

THE EFFECT OF AUDIT COMMITTEE
DELIBERATIONS
ON FINANCIAL REPORTING QUALITY:
EVIDENCE FROM AUDIT COMMITTEE MINUTES

By

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Abstract: My dissertation examines whether audit committee deliberations are associated with financial reporting quality. This is important because audit committees are responsible for overseeing the integrity of the firm's internal controls over financial reporting, accounting and reporting practices, financial statements, and external auditors. However, little is known about the nature of their deliberations, because this information is not available for publicly-traded companies. In contrast, this information is available for many universities, which are operating more like for-profit entities as the competition for students increases and financial resources become more scarce. Using a unique sample of minutes from universities' audit committee meetings, I first identify the topics of deliberation contained within these minutes. I then examine which specific audit committee deliberations are associated with the likelihood of severe deficiencies in internal control, my proxy for financial reporting quality. I find that internal audit and financial statements are the two most frequently discussed audit committee topics. However, the discussions that have the strongest negative association with the likelihood of internal control deficiencies are those that address internal controls, audit committee expertise, and the audit committee charter. These results provide useful information regarding audit committee deliberations, information that is unavailable for publicly-traded companies, and aid our understanding of how audit committees influence the quality of firms' financial reporting outcomes.

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CHAPTER I

INTRODUCTION

Audit committees are responsible for overseeing the integrity of the firm's internal controls over financial reporting, accounting and reporting practices, financial statements, and the selection and retention of external auditors. Yet, little is known about what actually occurs within audit committee meetings since this information is not directly observable for publicly-traded companies.¹ One audit committee member states “[f]rankly, we don’t do a good job of communicating what we do. The public doesn’t see all the work we do, quarter after quarter” (NACD 2013). PCAOB Investor Advisory Group committee member Peter H. Nachtwey further adds that there are tremendous differences in the level of quality among audit committees, and that all committees would benefit by seeing each other’s “best practices” (Nachtwey 2014). Due to this lack of transparency, prior researchers are limited to examining various observable characteristics of audit committees, such as size, number of meetings, and composition (e.g. Klein 2002; DeZoort, Hermanson, Archambeault, and Reed 2002; Carcello and Neal 2003). However, without observing what audit committee members are actually doing (e.g. with whom they are

¹ Even if minutes were made publicly available for publicly-traded companies, these minutes are usually thoroughly scrutinized by legal experts and only roughly describe the actions/discussions of the meeting (Schwartz-Ziv and Weisbach 2013). Therefore, minutes for publicly-traded U.S. companies would be insufficient to allow for a similar analysis.

interacting, what is being discussed, etc.), it is difficult for researchers to conclude what actually makes an audit committee effective (Cohen, Krishnamoorthy, and Wright 2004). DeFond and Zhang (2014) specifically state that: “we know nothing about how audit committees affect pre-audited financial statement quality, or how they interact with external auditors” (p. 278).

Therefore, the purpose of this study is to take the first step towards providing insight into these activities. Specifically, I provide data on audit committee deliberations contained within the minutes of university audit committee meetings. Then, I examine whether these audit committee deliberations are associated with financial reporting quality.

Although universities are not publicly-traded firms subject to shareholder demands, universities have a fiduciary duty to appropriately manage and oversee the financial resources provided to them by the state, taxpayers, and students. Universities also have to compete heavily for scarce resources, with universities often issuing debt to supplement reductions in revenue caused by declines in both enrollment and public funding (Motley 2014). As a result of these financial constraints and demands, many universities are now “being run more and more like for-profit enterprises” (Fichtenbaum 2016; p. 1). Unlike publicly-traded firms, though, the minutes of university audit committee meetings are often made available on university websites. For these reasons, an examination of university audit committee minutes can help researchers better understand audit committees’ monitoring and oversight function and summarize which areas of audit committee oversight are useful for other organizations.

To gather data on deliberations within audit committee meetings, I examine publicly-available audit committee minutes from a sample of U.S. universities. This approach is similar to Schwartz-Ziv and Weisbach (2013), which examines minutes to determine the activities of boards of directors. I use the Linguistic Inquiry and Word Count (LIWC) 2015 software to process discussions contained within the audit committee minutes. LIWC is commonly used in social

science research, particularly psychology (McCarthy and Boonthum-Denecke 2012), to analyze large volumes of text. In this context, I use the LIWC software to separate the minutes into 14 categories based on audit committee “best practice” guides issued by the National Association of College and University Business Officers (NACUBO) and public accounting firms.

My study first provides descriptive statistics about the content of university audit committee minutes. Results indicate that the highest percentage of audit committee minutes contain discussions with internal audit personnel, followed by discussions concerning financial statement review and then, internal controls. Additionally, external audit oversight is discussed in a little over half of the committees’ meetings and slightly less than half of their meeting minutes are officially approved by the committee during their next meeting, indicating that some committees may consider the meetings to be ceremonial. Results also indicate that management oversight is discussed the least.

Second, I examine whether the 14 discussion categories are associated with universities’ financial reporting quality, with financial reporting quality proxied by (a lack of) deficiencies in internal controls over financial reporting. Internal control deficiencies are used in the governmental sector to examine financial reporting quality (Rich and Zhang 2014). In the context of publicly-traded firms, internal control deficiencies indicate that it is possible that a misstatement could have occurred during that financial period (Public Company Accounting Oversight Board [PCAOB] 2004; DeFond and Zhang 2014). Further, prior literature finds that audit committee oversight for publicly-traded companies influences the strength of internal control systems, with independent audit committees and financial expertise associated with fewer internal control deficiencies (Krishnan 2005; Hoitash, Hoitash and Bedard 2009). Therefore, using internal control deficiencies as a proxy for financial reporting quality allows my findings to generalize to a for-profit organization setting.

Results of backwards elimination analysis indicate that three of the 14 dimensions examined are significantly negatively associated with the likelihood of an internal control deficiency. The three dimensions are discussions about internal controls, the audit committee charter, and the audit committee's financial expertise. These dimensions are significant even after controlling for audit committee meeting frequency (a commonly-used proxy for audit committee oversight). I also find that internal control deficiencies are positively associated with university size and the financial crisis period. Finally, the likelihood of a deficiency is negatively related to large auditors and private sources of funding.

Of the three discussion categories associated with a decreased likelihood of internal control deficiencies, only audit committee expertise information is available for publicly-traded companies.² Even further, companies typically only provide information about the number of experts and not information about whether the committee periodically evaluates its financial expert. These results suggest that additional topics are associated with improvements in internal control quality, yet are not being captured by proxies that are currently available for publicly-traded companies.

In additional analyses, I find that discussions regarding the committee's financial expertise and financial statement analysis discussions are negatively associated with the total number of internal control deficiencies (which is a proxy for the magnitude of the deficiencies in internal control). Discussions regarding non-audit services are positively associated with the total number

² Although information regarding internal control effectiveness is provided under AS 2201, *An Audit of Internal Control over Financial Reporting That is Integrated with an Audit of Financial Statements* (PCAOB 2007), the Standard applies to accelerated and large accelerated filers. Additionally, the external auditor's report does not include information pertaining to the committee's oversight over internal controls, which is the focus of this study. Additionally, while audit committee charters are made available to the public, readers cannot determine the frequency in which committees assess compliance with their charter. Even further, Carcello, Hermanson and Neal (2002) find that what committees should be doing according to their charters often differs from what they actually do, suggesting that the charter alone is insufficient to assess committee effectiveness.

of internal control deficiencies. This suggests that committees assess the need to enlist in additional outside assistance as internal control problems become more pervasive.

This topic and its results are of interest to both researchers and regulators. In contrast to prior studies, this study directly examines what transpires during audit committee meetings in order to determine which of its activities are most effective, answering calls from Cohen et al. (2004) and Carcello, Hermanson, and Ye (2011). It supplements prior studies that examine the association between audit committees and financial reporting quality. This paper also highlights the value of using a qualitative research methodology, as well as a unique dataset, in order to uncover the “underpinnings of the workings of audit committees” (Cohen et al. 2004; p. 96). This study complements other qualitative studies, such as Gendron, Bédard, and Gosselin (2004) and Carcello, Hermanson and Neal (2002), who examine audit committee activities using surveys, audit committee charters, and reports. Additionally, academics have an interest in the financial reporting health of their specific university as their future with the university is dependent on this information. This information is also useful for academics who serve as audit committee/board members or consultants who would like to enhance the effectiveness of audit committees.

This study also provides insights to standard setters and current audit committees. The PCAOB Investor Advisory Group has issued calls for audit committees to disclose best practice recommendations to other committees. (Nachtwey 2014). Other U.S. governance organizations, such as the Center for Audit Quality (CAQ) and the SEC, are calling for an increase in disclosures related to the activities of the audit committee (Tysiac 2015). Therefore, this information is useful to audit committee members who wish to focus their efforts on activities that are most effective. The PCAOB can use this information when evaluating the impact of the audit committee membership requirements of the Sarbanes-Oxley Act of 2002 (SOX; Congress 2002).

The remainder of this paper proceeds as follows: Section 2 provides the literature review and theory development. Section 3 explains the research method and sample details. Section 4 provides descriptive statistics. Section 5 examines the primary results and Section 6 provides sensitivity analyses. Section 7 documents the conclusions.

CHAPTER II

REVIEW OF THE LITERATURE

Understanding the Higher Education Industry

The Size, Scope, and Funding of the Higher Education Industry

This section provides information about the U.S. higher education industry. The purpose of public universities is to provide the opportunity for high-quality education to all students, regardless of income level. There are currently almost seven million students enrolled in public four-year higher education institutions in the United States, and these universities employ over 1.8 million faculty and staff nationwide (National Center for Education Statistics; NCES 2016). At the end of the academic year 2013–14, total revenues at all degree-granting postsecondary institutions in the U.S. equaled \$605 billion (NCES 2016). Revenues of four-year, public universities for fiscal year 2014 totaled \$297 billion. Of that \$297 billion, about 36 percent was received from federal, state and local government, 21 percent from tuition and fees, 13 percent from the sale of services of hospitals, 8 percent from the sales and services of auxiliary enterprises, 7 percent investment income, 6 percent from other operating revenues, and the remaining 9 percent from “other,” including gifts, capital appropriations, and other non-operating revenues (NCES 2016).

In most states, state-funded enrollment revenue is determined by a formula that must first be

approved by the state legislature. The enrollment revenue formula is based on multiple factors, including (university-reported) student headcounts, credit hours, level of instruction, number of campuses, and program mix. State revenues are then allocated to individual universities by the state department that oversees higher education. Many states are currently facing revenue shortfalls, which often result in cuts to higher education funding (Jessell 2013; NASBO 2013). Universities must address these differences between revenues and operating expenses by cutting expenses or generating funds from other sources, such as debt issuances or tuition and fee increases. However, state regulators may restrict the size of any tuition or fee increases. Additionally, universities also face significant pressure from students and parents to keep tuition levels constant (NASBO 2013).

