

# The Disclosure of Material Weaknesses in Internal Control after the Sarbanes-Oxley Act

Weili Ge and Sarah McVay

**SYNOPSIS:** This paper focuses on a sample of 261 companies that disclosed at least one material weakness in internal control in their SEC filings after the effective date of the Sarbanes-Oxley Act of 2002. Based on the descriptive material weakness disclosures provided by management, we find that poor internal control is usually related to an insufficient commitment of resources for accounting controls. Material weaknesses in internal control tend to be related to deficient revenue-recognition policies, lack of segregation of duties, deficiencies in the period-end reporting process and accounting policies, and inappropriate account reconciliation. The most common account-specific material weaknesses occur in the current accrual accounts, such as the accounts receivable and inventory accounts. Material weakness disclosures by management also frequently describe internal control problems in complex accounts, such as the derivative and income tax accounts. In our statistical analysis, we find that disclosing a material weakness is positively associated with business complexity (e.g., multiple segments and foreign currency), negatively associated with firm size (e.g., market capitalization), and negatively associated with firm profitability (e.g., return on assets).

**Keywords:** internal control; material weakness; Sarbanes-Oxley.

**Data Availability:** Data are available from sources identified in the text.

## INTRODUCTION

The Sarbanes-Oxley Act (SOX) of 2002 requires the implementation of many new rules and procedures. One element of SOX, concentrated in Sections 302 and 404, relates to the internal control over financial reporting. Essentially, SOX requires top

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management to establish, maintain, and regularly evaluate the effectiveness of internal control over financial reporting (hereafter internal control).<sup>1</sup> In this paper, we focus on the firms that have disclosed material weaknesses in internal control since August 2002, the effective date of Section 302. 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*” (emphasis added), as defined by the Public Company Accounting Oversight Board (PCAOB 2004) under Auditing Standard No. 2.<sup>2</sup> In practice, there is a wide array of possible material weaknesses.

We identify 261 companies that disclosed at least one material weakness in internal control in their SEC filings from August 2002 to November 2004 in response to the Section 302 requirements of SOX. We present descriptive evidence on the specific types of material weaknesses disclosed, as well as the general characteristics of the firms and industries in which they occur. This study is the first to examine material weakness disclosures following SOX, and should be informative for managers and auditors, because the former must identify material weaknesses within their firm, and the latter must attest to the manager’s report of internal control under Section 404 of SOX. The evidence is likely to interest regulators and users of financial statements as well.<sup>3</sup>

Based on the descriptive disclosures of material weaknesses provided by management in their SEC filings, we find that inadequate accounting resources underpin the majority of internal control weaknesses. For example, a common cause cited for material weaknesses is a lack of qualified accounting personnel. More specifically, material weaknesses in internal control tend to be attributed (by management) to deficient revenue-recognition policies, lack of segregation of duties, deficiencies in the period-end reporting process and accounting policies, and inappropriate account reconciliation. Subsidiary-specific internal control deficiencies also appear to be quite common. The most commonly identified account-specific material weaknesses occur in the current accrual accounts, such as the accounts receivable and inventory accounts. Material weakness disclosures by management also frequently describe internal control problems in complex accounts, such as the derivative and income tax accounts.

In our statistical analysis, we find that disclosing a material weakness is positively associated with business complexity, measured by the number of reported operating segments and the existence of a foreign currency translation. Disclosing a material weakness is negatively associated with firm size and firm profitability. Finally, after controlling for complexity, size, and profitability, we find that being audited by a large audit firm is positively associated with the reporting of a material weakness. Perhaps, since large audit firms

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<sup>1</sup> Internal control over financial reporting is defined as “a process designed by, or under the supervision of, the company’s principal executive and principal financial officers, or persons performing similar functions, and effected by the company’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” (PCAOB 2004, para. 7).

<sup>2</sup> A significant deficiency is defined as “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 statements that is more than inconsequential will not be prevented or detected” (PCAOB 2004, para. 9).

<sup>3</sup> See Geiger and Taylor (2003) for a brief review of Sections 302 and 404 and <http://www.sarbanes-oxley.com> and <http://www.sec.gov> for the final rules and interpretations. Section 404 became effective for fiscal years ending after November 15, 2004 for accelerated filers.

are exposed to a greater legal liability, they might be more diligent about searching for, and reporting, material weaknesses in our sample period.

The paper proceeds as follows. In the next section, we discuss the background of the Sarbanes-Oxley Act and internal control regulation. We then describe the sample, provide descriptive evidence on the specific types of material weakness disclosures, and present our empirical analyses. The final section presents our conclusions and suggestions for future research. In the Appendix, we provide a listing of material weakness disclosures categorized by deficiency type.

### INTERNAL CONTROL AND THE SARBANES-OXLEY ACT OF 2002

The importance of internal control and the need for internal control standards is longstanding (e.g., Kinney et al. 1990; Hermanson 2000; Kinney 2001). However, leading up to the egregious financial reporting practices unveiled in the early 2000s, actual standards in place were very limited in scope (Geiger and Taylor 2003). Prior to SOX, the Foreign Corrupt Practices Act of 1977 (FCPA) was the only statutory regulation to address internal control, while the only required public disclosure of significant internal control deficiencies was in the firm's 8-K when disclosing a change in auditors (SEC 1988; Geiger and Taylor 2003; Krishnan 2005).<sup>4</sup>

The FCPA provided the first statutory regulation of internal controls of SEC registrants, requiring that registrants maintain *cost-effective* systems of internal accounting control over transactions and assets. In late 1977 when the FCPA was passed, much of the business community had an unexpected and unpleasant surprise. Although many of the registrants did not participate in foreign trade, the FCPA applied to all companies filing with the SEC, regardless of their foreign trade practices: "the FCPA reaches *every* company that files with the SEC, everyone, whether it is in foreign trade, or not. So a lot of companies that are totally domestic, that are not engaged in doing anything that they think of as corrupt, find themselves with new responsibilities under that Act" (Mautz 1980).

Academic work suggests that the ambiguity of the term "cost-effective" in the FCPA weakened the rule considerably (Kinney et al. 1990).<sup>5</sup> In fact, in the 1980s the existence of fraud and unexpected business failures led some members of Congress to question the adequacy of the financial reporting systems, and especially the internal controls, of public companies. This concern prompted the creation of the Treadway Commission and its call for additional internal control standards and guidance (Kinney et al. 1990). Specifically, the Commission recommended that all public companies should be required to include a report on internal control, written by management, in their annual reports—a recommendation that has finally been realized under SOX Section 404.

The Sarbanes-Oxley Act does not substantially alter requirements for *maintaining* internal control over those expressed in the FCPA. Instead, SOX mandates new disclosures about and assessments of internal controls. Specifically, SOX 302 increases disclosure requirements related to the effectiveness of, and significant changes in, internal control. SOX 404 requires management to annually disclose its assessment of the firm's internal control

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<sup>4</sup> An exception is the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991, which requires banks operating in the United States to file an annual report with regulators in which management attests to the effectiveness of their controls, and independent public accountants must attest to, and separately report on, management's assertions.

