000		
BIG4	0.841	0.936	-0.095*** (-4.47)	-0.000*** (-5.89)
	1.000	1.000		
N	321	1,979		

Panel B. Variables in fee change model

Variables	ICW Firms	Non- ICW Firms	Mean Comparison	Median Comparison
	Mean Median	Mean Median	(<i>t</i> -statistic)	(<i>Z</i> -score)
AUDFEECG	1,334,846 771,551	1,132,640 635,836	202,206 (1.24)	135,718** (2.11)
NONADFEECG	-170,833 -17,990	-146,865 -17,601	-23,968 (-0.37)	-389 (0.15)
TOTFEECG	1,164,013 749,598	985,775 578,641	178,238 (1.16)	170,957*** (2.67)
AUDFEECGPCT	1.827 1.550	1.313 1.116	0.513*** (5.78)	0.434*** (5.68)
DTACCCG	-0.001 -0.000	0.006 0.005	-0.007 (-0.72)	-0.005 (-1.26)
LEVCG	-0.008 0.000	-0.002 -0.002	-0.006 (-0.95)	0.002** (2.30)
ROACG	0.002 0.004	0.020 0.011	-0.018** (-2.05)	-0.007*** (-3.66)
LOSSCG	0.013 0.000	-0.065 0.000	0.077*** (2.80)	-0.000*** (-3.24)
TACG	0.181 0.065	0.204 0.101	-0.023 (-0.61)	-0.036*** (-3.29)
SALEGRCG	0.058 0.030	0.008 0.032	0.050 (1.13)	-0.002 (-0.82)
BUSCG	0.037 0.000	0.028 0.000	0.010 (0.40)	0.000 (0.35)
N	318	1,952		

Notes:

ICW firms are firms with internal control weaknesses, whereas non-ICW firms are firms without internal control weaknesses. All variable definitions are in the Appendix.

*, **, and *** denote two-tailed significance at the 10, 5 and 1 percent levels, respectively. We use *t*-test for the difference in means, and Wilcoxon rank sum test for the difference in medians.

Table 4. Frequency of audit opinion and auditor change conditioning on internal control weaknesses

Panel A. Frequency of audit opinions vs. internal control weaknesses

	Variable	ICW firms	Non-ICW firms	Total
Audit Opinion	Standard unqualified audit opinion	172	1,319	1,491
	Percent	7.48	57.35	64.83
	Row percent	11.54	88.46	
	Column percent	53.58	66.65	
	Modified Audit Opinion	149	660	809
	Percent	6.48	28.70	35.17
	Row percent	18.42	81.58	
	Column percent	46.42	33.35	

Panel B. Frequency of dismissal, resignation, no change vs. internal control weaknesses

	Variable	ICW firms	Non-ICW firms	Total
Auditor change	Dismissal	31	115	146
	Percent	1.35	5.00	6.35
	Row percent	21.23	78.77	
	Column percent	9.66	5.81	
	Resignation	29	18	47
	Percent	1.26	0.78	2.04
No auditor change	No auditor change	261	1,846	2,107
	Percent	11.35	80.26	91.61
	Row percent	12.39	87.61	
	Column percent	81.31	93.28	

Panel C. Frequency of preceding auditor, successor auditor vs. internal control weaknesses

	Variable	ICW firms	Non-ICW firms	Total
Auditor change*	Big 4 to Big 4	12	45	57
	Percent	6.32	23.68	30.00
	Row percent	21.05	78.95	
	Column percent	20.00	34.62	
	Big 4 to Non-Big 4	41	79	120
	Percent	21.58	41.58	63.16
	Row percent	34.17	65.83	
	Column percent	68.33	60.77	
	Non-Big4 to Big 4	0	4	4
	Percent	0.00	2.11	2.11
	Row percent	0.00	100.00	
	Column percent	0.00	3.08	
	Non-Big 4 to Non-Big 4	7	2	9
	Percent	3.68	1.05	4.74
	Row percent	77.78	22.22	
	Column percent	11.67	1.54	

Notes:

ICW firms are firms with internal control weaknesses, whereas non-ICW firms are firms without internal control weaknesses. Dismissal occurs when a client terminates the auditor and resignation occurs when an auditor resigns from the client.