University Reporting Requirements

The Government Accounting Standards Board (GASB) is responsible for standard setting for governmental institutions (including state universities).³ GASB's goals in standard setting include decision-usefulness and public accountability. Accountability "implies a willingness to endure public scrutiny, even for the public to scrutinize the behaviors of the organization's leadership" (Lawry 1995; 175). The Financial Accounting Standards Board (FASB), the standard setting body for public and private companies and not-for-profit organizations, states that the objective of general purpose financial reporting is "to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling, or holding equity and debt instruments and providing or settling loans and other forms of credit" (FASB 2010, ¶OB2). This is also referred to as the "decision-usefulness" purpose of financial statements.

³ Universities are categorized as public (state-dependent) universities, private, and for-profit universities. Audit committee meeting information is only available for public universities, therefore, this university category is the focus of this study.

According to Coy, Fisher, and Gordon (2001), the decision-usefulness focus is clearly documented in GASB's conceptual framework. Engstrom and Esmond-Kiger (1997) document that the financial community (bond rating agencies, investment bankers, underwriters and investors) highly depends on universities' audited financial statements for decision making. For example, an analysis of a sample of 100 U.S. college and university annual reports reveals that the reports emphasize financial information in order to meet the needs of creditors and lenders (Coy et al. 2001; Gordon, Fisher, Malone, and Tower 2002). Bond rating agencies compute a number of ratios using both financial and non-financial information, such as the amount of debt per student (Gordon and Fisher 2008).

GASB Statement No. 35 (GASB 35), effective for universities with fiscal years ending after 2002, contains the reporting requirements for Public Colleges and Universities (GASB 1999). This standard changed the financial statements of universities so that they now more closely resemble for-profit entities (Fichtenbaum 2016). GASB 35 requires that universities include, in their separately issued reports, the following items: management's discussion and analysis (MD&A), financial statements, notes to the financial statements, and required supplementary information other than MD&A (GASB 1999). GASB Statement No. 39 provides guidance used to determine whether certain organizations should be reported as component units based on the nature and significance of their relationship with the primary government (GASB 2002).

Many universities prepare separate financial statements to accomplish at least one of the following objectives: 1) support state or federal aid applications; 2) report financial activities to specific groups; and/or 3) prepare financials for use in a bond issuance. Additionally, some states choose to issue a separate report for groups of universities referred to as a university system. The system is comprised of other campuses, medical centers, and foundations and are reported together, because the same group of Regents oversees the entities. The operations of these

universities are also included in the state-wide report as a discretely presented component unit in the state's Comprehensive Annual Financial Report (CAFR), which is prepared annually in accordance with GASB.

The CAFR contains audited financial statements that report fiscal activity for the year, as well as its year-end statement of financial position. These financial statements are audited by external auditors who are either public accounting firms or individuals from the State Auditor's Office, both of whom are required to issue an audit report on the financial statement's compliance with GASB. The filing deadlines for these reports vary by state.

In addition to financial statement audits, non-federal entities that expend \$750,000 (an increase from \$500,000 effective December 26, 2014) or more of Federal awards in a year are required to obtain an annual audit in accordance with the Single Audit Act Amendments of 1996, OMB Circular A-133 (referred to as an A-133 audit or single audit), the OMB Circular Compliance Supplement and Government Auditing Standards. Each A-133 audit includes a traditional audit conducted by a licensed certified public accountant, an assessment of internal controls, and compliance with laws and regulations (OMB 2003, 2013). In addition to federal requirements, grant donors often impose a number of rules and restrictions upon the use of grant funds. This also typically requires testing performed by internal or external auditors. Audit reports and *Schedules of Findings and Questioned Costs*⁴ must be submitted annually to the Federal Audit Clearinghouse (FAC).⁵ The FAC makes summary *Schedules of Findings and Questioned Costs*

⁴ Questioned costs are expenses that were improperly charged to a grant or program. Known questioned costs in excess of \$10,000 (for a major program) are required to be reported by the auditor on the *Schedule of Findings and Questioned Costs* (OMB 2013 §.505).

⁵ The FAC database can be accessed using the following link: <https://harvester.census.gov/facweb/>. According to the FAC user manual, State-Dependent Institutions of Higher Education are entity type code "004."

available to the public for the most recent seven years. Detailed information about findings and questioned costs are now available for fiscal years ending on or after 2013.

As part of the university's reporting package, the external auditor issues their *Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of the Financial Statements Performed in Accordance with Government Auditing Standards* (GAS Report). The auditor also issues their *Report on Compliance for Each Major Federal Program; Report on Internal Control over Compliance; and Report on Schedule of Expenditures of Federal Awards as Required by OMC Circular A-133* (A-133 Report; where required). Each report contains a *Schedule of Findings and Questioned Costs*, which includes a description of deficiencies in internal control and compliance, as well as the total dollar amount of total findings and questioned costs. These deficiencies are categorized in terms of severity and include control deficiencies/other matters, significant deficiencies, and material weaknesses. Significant deficiencies (referred to as reportable conditions for years ending prior to 2007) involve deficiencies in the design or operation of controls that affect the organization's financial reporting or ability to administer its federal programs. Material weaknesses are significant deficiencies in which the design or operation of controls does not reduce to a low level the risk of material noncompliance with applicable grant requirements or with GASB generally accepted accounting principles that may occur and not be detected in a timely manner (AICPA 2003; Petrovits et al. 2011).

In response to the transparency movement of publicly-traded companies, most states have implemented transparency initiatives which require universities to make information available to the public, such as the audited financial statements described above, revenue and expenditure detail, and minutes detailing the meetings of Boards of Regents (and committees). These initiatives focus on the transparency needs of the public, which includes parents, students, and

taxpayers. The goal is to improve universities' performance, accountability, information, and equity (NASBO 2013). Therefore, although governmental and private entities have separate standard-setting bodies, the FASB, GASB, and state standard-setting bodies share a common goal of providing information that aids in decision making.

University Financial Pressures

All universities are forced to compete for the same scarce resources in terms of students, employees, faculty, and funding (Engstrom and Esmond-Kiger 1997). Over time, state governments have reduced financial support for universities and encouraged competition and financial independence. Additionally, many public universities are losing prospective students to private and for-profit universities. As a result, competition for students is increasing as public universities are losing market share (NASBO 2013). This loss in funding can have a devastating effect on universities. A significant loss in funding for any university reduces the funding that is available for general operations, affects the university's ability to attract and retain quality research faculty, and impacts the university's ability to maintain a high academic and research reputation (Jessell 2013).

To compensate for reduced government support, universities are turning to the financial community. This outside financial support is used to pay for projects, such as the refurbishment and building of classroom space, residence halls, and parking garages. However, universities are beginning to feel the stress of their increased debt loads (Jessell 2013). This means that universities are acting more like for-profit business entities with an obligation to increase operational efficiency and effectiveness (Schmidt and Günther 2016).

Schmidt and Günther (2016) highlight the potential risks associated with universities' increased autonomy from state funding and accountability to outside debt holders. The authors state that it is "surprising that risk issues have not been discussed so far in light of the fact that some (private)

universities, especially in Anglo-American countries, have had to file for bankruptcy or run into severe problems of financial distress. [...] Thus, risks in the higher education sector and overall risk management appear to be under-researched” (Schmidt and Günther 2016; p. 27). Even further, universities are not subject to external monitoring provided by groups such as institutional shareholders (as in the publicly-traded company setting). Therefore, university audit committees may need to compensate with increased levels of monitoring.

Earnings Management in the Higher Education Industry

Healy and Whalen (1999; p. 368) define earnings management as “manage[ment’s] use [of] judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholder about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers.” Many times, managers are compensated both directly (through salaries and bonuses) or indirectly (through prestige, future promotions, and job security) depending on the firm’s earnings performance, which is generally based on an earnings benchmark. However, management has discretion over reported earnings. This discretion, combined with the effects of earnings on management’s compensation, leads to agency problems (Healy and Whalen 1999).

Although management compensation structures at not-for-profit and governmental entities are different from their counterparts at for-profit entities, Leone and Van Horn (2005) provide evidence that earnings management occurs in the governmental sector as well. Specifically, the authors find evidence that nonprofits adjust earnings just above zero. The reason is that these organizations have incentives not only to avoid losses but also to avoid reporting large positive net income (for fear of losing their nonprofit status). In a working paper, Kuroki (2015) documents that this incentive exists for Japanese colleges and universities as well, finding that managers manage earnings toward zero in these institutions. Although Kuroki (2015) examines

private universities, Japanese universities are funded in a similar fashion to U.S. public colleges and universities and are accountable to the same group of stakeholders.

Kuroki (2015) documents that the primary motivation for university leaders to manage earnings near zero is to prevent bad publicity associated with poor financial performance. This fear is also shared by U.S. university management where a reduction in state funding has been referred to as “a killer in higher education” (Flaherty 2017). The inability to recruit strong faculty affects university enrollment and many other aspects of the university. Therefore, universities have strong incentives to portray a positive message about their ability to continue to provide high-quality, affordable education as evidenced by positive cash flows and changes in net position (net income).

Additionally, as stated previously, competition for public funding is intense, and this intensity increases as the pool of available state funding declines (Jessell 2013; NASBO 2013). Since many states are implementing performance-based or outcomes-based budgeting models in order to determine which institutions receive state funding, the level of funding received by universities is becoming increasingly dependent on university-reported information. However, Coy et al. (2001) highlight that in addition to the risk of earnings management, there is an incentive for management to misreport non-financial information as well. Specifically, they state that performance information is often inaccurate. The UK University Funding Council 1989 documented that “it has become apparent that the assumption of honesty and veracity was not always justified and in one or two subject areas, at least, it would seem that deliberate ‘misreporting’ occurred” (Cave, Hanney, Henkel, and Kogan 1997; p. 127).

Demand for Audit Committees to Serve as Monitors in the University Setting

Prior literature demonstrates that independent outside directors protect shareholders in the presence of an agency problem (e.g. Brickley and James 1987). Boards are responsible for

monitoring management in order to protect stakeholders' interests. The governing boards of colleges and universities are referred to as a Board of Regents (also the Board of Trustees, Governors, or Visitors). University boards are almost exclusively comprised of outside directors that are externally appointed by the state or elected by the existing board members (Gordon et al. 2002).

Most of the board's functions are delegated to individual committees within the board, such as the audit committee (Laux and Laux 2009). The audit committee is responsible for monitoring the integrity of the firm's financial statements, overseeing the internal audit function, and corresponding with the external auditors. Therefore, the firm's level of earnings management is influenced by the audit committee's level of monitoring (Klein 2002; Laux and Laux 2009).

Audit Committee Literature and Research Questions

Prior research on audit committees for publicly-traded companies has typically focused on observable characteristics of the committee. Specifically, prior studies have focused on audit committee size, independence, meeting frequency, and financial/industry expertise. Researchers have found that financial reporting quality is positively associated with audit committee meeting frequency (Menon and Williams 1994) and audit committee independence (Abbott, Parker, and Peters 2004). More independent audit committees also enhance audit quality by protecting audit firms from dismissals following the issuance of going-concern reports (Carcello and Neal 2003). Bédard, Chtourou, and Courteau (2004) find that earnings management is negatively associated with audit committee financial expertise. Zhang, Zhou, and Zhou (2007) document that firms with internal control weaknesses have fewer financial experts. Krishnan and Visvanathan (2008) extend this literature and find that only accounting and financial expertise are associated with higher financial reporting quality. Baura, Rama, and Sharma (2010) document a substitution effect between audit committee expertise and the firm's investment in internal auditing.