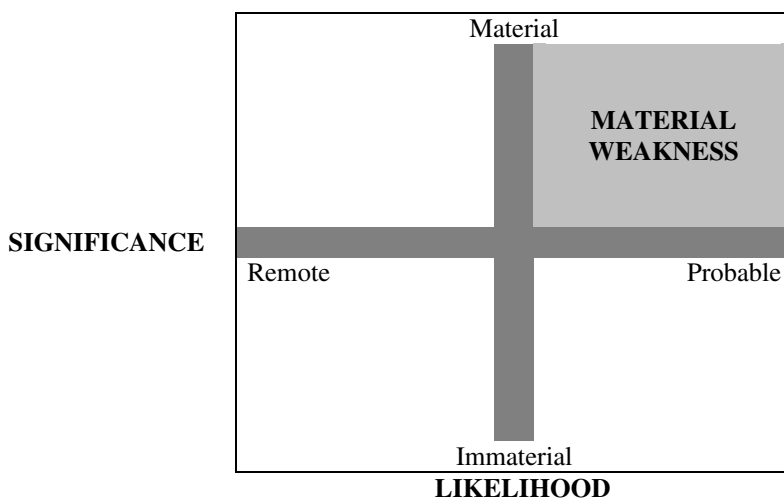
<sup>5</sup> The 1988 amendments to the FCPA state that "the terms 'reasonable assurances' and 'reasonable detail' in the FCPA mean such level of detail and degree of assurance as would satisfy prudent officials in the conduct of their affairs, having in mind a comparison between benefits to be obtained and costs to be incurred in obtaining such benefits."

structure and procedures for financial reporting and include the corresponding opinions by the firm's auditor.<sup>6</sup>

Beginning in 2002, Section 302 of SOX requires the executives of the company to certify in their periodic reports (e.g., the 10-Qs and 10-Ks) filed with the SEC that they have reported their conclusions about the effectiveness of their internal controls. Clearly the identification of a material weakness in internal control precludes management from reporting that the internal controls are effective. In addition, the executives are required to disclose whether the company significantly changed its internal controls. While our sample predates the effective date of Section 404, the above two requirements of Section 302 caused at least 261 firms to disclose material weaknesses from the date Section 302 became effective to November 2004. This is not surprising as, under SOX Section 906, criminal penalties can be imposed on managers who knowingly certify a periodic report that does not comport with the requirements; the allowable penalties include a fine of up to \$5,000,000 and up to 20 years imprisonment.

We focus on a sample of companies that disclose material weaknesses in internal control in their SEC filings after the effective date of SOX 302. Figure 1 depicts the evaluation

**FIGURE 1**  
**Internal Control Deficiency Evaluation**



As shown in this diagram, internal control deficiencies must be evaluated along two dimensions to determine their relative significance. Those two dimensions are likelihood and significance, depicted here along the horizontal and vertical axes, respectively. If there is more than a remote chance (likelihood) that a material error (significance) could result from the deficiency, then it is considered a material weakness, which must be reported.

Adapted from Ramos (2004).

<sup>6</sup> The focus of SOX 302 is on disclosure of controls and procedures, while SOX 404 focuses on internal control over financial reporting. Detailed rules can also be found in Items 307 and 308 of Regulation S-K. Under Section 404, auditors issue three opinions in an annual financial report: one on the financial statements, one on management's assessment of internal control effectiveness, and a third on the effectiveness of internal control over financial reporting.

of an internal control deficiency (Ramos 2004). Two dimensions are considered when assessing a deficiency in internal control, the likelihood of a misstatement and the significance of that potential misstatement. A material weakness must be reported if there is more than a remote chance that a material error could result from the deficiency. As an example of a material weakness and the related 2003 disclosure, the Interpublic Group of Companies, Inc., disclosed a material weakness in their 10-K related to the processing and monitoring of intercompany transactions. In the Risk Factors section in Item 1, in the Control and Procedures section in Item 9A, and in the Report of Management in their 10-K, Interpublic Group extensively discusses the implications of the material weakness and the changes they are implementing in response to the identification of the material weakness.

To date, the only direct evidence on the *prevalence* of material weaknesses is provided by Krishnan (2005) who finds that the frequency of reportable conditions (including material weaknesses) and the quality of the audit committee are negatively associated for the years 1994–2000.<sup>7</sup> Her sample predates SOX and thus includes only those reportable conditions that are disclosed in 8-Ks when a change of auditor is recorded.<sup>8</sup> Krishnan (2005) splits her sample between those reportable conditions that are and are not considered to be material weaknesses, and finds that both subsets of internal control problems are negatively associated with audit committee quality. She does not provide descriptive evidence on the specific types of material weaknesses.

Overall, only limited evidence exists regarding the types of material weaknesses that investors might expect to see under Section 404. In this paper, we provide detailed descriptions of material weaknesses reported under Section 302 and explore general firm characteristics that appear to be associated with the firms disclosing material weaknesses.

### SAMPLE

Section 302 became effective for quarterly, semiannual, and annual reports covering periods that end after August 29, 2002; our sample period is from August 2002 to November 2004. We obtain the sample for this study from two sources: (1) EDGAR, the SEC's website of electronic filings, through which we conduct an extensive search on registrants' 10-K filings using the keywords "material weakness" and "internal control"; and (2) Compliance Week, which began collecting internal control disclosures from all SEC filings in November 2003, not only those reported in 10-K filings.

To ensure that the identified disclosures pertain to a material weakness in internal control, we read through each of the disclosures obtained through our 10-K search and/or Compliance Week. We identify 261 individual companies that disclosed at least one material weakness in internal control from August 2002 to November 2004. In the event that the firm discloses multiple material weaknesses, we record each deficiency, resulting in 493 distinct deficiencies for the 261 firms.<sup>9</sup>

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<sup>7</sup> McMullen et al. (1996) examine the choice to voluntarily report on internal controls and classify firms that are subject to SEC enforcement actions or restatements as firms with weak internal controls. However, they do not examine specific types of internal control weaknesses.

<sup>8</sup> Specifically, companies that change auditors are required to state whether any "reportable events" had occurred over the previous two years, and if so to disclose the nature of the reportable events. Reportable events are those "where the accountant has advised the registrant that it questions the accuracy or reliability of the registrant's financial statements, management's representations, the registrant's internal controls or prior audits" (SEC 1988, 1141).

<sup>9</sup> These disclosures vary widely in terms of details. While some clearly list individual material weaknesses, others are vague about the actual number of material weaknesses. In these instances, we record each internal control problem discussed as a separate material weakness. If a parent and subsidiary both file with the SEC and report the same material weakness, then we include only the parent company; we found no instances where a parent and subsidiary reported different material weaknesses.

We group each of the 493 deficiencies into one of nine categories (detailed in the Appendix, hereafter deficiency type). As the purpose of this paper is to provide descriptive evidence on material weakness disclosures, we choose to group our categories as generally as possible, based on the specific material weaknesses disclosed by management. We obtain additional data on industry, financial information, and auditor from the 2003 annual Compustat database.

Table 1 outlines our final sample. Panel A presents material weakness firms by their listing stock exchange. The majority of the material weakness firms that trade on a major exchange are listed on NASDAQ, while 52 firms are Pink Sheet or OTC firms.

Table 1, Panel B, presents material weakness firms by industry.<sup>10</sup> The disclosure of material weaknesses is most prevalent in Computers (21.4 percent), followed by Services (11.4 percent). These percentages are each greater than the proportion of total Compustat firms in each industry (see the final column of Table 1, Panel B). For example, while Computers makes up 21.4 percent of the sample firms disclosing a material weakness, this industry makes up only 13.7 percent of all 2003 Compustat firms. Closer examination of the firms in Computers reveals that they are often Internet, software, and/or technology companies. While Banks and Insurance makes up 22.1 percent of all Compustat firms, only 9.2 percent of the material weakness firms are in this industry. This is not surprising as the banking industry was subject to a higher degree of internal control regulation relative to other industries in the past. Under the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991, banks operating in the United States are required to file an annual report with regulators in which management attests to the effectiveness of their controls, and independent public accountants must attest to, and separately report on, management's assertions. In fact, practitioners suggest that the banks' decade-long experience with FDICIA will help guide companies toward compliance with Section 404 (Kroeger 2003).

