

**Factors Associated with Providing Early Warning of Material Weaknesses  
in Internal Control Under SOX Section 302<sup>1</sup>**

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## **Factors Associated with Providing Early Warning of Material Weaknesses in Internal Control Under SOX Section 302**

### **Abstract**

We examine factors associated with whether any of the internal control deficiencies (ICDs) disclosed in adverse initial Section 404 reports were disclosed earlier by management under Section 302. Based on 451 companies with adverse initial Section 404 reports, we find evidence that early disclosure of ICDs under Section 302 is associated with factors reflecting management's incentive to discover and disclose ICDs (Ashbaugh-Skaife et al., 2007a): the severity and number of material weaknesses, prior earnings restatements, future equity financing activities, auditor independence and effort, CFO change, the number of institutional investors, and the number of audit committee meetings.

*JEL classification:* G34; M41; M42

*Keywords:* Internal control deficiency, Material weakness, Sarbanes-Oxley, Section 302, Section 404

## **Factors Associated with Providing Early Warning of Material Weaknesses in Internal Control Under SOX Section 302**

### **1. Introduction**

This study examines factors associated with whether management provided early warning of internal control deficiencies (ICDs) cited in auditors' initial Sarbanes-Oxley Act ("SOX" hereafter, U.S. House of Representatives, 2002) Section 404 reports. During the first year of the SOX Section 404 reporting requirements (November 15, 2004 – November 14, 2005), many adverse Section 404 reports were a "surprise" in that management had not previously warned investors of the ICDs in SEC filings under Section 302 (Glass Lewis, 2005).<sup>2</sup> Aguilar (2006c) quotes Mark Cheffers, chief executive of Audit Analytics, "We should've seen far more ineffective 302 reports prior to the first round of adverse 404 reports." Aguilar goes on to state, "In most cases, an adverse report on their internal controls over financial reporting [Section 404] means a company also had an ineffective disclosure control [Section 302], says Cheffers."

In addition, Steinberg (2005) indicates that he expects SEC staff to ask several questions when adverse Section 404 reports follow clean disclosures under Section 302: "When did the weakness first occur? When did management first know of it? Why wasn't it reported in the preceding 302 report?" These perspectives indicate that many parties expected Section 302 disclosures to highlight most ICDs that subsequently are disclosed as material weaknesses in Section 404 reports.

Section 302 of SOX (2002) requires that "the principal executive officer or officers and the principal financial officer or officers, or persons performing similar functions, certify

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<sup>2</sup> Glass Lewis (2005) also finds that many companies foreshadow an adverse Section 404 report by issuing a press release before the 404 report is issued. We encourage future research on the role of press releases in providing investors with (somewhat) early disclosure of material weaknesses in internal control.

in each annual or quarterly report” that the signing officers “have presented in the report their conclusions about the effectiveness of their internal controls based on their evaluation as of that date.” The signing officers also are required to certify that they “have indicated in the report whether or not there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of their evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses” (SOX, 2002).

Despite these guidelines, the SEC’s requirements regarding disclosure of internal control weaknesses discovered during the initial Section 404 implementation process are not entirely clear (Ashbaugh-Skaife et al., 2007a). The SEC (2004, Question 9) indicates that companies should “carefully consider” whether material weaknesses discovered as part of the initial Section 404 testing should be disclosed in interim periods, and Ashbaugh-Skaife et al. (2007a, 167) assert that “managers had more discretion in disclosing ICDs during the pre-Section 404 regime.” Therefore, it appears that under Section 302, the disclosure of internal control weaknesses discovered during the initial Section 404 testing was somewhat voluntary.

Previous studies have compared characteristics of companies with versus without ICDs (e.g., Ashbaugh-Skaife et al., 2007a; Doyle et al., 2007a; Krishnan and Visvanathan, 2007; Zhang et al., 2007). Our study adds to this literature by addressing factors associated with whether management had disclosed any of the ICDs under Section 302 before they were reported in the auditor’s initial Section 404 report. Thus, our sample includes only companies with material weaknesses in internal control.

Based on an analysis of 451 companies with adverse initial Section 404 reports from November 2004 to November 2005, we find that only 27 percent of companies provided early

warning of *any* of their material weaknesses in earlier SEC filings (under Section 302) before the fiscal year-end. We also find evidence that early disclosure of ICDs under Section 302 is associated with factors reflecting management's incentive to discover and disclose ICDs: the severity and number of material weaknesses, prior earnings restatements, future equity financing activities, auditor independence and effort, CFO change, the number of institutional investors, and the number of audit committee meetings. Results are similar when we consider the exact timing of early disclosure under Section 302. Our results hold after controlling for ICD risk factors (Ashbaugh-Skaife et al., 2007a), and they illustrate the important roles of material weakness characteristics, financing incentives, and external monitoring (including monitoring by the auditor, institutional investors, and the audit committee) in ICD disclosure.

Recently there has been considerable debate about the auditor's role in internal control reporting (Hermanson, 2000). For example, the requirements in Canada now call for management reports on internal control effectiveness, but without any auditor attestation (Aguilar, 2006b). Also, Japan's new rules require management's assessment on internal control effectiveness to be audited by the external auditor, but the rules do not require the auditor's report on internal control to be issued publicly (Aguilar, 2007). In addition, there has been controversy surrounding the issue of whether small businesses should be exempt from the requirements of Section 404 (Aguilar, 2006a).

Our study helps to shed light on these important issues. First, our results indicate that prior to Section 404 implementation, when the auditor was not involved in attesting to internal control effectiveness, disclosures of ICDs under Section 302 were quite limited (consistent with Glass Lewis (2005)). It appears that auditor involvement is essential to the disclosure of ICDs. If smaller public companies were exempted from the Section 404 requirement of

auditor attestation, we question whether ICDs in these companies would be likely to be discovered and disclosed. In addition, our results highlight instances in which such disclosures under Section 302 are more forthcoming and presumably more useful to the investing community. Among other findings, auditor independence and diligence (as measured by audit fees), as well as audit committee diligence, are associated with early warning of material weaknesses under Section 302. These results highlight the important role of vigilant auditors and audit committees in promoting timely disclosure of ICDs.

Our study is closest to Ashbaugh-Skaife et al. (2007a), who examine factors associated with the existence, discovery, and disclosure of ICDs under Section 302 by comparing companies disclosing ICDs to those not disclosing ICDs. In addition to the determinants of ICD existence, the authors also find that companies with prior SEC enforcement actions or restatements, a large external auditor, and more concentrated institutional ownership are more likely to discover and disclose ICDs.

Our research differs from Ashbaugh-Skaife et al. (2007a) in several ways. First, the focus of our study is on early warning of material weaknesses subsequently disclosed in Section 404 reports. We not only examine why companies disclose ICDs under Section 302 before the fiscal year-end for which they received adverse Section 404 opinions, but we also shed light on what factors are associated with the timing of the disclosure. Second, Ashbaugh-Skaife et al. (2007a) use a sample composed of both companies disclosing ICDs and those not disclosing ICDs (the non-disclosing companies may not have any internal control weaknesses). Our sample contains only companies with material weaknesses in internal control under Section 404, and we look back in time to determine whether the companies' managers had previously disclosed any of these weaknesses under Section 302. Finally, in

addition to factors that are found by Ashbaugh-Skaife et al. (2007a) to be associated with the disclosure of ICDs under Section 302, we find other factors associated with such disclosures: the severity and number of material weaknesses, future equity financing activities, auditor independence and effort, CFO change, and the number of audit committee meetings.

The next section provides background information and develops the theory. The following sections present the expectations, method, results, and conclusion.

## **2. Background and theory**

### ***2.1 Internal control reporting***

Section 302 of SOX became effective on August 29, 2002, and it requires the CEO and CFO of the corporation to include a quarterly certification indicating that (SEC, 2002a):

[T]hey are responsible for establishing, maintaining and regularly evaluating the effectiveness of the issuer's internal controls; they have made certain disclosures to the issuer's auditors and the audit committee of the board of directors about the issuer's internal controls; and they have included information in the issuer's quarterly and annual reports about their evaluation.<sup>3</sup>

Section 302 certifications address “disclosure controls and procedures”, which are closely related to the notion of “internal control over financial reporting” that is addressed by Section 404.<sup>4</sup> The SEC (2003) asserts that “there is substantial overlap between internal control over financial reporting and disclosure controls and procedures” and requires public companies to

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<sup>3</sup> SOX Section 906 mandated strict criminal penalties for willful non-compliance with Section 302, but it does not appear that there was a tough enforcement posture in the initial year of Section 404 implementation.