Specifically, the firm's investment in internal auditing is negatively related to the audit committee financial expertise and audit committee tenure. As summarized by Carcello et al. (2011), "good" audit committees are associated with "good" outcomes, where good audit committees are defined as those that are independent and experts, and good outcomes consist of less earnings management/fraud, effective internal controls and higher audit quality.

In the governmental sector, Rezaee, Elmore, and Szendi (2000) examine the functions of audit committees in corporations and compare them to those of colleges and universities. They find that audit committees for colleges and universities are smaller, but the relationships with the committees and both internal and external auditors are similar. Additionally, they find that the specification of duties is "virtually identical" and involves overseeing organizational governance, the financial reporting process, and the internal and external auditors (Rezaee et al. 2000). Within governmental literature, universities have become the focus of corporate governance studies since they represent multi-million dollar enterprises (e.g. De Silva Lokuwaduge and Armstrong 2015; Dixon and Coy 2007). For example, De Silva Lokuwaduge and Armstrong (2015) examine the impact of board committees for Australian universities and find that stronger committees are positively associated with university financial performance (viability and sustainability).

However, despite the vast amount of research about the characteristics of audit committees, little is known about what audit committees actually do. Carcello et al. (2002) find that the actual reported activities of audit committee members differs from their expected activities according to their charter, even further highlighting the need to study the actual actions of the audit committee members. In their call for research, DeFond and Zhang (2014) specifically state that: "we know nothing about how audit committees affect pre-audited financial statement quality, or how they interact with external auditors" (p. 278). Therefore, the purpose of this study is to take the first step towards providing insight into these activities. Because this study is exploratory, I present

generalized research questions instead of formal hypotheses (following Burrows and Black 1998; Groot and Merchant 2000; Fleischman and Stephenson 2012; Wright 1983). This leads to the following research questions:

(RQ1) What are the topics of deliberation during audit committee meetings?

(RQ2) Which of these topics are associated with financial reporting quality?

Since financial reporting quality is difficult to measure, I examine financial reporting quality in terms of internal control deficiencies, where (a lack of) financial reporting quality is measured using the presence of internal control deficiencies. I focus on internal control deficiencies for a few reasons. First, internal control deficiencies are commonly used in the governmental sector as a proxy for financial reporting quality (Rich and Zhang 2014; Petrovits et al. 2011). While the identification of an internal control deficiency is not always directly associated with a financial reporting misstatement, internal control deficiencies indicate that it is possible that a financial reporting misstatement could have occurred (PCAOB 2004; DeFond and Zhang 2014).

Depending on the severity of the deficiency, this misstatement would be considered material. As such, I analyze the presence of severe deficiencies, which in this study are significant deficiencies and material weaknesses.

Second, internal control deficiencies are commonly examined in publicly-traded company research as a proxy for financial reporting quality (e.g. Ashbaugh-Skaife, Collins, Kinney, and LaFond 2008; Bedard and Graham 2011; Naiker and Sharma 2009). Therefore, my findings can more easily translate to this setting (compared to other higher education industry-specific measures). Finally, other commonly used measures, such as accruals quality and restatements, do not easily translate into the higher education setting (Ashbaugh-Skaife et al. 2008; Baber, Gore, Rich, and Zhang 2013; Wang and Zhou 2012).

CHAPTER III

METHODOLOGY

Data Processing

Due to the large volume (content and number) of audit committee minutes for U.S. universities, I use the LIWC 2015 software to categorize the content of the audit committee minutes. This software allows users to define a set of categories in which to analyze a document based on a user-defined data dictionary and has been widely used in the social sciences (McCarthy and Boonthum-Denecke 2012). The LIWC software scans each set of audit committee minutes for matching key phrases (outlined in the data dictionary) and outputs the total document percentage of words that pertain to each category. Appendix A includes a description of each category that I use to analyze the audit committee minutes.

The categories are based on recommendations from guidance issued by public accounting firms and from NACUBO. NACUBO is a membership organization that is comprised of chief business and financial officers from more than 2,100 colleges and universities. The association's mission is to provide guidance and other assistance to universities in order to promote efficient business and finance strategies and is a reference source used by universities. In 2003, NACUBO released an advisory report as a guide for universities in implementing SOX (Congress 2002). Although SOX does not directly apply to universities, NACUBO considers the concerns that SOX covers to

be universal. As such, within their report, NACUBO provides recommendations for addressing issues raised by SOX. The report includes a checklist addressing each item of SOX and its corresponding item as it relates to universities. I use this checklist to define audit committee categories as described below (NACUBO 2003). I also define categories based on suggestions from EY's Guide for Audit Committees (Ernst & Young 2014), which provides areas of focus to help audit committee members perform their oversight function.

The first set of categories that I define are those that involve the university's internal controls and risk assessment, as well as their impact on the financial statements. The audit committee has the responsibility to oversee internal controls which involves understanding key controls, the internal auditor's testing of controls, and the implementation of corrective action (*1_INTERNAL CONTROLS*). The audit committee should also understand fraud risks (*2_FRAUD RISK*), which include the risk of management override of controls and fraud as it relates to revenue recognition. The committee should also obtain an understanding of the overall business and legal risks affecting the university (*3_ASSESS RISK*; Ernst & Young 2014). NACUBO (2003) further emphasizes the importance of the organization's overall "tone at the top." As a result, the checklist recommends that the financial officers adopt a code of conduct. The audit committee should periodically review this code of conduct to determine the code's adequacy and how management assures compliance with this code (*4_CODE OF CONDUCT*). The committee is also responsible for overseeing management (*5_MGT OVERSIGHT*). Management is responsible for the university's internal controls and information contained in financial statements. The audit committee should meet with management to discuss critical and significant accounting practices and policies, significant estimates and misstatements, or internal control issues (NACUBO 2003).

The second set of categories involve audit committee organization and operation derived from EY's Guide for Audit Committees (Ernst & Young 2014) and NACUBO's SOX Checklist for

Higher Education (NACUBO 2003), as well as the NASDAQ and NYSE audit committee requirements for registrants (NYSE 2013; SEC 2008). *6_AC CHARTER* identifies audit committee discussions regarding the implementation (and later revisions) of the audit committee charter. Prior literature has demonstrated that financial expertise affects audit committee oversight (Abbott et al. 2004). Therefore, I also examine whether the committee performs a self-assessment to determine if it has sufficient financial expertise among committee members (*7_EXPERT*). I also examine whether the audit committee formally approves the audit committee minutes (*8_APPROVE MEETING*). The last audit committee organization item that I measure is whether the audit committee holds private sessions with internal audit, management, or external auditors (*9_EXEC SESSION*). These sessions provide committees with the opportunity to set clear expectations for each of these groups (Ernst & Young 2014).

The third set of categories outline the audit committee's role in overseeing the audit process. Since auditor oversight is a key role of the audit committee, I examine whether the committee documents their discussions with the independent auditor (*10_ADT OVERSIGHT*). NACUBO also recommends that the audit committee pre-approves all non-audit services to be performed by the external auditor (NACUBO 2013). Therefore, I examine whether the minutes contain discussions of the audit committee's approval of non-audit services (*11_NAS*). Finally, both NACUBO (2003) and the EY guide (Ernst & Young 2014) recommend that the audit committee review internal audit's plan, receive periodic updates from the internal audit department regarding internal control findings and obtain information regarding implementation status of remedies. As such, I indicate whether the audit committee meets with internal audit personnel (*12_IAUD*).

My final two categories focus on the financial statements as a whole. Stakeholders rely on audit committees to ensure that financial statements are prepared in conformity with GASB generally accepted accounting principles and are free from material error. Due to the audit committee's role

in the financial statement oversight process, I include a financial statement category (*13_FIN STATEMENTS*) to capture these related discussions. These topics include the usage of accruals and estimates, critical accounting policies, and the discussion of the implementation of GASB standards (Ernst & Young 2014). Finally, since revenue allocations are often based on enrollment numbers or other financial ratios, I include a category that captures discussions surrounding performance measures (*14_FIN STRENGTH*).

For each of the categories described, the LIWC output provides the percentage of words (of the document total) related to that category. Since my primary interest is whether the topic was discussed or not, I convert these scores into indicator variables that equal one if the LIWC score is greater than zero; zero otherwise. Additionally, I obtain all audit committee minutes, by university, that relate to a particular year. Therefore, I sum the number of times that each item was discussed, by year. I divide that total by the total number of meetings so I do not artificially inflate the totals for universities that meet more frequently during the year. My score for each category then reflects the percentage of meetings in which each topic was discussed (by year) as indicated by the “PCT” included at the end of each category title.

Primary Model

With internal control deficiencies as my proxy for financial reporting quality, I estimate the following overall model:

$$\begin{aligned}
 FS\ WEAK_{it} = & \beta_0 + \beta_1 SIZE_{it} + \beta_2 LINVEST_{it} + \beta_3 TLTA_{it} + \beta_4 ROTA_{it} + \beta_5 SWITCH_{it} + \beta_6 BIG\ N_{it} \\
 & + \beta_7 NUMBER\ OF\ MEETINGS_{it} + \beta_8 SOX_{it} + \beta_9 CRISIS_{it} + \beta_{10} DOCTORAL_{it} \\
 & + \beta_{11} PUBLIC\ PCT_{it} + \beta_{12} PRIVATE\ PCT_{it} + \beta_{13} SA\ WEAK_{it} \\
 & + \beta_{14} 1_INTERNAL\ CONTROLS\ PCT_{it} + \beta_{15} 2_FRAUD\ RISK\ PCT_{it} \\
 & + \beta_{16} 3_ASSESS\ RISK\ PCT_{it} + \beta_{17} 4_CODE\ OF\ CONDUCT\ PCT_{it} \\
 & + \beta_{18} 5_MGT\ OVERSIGHT\ PCT_{it} + \beta_{19} 6_AC\ CHARTER\ PCT_{it} \\
 & + \beta_{20} 7_EXPERT\ PCT_{it} + \beta_{21} 8_APPROVE\ MEETING\ PCT_{it} \\
 & + \beta_{22} 9_EXEC\ SESSION\ PCT_{it} + \beta_{23} 10_ADT\ OVERSIGHT\ PCT_{it} \\
 & + \beta_{24} 11_NAS\ PCT_{it} + \beta_{25} 12_IAUD\ PCT_{it} + \beta_{26} 13_FIN\ STATEMENTS\ PCT_{it} \\
 & + \beta_{27} 14_FIN\ STRENGTH\ PCT_{it} + \varepsilon_{it}
 \end{aligned} \tag{1}$$

where subscripts *i* and *t* indicate university and year, respectively. I estimate Model (1) using a logistic regression where *FS WEAK* is equal to one if the university reported a significant deficiency or material weakness in internal controls over financial reporting during the period; zero otherwise.^{6,7}

Along with the audit committee deliberation categories discussed previously, the model includes several controls for university and financial reporting characteristics. Following Mellett, Peel, and Karbhari (2007), I control for university size (*SIZE*) based on the natural log of total revenues.⁸ More complex auditees have a higher risk of misstatement or poor financial reporting quality (Krishnan et al. 2011). Therefore, I control for complexity based on the amount of the university's financial investments. Specifically, I measure the accounting complexity of financial investments (*LINVEST*) by taking the log of the year-end value of financial investments (Mellett et al. 2007). I also include an indicator variable that measures differences attributable to the Carnegie Classifications of universities.⁹ Specifically, *DOCTORAL* equals one for universities classified as Doctoral/Research Universities; zero otherwise.