## TYPES OF MATERIAL WEAKNESSES

### Deficiency Types

In Figures 2 and 3, we provide a breakdown of the types of material weaknesses reported under Section 302. This breakdown provides initial evidence on the common internal control problems investors might see after the implementation of Section 404. We begin by categorizing the disclosed internal control problems into nine major deficiency types: Account-Specific, Training, Period-End Reporting/Accounting Policies, Revenue Recognition, Segregation of Duties, Account Reconciliation, Subsidiary-Specific, Senior Management, and Technology Issues (Figure 2). The Appendix provides a detailed description and examples of specific weaknesses under each category. Each company can have more than one internal control deficiency; for our 261 firms, we categorize 493 distinct deficiencies, an average of 1.9 per firm.<sup>11</sup>

Of these nine disclosure categories, Account-Specific has the greatest number of instances, indicating that many internal control deficiencies are related to specific financial statement accounts.<sup>12</sup> Following Account-Specific deficiencies, the most common type of deficiency is in Training, often described as having "inadequate qualified staffing and resources." Among this category, most companies lack personnel with technical expertise in

<sup>10</sup> Our industry classification scheme is based on Frankel et al. (2002).

<sup>11</sup> Of the 261 material weakness firms, 110 have one material weakness, 95 have two material weaknesses, and 56 have more than two material weaknesses (not tabulated).

<sup>12</sup> If a firm has material weaknesses related to multiple accounts, then we only list this firm once under Account-Specific in Figure 2. In Figure 3, we provide a complete breakdown of each Account-Specific account affected, resulting in more than 119 Account-Specific deficiencies.

**TABLE 1**  
**Number of Companies with Material Weaknesses in Internal Control**

**Panel A: By Stock Exchange**

<u>Stock Exchange</u>	<u>NASDAQ</u>	<u>NYSE</u>	<u>PINK SHEET</u>	<u>AMEX</u>	<u>OTC</u>	<u>Other</u>	<u>Total</u>
Number of Material Weakness Firms	125	50	33	20	19	14	261
Percentage of Material Weakness Firms	47.9	19.2	12.6	7.6	7.3	5.4	100.0

**Panel B: By Industry**

<u>Industry</u>	<u>Number of Material Weakness Firms within the Industry</u>	<u>Percentage of Material Weakness Firms within the Industry</u>	<u>Total Number of Firms within the Industry (Compustat 2003)</u>	<u>Percentage of Firms within the Industry (Compustat 2003)</u>
Computers	51	21.4	853	13.7
Services	27	11.4	537	8.6
Banks and Insurance	22	9.2	1,377	22.1
Drugs and Medical Equipment	21	8.8	559	9.0
Miscellaneous Equipment	19	8.0	314	5.0
Retail	17	7.1	460	7.4
Rubber, Leather, and Metal	13	5.5	229	3.7
Transportation	13	5.5	333	5.3
Industrial Equipment	12	5.0	251	4.0
Refining and Extractive	9	3.8	196	3.1
Electrical Equipment	9	3.8	151	2.4
Mining and Construction	7	2.9	158	2.5
Utilities	7	2.9	287	4.6
Textiles, Printing, and Publishing	5	2.1	210	3.4
Food	3	1.3	112	1.8
Chemicals	3	1.3	135	2.2
Total	238	100.0	6,162	98.8 <sup>a</sup>

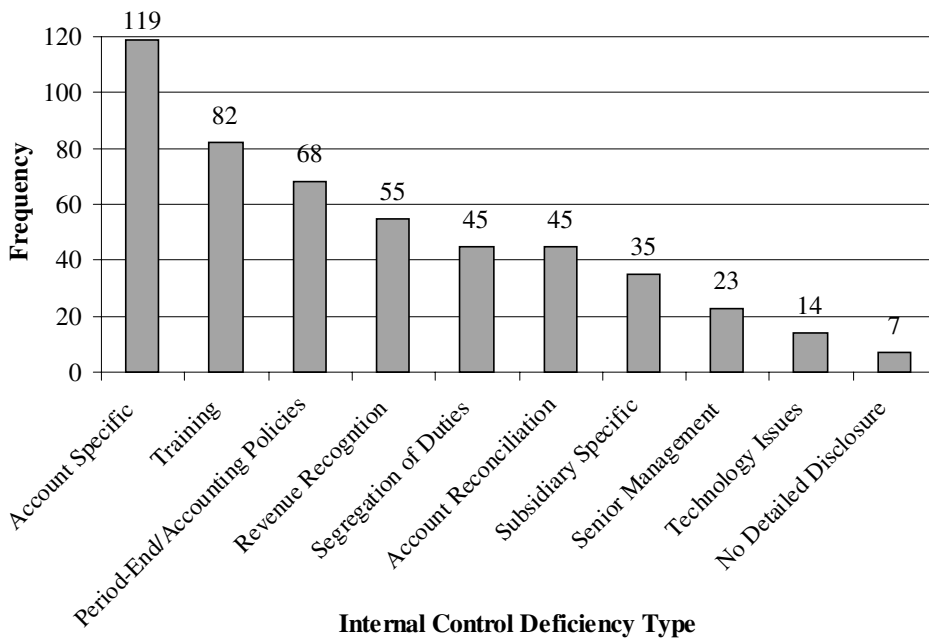
A total of 238 firm observations have available industry data and at least one material weakness, and 6,233 firm observations have 2003 Compustat data (including material weakness firms). Industry classifications are compiled using the following SIC codes: Mining: 1000–1299, 1400–1999; Food: 2000–2199; Textiles: 2200–2799; Drugs: 2830–2839, 3840–3851; Chemicals: 2800–2829, 2840–2899; Refining: 1300–1399, 2900–2999; Rubber: 3000–3499; Industrial: 3500–3569, 3580–3659; Electrical: 3660–3669, 3680–3699; Miscellaneous Equipment: 3700–3839, 3852–3999; Computers: 3570–3579, 3670–3679, 7370–7379; Transportation: 4000–4899; Utilities: 4900–4999; Retail: 5000–5999; Banks: 6000–6999; Services: 7000–7369, 7380–8999.

<sup>a</sup> There are 71 industry observations with zero material weaknesses within the industry, which are not shown (Agriculture [100–999] and Miscellaneous [9000–9999]).

U.S. GAAP and SEC requirements, especially when managing complex accounts, such as derivatives or income taxes. Lack of financial reporting expertise is a serious deficiency that can lead to accounting errors and misstatements. To address this problem, many managers report that they plan to hire additional employees and increase local training.

Period-End Reporting/Accounting Policies, Revenue Recognition, and Segregation of Duties are three additional pervasive internal control weaknesses. In their monograph,

**FIGURE 2**  
**Number of Material Weaknesses in Internal Control by Deficiency Type**



The sample is from August 2002 to November 2004 and consists of 261 companies that have disclosed material weaknesses in internal control (see the Appendix for details on deficiency types). Each company can disclose more than one internal control deficiency. Sample firms disclosed 493 deficiencies. On average, each company has 1.9 deficiency types.