<sup>4</sup> In Rule 13a-15(d) of the Securities Exchange Act of 1934, the SEC defines disclosure controls and procedures as “controls and other procedures of an issuer that are designed to ensure that information required to be disclosed by the issuer in the reports that it files or submits under the Act (15 U.S.C. 78a et seq.) is recorded, processed, summarized and reported, within the time periods specified in the Commission's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by an issuer in the reports that it files or submits under the Act is accumulated and communicated to the issuer's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.”

incorporate the term “internal control over financial reporting” into the Section 302 certification.

According to Section 302 and the SEC (2003), material weaknesses in disclosure controls must be publicly disclosed in quarterly or annual reports, although Ashbaugh-Skaife et al. (2007a) note that it was less clear whether material weaknesses in internal control over financial reporting discovered in the Section 404 implementation process required interim disclosure under Section 302 (see SEC, 2004). Glass Lewis (2005) finds that the vast majority of adverse initial Section 404 reports were preceded by clean Section 302 reports. Glass Lewis (2005, 10) states, “In our view, the CEO and CFO of these companies were using a rubber stamp to certify the effectiveness of internal controls prior to SOX 404. We believe it took the pressure of the PCAOB on audit firms, more rigorous audits, and the implementation of SOX 404 to get the management of these companies to *realize and/or disclose* that their internal controls were not effective” [emphasis added].

Under Section 404 of SOX and PCAOB Auditing Standard No. 2 (“AS2,” PCAOB, 2004), the auditor expresses an opinion on management’s assessment of internal control over financial reporting and on the effectiveness of internal control over financial reporting.<sup>5</sup> This requirement was first effective for accelerated filers on November 15, 2004. If the auditor detects one or more material weaknesses in internal control over financial reporting, these

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<sup>5</sup> The SEC (2003) defines internal control over financial reporting as “a process designed by, or under the supervision of, the registrant’s principal executive and principal financial officers, or persons performing similar functions, and effected by the registrant’s board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that: (1) Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the registrant; (2) Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the registrant are being made only in accordance with authorizations of management and directors of the registrant; and (3) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the registrant’s assets that could have a material effect on the financial statements.”

material weaknesses must be publicly disclosed in an adverse audit opinion. While AS2 has now been replaced with AS5 (PCAOB, 2007), AS2 was in effect during our sample period and is the basis for our discussion.<sup>6</sup>

## ***2.2 Research related to Sections 302 and 404***

Several recent papers have examined disclosures of ICDs under Sections 302 and 404, comparing companies with versus without ICD disclosures. Ashbaugh-Skaife et al. (2007a) examine Section 302 disclosures and compare companies disclosing ICDs to those not disclosing such deficiencies. The authors distinguish between factors suggesting the presence of ICDs (complexity and scope of operations, organizational change, accounting application risk, and internal control resources) and those related to management's incentive to discover and disclose such deficiencies (auditor technology and scrutiny, regulator intervention threats, investor intervention threats, and litigation risk).

The authors find companies disclosing ICDs under Section 302 to have more complex operations, changes in their organizational structure, greater accounting risk exposure, fewer resources devoted to internal control, more frequent auditor resignations, more SEC enforcement actions or restatements, more frequent use of large audit firms, and more concentrated institutional ownership. These variables reflect both internal control risk

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<sup>6</sup> AS2 (PCAOB, 2004) differentiates three levels of internal control deficiencies based on the severity of the deficiencies: "A control deficiency exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect misstatements on a timely basis" (AS2, para. 8). A significant deficiency is "a control deficiency, or combination of control deficiencies, that adversely affects the company's ability to initiate, authorize, record, process, or report external financial data reliably in accordance with generally accepted accounting principles such that there is more than a remote likelihood that a misstatement of the company's annual or interim financial statement that is more than inconsequential will not be prevented or detected" (AS2, para.9). A material weakness is "a significant deficiency, or combination of significant deficiencies, that results in more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected" (AS2, para. 10).

attributes (i.e., likelihood that an ICD exists) and management's incentive to discover and disclose ICDs.

Doyle et al. (2007a) examine disclosures of material weaknesses under Section 302 or 404, comparing companies with versus without material weakness disclosures. The authors find companies with material weaknesses to be smaller, younger, in weaker financial condition, more complex, growing more rapidly, and more likely to have been restructured. In addition, compared to companies with account-specific material weaknesses, companies with entity-wide (company-level) material weaknesses are smaller, younger, and in weaker financial condition.

Krishnan and Visvanathan (2007) compare companies disclosing ICDs under Section 404 to a matched sample of companies not disclosing such deficiencies. They find the deficiency companies to have more audit committee meetings, fewer financial experts on the audit committee, and more auditor changes. They also find ICDs to be positively related to restatements / SEC enforcement actions, foreign operations, special income statement items, and sales growth, and negatively related to profitability.

Zhang et al. (2007) also examine disclosures of material weaknesses under Section 302 or 404, comparing companies with versus without material weakness disclosures. They find material weaknesses to be negatively related to audit committee financial expertise, and positively related to auditor independence (based on audit fee measures) and auditor changes.<sup>7</sup>

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<sup>7</sup> In addition to these studies, Ge and McVay (2005) categorize the types of weaknesses disclosed in Section 302 reports, and several researchers have examined the effects of material weakness disclosures under Section 404. These disclosures are found to be associated with market value declines (De Franco et al., 2005; Cheng et al., 2006; Gupta and Nayar, 2007), higher cost of equity (Ashbaugh-Skaife et al., 2007b), lower quality earnings (Doyle et al., 2007b), higher audit fees (Raghunandan and Rama, 2006; Hoitash et al., 2007a), auditor changes (Ettredge et al., 2007), and shareholder votes against the directors (Ye and Krishnan, 2007) and auditors (Hermanson et al., 2007).

To summarize, prior research compares companies with versus without disclosed ICDs. We add to this literature by examining factors associated with providing early warning under Section 302 of subsequent material weakness disclosures under Section 404.

### ***2.3 Clean Section 302 disclosures followed by adverse Section 404 reports***

As noted above, many adverse initial Section 404 reports were preceded by “clean” Section 302 disclosures. Ashbaugh-Skaife et al. (2007a) describe three conditions necessary for a company to disclose an ICD under Section 302 – (1) there must be a deficiency in internal control, (2) management or the auditor must discover the deficiency, and (3) management must disclose the deficiency. Given that our sample (as discussed below) contains only companies with adverse Section 404 reports, we know that material weaknesses in internal control existed at year-end; however, it is possible that such problems did not exist in the interim periods. We consider this possibility (ICDs arising late in the fiscal year) in our supplemental testing where we control for ICD risk factors. Of interest in our main analyses (assuming that the ICDs disclosed in the Section 404 report existed during the entire fiscal year) is whether there are factors associated with “early warning” through Section 302 disclosures that reflect management’s incentive to discover and disclose ICDs.

This study differs from previous research that typically compares companies disclosing internal control problems to those not disclosing internal control problems (the non-disclosers may not have any internal control problems, or they may have undisclosed problems). In our case, all of the sample companies have a material weakness(es) disclosed in their initial Section 404 report, and we look back in time to their previous SEC filings to determine whether management had previously disclosed any of the ICDs revealed in the Section 404 report. Our study is closest to Ashbaugh-Skaife et al. (2007a) in that we both

examine Section 302 disclosures. However, our study differs from Ashbaugh-Skaife et al. (2007a) on the following dimensions: (1) Our focus is on early warning of material weaknesses subsequently disclosed in Section 404 reports; (2) Our sample is different from Ashbaugh-Skaife et al. (2007a), as we include only companies with adverse initial Section 404 reports; and (3) As discussed below, many of the factors we find to be associated with Section 302 disclosure are not examined by Ashbaugh-Skaife et al. (2007a).

#### ***2.4 Theoretical development***

Given the somewhat voluntary nature of ICD disclosure during this time period (SEC, 2004; Ashbaugh-Skaife et al., 2007a), we consider factors related to management's incentive to discover and disclose ICDs in the fiscal year before the initial 404 report, based on a sample of companies with adverse Section 404 reports.<sup>8</sup> Conceptually, Ashbaugh-Skaife et al. (2007a, 174) note that "management faces greater incentives to discover and report internal control weaknesses when the firm is subject to greater monitoring by stakeholders and when those stakeholders have greater incentives to initiate litigation if the firm's financial reporting process is deemed to be deficient."