⁶ I follow Petrovits, Shakespeare, and Shih (2011) who examine internal control deficiencies in nonprofit organizations and measure my dependent variable as a binary indicator variable. I include consideration of both material weaknesses and significant deficiencies because the presence of an issue at either indicates that the nonprofit organization is not effectively carrying out its fiduciary responsibilities (Petrovits et al. 2011). Further, Petrovits et al. (2011) document that the presence of either level of internal control problem negatively impact donations and government support received in future periods.

⁷ In an untabulated analysis, I also follow Rich and Zhang (2014) and measure my dependent variable using an ordered logit model (where the presence of a significant deficiency is an indicator variable equal to one, a material weakness equal to two; zero otherwise) and obtain quantitatively and qualitatively similar results.

⁸ Some of the universities in my sample represent state-wide systems with multiple universities under one governing body. The model controls for this using the size and complexity measures, with state-wide systems representing the larger, more complex universities in my sample. An alternative means to control for this is to include an indicator variable in the model for state-wide systems, but due to multi-collinearity concerns between the state-wide indicator variable and my *SIZE* measure, these measures cannot be in the model at the same time. Results are similar if I replace *SIZE* with a state-wide indicator variable.

⁹ Carnegie Classifications categorize schools using the highest degrees offered by the university and the school's relative research intensity (compared to similar schools). The categories group relatively homogenous groups of universities together with respect to the functions of the institutions as well as the characteristics of students and members of the faculty (McCormick and Zhao 2005). Classifications can be found online: <http://carnegieclassifications.iu.edu/>.

I control for client specific-risk and financial performance, as both are associated with audit quality in for-profit entities (Newton et al. 2013). Universities with greater financial liabilities, as compared to total assets, are under greater financial and performance risk (Mellett et al. 2007). Therefore, my first measure of risk (*TLTA*) is calculated as total liabilities divided by total assets. My second measure of risk (*ROTA*) is calculated as the total change in net position (net income) scaled by total assets (Mellett et al. 2007). Finally, since the source of funding is associated with the quality of governance in the nonprofit sector (Harris et al. 2015), I include two variables that measure the percentage of the total university's resources from public and private sources. Specifically, I control for the percentage of total revenues received from federal, state, and local government (*PUBLIC_PCT*). My second measure, *PRIVATE_PCT*, measures the percentage of total university revenues received from private donors.¹⁰ Finally, I control for deficiencies in internal control over compliance, as these problems may reveal underlying issues with the university.¹¹ *SA WEAK* is an indicator variable equal to one if the university reported a severe deficiency in internal controls over compliance (significant deficiency or material weakness); zero otherwise.

I also control for characteristics of the university's audit firm. I include an indicator variable for Big 4 audit firms (*BIG N*) that is equal to one if the client is audited by a Big 4 auditor in year *t*; zero otherwise.¹² Regulators document that auditor changes improve reporting quality by increasing the auditor's objectivity and decreasing fee dependence (GAO 2003). However, prior research suggests that audit quality is lower in the first few years of the audit due to fee pressure

¹⁰ The university revenue sources not reflected in these two measures include tuition and fees, sales of services of hospitals, investment income, and services of auxiliary enterprises.

¹¹ I also include a lagged variable that equals one if the university had a prior year significant deficiency or material weakness; zero otherwise, as this could also indicate systemic problems with the university. I find that of my discussion variables, *IC_PCT* is no longer significantly positive ($p=0.108$; untabulated), and *EXEC_SESS_PCT* becomes significantly positive ($p=0.004$; untabulated).

¹² I obtain similar results if I replace with an indicator variable equal to one for external (non-State/Internal) auditors; 0 otherwise.

or lack of client-related knowledge (e.g. Stanley and DeZoort 2007). Therefore, I control for changes in auditors (*SWITCH*) using an indicator variable equal to one if the client switched auditors during year *t*; zero otherwise.

I control for the number of meetings (*NUMBER OF MEETINGS*) held by the audit committee during the year because results in Menon and Williams (1994) indicate that audit committee meeting frequency is associated with financial reporting quality. Additionally, I include two time period indicator variables to capture variation in the likelihood of internal control problems affecting firms caused by external forces. The first of which, *SOX*, is an indicator variable that equals one for university-year observations in the post-SOX time period (after 2002); zero otherwise. Studies document an increased focus on entities' control environments in the post-SOX period (Coates and Srinivasan 2014). Finally, Ettredge, Fuerherm, and Li (2014) document evidence of an increased likelihood of internal control weaknesses during the 2008 recession. Therefore, I include a second measure, *CRISIS*, which is an indicator variable equal to one for university-year observations during 2008 and 2009; zero otherwise.¹³ All variables are measured in year *t*.¹⁴ Standard errors are clustered by year and university in my primary analysis.

I first estimate Model (1) using all independent variables identified above. However, each variable may not affect financial reporting quality in the university setting. Additionally, some of the discussion variables may proxy for similar dimensions of audit committee oversight.

Therefore, I follow prior studies and use backward elimination to reduce the total number of variables in the model (Carcello et al. 2002; Dechow, Ge, Larson, and Sloan 2011; Xu and Zhang

¹³ The results for my primary analysis remain quantitatively and qualitatively similar if I include years 1999 and 2001 in the *CRISIS* period (untabulated).

¹⁴ I also estimate Model (1) using a lagged variable approach, where *FS WEAK* is measured in year *t-1*. Of my total audit committee discussion variables, only *AC_CHARTER_PCT* has a significant association with the likelihood of a severe deficiency. This suggests that audit committee discussions drive changes in financial reporting quality instead of findings driving the audit committee discussions (reverse causality).

2009).¹⁵ In my backward elimination estimation, variables are retained in the model if they are significant at the 20 percent level. In backward elimination, the results of the Wald test for individual parameters are examined. The least significant effect that does not meet the significance level of 20 percent is removed from the model. This process is repeated until no other effect meets the level for removal (Bursac, Gauss, Williams, and Hosmer 2008). I retain significant variables obtained using backward elimination and re-estimate Model (1) using those variables.

Sample Selection

To obtain my sample of university audit committee minutes, I first identify all public four-year universities (excluding universities that provide predominantly associates degrees) within the U.S from the NCES database (NCES 2016). This initial search produced a listing of 404 state-dependent universities, of which, 160 are classified as research universities¹⁶. From this listing, I searched the university's website to determine whether the university's audit committee minutes are publicly available. Of these 160 research universities, 79 universities only provide minutes for the entire Board of Trustees/Regents.¹⁷ An additional four universities do not have a separate

¹⁵ Note that I use backward elimination instead of principal component analysis (PCA) because PCA is used to reduce the dimensionality of a data set consisting of a large number of interrelated variables (while retaining as much of the variation in the data set as possible). PCA transforms to a new set of variables (principal components) and creates new, uncorrelated variables (components). The first few components retain most of the variation present in all of the original variables. (Jolliffe 2002). An examination of a correlation matrix of the 14 audit committee variables suggests that high collinearity among the 14 variables is not a significant problem (all estimated correlation coefficients are ≤ 0.48 ; *I_INTERNAL CONTROLS PCT* and *10_ADT OVERSIGHT PCT*). The largest estimated variance inflation factor is 2.002 (*7_EXPERT_PCT*). Further, when I estimate the significant principal components, only the first principal component is greater than unity. That component retains 11 of the 14 original audit committee variables, and thus does not significantly reduce the total number of original variables from the estimated model.

¹⁶ Value for the *carnegie_sector* variable = 1 for Public Research universities. I limit my initial search to research-oriented universities as these universities are the most likely to have a separate audit committee (as well as publish minutes online). I obtain additional coverage over non-research universities because over 25% of my sample is comprised of university systems (multiple universities that share one governing body), which also include non-research universities. See Appendix B for the university listing for this sample.

¹⁷ Although the majority of states have implemented a transparency initiative requiring information such as audit committee minutes be made available to the public, the determination to provide audit committee

audit committee, and one university does not provide copies of any Board or committee meetings online. Of the 76 universities with minutes available online, I obtain all audit committee minutes that are available for a total of 1,632 minutes related to 389 university-year observations.¹⁸ The earliest minutes available are related to fiscal years ending June 30, 1996. The most recent minutes available are related to fiscal years ending June 30, 2017.

I manually assigned the minutes to a fiscal year based on the date of the audit committee minutes. Minutes occurring during the fiscal year are assigned to that fiscal year-end.¹⁹ Based on these dates, I obtain financial information from the university's financial statements published on the university's website. The majority of these universities also publish copies of the A-133 report on their website. Therefore, I extract information about total deficiencies from these reports. For universities in which the A-133 report is not available, I obtain this information from the FAC database. I was unable to locate the financial statements for 26 university-year observations. Additionally, I was unable to locate the A-133 reports for 33 university-year observations. My final sample is comprised of 330 university-year observations between June 30, 1996, and June 30, 2016. A summary of the sample selection process is provided in Table 1, Panel A.

minutes online is typically made by the Board. Other universities disclose that copies of the minutes are available upon request. Because one of the purposes of this study is to demonstrate the availability of such data, I restrict my sample to universities that publish their minutes online. This restriction may limit the generalizability of my results to the full population of universities. However, in an untabulated analysis, when I compare my sample to the entire population of research universities from 2000-2012 (data available at <https://nces.ed.gov/ipeds/deltacostproject/>), the total mean (net) tuition revenue for my sample is not significantly different from the remaining population of state-dependent universities (p-value=0.267). This provides some evidence that my sample does not significantly differ from the universe of all state-dependent research universities.

¹⁸ Appendix B identifies 45 universities and university systems. My sample is comprised of 12 university systems (overseeing 43 universities), and 33 individual universities.

¹⁹ In order to determine whether the timing of discussions impacts internal control deficiencies, I perform a supplemental analysis where I separately examine discussions that only occurred during Quarter 4 (for the same fiscal year). I also analyze discussions that occurred during the first quarter of the next fiscal year (related to deficiencies identified in year t). See section six for a discussion of this testing and results.