Dechow and Schrand (2004) examine Accounting and Auditing Enforcement Releases and find that overstating revenues is the most common method of earnings management. The presence of weak internal controls over the revenue-recognition process provides managers with the flexibility to manage earnings in this fashion. Interestingly, 55 of our sample firms disclosed internal control deficiencies in their revenue-recognition policies and procedures. Revenue-recognition deficiencies are usually related to the timing of revenue recognition and other contracting practices. For example, Bearingpoint, Inc., disclosed the following deficiency in their 2003 10-K: “there were reportable conditions related to protocol and documentation for reviewing and assessing contract revenue recognition ... lack of a formal documented policy relating to evidence of a contractual arrangement with respect to revenue recognition based on local legal requirements.”

Deficiencies in revenue-recognition policies might facilitate earnings management through improper revenue recognition, such as “channel stuffing,” which involves boosting sales results by shipping more products to subsidiaries or vendors than are needed. These excess products are often returned in subsequent quarters. Channel stuffing tends to inflate the distributor’s accounts receivable balance. In our sample, Symbol Technologies, Inc., engineered a three-way channel-stuffing scheme to increase quarter-end revenue to meet sales targets. In their 2003 10-K filing, they disclosed the following: “we have identified a material weakness related to the manner in which we process transactions to record our



revenue. Our current processes and procedures to record revenue transactions require substantial manual intervention and are reliant on several departments in our sales and finance organization.” Channel stuffing at period-end is often motivated by incentives to meet or exceed analysts’ earnings expectations. Not surprisingly, Symbol’s management is purportedly obsessed with meeting financial performance targets.<sup>13</sup>

Segregation of Duties is a key component of effective internal control; 45 companies in our sample specifically disclose a material weakness in their segregation of duties. Assigning one person with two related functions increases the possibility of theft within the organization. For example, it is not wise to have one person authorize the payment of a vendor’s invoice and also sign the check that pays the invoice. In addition to possible embezzlement, lack of segregation of duties might facilitate financial statement manipulation. Deficiencies in segregation of duties are sometimes, but not always, associated with an insufficient number of accounting staff.

Subsidiary-Specific internal control deficiencies appear quite common. A notorious case is Baxter International, Inc., one of our sample firms. Senior management and the Audit Committee of Baxter’s Board of Directors discovered a material weakness in their Brazilian division related to revenue recognition, which resulted in a restatement of their previously issued financial results.

We observe 23 cases of Senior Management deficiencies, which typically refer to an ineffective control environment. In general, an ineffective control environment usually reflects the “tone” at the top regarding internal control. The Treadway Commission (NCFRR 1987, 32) noted that “[t]he tone set by top management—the corporate environment or culture within which financial reporting occurs—is the most important factor contributing to the integrity of the financial reporting process. Notwithstanding an impressive set of written rules and procedures, if the tone set by management is lax, fraudulent financial reporting is more likely to occur.” Again, Symbol Technologies, Inc. is an example of a firm that the SEC has described as having a “numbers driven” corporate culture and a low emphasis on internal control.

### **Account-Specific Material Weaknesses**

Figure 3 presents the breakdown of accounts within the Account-Specific deficiency category. A given company can have more than one account affected by an internal control problem; 119 firms have a total of 167 financial statement accounts affected by their Account-Specific deficiencies, an average of 1.4 per firm. We obtain the affected accounts directly from management’s identification of these accounts in their SEC filings. For example, one disclosure stated that “[c]ertain of our inventory processes were not reviewed by a supervisor in sufficient detail, resulting in inaccurate adjustments ... Our auditor also observed a lack of procedures to track inventory transactions.”

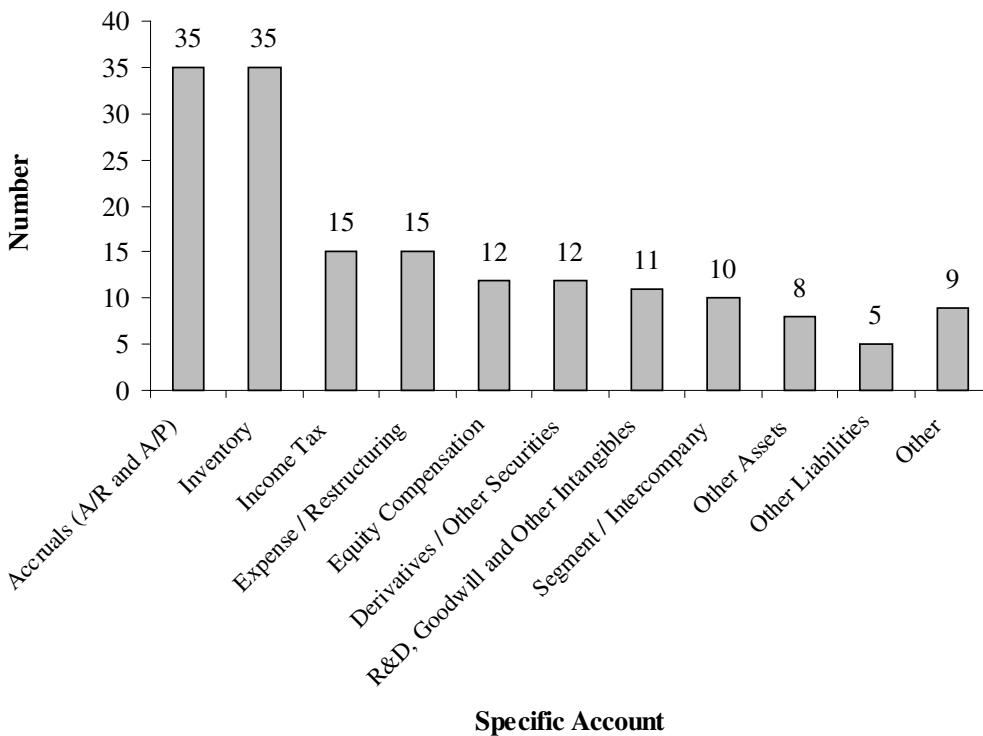
Referring to Figure 3, most of the Account-Specific deficiencies affect the accounts receivable, accounts payable, and inventory accounts.<sup>14</sup> The bulk of the remaining internal control problems occur in complex accounts (e.g., income taxes and derivatives). Per management, these deficiencies are usually associated with staff having insufficient technical expertise.

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<sup>13</sup> In June 2004, the SEC issued an Accounting and Auditing Enforcement Release (AAER) on this company and described the details of Symbol’s “channel stuffing” scheme. In the AAER, the SEC stated that “Symbol was a ‘numbers driven’ company obsessed with meeting financial projections.”

<sup>14</sup> Statistically, a positive association exists between the disclosure of a material weakness and both Accounts Receivable Intensity and Inventory Intensity. These relations hold in a multivariate setting.

**FIGURE 3**  
**Number of Account-Specific Material Weaknesses by Account Type**



The sample for this graph is from August 2002 to November 2004 and consists of 119 companies that have disclosed at least one Account-Specific material weakness in internal control. Each company can disclose deficiencies related to more than one account. Sample firms disclosed 167 Account-Specific deficiencies (excluding revenue accounts). On average, each company has 1.4 Account-Specific deficiencies.