In addition, Skinner (1994) notes that managers face potential legal liability and reputation damage when they fail to make voluntary bad news disclosures. He finds that managers voluntarily preempt earnings announcements more often if the announcements convey large negative surprises, apparently due to legal liability and reputational concerns.

Prior studies also suggest that managers strategically choose the timing of voluntary disclosures for the benefit of future financing. Frankel et al. (1995) find a positive association

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<sup>8</sup> While the discovery and disclosure of internal control deficiencies are distinct constructs, consistent with Ashbaugh-Skaife et al. (2007a), we do not attempt to separate these two constructs. Many of the variables we test below appear to have a logical relationship with both ICD discovery and ICD disclosure. In addition, Ashbaugh-Skaife et al. (2007a) note that even the distinction between ICD risks and ICD discovery/disclosure is not completely clear, such that some variables may reflect elements of each factor.

between companies' financing activities and tendencies to disclose earnings forecasts. Consistently, Frankel et al. (1999) show a positive association between holding conference calls and financing activities. Moreover, Lang and Lundholm (2000) document that some companies increase their disclosure activities to “hype” stock prices before equity offerings. Since the market reacts adversely to the disclosure of ICDs (Hammerlsey et al., 2008), we conjecture that companies with future financing activities are less likely to disclose ICDs.

Based on theory and previous literature, we expect managers to have a greater incentive to discover and disclose ICDs early when they face greater monitoring or greater legal risk, but we expect this incentive to decrease if the managers plan to obtain external financing. Ashbaugh-Skaife et al. (2007a) use four variables to proxy for incentive to discover and disclose ICDs – auditor type, restatements, institutional ownership, and litigation risk. We consider variables related to (1) material weakness characteristics, (2) litigation risk, (3) subsequent financing, (4) auditor characteristics, and (5) management and governance traits (also see Krishnan and Visvanathan (2007)).

### **3. Variables tested and expectations**

#### ***3.1 Material weakness characteristics***

**Company-level material weakness (COMMW).** Compared to material weaknesses relating to controls over specific accounts or transaction-level processes, company-level material weaknesses are regarded as more pervasive and severe.<sup>9</sup> COSO (1992) and SAS No. 55 (AICPA, 1988a) emphasize that company-level controls are the foundation for all other components of internal control. Compared to transaction-level material weaknesses, company-level weaknesses are more likely to result in poor earnings quality (Doyle et al., 2007b), longer audit report lags (Ettredge et al., 2007), and shareholder dissatisfaction

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<sup>9</sup> ICDs are coded as company-level material weaknesses based on paragraph 53 of AS2 (PCAOB, 2004).

(Hermanson et al., 2007). Skinner's (1994) results suggest that such "large negative surprises" would be more likely to be disclosed by management in an interim period. Therefore, we expect that in the presence of company-level material weaknesses, management will be more aware of ICDs and more likely to provide early warning.

**Number of material weaknesses (*MWNO*).** Market participants also may perceive a larger number of material weaknesses to reflect more serious and more pervasive internal control problems. Consistent with the argument above for company-level weaknesses, as the number of material weaknesses disclosed in the Section 404 report increases, we expect management to be more likely to be aware that material weaknesses exist and more likely to provide early disclosure.

**Earnings restatements (*RESTATE*).** AS2 (PCAOB, 2004, para. 140) states that "restatement of previously issued financial statements to reflect the correction of a misstatement" is among the circumstances that should be treated as at least a significant deficiency and a strong indicator that a material weakness in internal control exists. Therefore, the disclosure of a restatement usually signals the existence of ICDs to the public. To protect them from reputation damage and litigation, managers may seek to provide disclosure about ICDs underlying the restatement. Ashbaugh-Skaife et al. (2007a) find previous accounting restatements / SEC enforcement actions to be associated with disclosures of ICDs under Section 302, and Krishnan and Visvanathan (2007) find a similar result for Section 404 disclosures. Therefore, if the company has recently restated its earnings, we expect management to be more likely to be aware that ICDs exist and more compelled to provide early disclosure.

### ***3.2 Litigation risk***

**Litigation risk (*LITI*).** Skinner (1994) and Ashbaugh-Skaife et al. (2007a) discuss the expected role of litigation risk in promoting the timely disclosure of bad news. Based on theory, we expect managers facing higher litigation risk (i.e., operating in higher litigation risk industries) to have a greater incentive to discover and disclose ICDs so as to minimize the potential for significant damages arising from their failure to warn investors of problems. However, we note that Ashbaugh-Skaife et al. (2007a) do not find any evidence that ICDs are more commonly disclosed by companies in high litigation risk industries.

### ***3.3 Subsequent financing***

**Equity issuance (*EQUFIN*) and debt issuance (*DEBFIN*).** Research indicates that some companies manage earnings or increase their disclosure activities to secure future financing on favorable terms (e.g., Lang and Lundholm, 2000; Shivakumar, 2000). Given the value relevance of ICD disclosures under Section 302 (Hammerlsey et al., 2008), we expect companies subsequently issuing equity or debt to be less likely to provide early disclosure of ICDs. Concealing ICDs during the sensitive pre-issuance time period, if successful, would be expected to result in greater proceeds from an equity issuance or more favorable terms for debt.

### ***3.4 Auditor characteristics***

**Big 4 auditor (*BIG4*).** Based on the theory about audit quality differences (e.g., DeAngelo, 1981), a large auditor is expected to be associated with earlier detection of ICDs and greater pressure placed on managers to disclose such deficiencies (Ashbaugh-Skaife et al., 2007a). However, Ashbaugh-Skaife et al. (2007a) find Grant Thornton and BDO Seidman to

be positively associated with ICD disclosures, while a Big 4 auditor is negatively related to ICD disclosures. Therefore, we do not have a directional prediction for *BIG4*.

**Former Andersen clients (AA).** Given the market changes caused by the dissolution of Andersen in 2002, which immediately precedes our sample period, we examine whether former Andersen clients are more or less likely to provide early warning of ICDs. Previous research indicates that successor auditors viewed Andersen audits as risky (Cahan and Zhang, 2006) and treated ex-Andersen clients more conservatively. It is possible that auditor conservatism could drive former Andersen clients to be more likely to disclose ICDs. Conversely, former Andersen clients might be less forthcoming about ICDs to attempt to avoid further “tainting” in the marketplace. Hence, we do not have a directional prediction for this variable.

**Auditor changes (AUCHG).** Since the pre-SOX period, companies that change auditors have been mandated to disclose any ICDs identified by their predecessor auditors (SEC, 1988; Krishnan, 2005). We expect that such a requirement will increase the likelihood of management’s disclosure of internal control problems. Even in situations where the predecessor auditor does not identify any internal control problems, auditor change can signal heightened client risk (Krishnan and Krishnan, 1997; Geiger et al., 1998). Ashbaugh-Skaife et al. (2007a), Krishnan and Visvanathan (2007), and Zhang et al. (2007) find auditor changes to be positively related to ICD disclosures. Hence, if the company has recently changed auditors, we expect management to be more likely to be aware that material weaknesses exist and more likely to provide early disclosure.<sup>10</sup>

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<sup>10</sup> Ashbaugh-Skaife et al. (2007a) view auditor resignations as an ICD risk factor, rather than as an ICD discovery and disclosure factor.

**Nonaudit fee ratio (*DNASR*).** Zhang et al. (2007) find material weakness disclosures to be positively related to auditor independence, measured by the ratio of *audit* fees to total fees. We use the ratio of *nonaudit* fees (the sum of nonaudit fees and other fees) to the sum of audit and audit-related fees to measure the auditor's lack of independence – large ratios of nonaudit fees may impair auditor independence such that the auditor is less likely to discover ICDs (less vigilant monitoring) and/or less likely to encourage management to disclose detected ICDs. Therefore, we expect the nonaudit fee ratio to be negatively related to ICD disclosures.

**Scaled audit fee (*AUFEE*).** Higher audit fees may reflect greater audit effort. Greater audit effort (enhanced monitoring) should increase the likelihood of discovering internal control problems in the quarterly reviews or annual audits. Also, if auditors know of any internal control problems, they are obligated to communicate them to the audit committee and management (AICPA, 1988b; PCAOB, 2004, para. 207), possibly during the fiscal year. Hence, we expect a positive relation between audit fees and early disclosure of material weaknesses.