CHAPTER IV

FINDINGS

Descriptive Statistics and Correlations

Focus Areas of Audit Committee Meetings (RQ1)

Table 1, Panel B, presents descriptive statistics for the entire sample of audit committee minutes. On average, university audit committee members meet a little over four times per year. Total revenues (*SIZE*) and total investments (*LINVEST*) and are reported as natural logs. The log transformed values of revenues (*SIZE*) are larger than publicly-traded firms, with a mean equal to 21.281. The log of the transformed values of total investments (*LINVEST*) are 0.241, which are slightly larger than publicly-traded firms.²⁰ *BIG_N* auditors have a smaller market share of this population when compared to publicly-traded companies (around 21 percent). On average, if the university reported an internal control deficiency, it reported a total of over three severe (either a significant deficiency or material weakness) internal control deficiencies (*COUNT FS WEAK*; 3.610). Additionally, 35.8 percent of university-year observations included financial reporting deficiencies that were severe (*FS WEAK*) and 50.6 percent reported deficiencies in internal

²⁰ In comparison with the general Compustat population, the mean total revenues in my sample is \$3.5 billion compared to \$2.8 billion for the general Compustat population (untabulated). The mean total investments for my sample is \$2.5 billion compared to \$1.9 billion for the general Compustat sample (untabulated).

controls over compliance (*SA WEAK*). Approximately 42.8 percent of total revenues are received from public funding sources (*PUBLIC_PCT*) and 9.7 percent from private sources (*PRIVATE_PCT*).

With regards to the audit committee deliberation topics, the most frequently discussed items are meetings with internal audit (*I2_IAUD PCT*; 70.9 percent). The second most discussed topic involves approval of the financial statements (*I3_FIN STATEMENTS PCT*; 67.0 percent of university-year observations), followed by internal controls discussions (*I1_INTERNAL CONTROLS PCT*), which were addressed in over 61.5 percent of their university-years. Members approved a little less than half of the minutes of their meetings (*I8_APPROVE MEETING PCT*; 49.8 percent). Audit committees also frequently discussed their role in overseeing the external auditors (*I10_ADT OVERIGHT PCT*; 53.9 percent). Other significant discussions included risk assessment (*I3_ASSESS RISK PCT*; 49.5 percent), the risk of fraud (*I2_FRAUD RISK PCT*; 31.7 percent) and their charter (*I6_AC CHARTER PCT*; 20.2 percent). Audit committees did not frequently discuss their role in overseeing management (*I5_MGT OVERSIGHT PCT*), codes of conduct (*I4_CODE OF CONDUCT PCT*), non-audit services (*I11_NAS PCT*), or identify the expert members of the committee (*I7_EXPERT PCT*) as less than ten percent of meetings included discussions of these topics.

Table 2 presents the correlation matrix. The Pearson (Spearman) correlation coefficients are presented below (above) the diagonal line. All correlations that are bold are significant at the five percent level. Of my 14 discussion categories, eight are significantly negatively correlated with the likelihood of a control deficiency. Specifically, *I1_INTERNAL CONTROLS PCT*, *I2_FRAUD RISK PCT*, *I3_ASSESS RISK PCT*, *I4_CODE OF CONDUCT PCT*, *I5_MGT OVERSIGHT PCT*, *I6_AC CHARTER PCT*, *I7_EXPERT PCT*, and *I13_FIN STATEMENTS PCT* are significantly negatively correlated with *FS WEAK*. Additionally, *NUMBER OF MEETINGS*, which is often

used in prior studies as a measure of audit committee effectiveness, is positively correlated with *FS WEAK*. This provides an initial univariate response to my second research question in regards to what committee discussions are related to financial reporting quality. It also highlights the importance of actually examining what audit committees are discussing, in addition to their meeting frequency, when examining audit committee effectiveness.

The control variables' correlations also appear to be reasonable. Specifically, university *SIZE* and *DOCTORAL* institutions, which capture university reporting complexity, are positively correlated with *FS WEAK*. Risk, as measured as the ratio of liabilities to assets (*TLTA*), and post-SOX periods (*SOX*), are negatively correlated with *FS WEAK*. This indicates that management, internal auditors, and audit committees are appropriately addressing risk at their universities. Finally, deficiencies in controls over financial reporting (*FS WEAK*) are positively correlated with deficiencies in controls over compliance (*SA WEAK*). These findings provide support for controlling for university characteristics in my multivariate analysis.

CHAPTER V

MULTIVARIATE RESULTS

Impact of Discussions on Financial Reporting Quality (RQ2)

Table 3, Panel A, presents the results from estimating the full version of Model (1) using logistic regression. The dependent variable in this table is an indicator variable equal to one if the university reported a severe deficiency in internal controls over financial reporting (significant deficiency or material weakness); zero otherwise (*FS WEAK*).

With regards to the audit committee deliberation variables, the likelihood of a severe deficiency marginally decreases when the committee discusses whether it has a financial expert on the committee (*7_EXPERT_PCT*; -2.921; p-value=0.074). The likelihood of a severe deficiency is also marginally negatively associated with the committee's discussion of its roles and responsibilities as outlined in its charter (*6_AC CHARTER PCT*; -1.360; p-value=0.053).

For the control variables within the full model, I find that the likelihood of a severe deficiency increases with larger (*SIZE*) firms (0.554; p-value=0.012) and decreases with higher values of *ROTA* (-3.932; p-value=0.028). Firms have an increased likelihood of an internal control deficiency during the financial crisis period (*CRISIS*; 1.047; p-value=0.027), consistent with Ettredge et al. (2014). The source of funding also has an impact on financial reporting quality.

Specifically, I find that private sources of funding (*PRIVATE_PCT*) are marginally negatively associated (-3.778; p-value=0.090) with the likelihood of a severe deficiency. Additionally, universities that have deficiencies in internal controls over compliance are more likely to have a severe deficiency in controls over financial reporting (*SA WEAK*; 1.733; p-value<0.001).

Table 3, Panel B, presents the results of estimating Model (1) using backward elimination. I find similar results when estimating the model with fewer variables. Discussions regarding the committee's charter increases in significance (*6_AC CHARTER PCT*; -1.608; p-value=0.011). Universities with committees that identify and assess their financial expert (*7_EXPERT PCT*) have a marginally negative association with the likelihood of a deficiency (-2.957; p-value=0.094). Alternatively, discussions regarding the overall financial health of the university (*14_FIN STRENGTH*) are marginally positively associated with deficiencies in internal control (1.315; p-value=0.063). However, I now find that auditor size (*BIG N*) is significantly negatively associated with the likelihood of a severe deficiency (-0.989; p-value=0.017). I also document a significantly negative association between committees that discuss internal controls (*1_INTERNAL CONTROLS PCT*; -0.913; p-value=0.048) and severe deficiencies.

These results indicate that university-years that include a discussion of internal controls, the odds of reporting a severe deficiency is about 40.1 percent of the odds of a university-years with no such discussion.²¹ Additionally, for university-years that include a discussion of their charter and financial experts, the odds of reporting a severe deficiency is about 20.0 percent and 5.2 percent, respectively, of the odds of a university-years with no such discussion. University-years that include a discussion regarding the financial health of the university (*14_FIN STRENGTH*) are nearly four times as likely to report a deficiency in internal controls over financial reporting (372.5 percent), compared to years without such discussion. In terms of economic significance, I

²¹ Estimates of log-odds are computed as exp(coefficient estimate).

rely on the auditor's classification of deficiencies and assume that the presence of a severe deficiency would have a material impact on the financial statements.

As a further test of the significance of the audit committee discussion variables to the model, I examine changes in the model's ROC curve with and without the audit committee discussion variables to determine whether audit committee discussions affect financial reporting quality (above what is captured by university attributes alone). First, I estimate Model (1) without the discussion variables (untabulated) and find that the area under the ROC curve for this model equals 0.804. Second, I compare this value to the area under the ROC curve for the full model results shown in Table 3, Panel A, which is equal to 0.840. Using the PROC CONTRAST statement in SAS, my analysis indicates that the difference between the area under the ROC curves is significant ($p\text{-value} < 0.01$). Results of the same analysis using the backward elimination models (Table 3, Panel B) provide similar results ($p\text{-value} = 0.030$).

In summary, I find that audit committees most often meet with and discuss the findings of internal audit. The next most frequently discussed items are financial statements, internal controls, and the committee's role in overseeing the external auditor. However, of these four top discussions, only discussions regarding internal controls are negatively associated with internal control deficiencies, which indicates that the remaining items frequently discussed by committees do not have a direct impact on university internal control quality. University characteristics such as changes in net assets, private funding, and Big N auditors are negatively associated with the likelihood of a severe deficiency. This suggests that private donors and large auditors serve as monitors, resulting in improvements in financial reporting quality. University size (log of total revenues) is positively associated with deficiencies, signaling that universities have internal control problems related to revenue reporting. Universities also reported a higher likelihood of

internal control deficiencies during the financial crisis, which indicates that universities moved resources away from internal controls during times of hardship.

CHAPTER VI

ADDITIONAL ANALYSES

Total Deficiencies

My primary analysis examines the likelihood of a severe internal control deficiency. In order to examine the severity of the internal control problems at the university, I re-estimate Model (1) by replacing the dependent variable with the sum of the total number of significant deficiencies and material weaknesses for that year (*COUNT FS WEAK*). I remove observations without a control deficiency and estimate Model (1) using a negative binomial regression.²² Therefore, the estimated coefficients represent the association between the university, auditor, and audit committee characteristics and the total number of internal control problems identified at the university.

Table 4 presents the results from estimating Model (1) with *COUNT FS WEAK* as the dependent variable. For brevity, I only include the results after estimating backward elimination in Table 4. Consistent with Table 3, *SIZE* is significantly positively associated with total internal control findings (p-value=0.017). The sources of funding continue to play an important role in internal

²² Because *COUNT FS WEAK* is a count variable in this model, I recognize that a Poisson regression modeling approach could be appropriate, as well. However, I find that over-dispersion is present with my model (untabulated), necessitating the use of a negative binomial regression model in this particular setting.

control quality, with public sources of funding negatively associated with the total number of deficiencies (*PUBLIC_PCT*; p-value<0.001), This suggests that a large number of deficiencies indicates problems with the university, resulting in a loss of public funding. Large auditors may identify more problems with the university, as indicated by the significantly positive association between *BIG N* auditors and the number of deficiencies (p-value<0.001).

Of the audit committee discussions, three items are associated with total findings. The first topic of discussion, non-audit fees (*11_NAS PCT*), is significantly positively associated with internal control deficiencies (p-value=0.017). This positive association suggests that audit committee members address problems at the university by contracting with consultants or other outside advisors. The identification and evaluation of the committee's financial expert is associated with improvements in financial reporting quality, as indicated by the negative coefficient on *7_EXPERT PCT* (p-value=0.005). Finally, discussions about the university's financial statements are negatively associated with total deficiencies (*13_FIN STATEMENTS PCT*; p-value=0.005). This suggests that audit discussions regarding the financial statements translate into improvements in financial reporting quality.

In summary, when examining the total number of deficiencies (another indicator of the severity of the internal control problem), I find that discussions about non-audit fees, financial statements, and the audit committee financial expert are associated with the total number of severe internal control problems. Of the discussion topics associated with the total number of deficiencies, only financial statements discussions are amongst the three most frequently discussed topics. This suggests that committees play an active role in addressing internal control problems, however, their areas of focus do not always translate in to improvements in financial reporting quality.