### Deficiency Types by Industry and Size

Recall that Table 1, Panel B, presents the breakout of material weakness firms by industry. For example, the Computers industry has the greatest concentration of firms disclosing material weaknesses (21.4 percent). Table 2 provides a breakout by industry and *deficiency type*.<sup>15</sup> For example, firms in the Computers industry disclose 22.9 percent of all deficiencies, while 25.7 percent of all deficiencies related to Training occur in the Computers industry. Interestingly, fully 40 percent of Revenue Recognition deficiencies occur within Computers. This is consistent with Beasley et al. (2000), who find that technology companies have a very high incidence of revenue frauds. Computers also has the greatest concentration of deficiencies in Period-End Reporting/Accounting Policies and Inventory and Accruals, further indicating that there might be a concentration of earnings-management-driven internal control deficiencies in this industry.

<sup>15</sup> Recall that each material weakness firm can have multiple deficiencies and thus multiple deficiency types. There are a total of 261 material weakness firms, and 493 specific deficiency types. Each deficiency is a material weakness as we do not include non-material weakness reportable conditions in our sample.

**TABLE 2**  
**Deficiency Type and Industry**

<b>Industry</b>	<b>All</b>	<b>Training</b>	<b>Period-End/ Actg. Policies</b>	<b>Inventory and Accruals</b>	<b>Revenue Recognition</b>	<b>Account Reconciliation</b>	<b>Segregation of Duties</b>	<b>Complex Accounts</b>	<b>Subsidiary- Specific</b>	<b>Other</b>
Computers	22.9%	25.7%	33.3%	24.1%	40.0%	13.6%	19.0%	11.9%	9.4%	18.6%
Services	11.2	13.5	11.7	8.6	10.0	13.6	11.9	11.9	9.4	10.0
Retail	8.7	8.1	6.7	12.1	6.0	15.9	4.8	7.1	12.5	7.1
Drugs and Medical	7.9	13.5	5.0	3.4	12.0	6.8	9.5	4.8	12.5	4.3
Miscellaneous Equipment	7.8	5.4	6.7	10.3	10.0	4.5	7.1	9.5	9.4	8.6
Banks and Insurance	7.6	2.7	10.0	5.2	0.0	13.6	14.3	7.1	9.4	10.0
Rubber, Leather, and Metal	6.1	5.4	8.3	5.2	2.0	2.4	7.1	2.4	9.4	11.4
Transportation	5.9	9.5	5.0	0.0	6.0	4.5	9.5	11.9	3.1	4.2
Industrial Equipment	5.7	5.4	5.0	12.1	6.0	6.9	0.0	4.8	6.3	4.3
Electrical Equipment	3.8	0.0	1.7	6.9	2.0	4.5	7.1	7.1	9.3	1.4
Utilities	3.8	5.4	3.3	1.7	2.0	6.8	4.8	7.1	0.0	2.9
Mining and Construction	2.8	2.6	0.0	3.4	4.0	0.0	0.0	4.8	6.2	4.3
Refining and Extractive	2.6	0.0	1.7	5.3	0.0	0.0	2.5	4.8	3.1	5.7
Textiles	1.9	1.4	1.6	1.7	0.0	4.5	2.4	2.4	0.0	2.9
Chemicals	0.7	1.4	0.0	0.0	0.0	0.0	0.0	2.4	0.0	1.4
Food	0.6	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	2.9
All Industries	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
(Number of Deficiencies)	(472)	(74)	(60)	(58)	(50)	(44)	(42)	(42)	(32)	(70)

A total of 238 firms and 472 distinct deficiencies are listed in this table. To be included, a material weakness firm must have available industry data. Only those deficiency types with at least 30 observations are listed separately. Industry classifications are described in Table 1. Material weakness deficiency types are described in the Appendix. Complex Accounts refers to internal control deficiencies related to equity compensation, intangible assets, intercompany accounts, derivatives, income tax, and restructuring charges.

Consistent with various industries facing different challenges, the most common deficiencies in the Banking Industry are in Segregation of Duties (14.3 percent versus 7.6 percent) and Account Reconciliation (13.6 percent versus 7.6 percent), while the most common problem in the Utilities Industry is in Complex Accounts (7.1 percent versus 3.8 percent). The banking industry has historically experienced breakdowns due to segregation of duties, as noted in the Framework for the Evaluation of Internal Control Systems by the Basle (a.k.a. Basel) Committee on Banking Supervision (1998): “Lack of segregation of duties in particular has played a major role in the significant losses that have occurred at banks.” On the other hand, utility companies often engage in complicated transactions, such as hedging, which usually involve the interpretation and application of complex accounting standards. For example, El Paso Corporation, a natural gas pipeline company, disclosed a material weakness in applying complex accounting standards related to many of their hedge transactions.

In Table 3, we break out types by size rather than by industry. We report the percentage of each weakness category within each size quintile, measured by market capitalization, resulting in several interesting findings.<sup>16</sup> First, firms that have deficiencies in Training, Period-End Reporting/Accounting Policies, and Account Reconciliation tend to be smaller (26.5 percent, 29.6 percent, and 27.5 percent in the lowest size quintile, respectively). This is consistent with the intuition that small firms are more likely to lack qualified staff and have trouble designing and applying adequate accounting policies. Second, firms with revenue-recognition deficiencies seem to be relatively larger (27.1 percent in the highest size quintile). Larger firms may face greater pressures to manage earnings and thus might build in some latitude into their revenue-recognition policies. Third, again consistent with intuition, firms with Subsidiary-Specific or Complex Accounts deficiencies appear to be larger.

### CHARACTERISTICS OF MATERIAL WEAKNESS FIRMS

In this section, we investigate the general firm characteristics associated with firms that disclose material weaknesses. Specifically, we explore five aspects: business complexity, firm experience, size, profitability, and auditor. We present descriptive statistics for each of the variables discussed below in Tables 4 and 5, and a comprehensive logistic regression analysis in Table 6.<sup>17</sup>

#### Business Complexity and Material Weaknesses

Firms with more complicated transactions likely have a greater chance for a disconnect in the financial reporting process, and thus a material weakness. Therefore, all else being equal, firm disclosures of material weaknesses are likely to be positively associated with business complexity. We use two measures of business complexity: the number of operating segments reported in the 10-K and the existence of a foreign currency translation (Compustat Data Item #150).<sup>18</sup>

<sup>16</sup> We form quintiles over the 220 material weakness firms with market capitalization data. The number of deficiency types within each quintile varies, as each firm may have more than one deficiency type.

<sup>17</sup> In Table 4, we present each of the variables in actual values, after winsorizing at 1 percent and 99 percent. We present the Wilcoxon rank-sum test statistic, however each of our results holds using a t-test. Further, our results are similar if we take the logarithm of each of the skewed variables (operating segments, firm age, book value, and market capitalization).

<sup>18</sup> We also consider Research and Development Intensity as a third complexity measure. We find a positive association between this variable and the disclosure of material weaknesses in univariate tests; however, this relation is insignificant in the multivariate analysis.