### ***3.5 Management and governance characteristics***

**CFO change (*CFOCHG*).** Geiger and North (2006) find that the appointment of a new CFO is associated with lower discretionary accruals (less earnings management). A new CFO may bring a new perspective to the company, such that ICDs are more likely to be discovered. In addition, the disclosure of ICDs during the fiscal year may be less costly to the new CFO, who may deflect blame to the previous CFO (see Hoitash et al. (2007b) for evidence that CFO bonuses are negatively related to material weakness disclosures).

Therefore, we expect the presence of CFO change during the fiscal year to be associated with early disclosure of material weaknesses.<sup>11</sup>

**Institutional owners (*NINSTI*).** Compared to individual investors, institutional investors have more resources and greater incentives to monitor the activities of the companies in their investment portfolio (Gillan and Starks, 2000). Hence, companies with more institutional owners are under greater pressure to act in the best interest of investors. Ashbaugh-Skaife et al. (2007a) find institutional ownership concentration to be positively related to ICD disclosures, and Bronson et al. (2006) find greater institutional ownership to be positively related to the issuance of voluntary management reports on internal controls (MRICs). Similarly, we expect the increased monitoring provided by institutional investors, measured by the number of institutional investors, to be positively related to the early disclosure of material weaknesses under Section 302.

**Audit committee expertise (*ACEXPT*).** Previous studies show that audit committee expertise helps to protect investors' interests (e.g., Carcello and Neal, 2003; Krishnan and Ye, 2005). Also, Krishnan (2005), Krishnan and Visvanathan (2007), and Zhang et al. (2007) find audit committee financial expertise to be negatively associated with material weakness disclosures (comparing companies with versus without material weaknesses). Since all of our sample companies have material weaknesses, we expect audit committee members with greater accounting expertise (greater monitoring) to be more aware of such weaknesses and to be more assertive in ensuring that such weaknesses are disclosed in a timely manner.

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<sup>11</sup> Our CFO change variable captures whether the CFO's tenure is one year or less; therefore, some of the CFO changes could have occurred after ICDs were disclosed under Section 302. Of the 46 early-disclosing companies with CFO changes during the fiscal year, the tenure of the CFO at the time of the earliest disclosure was less than one year in 34 (74 percent) of the cases.

**Audit committee meetings (ACMEET).** Menon and Williams (1994) and Xie et al. (2003) document that the number of audit committee meetings is positively associated with the effectiveness of audit committees (see DeZoort et al. (2002) and Cohen et al. (2004) for reviews of such literature). Also, Bronson et al. (2006) find that the number of audit committee meetings is positively related to the issuance of voluntary MRICs, and Krishnan and Visvanathan (2007) find the number of audit committee meetings to be positively related to ICD disclosures under Section 404. Similarly, we expect the number of audit committee meetings (as a proxy for audit committee monitoring) to be positively related to the early disclosure of material weaknesses under Section 302.

### ***3.6 Control variables***

In the main model, we control for company size, measured by the log of total assets (*LOGTA*).<sup>12</sup> Ashbaugh-Skaife et al. (2007a) find company size to be negatively related to ICD disclosures, since smaller size is viewed as an ICD risk factor. In our study, since all sample companies have ICDs, it is possible that larger companies will be more likely to discover and disclose ICDs, as they have more resources. Hence, we do not offer an expected sign for this variable.

In our expanded model, we also control for several variables included in Ashbaugh-Skaife et al. (2007a) as indicators of internal control risk (i.e., the likelihood of having ICDs). These variables reflect factors including complexity, organizational change, growth, and financial performance.

## **4. Method**

### ***4.1 Model***

We use the following logistic regression model:

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<sup>12</sup> The use of market value of equity instead of assets produces similar results.

$$PROB(WARN) = f(COMMW, MWNO, RESTATE, LITI, EQUFIN, DEBFIN, BIG4, AA, AUCHG, DNASR, AUFEE, CFOCHG, NINSTI, ACEXPT, ACMEET, LOGTA)$$

Our dependent variable, *WARN*, is coded as 1 if any of the ICDs disclosed in the auditor’s adverse initial Section 404 report were disclosed earlier in the fiscal year in SEC filings (10-Qs, 10-Ks, 8-Ks, or proxy statements); 0 otherwise.<sup>13</sup> Please see Table 1 for the independent variable definitions and coding.

[Insert Table 1 about here]

#### 4.2 Data sources

We collected the data from several different sources. To identify disclosures regarding deficiencies in internal controls under Section 302, we used key words such as “weakness”, “reportable condition”<sup>14</sup>, “reportable events”, “deficiency”, and “deficiencies” to search in firms’ 10-Qs, 10-Ks, 8-Ks, and proxy statements on the Lexis/Nexis database.<sup>15</sup> If there was any disclosure of ICDs in these filings in the year before the fiscal year-end, we then compared these deficiencies to those identified in the auditor’s initial Section 404 report. If there was any overlap between the deficiencies disclosed under Section 302 and Section 404, *WARN* is coded as 1. Otherwise, it is coded as 0. We read the auditors’ Section 404 reports available on the Audit Analytics database or in firms’ 10-K filings to identify the internal control opinions and company-level material weaknesses. Data relating to number of material weaknesses, earnings restatement, auditor change, auditor fees, and whether the auditor is a Big 4 auditor were obtained from the Audit Analytics database.

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<sup>13</sup> As described below, we also use a second dependent variable, *LAG*, to capture the timing of management’s disclosures.

<sup>14</sup> Some companies still use the term “reportable conditions” or “reportable events” in their Section 302 disclosure of internal control deficiencies, because internal control problems were classified as reportable conditions and material weaknesses in the pre-SOX period.

<sup>15</sup> Audit Analytics also contains data about Section 302 disclosures. However, it does not have all the information we need for this study. Also, the Section 302 disclosure data on the Audit Analytics database were not available at the time of our initial data collection.

We obtained industry data for constructing *LITI* and other data (for *EQUFIN*, *DEBFIN*, *AA*, and *LOGTA*) from the Compustat database. Information on the CFO was retrieved from 10-Ks, 10-Qs, 8-Ks, and proxy statements. Data for the number of institutional investors were collected from the Compact Disclosure database.

We read the biographies of the audit committee directors in the proxy statements or 10-K filings to get information about the financial expertise of audit committee directors (*ACEXPT*). Following the SEC (2002b) and DeFond et al. (2005), we define an audit committee member as a financial expert if he/she has experience as a public accountant, auditor, principal or chief financial officer, controller, or principal or chief accounting officer. This definition is narrower than the “audit committee financial expert” definition issued by the SEC, as it relates directly to accounting expertise. Data on *ACMEET* also were retrieved from the proxy statements or 10-K filings.

### **4.3 Sample**

Our sample selection begins with 660 companies available on the Audit Analytics database that received adverse or disclaimer Section 404 audit opinions with fiscal years ending from November 15, 2004 – November 14, 2005. This sample was reduced due to repeat observations because of a change in the fiscal year-end ( $n = 1$ ), companies with restated internal control opinions ( $n = 104$ )<sup>16</sup>, companies not publicly traded or without required data on Compustat ( $n = 24$ ), companies without data on the number of institutional investors ( $n = 19$ ), companies with disclaimer Section 404 opinions ( $n = 30$ ), companies

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<sup>16</sup> Restated internal control opinions typically result in (a) moving from a clean opinion to an adverse opinion (73 companies in our sample), or (b) moving from an adverse opinion with fewer material weaknesses to an adverse opinion with more material weaknesses (31 companies in our sample – these 31 companies appear in the initial sample twice). For item (a), we delete these 73 observations, as it is very unlikely that management would be aware of (and disclose) the related deficiencies during the fiscal year. For item (b), we delete the 31 observations with more material weaknesses and keep the 31 observations with fewer material weaknesses (i.e., we retain the original Section 404 opinions).

without audit fee data ( $n = 2$ ), companies that did not disclose the number of audit committee meetings ( $n = 28$ ), and companies without audit committee expertise data ( $n = 1$ ). This leaves our final sample of 451 companies with adverse Section 404 opinions in the initial year of 404 adoption.