Quarter Four Discussions

The timing of audit committee discussions may have different impacts on internal control findings. For example, external auditors are typically on-site performing interim audit procedures during the fourth quarter. Audit committees may increase their discussions amongst the committee and management in attempts to rectify problems before year-end. Alternatively, increases in certain discussion areas may lead to fewer problems identified for that year-end. Therefore, I re-estimate Model (1) where discussion variables are measured using only minutes of meetings that occurred during the fourth quarter. All control variables are measured in year t .

Table 5 presents the results from estimating Model (1) for fourth quarter discussions. Panel A presents the results from estimating a logistic regression where the dependent variable is equal to one if the university had a severe deficiency; zero otherwise (*FS WEAK*). For brevity, I only include the results after estimating backward elimination in Table 5. Control variables are generally consistent with my primary analysis, except that observations in the post-SOX period (*SOX*) are marginally negatively associated with the likelihood of a deficiency (-1.209; p-value=0.081). Discussions of the audit committee's charter (*6_AC CHARTER PCT*) and examination of the university's financial statement strengths (*13_FIN STATEMENTS PCT*) are negatively associated with the likelihood of a deficiency (-3.223; p-value=0.011 and -2.466; p-value=0.011, respectively). Although the committee discussed these items late in the year, the committee's focus on these areas results in an improvement in financial reporting quality. Discussions regarding non-audit fees (*11_NAS PCT*), however, are marginally positively associated with the likelihood of a deficiency (5.310; p-value=0.062). This indicates that audit committees are re-examining the university's continuing relationship with the external auditors, or the auditor's level of independence, due to issues that arose near year-end.

Panel B presents the results after estimating Model (1) using backward elimination with *COUNT FS WEAK* as the dependent variable, which examines the severity of internal control problems.

Of the five discussion categories that are at least marginally significantly associated with total internal control deficiencies, three of these are positively associated with deficiencies. Specifically, discussions with external audit (*10_ADT OVERSIGHT PCT*) and regarding internal controls (*1_INTERNAL CONTROLS PCT*) are positively associated with the total number of findings (p-value=0.005 and p-value=0.090, respectively). Finally, the committee evaluates the code of conduct in which management is expected to follow as more issues arise, as evidenced by the significantly positive coefficient on these discussions (*4_CODE OF CONDUCT PCT*; p-value=0.004).

Discussions regarding internal audit (*12_IAUD PCT*) and executive sessions (*9_EXEC SESSION PCT*), although occurring late during the year, are still negatively associated with improvements in the total number of internal control deficiencies (p-value=0.015 and p-value=0.092, respectively). These findings suggest that the timing of these discussions serves as an indicator about when problems arise and are addressed at the university.

Quarter One Discussions

Alternatively, discussions that occur during the first quarter after fiscal year-end provide some additional insight regarding how committees are responding to external audit findings presented to the Board after year-end. Therefore, I re-estimate Model (1) where discussion variables are measured using minutes from meetings that occurred during the first quarter after fiscal year-end (year t+1). The dependent variable and control variables are still measured in year t.

Table 6 presents the results from estimating Model (1) based on first quarter discussions. Panel A presents the results from estimating a logistic regression where the dependent variable is equal to one if the university had a severe deficiency; zero otherwise (*FS WEAK*). Similar to my fourth quarter analysis in section 6.2, the direction and significance of the control variables are consistent with my primary analysis. Universities that had problems in the prior year focus on

remedying problems by meeting with internal audit (*12_IAUD PCT*) and conducting formal audit committee meetings (*8_APPROVE MEETING PCT*) as evidenced by the positive association between the likelihood of a deficiency and these discussions (2.854; p-value=0.026 and 2.142; p-value=0.062, respectively). Committees are more likely to focus on internal controls themselves, and shift focus away from discussing financial statements (*13_FIN STATEMENTS PCT*) in the first quarter following internal control deficiencies, as evidenced by the significantly negative coefficient on financial statement discussions (-2.391; p-value=0.029).

Panel B presents the results from estimating Model (1) with *COUNT FS WEAK* as the dependent variable. I find that committees are decreasing their discussions related to internal controls (*1_INTERNAL CONTROLS PCT*; p-value<0.001) in the first quarter after problems are identified. It is likely that committees are instead addressing issues as they are identified, for example, during the end of the prior year (Table 5, Panel B). The remaining quarter 1 discussion variables are not significantly associated with *COUNT FS WEAK*, suggesting that audit committees are proactive (compared to reactive) in the resolution of internal controls deficiencies.

CHAPTER VII

CONCLUSION

The audit committee is considered “one of the most reliable guardians of the public interest” who serves to “protect and preserve the integrity of America’s financial reporting process” (Levitt 2000). Yet, it is still unclear how audit committees actually fulfill this role. Prior research has focused on actions and characteristics of the committee that are directly observable such as size, number of meetings, and composition (e.g. Klein 2002; DeZoort et al. 2002; Carcello and Neal 2003). However, because some actions, such as meeting frequency, can be associated with positive or negative outcomes, users cannot determine whether meeting frequency should be associated with positive or negative financial reporting outcomes. Therefore, prior studies that make recommendations on these observable characteristics may be misleading. To the best of my knowledge, this is the first study to examine the characteristics of audit committee meetings by examining audit committee minutes. It is also the first study to directly examine audit committee deliberations and their impact on financial reporting quality (as proxied by internal control deficiencies).

In this study, I find that audit committees most frequently discuss internal audit testing plans and findings, internal controls, and financial statements. Over 50 percent of meetings include external auditor discussions, and slightly less than half of the meeting minutes undergo a formal approval

process. However, not all of these actions directly translate into improved financial reporting quality, as proxied by a reduction in internal control deficiencies. I find that discussions about the identification of the committee's financial expert, internal controls, and discussions regarding the audit committee charter are associated with a lower likelihood of severe deficiencies.

Additionally, discussions regarding the financial statements and identification of the committee's financial expert are associated with fewer internal control problems whereas discussions regarding non-audit fees are positively associated with the number of internal control deficiencies. In terms of university characteristics, larger universities are more likely to report an internal control deficiency (and number of internal control deficiencies). The university's change in net assets, one of my risk-based measures, is negatively associated with the likelihood of a deficiency. Larger auditors are associated with a lower likelihood of an internal control deficiency. Entities that receive a larger portion of their funding from private sources are less likely to report a deficiency. Finally, internal control deficiencies are more likely to occur during the 2008 recession.

This study has interesting implications for researchers, standard setters, and audit committees. Many of the audit committee actions that I find associated with internal control deficiencies cannot be captured by the proxies that are used in current studies. These discussions continue to be significantly associated with internal control findings even after controlling for committee meeting frequency, which is commonly used in the literature to proxy for audit committee oversight (Carcello et al. 2011). I provide information to standard setters who are considering increased audit committee disclosures and specifically, which actions may increase the effectiveness of audit committees (SEC 2015). Finally, I provide some insight to audit committees about which actions are associated with a reduction in the likelihood of internal control deficiencies. The disconnect between the items discussed most frequently and those that

are associated with findings suggests that committees should consider re-aligning their discussions with those that have the most impact on internal controls.

In addition to my contribution to the audit committee literature, I also highlight an additional approach to analyzing textual data. The LIWC software is an inexpensive and user-friendly tool that can be used in a wide variety of settings. It also does not have a limit to the number of characters that can be analyzed, which is a drawback to other commonly-used applications. Additionally, I demonstrate an alternative data source that can be used to provide information about the actions of audit committee members. These minutes, as well as those for a number of other public-sector organizations, are publicly available on the organization's websites and can be accessed by researchers to answer other research questions not addressed in this study.

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APPENDIX A

LIWC Search Engine Library Definitions

| Category | Key Search Phrase (s) |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>1_INTERNAL CONTROLS</i> | adequacy of controls audit finding* Committee of Sponsoring Organizations corrective action* COSO deficienc* information technology internal control management assessment management's assessment material weakness quality assessment quality control* remediation plan* reportable condition |
| <i>2_FRAUD RISK</i> | aggressive complaint detect fraud earnings management fraud fraud risk hotline illegal management compensation management override prevent and detect fraud prevent fraud related-party violation of law* |

| | |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | whistleblow* whistle-blow* |
| <i>3_ASSESS RISK</i> | assess risk general counsel legal counsel risk assessment risk dashboard risk exposure risk factor* risk report risk-assessment |
| <i>4_CODE OF CONDUCT</i> | code* of conduct code* of ethics |
| <i>5_MGT OVERSIGHT</i> | meet privately with management meet with management met privately with executive met privately with management met with executive met with management tone at the top |
| <i>6_AC CHARTER</i> | audit committee responsibilit* charter |
| <i>7_EXPERT</i> | Expert Financial financial expert* financially literate |
| <i>8_APPROVE MEETING</i> | approve* minutes approve* the minutes minutes of the meeting were approved |
| <i>9_EXEC SESSION</i> | executive session* meet privately with executive meet privately with management met privately with management |
| <i>10_ADT OVERSIGHT</i> | appoint audit plan audit scope audit* presentation Auditor's Communication With Those Charged with Governance effectiveness of the audit committee engagement letter evaluate audit* evaluate audit* independence evaluate independence management letter* manual journal entr* met privately with Deloitte met privately with EY met privately with KPMG |

| | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>met privately with PwC met privately with the audit* met with Deloitte met with EY met with KPMG met with PwC met with the audit* passed adjustment* peer review peer-review preapprov* audit present audit present the audit private session review audit report* rotat* scope of the audit section 260 selection criteria selection of the external selection of the independent Statement on Auditing Standards unadjusted differences</p> |
| <i>11_NAS</i> | <p>maintain independence nonaudit non-audit</p> |
| <i>12_IAUD</i> | <p>CAE chief audit executive internal audit</p> |
| <i>13_FIN STATEMENTS</i> | <p>accru* alternative accounting treatment* audit difference* critical accounting polic* estimate* FASB financial statement* GAAP GASB generally accepted accounting principles management control* management review regulation*</p> |
| <i>14_FIN STRENGTH</i> | <p>financial health financial strength peer data peer institutions ratio strategic planning</p> |

The above listed items and categories outline the specific phrases used in the LIWC 2015 software to categorize audit committee minutes. *indicates that all word forms/tenses were included in search.