**TABLE 3**  
**Deficiency Type and Firm Size**

<u>Deficiency Type</u>	<u>Lowest Quintile</u>	<u>Second Quintile</u>	<u>Third Quintile</u>	<u>Fourth Quintile</u>	<u>Highest Quintile</u>	<u>All Size Quintiles (Number)</u>
Training	26.5%	17.7%	20.6%	19.1%	16.1%	100% (68)
Inventory and Accruals	23.2	16.1	16.1	25.0	19.6	100% (56)
Period-End/Acctg. Policies	29.6	22.2	16.7	13.0	18.5	100% (54)
Revenue Recognition	2.1	25.0	22.9	22.9	27.1	100% (48)
Account Reconciliation	27.5	12.5	27.5	15.0	17.5	100% (40)
Segregation of Duties	20.5	20.5	20.5	18.0	20.5	100% (39)
Complex Accounts	23.1	12.8	20.5	12.8	30.8	100% (39)
Subsidiary-Specific	15.6	18.8	15.6	25.0	25.0	100% (32)
Other	14.3	23.8	17.5	20.6	23.8	100% (63)
All Deficiencies (Number)	20.5% (90)	19.1% (84)	19.6% (86)	19.1% (84)	21.7% (95)	100% (439)

A total of 220 firms and 439 distinct deficiencies are listed in this table. To be included, a material weakness firm must have available market capitalization data. Only those deficiency types with at least 30 observations are listed separately. Material weakness deficiency types are described in the Appendix. Complex Accounts refers to internal control deficiencies related to equity compensation, intangible assets, intercompany accounts, derivatives, income tax, and restructuring charges.

Table 4 provides descriptive statistics of these two variables for two subgroups, all firms that disclosed a material weakness and a benchmark group of 2003 Compustat firms that are not in our material weakness subgroup.<sup>19</sup> Both of our complexity measures are statistically greater for the subgroup of firms that disclosed a material weakness. Thus, the evidence suggests that firm complexity and the disclosure of material weaknesses are positively associated.

### **Firm Experience and Material Weaknesses**

The experience of the firm is a second attribute that might be associated with the existence of a material weakness. Younger firms likely have less established procedures, and the employees might have less experience than in older, more established firms. Thus, less experienced firms seem more likely to report material weaknesses.

We measure experience using firm age. We calculate firm age as the number of years the firm has price data available on Compustat, with a maximum of 30 years. Clearly this

<sup>19</sup> To be included in the benchmark group, the firm must have available data for Book Value and Return on Assets (defined below).

**TABLE 4**  
**Descriptive Statistics of Material Weakness Firms versus 2003 Compustat Firms**

Variable	Material Weakness Firms		2003 Compustat Firms (Excluding Material Weakness Firms)		Wilcoxon Test Statistic (two-tailed p-value)
	Mean	Median	Mean	Median	
<i>OPERATING SEGMENTS</i>	1.37	1.00	1.22	1.00	0.024
<i>FOREIGN CURRENCY</i>	0.24	0.00	0.16	0.00	0.001
<i>FIRM AGE</i>	12.18	10.00	13.44	11.00	0.060
<i>BOOK VALUE</i> (in millions)	472.87	40.09	997.97	100.78	0.001
<i>MARKET CAP</i> (in millions)	1,196.00	130.73	2,501.00	235.20	0.001
<i>ROA</i>	-0.30	-0.03	-0.15	0.01	0.001
<i>CFO/A</i>	-0.09	0.02	-0.03	0.06	0.001
<i>LARGE AUDITOR</i>	0.85	1.00	0.84	1.00	0.654

A maximum of 238 firm observations have available data and at least one material weakness, and a maximum of 5,995 firm observations have 2003 Compustat data (excluding material weakness firms). *OPERATING SEGMENTS* ranges from 1 to 11 and is equal to the number of operating segments reported in the firm's 10-K in fiscal 2003. *FOREIGN CURRENCY* is an indicator variable that is equal to 1 if the firm reported a non-zero foreign currency translation in fiscal 2003, and 0 otherwise. *FIRM AGE* is the estimated number of years a firm has been publicly traded, winsorized at 30 years. *BOOK VALUE* is the firm's book value of assets and *MARKET CAP* is the firm's market capitalization. *ROA* is earnings before extraordinary items scaled by average total assets, *CFO/A* is cash from operations scaled by average total assets. *LARGE AUDITOR* is an indicator variable that is equal to 1 if the firm is audited by one of the following: BDO Seidman, Deloitte & Touche, Ernst & Young, Grant Thornton, KPMG, or PricewaterhouseCoopers; and 0 otherwise. All continuous variables are winsorized at 1 percent and 99 percent.

is not a perfect measure of the age of the firm, as the longevity of the firm prior to going public remains unknown. However, the actual age of the firm is not available, and thus we follow prior literature in the calculation of this variable (e.g., Carter and Lynch 2001). Referring to Table 4, the median material weakness firm is 10 years old, while the median 2003 Compustat firm is 11 years old. The difference between the groups is marginally significant under the Wilcoxon rank-sum test (p-value = 0.060). Thus, there is weak univariate evidence that the disclosure of material weaknesses is associated with firm experience.

### Firm Size and Material Weaknesses

Prior research hypothesizes that firm size is a determinant of good internal control (e.g., Kinney and McDaniel 1989; DeFond and Jiambalvo 1991). While large firms have more assets that must be controlled, they likely also have more financial reporting processes and procedures in place. Large firms also tend to have more employees and greater resources to spend on internal auditors or consulting fees, which may aid in the generation of strong internal control. For example, there is a strong positive association between nonaudit fees and firm size (e.g., Frankel et al. 2002).

We look at two size variables, *Book Value* (Compustat Data Item #60) and *Market Cap* (Price  $\times$  Shares Outstanding, using Compustat Data Items #199  $\times$  #25). As evidenced in Table 4, both variables are significantly smaller for firms that disclose material weaknesses than for the benchmark group of 2003 Compustat firms. For example, the median *Book*

Value of material weakness firms is \$40 million, while the median *Book Value* of all other 2003 Compustat firms is \$101 million, more than double that of the material weakness firms. This difference is statistically different from zero under the Wilcoxon rank-sum test ( $p$ -value  $< 0.001$ ). In sum, the disclosure of material weaknesses appears to be negatively associated with firm size.

### Firm Profitability and Material Weaknesses

The ability to establish proper internal controls might vary with a firm's financial health. Poorly performing firms simply might not be able to adequately invest in proper controls (Krishnan 2005).<sup>20</sup> Good internal control requires both financial resources and company time, and may not be a priority for firms that are concerned about simply staying in business. In addition, poorly performing firms may be undertaking actions, such as downsizing, which could create holes in their existing internal controls. Therefore, firm disclosure of material weaknesses is likely to be negatively associated with profitability.

To investigate this conjecture, we examine two profitability metrics, Return on Assets (*ROA*) (the ratio of Compustat Data Item #18 to Compustat Data Item #6, averaged over the current and prior year) and Cash from Operations scaled by Assets (*CFO/A*) (the ratio of Compustat Data Item #308 to Compustat Data Item #6, averaged over the current and prior year). Results of our examination are provided in Table 4. The difference in profitability between material weakness firms and the remaining 2003 Compustat firms is statistically significant under the Wilcoxon test for both profitability measures. For example, the median *ROA* is  $-0.03$  for the 238 material weakness firms, which is significantly lower than the median *ROA* of  $0.01$  for the remaining 2003 Compustat firms.

Overall, the evidence supports the conjecture that firm disclosure of material weaknesses is negatively associated with performance. While our conjecture is based on the ability of the firm to establish strong internal controls, an alternative explanation for this finding is that auditors take additional care to identify and document internal control weaknesses when firms are doing poorly. Additional years of data (which we lack) would allow us to analyze lead and lag variables; further examination is left for future work.

### Auditor and Material Weaknesses

Finally, we look at the role of auditors in identifying and reporting material weaknesses in internal control. Large audit firms tend to have larger clients than smaller audit firms, and thus, to the extent that material weaknesses are associated with size, large audit firms might encounter fewer internal control problems. Moreover, larger audit firms are expected to have more auditing expertise and a higher exposure to legal liability than smaller audit firms. Thus, if larger audit firms historically imposed stronger internal control standards for their clients, we would expect to see fewer weaknesses disclosed under Sections 302 and 404. Therefore, we examine the association between auditor size (large versus small) and material weakness disclosures by firms.