As shown in Table 2, the sample companies are concentrated most heavily in the manufacturing (37 percent) and services (22 percent) industries. Wholesale and retail (14 percent) and financial services (12 percent) also account for a sizable portion of the sample. Over 60 percent of the sample companies are listed on NASDAQ, followed by nearly 30 percent on the NYSE.<sup>17</sup>

[Insert Table 2 about here]

## 5. Results

### 5.1 Univariate analyses and correlations

As shown in Table 3, the mean of *WARN* is 0.271, indicating that only 27 percent of the sample companies provided early warning of any of their ICDs under Section 302 by the fiscal year-end. This is consistent with research by Glass Lewis (2005) finding that most material weaknesses disclosed in auditors' initial Section 404 reports had not been previously disclosed by management under Section 302.

Table 3 also provides descriptive statistics for the independent variables for the whole sample and for companies with  $WARN = 1$  (companies that provide early warning of material weaknesses in internal control under Section 302) and  $WARN = 0$  (companies that do not provide early warning of material weaknesses in internal control under Section 302). Seven variables, *COMMW* (company-level material weaknesses), *MWNO* (number of material

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<sup>17</sup> We test whether stock exchange or time period (0 = fiscal year-end on or before 12/31/04; else 1) are associated with early disclosure under Section 302, but find that neither variable is significant.

weaknesses), *RESTATE* (frequency of accounting restatements), *AUCHG* (frequency of auditor change), *AUFEE* (scaled audit fees), *CFOCHG* (CFO change), and *ACMEET* (number of audit committee meetings) are significantly higher for the *WARN* = 1 group. *EQUFIN* (subsequent equity financing), *BIG4*, and *DNASR* (nonaudit fee ratio) are significantly lower for the *WARN* = 1 group.

[Insert Table 3 about here]

Table 4 presents the correlation matrix for the variables in the main model. *WARN* is significantly related to many of the independent variables. Only one correlation among the independent variables is greater than 0.50 in absolute value (*AUFEE* and *LOGTA* -0.51, recalling that *AUFEE* is audit fee scaled by total assets). The highest VIF score is 2.21, far below the 10.00 threshold cited by Neter et al. (1996). Therefore, we do not view multicollinearity as a problem.

[Insert Table 4 about here]

## 5.2 Logistic regression results

The primary logit results are reported in the first two numerical columns of Table 5. The overall model is highly significant (Chi-Square = 160.49,  $p < 0.01$ ), and the pseudo R-Square is 43.47 percent. The variables that are significant and have the expected signs include *COMMW* ( $p < 0.01$ ), *MWNO* ( $p < 0.05$ ), *RESTATE*<sup>18</sup> ( $p < 0.01$ ), *EQUFIN*<sup>19</sup> ( $p < 0.05$ ), *DNASR* ( $p < 0.05$ ), *AUFEE*<sup>20</sup> ( $p < 0.10$ ), *CFOCHG* ( $p < 0.05$ ), *NINSTI*<sup>21</sup> ( $p < 0.01$ ), and

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<sup>18</sup> We measure restatement frequency during the preceding 36 months. The results are similar when we use the preceding 12 or 24 months.

<sup>19</sup> If we use \$30 million instead of \$20 million to code *EQUFIN*, the results are similar. In addition, if we replace *EQUFIN* and *DEBFIN* with *NEWFIN* (= 1 if company issues equity or debt greater than \$20 million (or \$30 million) in the next fiscal year; 0 otherwise), *NEWFIN* is significantly negative, and the other results are similar.

<sup>20</sup> The results are similar if we use the natural log of audit fees.

<sup>21</sup> If we add (a) institutional ownership percentage, or (b) institutional ownership percentage divided by the number of institutional investors, these additional variables are not significant, and the other results are similar.

*ACMEET* ( $p < 0.05$ ). Therefore, companies with company-level material weaknesses, more total material weaknesses, more frequent accounting restatements, more independent auditors, higher audit fees, CFO change, more institutional investors, and more audit committee meetings are more likely to provide early disclosure.<sup>22</sup> Companies with subsequent equity financing are less likely to provide early disclosure.<sup>23, 24</sup>

[Insert Table 5 about here]

### **5.3 OLS regression results with alternate dependent variable (*LAG*)**

Our primary dependent variable, *WARN*, measures whether the company's management disclosed the material weakness at any time during the year preceding the fiscal year-end. This measure does not consider precisely how early management's warning, if any, was provided, and some market participants may view disclosure as more useful the earlier it is provided.

Therefore, as an alternative dependent variable, we use *LAG*, which equals the fiscal year-end date for the year for which a company receives an adverse Section 404 opinion

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Replacing *BIG4* with *BIG6* (coded 1 if company engaged one of the largest six audit firms for the fiscal year; 0 otherwise) also yields similar results.

<sup>22</sup> We base auditor changes on the preceding 36-month period. Using the preceding 24 months produces similar results. Also, if we base *ACEXPT* on whether the audit committee has at least one accounting expert, the results are similar.

<sup>23</sup> In addition to the expected results, *LITI* has a marginally negative coefficient (opposite of the theoretical expectation). Companies in high litigation risk industries appear less likely to provide early warning of ICDs ( $p = 0.08$  two-tailed), and we find similar results for *LITI* in Table 6 and in the OLS regression below. It is possible that companies in high litigation risk industries fear the scrutiny that an ICD disclosure may cause, and they may hope the ICD will be resolved before year-end, such that it is never made public. For example, Foamex International Inc. disclosed some reportable conditions in internal controls in April 2004 and then became the subject of an informal inquiry by the SEC (Foamex International Inc., 2005). Also, different from Skinner (1994), Francis et al. (1994) argue that voluntary and early disclosure of bad news may not be an effective mechanism to prevent litigation. We call for additional research to examine this unexpected finding, and we encourage readers to view this result cautiously.

<sup>24</sup> We run several additional tests. First, we also test *CEOCHR* (= 1 if the CEO and board chair are the same person; 0 otherwise). This variable is not significant. Second, the addition of an auditor industry specialization variable produces similar results. The specialization variable is not significant. Third, variables measuring company age and auditor tenure are not significant (given the *AUCHG* and *AA* variables, these analyses are run on reduced samples or models). Finally, we add industry dummy variables to the model (based on 1-digit SICs). The results are similar, and *SICI* (Agriculture, Mining, and Construction) is marginally significant ( $p = 0.09$ ) and positive.

minus the date of the earliest disclosure of any deficiencies mentioned in the auditor's Section 404 report. The earliest disclosure date is limited to the beginning of the fiscal year (*LAG* has a maximum value of +365 days). If no disclosure of the problem was made before the filing date of the 10-K with the auditor's adverse attestation report, then *LAG* equals the year-end date minus the 10-K filing date (e.g., if the 10-K is issued 75 days after year-end and no disclosure was made before the 10-K filing date, then  $LAG = -75$  days). Large positive values of *LAG* indicate earlier disclosure under Section 302. The mean (median) of *LAG* is -10.68 days (-75 days).

The last two columns of Table 5 present the OLS regression results using the same independent variables as in the main logit model, but replacing *WARN* with *LAG* as the dependent variable (White's (1980) t-statistics are used to correct for heteroskedasticity). The overall model is highly significant (F-value = 12.21,  $p < 0.01$ ), and the adjusted R-Square is 28.50 percent. The OLS regression results are very similar to the logistic regression results. The only exceptions are that auditor change (*AUCHG*) becomes positively significant ( $p < 0.05$ ), and the number of material weaknesses (*MWNO*) and subsequent equity financing (*EQUFIN*) are no longer significant.

#### ***5.4 Controlling for ICD risk***

Our sample includes only companies with adverse initial Section 404 reports; therefore, all of the sample companies have material weaknesses at the end of the fiscal year. We implicitly assume that the related ICDs existed during the entire fiscal year, such that management had a reasonable opportunity to provide early warning of the ICDs. However, it is possible that a company engaged in an economic event that induced a material weakness at the fiscal year-end, but the related ICD did not exist at the time of the Section 302

certifications. To bolster our analysis, we add several variables from Ashbaugh-Skaife et al. (2007a) to control for ICD risk – factors that reflect a greater probability that ICDs exist due to economic events that may cause ICDs to develop. These economic factors are the number of business segments, foreign operations, merger/acquisition activity, restructurings, sales growth, inventory, and losses (see Table 1 for variable names and coding).<sup>25</sup> While Ashbaugh-Skaife et al. (2007a) predict positive signs for these variables (they are expected to be positively related to ICD existence), it is possible that they may be negatively related to ICD disclosure in our study. For example, a merger late during the year may increase the risk that an ICD exists, but it may reduce the chance of early warning because any ICDs caused by the merger would not have existed during interim periods. Accordingly, we do not predict particular signs for these variables.