* 3 firms do not have information on successor auditor.

Table 5. Regression analyses on the relation between audit fees and the disclosure of internal control weaknesses

$$\begin{aligned} \text{LOG(AUDFEE)}_{it} = & \beta_0 + \beta_1 \text{ICW}_{it} + \beta_2 \text{DTACC}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{LOSS}_{it} + \\ & + \beta_6 \text{LOG(TA)}_{it} + \beta_7 \text{SALEGR}_{it} + \beta_8 \text{LOG(BUS)}_{it} + \beta_9 \text{BIG4} + \sum_{j=10}^{14} \text{INDUSTRY}_j + \varepsilon_{it} \end{aligned} \quad (1)$$

Variable	Predicted Sign	Dependent Variable = LOG(AUDFEE)
Intercept		10.30*** (158.94)
Audit risk variables		
ICW	+	0.34*** (9.68)
DTACC	+	0.17* (1.36)
Client business risk variables		
LEV	+	0.01 (0.20)
ROA	-	-0.24*** (-2.92)
LOSS	+	0.10*** (2.62)
Control variables		
LOG(TA)	+	0.49*** (59.80)
SALEGR	?	-0.002 (-0.97)
LOG(BUS)	+	0.13*** (7.35)
BIG4	+	0.31*** (6.72)
Adj R^2		69.73%
F-value		379.26***
N		2,300

Notes:

t statistics are reported in the parentheses below parameter estimates. All variable definitions are in the Appendix. We control for industries (SIC 28, SIC 35, SIC 36, SIC 38 and SIC 73) with more than 5 percent of total sample observations in our regression model, but do not report the coefficients on these industry dummies for brevity.

*, **, and *** denote significance (one-tailed for coefficients with sign predictions, and two-tailed for coefficients without sign predictions) at the 10, 5, 1 percent levels, respectively.

Table 6. Regression analysis on the relation between audit fee change percentage and the disclosure of internal control weaknesses

$$AUDFEECG_{it} = \beta_0 + \beta_1 ICW_{it} + \beta_2 DTACCCG_{it} + \beta_3 LEVCG_{it} + \beta_4 ROACG_{it} + \beta_5 LOSSCG_{it} + \beta_6 TACG_{it} + \beta_7 SALEGRCG_{it} + \beta_8 BUSCG_{it} + \sum_{j=9}^{13} \beta_j INDUSTRY + \varepsilon_{it} \quad (2)$$

Variable	Predicted Sign	Dependent Variable = AUDFEECG
Intercept		1.23*** (38.01)
Audit risk variables		
ICW	+	0.50*** (7.55)
DTACCCG	+	-0.26 (-1.20)
Client business risk variables		
LEVCG	+	0.31* (1.47)
ROACG	-	0.41 (1.67)
LOSSCG	+	0.18*** (2.71)
Control variables		
TACG	+	0.21*** (5.21)
SALEGRCG	?	0.02 (1.28)
BUSCG	+	0.05 (0.70)
Adj R^2		4.48%
F-value		9.19***
N		2,270

Notes:

* t statistics are reported in the parentheses below parameter estimates. All variable definitions are in the Appendix. We control for industries (SIC 28, SIC 35, SIC 36, SIC 38 and SIC 73) with more than 5 percent of total sample observations in our regression model, but do not report the coefficients on these industry dummies for brevity.

*, **, and *** denote significance (one-tailed for coefficients with sign predictions, and two-tailed for coefficients without sign predictions) at the 10, 5, 1 percent levels, respectively.

Table 7. Logit analyses on the relation between modified audit opinion and the disclosure of internal control weaknesses

$$OPINION_{it} = \beta_0 + \beta_1 ICW_{it} + \beta_2 DTACC_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 LOSS_{it} + \beta_6 LOG(TA)_{it} + \beta_7 SALEGR_{it} + \sum_{j=8}^{12} \beta_j INDUSTRY + \varepsilon_{it} \quad (3)$$