We define a *Large Auditor* to be one of the following: BDO Seidman, Deloitte & Touche, Ernst & Young, Grant Thornton, KPMG, or PricewaterhouseCoopers. We consider all remaining audit firms to be small auditors. In Table 4, we find that both the material weakness firms and the benchmark firms are equally likely to be audited by a *Large Auditor* ( $p$ -value =  $0.654$ ). Referring to the correlation matrix provided in Table 5, *Large Auditor* is significantly associated with each of our measures of complexity, experience, size, and

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<sup>20</sup> Consistent with this, Krishnan (2005) finds that the existence of a loss is positively associated with the reporting of an internal control problem in firms that change auditors.

**TABLE 5**  
Spearman\Pearson Correlation Matrix

	<u>MATERIAL WEAKNESS</u>	<u>OPERATING SEGMENTS</u>	<u>FOREIGN CURRENCY</u>	<u>FIRM AGE</u>	<u>BOOK VALUE</u>	<u>MARKET CAP</u>	<u>ROA</u>	<u>CFO/A</u>	<u>LARGE AUDITOR</u>
<i>MATERIAL WEAKNESS</i>	1.00	0.03 (0.034)	0.04 (0.001)	-0.03 (0.032)	-0.03 (0.008)	-0.03 (0.015)	-0.04 (0.004)	-0.03 (0.031)	0.01 (0.654)
<i>OPERATING SEGMENTS</i>	0.03 (0.024)	1.00	0.13 (0.001)	0.09 (0.001)	0.19 (0.001)	0.18 (0.001)	0.05 (0.001)	0.07 (0.001)	0.09 (0.001)
<i>FOREIGN CURRENCY</i>	0.04 (0.001)	0.13 (0.001)	1.00	0.05 (0.001)	0.13 (0.001)	0.15 (0.001)	0.07 (0.001)	0.08 (0.001)	0.12 (0.001)
<i>FIRM AGE</i>	-0.02 (0.060)	0.07 (0.001)	0.04 (0.001)	1.00	0.18 (0.001)	0.19 (0.001)	0.13 (0.001)	0.15 (0.001)	0.10 (0.001)
<i>BOOK VALUE</i>	-0.07 (0.001)	0.17 (0.001)	0.17 (0.001)	0.21 (0.001)	1.00	0.91 (0.001)	0.08 (0.001)	0.11 (0.001)	0.13 (0.001)
<i>MARKET CAP</i>	-0.05 (0.001)	0.19 (0.001)	0.21 (0.001)	0.17 (0.001)	0.90 (0.001)	1.00	0.09 (0.001)	0.12 (0.001)	0.13 (0.001)
<i>ROA</i>	-0.09 (0.001)	0.08 (0.001)	0.08 (0.001)	0.19 (0.001)	0.41 (0.001)	0.42 (0.001)	1.00	0.85 (0.001)	0.38 (0.001)
<i>CFO/A</i>	-0.07 (0.001)	0.09 (0.001)	0.08 (0.001)	0.16 (0.001)	0.38 (0.001)	0.41 (0.001)	0.74 (0.001)	1.00	0.36 (0.001)
<i>LARGE AUDITOR</i>	0.01 (0.654)	0.09 (0.001)	0.12 (0.001)	0.09 (0.001)	0.48 (0.001)	0.53 (0.001)	0.25 (0.001)	0.26 (0.001)	1.00

Spearman correlations are provided in the lower left diagonal and Pearson correlations in the upper right diagonal. p-values testing the null of zero correlation are in parentheses.

A maximum of 6,233 observations have available data. *MATERIAL WEAKNESS* is an indicator variable that is equal to 1 if the firm disclosed a material weakness in internal control in our sample period (August 2002 to November 2004), and 0 otherwise.

See Table 4 for additional variable definitions. All continuous variables are winsorized at 1 percent and 99 percent.



profitability. Since auditor size might be associated with material weakness disclosures after controlling for the competing forces described above, we examine *Large Auditor* further in our multivariate analyses below.

### Multivariate Analyses

As evidenced in Table 5, many of our variables are significantly correlated with one another. Thus, we use a logistic regression analysis to assess the association of each of our variables, after controlling for the other variables we examine. To avoid the influence of outliers, we rank each of our continuous variables into deciles, and use their decile rank (0 to 9) in the regression.<sup>21</sup> We also include indicator variables to control for the industry in which each firm operates. Because we have two measures for size and profitability, we first present limited regressions with one measure of each. In the final column, we present a complete regression with all available measures.

Results are presented in Table 6. These regressions have fewer observations than the previous tables because data must be available for each data item for the firm to be included. The first two columns of results are for the partial regressions; the results closely resemble those discussed above, with two exceptions. First, firm age is no longer a significant predictor of a firm disclosing a material weakness. Characteristics associated with firm age, such as firm size, may have been driving the initial association in Table 4. Second, in a multivariate setting, *Large Auditor* is now positively and significantly associated with firm disclosures of material weaknesses.<sup>22</sup> One possible explanation for this finding is that large auditors have greater resources with which to identify material weaknesses. In addition, large auditors might be reacting to the recent changes in the regulatory environment, such as being subject to annual reviews by the PCAOB.<sup>23</sup> This finding warrants future research.

The third column of regression results includes all of the variables, and thus multiple measures of the same characteristic (such as firm size). Not surprisingly, the size measures become insignificant (note the extremely high correlation between these variables in Table 5). In addition, *CFO/A* is not significant in the presence of *ROA*. The remaining variables have coefficients that are similar to the first two columns. Overall, of the firm aspects we examine, complexity, size, profitability, and auditor appear to be associated with whether firms disclose material weaknesses.

## CONCLUSIONS AND FUTURE RESEARCH

We provide evidence on the specific types of material weaknesses in internal control over financial reporting, reported under Sarbanes-Oxley Section 302. Our examination of management disclosures reveals that poor internal control is usually related to an insufficient allocation of resources for accounting controls, such as the lack of qualified accounting personnel. More specifically, material weaknesses in internal control tend to be attributed (by management) to:

- lack of training;
- deficiencies in the period-end reporting process and accounting policies;

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<sup>21</sup> Our results are similar if we include the continuous variables (winsorized at 1 percent and 99 percent) rather than ranking the variables into deciles.

<sup>22</sup> If we include an indicator for the Big 4, rather than *Large Auditor*, the variable is not statistically significant (see also Ashbaugh et al. 2005). Upon further inspection, many firms change auditors from the Big 4 to the other large auditors in the year surrounding the material weakness disclosure. Thus, caution must be taken when interpreting the Big 4 finding; it is likely that these auditors are dropping their riskiest clients.

<sup>23</sup> SOX requires the PCAOB to conduct annual inspections of registered accounting firms that audit more than 100 public companies.