Table 6 presents the expanded model results, both for the logit and OLS regressions. The results are quite consistent with those in Table 5, and none of the ICD risk variables is significant.<sup>26</sup>

[Insert Table 6 about here]

### ***5.5 Additional analyses related to WARN definition***

In our main logit model in Table 5, we use the fiscal year-end as the cut-off date to define *WARN*, partly because the fiscal year-end is the date for which the effectiveness of internal control is evaluated, and partly because we are more interested in management's

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<sup>25</sup> Ashbaugh-Skaife et al. (2007a) also include company size, auditor dismissal, and financial distress as ICD risk factors. Company size and auditor change are already in our model, and the addition of return on assets and leverage (financial distress variables) to our model produces similar results (these variables are not significant).

<sup>26</sup> As an alternative test, we add *CFOR* (change in income from foreign operations from the prior year deflated by total assets), *CINVEN* (change in the ratio of inventory to total assets from the prior year), *CSIZE* (change in the natural logarithm of total assets from the prior year), and *CSEG* (change in the number of business segments from the prior year) to the main logit model and rerun the regression. The coefficients on these variables are not significant except that the coefficient on *CFOR* is positive ( $p = 0.01$ ). The original results are not affected, except that *AUFEE* becomes insignificant.

disclosure without the external auditor's involvement in the attestation process. When we use the signature date on the auditor's adverse Section 404 report as the cut-off date to define *WARN*, its mean is 0.499. If we rerun our Table 5 logit model using *WARN* defined by the auditor's signature date, we find similar results for *COMMW*, *MWNO*, *RESTATE*, *EQUFIN*, *NINSTI*, and *ACMEET*, while *DNASR*, *AUFEE*, and *CFOCHG* are not significant (*LITI* and *AA* are negative and significant;  $p < 0.05$ , two-tailed). Thus, the auditor and management variables are associated with early warning during the fiscal year (as reflected in Table 5), but not after the fiscal year-end.

When we use the filing date of the 10-K with the auditor's adverse Section 404 opinion as the cut-off date to define *WARN*, its mean is 0.517. Thus, over half of companies provide disclosures of one or more ICDs before auditor's Section 404 report is released, but many of these disclosures take place after fiscal year-end. If we rerun our Table 5 logit model using *WARN* defined by the 10-K filing date, we find similar results for *COMMW*, *MWNO*, *RESTATE*, *EQUFIN*, *NINSTI*, and *ACMEET*, while *DNASR*, *AUFEE*, and *CFOCHG* are not significant (*LITI* and *AA* are negatively significant ( $p = 0.06$  and  $p < 0.05$ , respectively); two-tailed tests).

Finally, we retain in our sample only those 233 companies that disclosed ICDs under Section 302 either during the fiscal year or at any time after year-end up through the date the 10-K was filed. In this reduced sample, *WARN* = 1 means that the company disclosed the ICDs during the fiscal year, while *WARN* = 0 means that the company disclosed the deficiencies after year-end. If we run our Table 5 logit model on this reduced sample, we find that *COMMW* ( $p = 0.08$ ), *RESTATE* ( $p < 0.01$ ), *AUFEE* ( $p = 0.10$ ), *CFOCHG* ( $p = 0.05$ ), and

*NINSTI* ( $p = 0.09$ ) are positively associated with early disclosure, while *EQUFIN* ( $p = 0.09$ ), *DNASR* ( $p = 0.02$ ), and *BIG4* ( $p = 0.07$ ) are negatively related to early disclosure.

### **5.6 Unexpected fees**

To test the robustness of our results for auditor fees, we compute unexpected values for the nonaudit fee ratio and audit fees. Following the approach used by Raghunandan et al. (2003), we estimate OLS regression models with nonaudit fees, audit fees, and the natural logarithm of audit fees as dependent variables.<sup>27</sup>

The adjusted R-squares are 24.76 percent, 41.81 percent, and 71.32 percent for nonaudit fees, audit fees, and log audit fees, respectively. The residual from the nonaudit fee model divided by the residual from the audit fee model<sup>28</sup> is used to replace the *DNASR* variable in our Table 5 logit model. The residual from the log audit fee model is used to replace the *AUFEE* variable. The results of the logit model using the unexpected fee measures are similar to those presented in Table 5. The unexpected nonaudit fee ratio is negatively significant ( $p < 0.10$ ), and the unexpected audit fee is positively significant ( $p < 0.01$ ).

## **6. Conclusion**

Many parties in the investor community apparently expected management to reveal deficiencies in internal control under Section 302 before auditors reported such deficiencies in their initial Section 404 reports. In our sample, just over one-quarter of companies provided

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<sup>27</sup> The independent variables include company size (natural logarithm of total assets), Big 4 auditor, return on assets, one-year stock return, leverage, institutional ownership, the presence of negative special items, book-to-market ratio, the number of business segments, the existence of foreign operations, the existence of a pension or post-retirement plan, whether the auditor is in the first two years of its tenure, the existence of merger activity, new financing activity, sales growth over the past year, the ratio of inventory and receivables to total assets, the reporting lag between the fiscal year-end and the earnings announcement date, the volatility of stock price, and one-digit SIC dummies.

<sup>28</sup> There are 18 companies that have zero nonaudit fees. Setting the nonaudit fee to one dollar to allow for the log transformation actually lowers the explanatory power of the regression. Therefore, we choose not to use the log form of the fee variables as the dependent variables to construct the unexpected fee ratio.

such early warning of any of their material weaknesses before the end of the fiscal year for which they received an adverse initial Section 404 report.

We find early disclosure of such ICDs to be associated with factors related to management's incentive to discover and disclose ICDs. Specifically, we find evidence that early disclosure of ICDs under Section 302 is associated with the severity and number of material weaknesses, prior earnings restatements, future equity financing activities, auditor independence and effort, CFO change, the number of institutional investors, and the number of audit committee meetings. Results are similar when we consider the exact timing of early disclosure under Section 302. The results persist after controlling for ICD risk factors derived from Ashbaugh-Skaife et al. (2007a).

Our results highlight the role of management's incentive to discover and disclose ICDs. Specifically, managers are more likely to provide early warning when company-level material weaknesses exist, when there is a greater number of material weaknesses, or when the material weaknesses have been exposed to the public through earnings restatements. In these cases, the material weaknesses appear to reflect particularly negative news that managers are more likely to disclose early (see Skinner, 1994). In addition, the results illustrate the important role of financing incentives in influencing disclosure. Managers planning to issue equity in the coming year are less likely to provide early warning of control problems, consistent with a prior finding that some companies increase their disclosure activities to "hype" stock prices before equity offerings (Lang and Lundholm, 2000). Finally, the results suggest the important role of external monitoring in promoting the disclosure of ICDs. Disclosure of ICDs is more likely in the presence of independent, diligent auditors, a greater number of institutional investors, and diligent audit committees.

There are two primary limitations of our study. First, while our model contains a number of independent variables that we believe relate to management's knowledge of and/or willingness to disclose ICDs, there may be omitted variables correlated with our dependent variable and with certain independent variables. Second, given our research design, we are not able to separate the effects of management being unaware of an internal control problem versus management being aware of the problem but choosing not to report it (similar to Ashbaugh-Skaife et al. (2007a)). Other research methods, such as experimental markets, are needed to decouple these two factors.

Going forward, we encourage additional research on internal control reporting. For example, non-accelerated filers soon will be subject to Section 404. These companies will issue management reports on internal control (without auditor attestation) for years ending on or after December 15, 2007, followed by management and auditor reports for years ending on or after December 15, 2008 (SEC, 2006). It will be important to understand whether our results generalize to the non-accelerated filer setting, or whether other factors are associated with early warning of material weaknesses in internal control in the non-accelerated filer segment of the market.