Variable	Predicted Sign	Dependent Variable = AUDCHG
Intercept		-3.28*** (186.90)
Audit risk variables		
ICW	+	0.83*** (38.27)
DTACC	?	-0.08 (0.02)
Client business risk variables		
LEV	+	0.86*** (13.28)
ROA	-	-0.48* (1.95)
LOSS	+	0.12 (0.66)
Control variables		
LOG(TA)	?	0.37*** (141.23)
SALEGR	?	-0.22* (3.45)
Pseudo R^2		17.31%
N		2,300

Notes:

χ^2 statistics are reported in the parentheses below parameter estimates. All variable definitions are in the Appendix. We control for industries (SIC 28, SIC 35, SIC 36, SIC 38 and SIC 73) with more than 5 percent of total sample observations in our regression model, but do not report the coefficients on these industry dummies for brevity.

*, **, and *** denote significance (one-tailed for coefficients with sign predictions, and two-tailed for coefficients without sign predictions) at the 10, 5, 1 percent levels, respectively.

Table 8. Logit analyses on the relation between auditor switch and the disclosure of internal control weaknesses

$$AUDCHG_{it} = \beta_0 + \beta_1 ICW_{it} + \beta_2 DTACC_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 LOSS_{it} + \beta_6 LOG(AUDFEE)_{it} + \beta_7 LOG(TA)_{it} + \beta_8 SALEGR_{it} + \sum_{j=9}^{14} \beta_j INDUSTRY + \varepsilon_{it} \quad (4)$$

Variable	Predicted Sign	Dependent Variable = AUDCHG
Intercept		-6.00*** (16.14)
Audit risk variables		
ICW	+	0.93*** (26.69)
DTACC	?	0.26 (0.11)
Client business risk variables		
LEV	?	0.43 (1.60)
ROA	-	0.31 (0.40)
LOSS	?	-0.06 (0.06)
Control variables		
LOG(AUDFEE)	?	0.42*** (9.45)
LOG(TA)	-	-0.39*** (19.14)
SALEGR	+	-0.004 (0.04)
Pseudo R^2		6.73%
N		2,300

Notes:

χ^2 statistics are reported in the parentheses below parameter estimates. All variable definitions are in the Appendix. We control for industries (SIC 28, SIC 35, SIC 36, SIC 38 and SIC 73) with more than 5 percent of total sample observations in our regression model, but do not report the coefficients on these industry dummies for brevity.

*, **, and *** denote significance (one-tailed for coefficients with sign predictions, and two-tailed for coefficients without sign predictions) at the 10, 5, 1 percent levels, respectively.

Table 9. Multinomial logit analysis of the relation between auditor change and the disclosure of internal control weaknesses

Variables	Predicted Sign	Dismissal	Predicted Sign	Resignation
Intercept		-6.69*** (16.07)		-5.42* (3.13)
Audit risk variables				
ICW	+	0.51** (5.20)	+	1.99*** (36.25)
DTACC	-	-0.26 (0.08)	+	1.35 (0.87)
Client business risk variables				
LEV	-	0.39 (0.87)	+	0.75* (1.80)
ROA	-	0.41 (0.42)	-	0.56 (0.41)
LOSS	-	-0.30 (1.12)	+	0.60* (2.38)
Control variables				
LOG(AUDFEE)	+	0.45*** (8.46)	-	0.31 (1.27)
LOG(TA)	-	-0.35*** (12.45)	-	-0.64*** (10.33)
SALEGR	+	-0.004 (0.03)	+	-0.003 (0.00)
N		2,300		2,300

Notes:

In this multinomial logit model, the reference outcome is no auditor change, whereas alternative categories are dismissal and resignation. The choice variables in the model are auditor dismissal, resignation, and continuous auditor appointment between January 2005 and February of 2006. χ^2 statistics are reported in the parentheses below parameter estimates. ICW is an indicator variable for internal control weaknesses. See Table 2 for other variable definitions. χ^2 statistics are reported in the parentheses below parameter estimates. All variable definitions are in the Appendix. We control for industries (SIC 28, SIC 35, SIC 36, SIC 38 and SIC 73) with more than 5 percent of total sample observations in our regression model, but do not report the coefficients on these industry dummies for brevity.

*, **, and *** denote significance (one-tailed for coefficients with sign predictions, and two-tailed for coefficients without sign predictions) at the 10, 5, 1 percent levels, respectively.