APPENDIX B

University Listing and Sample Period

| University | Sample Period |
|--------------------------------------------|-------------------------|
| <i>University System of Arizona</i> | 06/30/2006 – 06/30/2016 |
| <i>University of California</i> | 06/30/1998 – 06/30/2017 |
| <i>Connecticut State University System</i> | 06/30/2012 – 06/30/2016 |
| <i>University of Florida</i> | 06/30/2006 – 06/30/2016 |
| <i>Florida Polytechnic University</i> | 04/30/2013 – 04/30/2017 |
| <i>University System of Georgia</i> | 06/30/1996 – 06/30/2016 |
| <i>University of Hawaii</i> | 06/30/2004 – 06/30/2017 |
| <i>University of Houston System</i> | 08/31/2013 – 08/31/2016 |
| <i>University System of Idaho</i> | 06/30/2007 – 06/30/2016 |
| <i>University of Illinois</i> | 06/30/2010 – 06/30/2017 |
| <i>University System of Iowa</i> | 06/30/2008 – 06/30/2017 |
| <i>University System of Kansas</i> | 06/30/2012 – 06/30/2016 |
| <i>University of Kentucky</i> | 06/30/2008 – 06/30/2016 |
| <i>Kentucky State University</i> | 06/30/2013 – 06/30/2015 |
| <i>University of Louisville</i> | 06/30/2008 – 06/30/2015 |
| <i>University of Maine System</i> | 06/30/2008 – 06/30/2016 |
| <i>University System of Maryland</i> | 06/30/2013 – 06/30/2016 |
| <i>University of Massachusetts System</i> | 06/30/2005 – 06/30/2016 |
| <i>Miami University of Ohio</i> | 06/30/2009 – 06/30/2017 |
| <i>University of Minnesota</i> | 06/30/2005 – 06/30/2016 |
| <i>Nevada System of Higher Education</i> | 06/30/2007 – 06/30/2016 |
| <i>University System of New Hampshire</i> | 06/30/2015 – 06/30/2016 |
| <i>University of New Mexico</i> | 06/30/2011 – 06/30/2017 |
| <i>University of North Carolina</i> | 06/30/2006 – 06/30/2017 |
| <i>North Dakota University System</i> | 06/30/2014 – 06/30/2016 |
| <i>University of North Florida</i> | 06/30/2002 – 06/30/2017 |
| <i>Northern Illinois University</i> | 06/30/2004 – 06/30/2016 |
| <i>Ohio State University</i> | 06/30/2014 – 06/30/2016 |
| <i>University of Oregon</i> | 06/30/2014 – 06/30/2016 |
| <i>Oregon State University</i> | 06/30/2014 – 06/30/2016 |
| <i>Pennsylvania State University</i> | 06/30/2014 – 06/30/2017 |
| <i>Portland State University</i> | 06/30/2014 – 06/30/2016 |
| <i>Purdue University</i> | 06/30/2012 – 06/30/2016 |
| <i>University of Southern Indiana</i> | 06/30/2003 – 06/30/2016 |
| <i>State University of New York</i> | 06/30/2014 – 06/30/2016 |
| <i>University of Tennessee</i> | 06/30/2009 – 06/30/2014 |

University Listing and Sample Period

| | |
|-------------------------------------------------------------|-------------------------|
| <i>University of Toledo</i> | 06/30/2016 – 06/30/2016 |
| <i>University of Texas System</i> | 08/31/2006 – 08/31/2016 |
| <i>University of Connecticut</i> | 06/30/2014 – 06/30/2016 |
| <i>University of North Texas System</i> | 08/31/2014 – 08/31/2016 |
| <i>University of Vermont and State Agricultural College</i> | 06/30/2006 – 06/30/2017 |
| <i>University of Virginia</i> | 06/30/1997 – 06/30/2016 |
| <i>Virginia Polytechnic Institute and State University</i> | 06/30/2002 – 06/30/2017 |
| <i>University of Washington</i> | 06/30/2014 – 06/30/2017 |
| <i>University of Wisconsin System</i> | 06/30/2006 – 06/30/2016 |

This Appendix includes a listing of all universities used in my sample and the corresponding fiscal-year ends covered in the audit committee minutes. Audit committee minutes were obtained from each university's website.

APPENDIX C

Variable Definitions

| Variable | Definition |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>FS WEAK</i> | An indicator variable equal to one if the university reported a severe deficiency in internal controls over financial reporting (significant deficiency or material weakness); zero otherwise. |
| <i>SA WEAK</i> | An indicator variable equal to one if the university reported a severe deficiency in internal controls over compliance (significant deficiency or material weakness); zero otherwise. |
| <i>COUNT FS WEAK</i> | The sum of the total number of significant deficiencies and material weaknesses in internal controls over financial reporting (in excess of zero). |
| <i>SIZE</i> | The natural log of total revenues. |
| <i>LINVEST</i> | The natural log of the year-end value of financial investments. |
| <i>TLTA</i> | Total liabilities divided by total assets. |
| <i>ROTA</i> | The ratio of total change in net position (net income) divided by total assets. |
| <i>SWITCH</i> | An indicator variable equal to one if the client switched auditors during year t; zero otherwise. |
| <i>BIG N</i> | An indicator variable equal to one if the client is audited by a Big 4 auditor in year t; zero otherwise. |
| <i>NUMBER OF MEETINGS</i> | Total number of meetings held by the audit committee during the year |
| <i>SOX</i> | An indicator variable that equals one for university-year observations in the post-SOX time period (after 2002); zero otherwise. |
| <i>CRISIS</i> | An indicator variable equal to one for university-year observations during 2008 and 2009; zero otherwise. |
| <i>DOCTORAL</i> | An indicator variable equal to one for universities classified as Doctoral/Research Universities; zero otherwise. |
| <i>PUBLIC PCT</i> | The percentage of total revenues received from federal, state and local government. |
| <i>PRIVATE PCT</i> | The percentage of total university revenues received from private donors. |

TABLE 1**Sample Selection and Descriptive Statistics****Panel A: Sample Selection**

| | |
|------------------------------------------------------------------------|-----------|
| High or very high research universities | 160 |
| Exclude: Universities without audit committee minutes available online | (79) |
| Exclude: Universities without an audit committee | (4) |
| Exclude: Universities without Board minutes available online | (1) |
| Total universities with committee minutes available online | <hr/> 76 |
| University-years with minutes available online | 389 |
| Exclude: University-years missing financial statement information | (26) |
| Exclude: University-years missing Single Audit reports | (33) |
| Final Sample | <hr/> 330 |

Panel B – Descriptive Statistics

| | Mean | Median | Std Dev |
|----------------------------------|-------------|---------------|----------------|
| <i>SIZE</i> | 21.281 | 21.377 | 1.231 |
| <i>LINVEST</i> | 0.241 | 0.219 | 0.165 |
| <i>TLTA</i> | 0.399 | 0.370 | 0.177 |
| <i>ROTA</i> | 0.032 | 0.029 | 0.215 |
| <i>SWITCH</i> | 0.155 | 0.000 | 0.362 |
| <i>BIG N</i> | 0.209 | 0.000 | 0.407 |
| <i>SOX</i> | 0.958 | 1.000 | 0.202 |
| <i>CRISIS</i> | 0.130 | 0.000 | 0.337 |
| <i>DOCTORAL</i> | 0.900 | 1.000 | 0.300 |
| <i>PUBLIC PCT</i> | 0.428 | 0.435 | 0.209 |
| <i>PRIVATE PCT</i> | 0.097 | 0.062 | 0.199 |
| <i>FS WEAK</i> | 0.358 | 0.000 | 0.480 |
| <i>SA WEAK</i> | 0.506 | 1.000 | 0.501 |
| <i>COUNT FS WEAK^a</i> | 3.610 | 2.000 | 1.000 |
| <i>NUMBER OF MEETINGS</i> | 4.318 | 4.000 | 1.966 |
| <i>1_INTERNAL CONTROLS PCT</i> | 0.615 | 0.667 | 0.345 |
| <i>2_FRAUD RISK PCT</i> | 0.317 | 0.250 | 0.338 |
| <i>3_ASSESS RISK PCT</i> | 0.495 | 0.500 | 0.363 |
| <i>4_CODE OF CONDUCT PCT</i> | 0.096 | 0.000 | 0.208 |
| <i>5_MGT OVERSIGHT PCT</i> | 0.016 | 0.000 | 0.071 |
| <i>6_AC CHARTER PCT</i> | 0.202 | 0.143 | 0.258 |
| <i>7_EXPERT PCT</i> | 0.032 | 0.000 | 0.134 |
| <i>8_APPROVE MEETING PCT</i> | 0.498 | 0.528 | 0.439 |
| <i>9_EXEC SESSION PCT</i> | 0.291 | 0.000 | 0.394 |
| <i>10_ADT OVERSIGHT PCT</i> | 0.539 | 0.500 | 0.333 |
| <i>11_NAS PCT</i> | 0.022 | 0.000 | 0.083 |
| <i>12_IAUD PCT</i> | 0.709 | 0.833 | 0.351 |
| <i>13_FIN STATEMENTS PCT</i> | 0.670 | 0.750 | 0.326 |
| <i>14_FIN STRENGTH PCT</i> | 0.157 | 0.000 | 0.242 |

^a Values for *COUNT FS WEAK* are based on 118 observations, where *FS WEAK* is not equal to zero.

In this table, Panel A describes the steps and data screens that I use to gather my sample for primary analysis. Panel B presents the descriptive statistics for each university-year observation. In this panel, variables ending in “PCT” are indicator variables that are summed by year and divided by the total number of meetings that occurred that year. Detailed variable definitions for each of the variables used in my analyses are provided in Appendices A and C.