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Table 1  
Variable definitions

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<i>WARN</i>	=	1 if one or more of the ICDs disclosed in the auditor's adverse Section 404 report were disclosed earlier in the fiscal year in SEC filings (10-Q, 10-K, 8-K, or proxy statements); 0 otherwise.
<i>COMMW</i>	=	1 if any company-level material weaknesses are disclosed in the auditor's attestation report; 0 otherwise.
<i>MWNO</i>	=	Number of material weaknesses disclosed in the auditor's attestation report.
<i>RESTATE</i>	=	Frequency of disclosing earnings restatements during the 36-month period before the fiscal year-end.
<i>LITI</i>	=	1 if a company is in a litigious industry – SIC codes 2833-2836; 3570-3577; 3600-3674; 5200-5961; 7370-7374, and 8731-8734; 0 otherwise (Francis et al., 1994).
<i>EQUFIN</i>	=	1 if a company issues equity greater than \$20 million in the next fiscal year; 0 otherwise.
<i>DEBFIN</i>	=	1 if a company issues debt greater than \$20 million in the next fiscal year; 0 otherwise.
<i>BIG4</i>	=	1 if the auditor that issues the Section 404 report is a Big 4 auditor; 0 otherwise.
<i>AA</i>	=	1 if a company was a client of Arthur Andersen in 2001 fiscal year; 0 otherwise.
<i>AUCHG</i>	=	Frequency of auditor changes during the 36-month period before the fiscal year-end.
<i>DNASR</i>	=	1 if the nonaudit fee ratio (the sum of tax fees and other fees divided by the sum of audit fees and audit-related fees) is above the sample median; 0 otherwise.
<i>AUFEE</i>	=	Audit fees scaled by total assets at the end of the fiscal year.
<i>CFOCHG</i>	=	1 if the CFO tenure is no greater than 1 year; 0 otherwise.
<i>NINSTI</i>	=	Natural logarithm of the number of institutional investors.
<i>ACEXPT</i>	=	Proportion of audit committee members with accounting expertise.
<i>ACMEET</i>	=	The number of audit committee meetings held in the fiscal year.
<i>LOGTA</i>	=	Natural logarithm of total assets (in millions) at the end of the fiscal year.
<i>SEG</i>	=	The number of business segments in the fiscal year.
<i>FOROPS</i>	=	1 if a company has foreign operations in the fiscal year; 0 otherwise.
<i>M&amp;A</i>	=	1 if a company is involved in a merger or acquisition in the fiscal year; 0 otherwise.
<i>RESTR</i>	=	1 if a company is involved in a restructuring in the fiscal year; 0 otherwise.
<i>SGROW</i>	=	Percentage change in sales over the prior year (winsorized at 1% and 99%).
<i>INVEN</i>	=	Inventory scaled by total assets at the end of the fiscal year.
<i>PLOSS</i>	=	Proportion of years with negative earnings during the most recent three-year period.

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Table 2  
Sample composition

Panel A: Composition of sample, by industry

Industry (SIC)	WARN = 1	WARN = 0	Overall Percentage
Agricultural Production and Services, Mining, and Construction (1-19)	11	14	5.54
Manufacturing (20-39)	44	124	37.25
Transportation and Utilities (40-49)	15	24	8.65
Wholesale and Retail (50-59)	11	53	14.19
Financial Services (60-69)	10	45	12.20
Services (70-89)	<u>31</u>	<u>69</u>	<u>22.17</u>
Total	<u>122</u>	<u>329</u>	<u>100.00</u>

Panel B: Composition of sample, by exchange

Exchange	WARN = 1	WARN = 0	Overall Percentage
AMEX	6	14	4.43
NASDAQ	75	202	61.42
NYSE	34	97	29.05
OTC	<u>7</u>	<u>16</u>	<u>5.10</u>
Total	122	329	100.00

See Table 1 for variable definition.

Table 3  
Descriptive statistics

Variable	Group	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	t-statistic	Wilcoxon Statistic
<i>WARN</i>	All	0.271	0.445	0.000	0.000	1.000		
<i>COMMW</i>	<i>WARN=1</i>	0.615	0.489	0.000	1.000	1.000		
	<i>WARN=0</i>	0.289	0.454	0.000	0.000	1.000	6.64***	6.34***
<i>MWNO</i>	All	0.377	0.485	0.000	0.000	1.000		
	<i>WARN=1</i>	3.418	3.045	1.000	2.500	4.000		
<i>RESTATE</i>	<i>WARN=0</i>	1.872	1.580	1.000	1.000	2.000	5.35***	6.76***
	All	2.290	2.187	1.000	1.000	3.000		
<i>LITI</i>	<i>WARN=1</i>	1.041	0.948	0.000	1.000	2.000		
	<i>WARN=0</i>	0.267	0.531	0.000	0.000	0.000	8.53***	9.59***
<i>EQUFIN</i>	All	0.477	0.752	0.000	0.000	1.000		
	<i>WARN=1</i>	0.369	0.484	0.000	0.000	1.000		
<i>DEBFIN</i>	<i>WARN=0</i>	0.416	0.494	0.000	0.000	1.000	-0.91	-0.91
	All	0.404	0.491	0.000	0.000	1.000		
<i>BIG4</i>	<i>WARN=1</i>	0.090	0.288	0.000	0.000	0.000		
	<i>WARN=0</i>	0.188	0.392	0.000	0.000	0.000	-2.91***	-2.51**
<i>AA</i>	All	0.162	0.369	0.000	0.000	0.000		
	<i>WARN=1</i>	0.287	0.454	0.000	0.000	1.000		
<i>AUCHG</i>	<i>WARN=0</i>	0.295	0.457	0.000	0.000	1.000	-0.16	-0.16
	All	0.293	0.455	0.000	0.000	1.000		
<i>DNASR</i>	<i>WARN=1</i>	0.746	0.437	0.000	1.000	1.000		
	<i>WARN=0</i>	0.839	0.368	1.000	1.000	1.000	-2.09**	-2.25**
<i>AUFEE</i>	All	0.814	0.390	1.000	1.000	1.000		
	<i>WARN=1</i>	0.156	0.364	0.000	0.000	0.000		
<i>AUFEE</i>	<i>WARN=0</i>	0.173	0.379	0.000	0.000	0.000	-0.44	-0.44
	All	0.169	0.375	0.000	0.000	0.000		
<i>AUFEE</i>	<i>WARN=1</i>	0.533	0.706	0.000	0.000	1.000		
	<i>WARN=0</i>	0.356	0.567	0.000	0.000	1.000	2.49**	2.39**
<i>AUFEE</i>	All	0.404	0.612	0.000	0.000	1.000		
	<i>WARN=1</i>	0.410	0.494	0.000	0.000	1.000		
<i>AUFEE</i>	<i>WARN=0</i>	0.532	0.500	0.000	1.000	1.000	-2.31**	-2.30**
	All	0.499	0.501	0.000	0.000	1.000		
<i>AUFEE</i>	<i>WARN=1</i>	0.008	0.016	0.002	0.004	0.009		
	<i>WARN=0</i>	0.005	0.007	0.001	0.003	0.006	2.13**	3.58***
<i>AUFEE</i>	All	0.006	0.010	0.001	0.003	0.006		

Table 3 (continued)  
Descriptive statistics

Variable	Group	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	t-statistic	Wilcoxon Statistic
<i>CFOCHG</i>	<i>WARN=1</i>	0.377	0.487	0.000	0.000	1.000		
	<i>WARN=0</i>	0.204	0.403	0.000	0.000	0.000	3.51***	3.77***
	All	0.251	0.434	0.000	0.000	1.000		
<i>NINSTI</i>	<i>WARN=1</i>	4.130	1.105	3.584	4.331	4.745		
	<i>WARN=0</i>	4.126	1.236	3.689	4.357	4.852	0.03	-0.59
	All	4.127	1.201	3.638	4.344	4.836		
<i>ACEXPT</i>	<i>WARN=1</i>	0.172	0.379	0.000	0.000	0.000		
	<i>WARN=0</i>	0.164	0.371	0.000	0.000	0.000	0.20	0.20
	All	0.166	0.373	0.000	0.000	0.000		
<i>ACMEET</i>	<i>WARN=1</i>	12.787	7.417	8.000	11.000	16.000		
	<i>WARN=0</i>	9.234	4.200	6.000	8.000	11.000	5.00***	5.00***
	All	10.195	5.491	7.000	9.000	12.000		
<i>LOGTA</i>	<i>WARN=1</i>	6.159	1.782	4.970	6.000	7.310		
	<i>WARN=0</i>	6.245	1.615	5.130	6.060	7.140	-0.49	-0.59
	All	6.222	1.661	5.110	6.050	7.190		

\*\*\*, \*\*, and \* indicate significance at the 0.01, 0.05 and 0.10 levels, respectively, two-tailed.

See Table 1 for variable definitions.