**TABLE 6**  
**Logistic Regression of the Probability of a Firm Disclosing a Material Weakness**

Independent Variables	Dependent Variable = <i>MATERIAL WEAKNESS</i>		
	Logit Estimate (p-value)	Logit Estimate (p-value)	Logit Estimate (p-value)
Intercept	-3.57 (0.001)	-3.81 (0.001)	-3.65 (0.001)
<i>OPERATING SEGMENTS</i>	0.134 (0.010)	0.141 (0.006)	0.137 (0.008)
<i>FOREIGN CURRENCY</i>	0.500 (0.004)	0.463 (0.008)	0.485 (0.006)
<i>FIRM AGE</i>	0.009 (0.719)	0.018 (0.490)	0.027 (0.313)
<i>BOOK VALUE</i>	-0.109 (0.001)		-0.058 (0.284)
<i>MARKET CAP</i>		-0.097 (0.002)	-0.030 (0.574)
<i>ROA</i>	-0.136 (0.001)		-0.123 (0.001)
<i>CFO/A</i>		-0.128 (0.001)	-0.042 (0.268)
<i>LARGE AUDITOR</i>	0.620 (0.004)	0.523 (0.015)	0.539 (0.014)
Industry Indicator Variables	Included	Included	Included
Number of Material Weakness Firms	222	214	214
Number of Total Observations	5,077	5,014	5,014
Likelihood Ratio	95.77 (0.001)	80.69 (0.001)	94.01 (0.001)
Pseudo R <sup>2</sup>	1.9%	1.6%	1.9%

*MATERIAL WEAKNESS* is an indicator variable that is equal to 1 if the firm disclosed a material weakness in internal control in our sample period (August 2002 to November 2004), and 0 otherwise. See Table 4 for additional variable definitions and Table 1 for industry classifications. Each of the continuous independent variables is decile ranked in order to mitigate outliers.

- deficient revenue-recognition policies;
- lack of segregation of duties; and
- inappropriate account reconciliation.

In firms with subsidiaries, subsidiary-specific internal control deficiencies are quite common. The most commonly identified account-specific material weaknesses occur in the current accrual accounts, such as the accounts receivable and inventory accounts. Material weakness disclosures by management also frequently describe internal control problems in complex accounts, such as the derivative and income tax accounts.

In our statistical analysis, we investigate firm characteristics associated with the disclosures of material weaknesses. We find that firms disclosing material weaknesses tend to have more complex operations, be smaller, and be less profitable. Finally, we find that after controlling for complexity, size, and profitability, firms disclosing a material weakness appear to be more often audited by a large audit firm.

Following the passage of the Sarbanes-Oxley Act of 2002, a great opportunity exists for research in the area of internal control over financial reporting. For example, we find that profitability and material weakness disclosures are strongly negatively associated. Future research could explore why this association exists. Does this finding reflect the cost of implementing a quality internal control system, which might be prohibitive for poorly performing firms? Or are auditors more diligent when firms are performing poorly? Future research might help explain our finding that companies with large auditors are more likely to disclose a material weakness, after controlling for complexity, firm size, and profitability. Is this due to auditor diligence? If so, then is this diligence because larger auditors are exposed to greater legal liabilities? Or is it because their searches for material weaknesses are more effective?

More work can also be done in examining the *types* of material weaknesses disclosed by firms. While we present one classification scheme, many possible alternatives exist. Moody's, for example, proposes to break the material weaknesses into transaction-level processes and company-level control problems, and suggests that the latter indicates a more serious material weakness (Doss and Jonas 2004). Doyle et al. (2005) find this distinction is important; they find that the company-level control problems, which cannot be audited as easily, are associated with lower earnings quality. Alternatively, future studies could explore links between disclosure of material weaknesses and fraud, earnings management, or restatements. These studies could help provide insights to the benefits of Sarbanes-Oxley, and Section 404 in particular.

## APPENDIX

### Material Weakness Classification and Examples

#### Account-Specific

- Internal control matters with respect to inventory transactions
- Inadequate internal controls for accounting for loss contingencies, including bad debts
- Improper accounting for accruals such as prepaid expenses and accrued expenses
- Improper accounting for income taxes
- Internal control deficiencies related to the reconciliation of service advances
- Problems, such as a lack of effective documentation, with stock options and other compensatory equity grants
- Improper accounting for derivatives
- Failure to record patents or trademarks in a timely fashion, or to analyze timely the patents and trademarks for usefulness and possible impairment
- Weaknesses in the process to gather information in order to complete the annual impairment testing of recorded goodwill and indefinite lived intangible assets
- Inadequate procedures to reconcile intercompany accounts and transactions
- Inadequate implementation of uniform controls over certain acquired entities and operations
- Improper accounting procedures for capitalized software development
- Improper accounting for an equity method investment
- Weak procedures for applying SFAS No. 131, such as segment determination
- Inadequate control over classification of certain fixed asset balances
- Deficiencies in the documentation of a receivables securitization program

- Improper accounting for convertible debentures with warrants and related measurement and recognition of beneficial conversion and warrant discounts and issuance costs
- Improper accounting for pension liability
- Weaknesses in the process to record liabilities related to large deductible insurance programs
- Lack of compliance with established procedures for appropriately applying SFAS No. 5, *Accounting for Contingencies*

### **Training**

- Inadequate qualified staffing and resources leading to the untimely identification and resolution of certain accounting and disclosure matters and failure to perform timely and effective reviews
- The need to increase the training of the financial staff

### **Period-End Reporting/Accounting Policies**

- Deficiencies in the period-end reporting process (closing process)
- No adequate internal controls over the application of new accounting principles or the application of existing accounting principles to new transactions
- The absence or ineffectiveness of a rule compliance checking procedure for SEC filings
- A lack of effective record keeping and compliance assistance for reports required under Section 16(a) of the Exchange Act
- Inadequate internal controls relating to the authorization, recognition, capture, and review of transactions, facts, circumstances, and events that could have a material impact on the company's financial reporting process
- Deficiencies related to the design of policies and execution of processes related to accounting for transactions
- Weaknesses related to the establishment of standards for review of journal entries and related file documentation
- Deficiencies related to the accounting and financial reporting infrastructure for collecting, analyzing, and consolidating information to prepare the consolidated financial statements
- Inadequate procedures for appropriately assessing and applying certain SEC disclosures and requirements
- Inconsistent application of accounting policies

### **Revenue Recognition**

- Weak internal controls related to the design and review of revenue-recognition policies
- Weak internal controls related to contracting practices
- Weaknesses over certain internal controls related to the detection of side letters and the process of investigating customer assertions regarding terms not specified in the agreements

### **Segregation of Duties**

- Weak internal controls and procedures relating to separation of duties (e.g., lack of separation of certain duties between payroll and other accounting personnel)

- Inappropriate segregation of duties to ensure that accurate information is contained in certain types of internal and external corporate communications, including press releases

### **Account Reconciliation**

- Problems with certain accounting reconciliations and review procedures
- Lack of compliance with established procedures for monitoring and adjusting balances relating to certain accruals and provisions, including restructuring charges

### **Subsidiary-Specific**

- Deficiencies related to the timely completion of statutory filings in foreign countries
- Inconsistencies in the application of company policies among business units and segments
- Deficiencies related to the timely and complete revelation of material contracts entered into by subsidiaries of the company
- Employees overseas engaged in improper transactions and unauthorized trading
- Internal accounting control that could have permitted employees at certain company locations to circumvent federal and state laws relating to the reporting of certain cash payments

### **Senior Management**

- Override by senior management
- Ineffective control environment
- No full-time CFO who has SEC and reinsurance experience to focus on the financial affairs of the company

### **Technology Issues**

- The security of systems used for the entry and maintenance of accounting records requires additional documentation and scrutiny to ensure that access to such systems and the data contained therein is restricted to only those employees whose job duties require such access
- Information technology has a number of areas where formal, documented policies and procedures have not been developed

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