Table 4  
 Pearson correlation matrix  
 N = 451

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	<i>COMMW</i>	<i>MWNO</i>	<i>RESTATE</i>	<i>LITI</i>	<i>EQUFIN</i>	<i>DEBFIN</i>	<i>BIG4</i>	<i>AA</i>	<i>AUCHG</i>	<i>DNASR</i>	<i>AUFEE</i>	<i>CFOCHG</i>	<i>NINSTI</i>	<i>ACEXPT</i>	<i>ACMEET</i>	<i>LOGTA</i>
<i>WARN</i>	<b>0.299</b>	<b>0.314</b>	<b>0.457</b>	-0.043	<b>-0.119</b>	-0.008	<b>-0.106</b>	-0.021	<b>0.129</b>	<b>-0.108</b>	<b>0.138</b>	<b>0.178</b>	0.002	0.010	<b>0.288</b>	-0.023
<i>COMMW</i>		<b>0.491</b>	<b>0.170</b>	0.041	<b>-0.093</b>	-0.038	<b>-0.168</b>	-0.008	0.070	0.011	<b>0.178</b>	0.068	<b>-0.108</b>	-0.040	<b>0.140</b>	<b>-0.130</b>
<i>MWNO</i>			<b>0.214</b>	0.048	<b>-0.127</b>	-0.005	-0.056	0.013	0.085	-0.047	<b>0.212</b>	<b>0.136</b>	-0.051	-0.008	<b>0.210</b>	<b>-0.133</b>
<i>RESTATE</i>				-0.053	-0.063	0.046	-0.053	0.038	<b>0.151</b>	-0.025	0.030	<b>0.103</b>	-0.087	0.010	<b>0.285</b>	0.039
<i>LITI</i>					-0.030	<b>-0.172</b>	0.034	-0.008	-0.048	<b>-0.107</b>	<b>0.101</b>	0.046	0.070	-0.028	0.054	<b>-0.272</b>
<i>EQUFIN</i>						<b>0.247</b>	<b>0.102</b>	-0.069	-0.034	0.055	<b>-0.117</b>	-0.018	<b>0.293</b>	-0.035	0.003	<b>0.342</b>
<i>DEBFIN</i>							<b>0.158</b>	0.036	0.022	0.021	<b>-0.162</b>	0.022	<b>0.225</b>	<b>0.118</b>	<b>0.141</b>	<b>0.372</b>
<i>BIG4</i>								-0.028	<b>-0.476</b>	0.045	<b>-0.112</b>	-0.013	<b>0.291</b>	-0.062	<b>0.126</b>	<b>0.289</b>
<i>AA</i>									<b>0.488</b>	-0.011	-0.023	0.013	-0.015	0.006	0.029	-0.092
<i>AUCHG</i>										<b>-0.107</b>	<b>0.100</b>	0.003	<b>-0.155</b>	0.017	0.043	<b>-0.155</b>
<i>DNASR</i>											-0.071	0.006	0.053	0.078	-0.069	0.075
<i>AUFEE</i>												0.082	<b>-0.247</b>	-0.037	-0.025	<b>-0.514</b>
<i>CFOCHG</i>													0.012	0.085	<b>0.170</b>	0.015
<i>NINSTI</i>														-0.028	<b>0.149</b>	<b>0.438</b>
<i>ACEXPT</i>															0.055	-0.017
<i>ACMEET</i>																<b>0.214</b>

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Bold indicates significance at the 0.05 level or better.  
 See Table 1 for variable definitions.

Table 5  
 Primary regression results  
 N = 451

Variable	Expected Sign	Logistic Regression DV = <i>WARN</i>		OLS Regression DV = <i>LAG</i>	
		Coefficient Estimate	t-statistic	Coefficient Estimate	White's t-statistic
<i>Intercept</i>	?	-3.859	-4.41***	-123.689	-4.25***
<i>COMMW</i>	+	0.945	3.08***	22.908	1.78**
<i>MWNO</i>	+	0.127	1.87**	3.915	1.21
<i>RESTATE</i>	+	1.275	6.59***	63.054	7.85***
<i>LITI</i> <sup>a</sup>	+	-0.522	-1.76	-18.500	-1.67
<i>EQUFIN</i>	-	-0.801	-1.79**	4.822	0.33
<i>DEBFIN</i>	-	-0.098	-0.30	-7.804	-0.64
<i>BIG4</i>	?	-0.430	-1.03	-9.105	-0.58
<i>AA</i>	?	-0.582	-1.39	-12.659	-0.69
<i>AUCHG</i>	+	0.201	0.71	23.774	1.94**
<i>DNASR</i>	-	-0.609	-2.23**	-25.580	-2.41***
<i>AUFEE</i>	+	20.429	1.45*	1703.324	3.18***
<i>CFOCHG</i>	+	0.628	2.12**	34.777	2.67***
<i>NINSTI</i>	+	0.351	2.46***	10.921	1.97**
<i>ACEXPT</i>	+	0.048	0.13	3.624	0.24
<i>ACMEET</i>	+	0.060	2.26**	2.357	2.15**
<i>LOGTA</i>	?	-0.005	-0.04	-0.135	-0.03
		Chi-square	160.49***	F-Value	12.21***
		Pseudo R <sup>2</sup>	43.47%	Adj. R <sup>2</sup>	28.50%

\*\*\*, \*\*, and \* indicate significance at the 0.01, 0.05 and 0.10 levels, respectively; one-tailed where signs are predicted, two-tailed otherwise.

*LAG* = The fiscal year-end date for the year for which a company receives an adverse Section 404 opinion minus the date of the earliest disclosure of any deficiencies mentioned in the auditor's Section 404 report. The earliest disclosure date is limited to the beginning of the fiscal year. Large positive values of *LAG* indicate earlier disclosure under Section 302.

See Table 1 for other variable definitions.

<sup>a</sup> See footnote 22 for discussion of this variable's unexpected sign.

Table 6  
Regression results controlling for ICD risk  
N = 451

Variable	Expected Sign	Logistic Regression DV = <i>WARN</i>		OLS Regression DV = <i>LAG</i>	
		Coefficient Estimate	t-statistic	Coefficient Estimate	t-statistic
<i>Intercept</i>	?	-3.877	-4.00***	-112.134	-3.07***
<i>COMMW</i>	+	0.971	3.10***	22.916	1.81**
<i>MWNO</i>	+	0.126	1.81**	4.088	1.41*
<i>RESTATE</i>	+	1.314	6.50***	63.151	8.31***
<i>LITI</i> <sup>a</sup>	+	-0.612	-1.98	-21.687	-1.81
<i>EQUFIN</i>	-	-0.856	-1.83**	7.469	0.46
<i>DEBFIN</i>	-	-0.129	-0.39	-9.087	-0.70
<i>BIG4</i>	?	-0.346	-0.80	-10.432	-0.60
<i>AA</i>	?	-0.653	-1.52	-12.113	-0.72
<i>AUCHG</i>	+	0.261	0.90	23.772	1.98**
<i>DNASR</i>	-	-0.636	-2.30**	-27.355	-2.56***
<i>AUFEE</i>	+	20.461	1.39*	1697.118	2.70***
<i>CFOCHG</i>	+	0.557	1.78**	32.863	2.57***
<i>NINSTI</i>	+	0.414	2.69***	11.415	2.14**
<i>ACEXPT</i>	+	0.091	0.24	4.320	0.30
<i>ACMEET</i>	+	0.059	2.16**	2.459	2.27**
<i>LOGTA</i>	?	0.015	0.11	-1.113	-0.22
<i>SEG</i>	?	-0.119	-1.14	-2.055	-0.52
<i>FOROPS</i>	?	-0.185	-0.65	1.159	0.10
<i>M&amp;A</i>	?	-0.443	-0.59	-26.960	-0.92
<i>RESTR</i>	?	0.269	0.86	15.374	1.23
<i>SGROW</i>	?	-0.001	-0.14	-0.064	-0.40
<i>INVEN</i>	?	-1.254	-1.17	1.668	0.04
<i>PLOSS</i>	?	0.037	0.09	-10.745	-0.69
		Chi-square	165.12***	F-Value	8.54***
		Pseudo R <sup>2</sup>	44.50%	Adj. R <sup>2</sup>	27.83%

\*\*\*, \*\*, and \* indicate significance at the 0.01, 0.05 and 0.10 levels, respectively; one-tailed where signs are predicted, two-tailed otherwise.

See Tables 1 and 5 for variable definitions.

<sup>a</sup> See footnote 22 for discussion of this variable's unexpected sign.