TABLE 2
Correlation Matrix

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|
| 1 SIZE | | 0.211 | 0.044 | 0.079 | -0.041 | 0.329 | -0.024 | 0.001 | 0.636 | -0.320 |
| 2 LINVEST | 0.211 | | -0.212 | 0.088 | -0.058 | 0.310 | 0.009 | -0.012 | 0.082 | -0.314 |
| 3 TLTA | 0.044 | -0.212 | | -0.011 | 0.098 | 0.226 | 0.239 | -0.064 | 0.007 | -0.089 |
| 4 ROTA | 0.079 | 0.088 | -0.011 | | -0.121 | -0.012 | 0.004 | -0.008 | 0.114 | 0.047 |
| 5 SWITCH | -0.041 | -0.058 | 0.098 | -0.121 | | 0.089 | 0.007 | -0.041 | 0.059 | -0.066 |
| 6 BIG N | 0.329 | 0.310 | 0.226 | -0.012 | 0.089 | | 0.108 | 0.000 | 0.072 | -0.311 |
| 7 SOX | -0.024 | 0.009 | 0.239 | 0.004 | 0.007 | 0.108 | | 0.081 | -0.070 | -0.082 |
| 8 CRISIS | 0.001 | -0.012 | -0.064 | -0.008 | -0.041 | 0.000 | 0.081 | | 0.009 | 0.087 |
| 9 DOCTORAL | 0.636 | 0.082 | 0.007 | 0.114 | 0.059 | 0.072 | -0.070 | 0.009 | | -0.232 |
| 10 PUBLIC PCT | -0.320 | -0.314 | -0.089 | 0.047 | -0.066 | -0.311 | -0.082 | 0.087 | -0.232 | |
| 11 PRIVATE PCT | -0.131 | 0.057 | -0.158 | 0.229 | -0.065 | -0.058 | 0.014 | -0.033 | -0.090 | 0.521 |
| 12 FS WEAK | 0.210 | -0.058 | -0.137 | -0.106 | 0.013 | -0.104 | -0.125 | 0.106 | 0.122 | 0.100 |
| 13 SA WEAK | 0.183 | -0.193 | -0.130 | -0.073 | 0.003 | -0.118 | 0.003 | 0.040 | 0.115 | 0.227 |
| 14 COUNT FS WEAK | 0.201 | -0.211 | -0.129 | -0.035 | -0.060 | -0.105 | -0.179 | 0.059 | 0.097 | 0.236 |
| 15 NUMBER OF MEETINGS | 0.260 | -0.057 | -0.057 | 0.040 | -0.291 | 0.069 | 0.042 | 0.001 | -0.003 | -0.015 |
| 16 1_INTERNAL CONTROLS PCT | 0.165 | 0.108 | -0.002 | -0.016 | 0.052 | 0.096 | 0.196 | 0.078 | 0.269 | -0.106 |
| 17 2_FRAUD RISK PCT | -0.034 | -0.048 | 0.119 | -0.077 | -0.012 | 0.009 | 0.121 | 0.005 | 0.028 | -0.012 |
| 18 3_ASSESS RISK PCT | 0.050 | 0.205 | 0.197 | -0.059 | -0.080 | 0.199 | 0.103 | 0.009 | 0.149 | -0.141 |
| 19 4_CODE OF CONDUCT PCT | -0.084 | 0.047 | 0.020 | -0.008 | 0.003 | 0.015 | 0.080 | 0.079 | 0.047 | 0.026 |
| 20 5_MGT OVERSIGHT PCT | -0.011 | 0.130 | 0.117 | -0.011 | -0.025 | 0.121 | 0.048 | -0.049 | 0.076 | -0.019 |
| 21 6_AC CHARTER PCT | -0.012 | 0.101 | 0.060 | 0.026 | -0.068 | -0.052 | 0.035 | 0.020 | 0.055 | -0.022 |
| 22 7_EXPERT PCT | 0.286 | 0.140 | 0.177 | -0.027 | -0.072 | 0.260 | 0.051 | 0.115 | 0.080 | -0.108 |
| 23 8_APPROVE MEETING PCT | 0.026 | 0.064 | -0.061 | 0.010 | -0.061 | -0.168 | -0.001 | -0.032 | -0.001 | -0.121 |
| 24 9_EXEC SESSION PCT | 0.131 | 0.331 | 0.101 | 0.026 | -0.004 | 0.233 | -0.147 | -0.064 | 0.195 | -0.270 |
| 25 10_ADT OVERSIGHT PCT | 0.090 | -0.025 | 0.072 | -0.034 | 0.041 | 0.124 | -0.008 | 0.037 | 0.111 | 0.010 |
| 26 11_NAS PCT | 0.086 | 0.185 | 0.080 | -0.012 | -0.027 | 0.282 | 0.055 | 0.023 | 0.087 | -0.084 |
| 27 12_IAUD PCT | 0.216 | 0.092 | 0.052 | -0.103 | -0.073 | 0.193 | 0.122 | 0.072 | 0.086 | 0.003 |
| 28 13_FIN STATEMENTS PCT | -0.082 | 0.131 | 0.036 | 0.071 | -0.062 | 0.156 | 0.285 | 0.012 | 0.009 | -0.058 |
| 29 14_FIN STRENGTH PCT | -0.148 | -0.159 | -0.026 | 0.033 | -0.055 | -0.085 | 0.090 | -0.016 | -0.015 | 0.054 |

TABLE 2 (Continued)
Correlation Matrix

| | | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-----------|--------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 1 | <i>SIZE</i> | -0.131 | 0.210 | 0.183 | 0.201 | 0.260 | 0.165 | -0.034 | 0.050 | -0.084 | -0.011 |
| 2 | <i>LINVEST</i> | 0.057 | -0.058 | -0.193 | -0.211 | -0.057 | 0.108 | -0.048 | 0.205 | 0.047 | 0.130 |
| 3 | <i>TLTA</i> | -0.158 | -0.137 | -0.130 | -0.129 | -0.057 | -0.002 | 0.119 | 0.197 | 0.020 | 0.117 |
| 4 | <i>ROTA</i> | 0.229 | -0.106 | -0.073 | -0.035 | 0.040 | -0.016 | -0.077 | -0.059 | -0.008 | -0.011 |
| 5 | <i>SWITCH</i> | -0.065 | 0.013 | 0.003 | -0.060 | -0.291 | 0.052 | -0.012 | -0.080 | 0.003 | -0.025 |
| 6 | <i>BIG N</i> | -0.058 | -0.104 | -0.118 | -0.105 | 0.069 | 0.096 | 0.009 | 0.199 | 0.015 | 0.121 |
| 7 | <i>SOX</i> | 0.014 | -0.125 | 0.003 | -0.179 | 0.042 | 0.196 | 0.121 | 0.103 | 0.080 | 0.048 |
| 8 | <i>CRISIS</i> | -0.033 | 0.106 | 0.040 | 0.059 | 0.001 | 0.078 | 0.005 | 0.009 | 0.079 | -0.049 |
| 9 | <i>DOCTORAL</i> | -0.090 | 0.122 | 0.115 | 0.097 | -0.003 | 0.269 | 0.028 | 0.149 | 0.047 | 0.076 |
| 10 | <i>PUBLIC PCT</i> | 0.521 | 0.100 | 0.227 | 0.236 | -0.015 | -0.106 | -0.012 | -0.141 | 0.026 | -0.019 |
| 11 | <i>PRIVATE PCT</i> | | -0.068 | -0.075 | -0.015 | -0.024 | -0.102 | -0.042 | -0.048 | 0.005 | -0.020 |
| 12 | <i>FS WEAK</i> | -0.068 | | 0.396 | 0.479 | 0.140 | -0.143 | -0.129 | -0.128 | -0.125 | -0.111 |
| 13 | <i>SA WEAK</i> | -0.075 | 0.396 | | 0.261 | 0.015 | -0.066 | -0.052 | -0.089 | 0.015 | 0.045 |
| 14 | <i>COUNT FS WEAK</i> | -0.015 | 0.479 | 0.261 | | 0.124 | -0.069 | -0.088 | -0.197 | -0.094 | -0.074 |
| 15 | <i>NUMBER OF MEETINGS</i> | -0.024 | 0.140 | 0.015 | 0.124 | | -0.134 | -0.028 | -0.129 | -0.129 | -0.003 |
| 16 | <i>1_INTERNAL CONTROLS PCT</i> | -0.102 | -0.143 | -0.066 | -0.069 | -0.134 | | 0.316 | 0.302 | 0.136 | 0.110 |
| 17 | <i>2_FRAUD RISK PCT</i> | -0.042 | -0.129 | -0.052 | -0.088 | -0.028 | 0.316 | | 0.315 | 0.265 | 0.241 |
| 18 | <i>3_ASSESS RISK PCT</i> | -0.048 | -0.128 | -0.089 | -0.197 | -0.129 | 0.302 | 0.315 | | 0.239 | 0.233 |
| 19 | <i>4_CODE OF CONDUCT PCT</i> | 0.005 | -0.125 | 0.015 | -0.094 | -0.129 | 0.136 | 0.265 | 0.239 | | 0.213 |
| 20 | <i>5_MGT OVERSIGHT PCT</i> | -0.020 | -0.111 | 0.045 | -0.074 | -0.003 | 0.110 | 0.241 | 0.233 | 0.213 | |
| 21 | <i>6_AC CHARTER PCT</i> | -0.029 | -0.181 | 0.019 | -0.094 | -0.113 | 0.231 | 0.256 | 0.271 | 0.232 | 0.224 |
| 22 | <i>7_EXPERT PCT</i> | -0.027 | -0.115 | -0.126 | -0.066 | 0.046 | 0.196 | 0.284 | 0.180 | 0.163 | 0.103 |
| 23 | <i>8_APPROVE MEETING PCT</i> | -0.056 | 0.000 | -0.075 | -0.155 | 0.112 | 0.042 | 0.267 | 0.035 | -0.046 | 0.002 |
| 24 | <i>9_EXEC SESSION PCT</i> | -0.064 | 0.034 | -0.113 | -0.025 | -0.179 | 0.011 | -0.142 | 0.099 | 0.009 | 0.127 |
| 25 | <i>10_ADT OVERSIGHT PCT</i> | -0.046 | -0.074 | -0.025 | -0.009 | -0.205 | 0.477 | 0.327 | 0.368 | 0.165 | 0.161 |
| 26 | <i>11_NAS PCT</i> | 0.007 | -0.080 | -0.111 | -0.066 | 0.153 | 0.112 | 0.116 | 0.174 | 0.179 | 0.273 |
| 27 | <i>12_IAUD PCT</i> | -0.130 | -0.046 | 0.085 | 0.115 | 0.013 | 0.350 | 0.328 | 0.276 | 0.114 | 0.127 |
| 28 | <i>13_FIN STATEMENTS PCT</i> | -0.017 | -0.171 | -0.048 | -0.241 | -0.138 | 0.445 | 0.380 | 0.326 | 0.210 | 0.104 |
| 29 | <i>14_FIN STRENGTH PCT</i> | 0.105 | -0.036 | -0.149 | -0.086 | -0.014 | 0.180 | 0.304 | 0.210 | 0.087 | -0.060 |

TABLE 3
Severe Deficiencies

| | Estimate | Standard Error | P-value |
|--------------------------------|----------|----------------|---------|
| Panel A – Full model | | | |
| <i>SIZE</i> | 0.554 | 0.218 | 0.012 |
| <i>LINVEST</i> | 1.766 | 1.274 | 0.167 |
| <i>TLTA</i> | -0.820 | 1.309 | 0.532 |
| <i>ROTA</i> | -3.932 | 1.776 | 0.028 |
| <i>SWITCH</i> | 0.293 | 0.455 | 0.520 |
| <i>BIG N</i> | -0.794 | 0.508 | 0.119 |
| <i>NUMBER OF MEETINGS</i> | 0.132 | 0.096 | 0.168 |
| <i>SOX</i> | -0.345 | 0.765 | 0.653 |
| <i>CRISIS</i> | 1.047 | 0.473 | 0.027 |
| <i>DOCTORAL</i> | 0.118 | 0.774 | 0.879 |
| <i>PUBLIC PCT</i> | 1.594 | 1.002 | 0.113 |
| <i>PRIVATE PCT</i> | -3.778 | 2.219 | 0.090 |
| <i>SA WEAK</i> | 1.733 | 0.373 | <0.001 |
| <i>1_INTERNAL CONTROLS PCT</i> | -0.883 | 0.560 | 0.116 |
| <i>2_FRAUD RISK PCT</i> | 0.262 | 0.552 | 0.636 |
| <i>3_ASSESS RISK PCT</i> | 0.076 | 0.515 | 0.883 |
| <i>4_CODE OF CONDUCT PCT</i> | -0.805 | 0.802 | 0.316 |
| <i>5_MGT OVERSIGHT PCT</i> | -3.467 | 2.697 | 0.200 |
| <i>6_AC CHARTER PCT</i> | -1.360 | 0.700 | 0.053 |
| <i>7_EXPERT PCT</i> | -2.921 | 1.630 | 0.074 |
| <i>8_APPROVE MEETING PCT</i> | 0.176 | 0.386 | 0.648 |
| <i>9_EXEC SESSION PCT</i> | 0.567 | 0.465 | 0.223 |
| <i>10_ADT OVERSIGHT PCT</i> | 0.616 | 0.645 | 0.340 |
| <i>11_NAS PCT</i> | 1.439 | 2.461 | 0.559 |
| <i>12_IAUD PCT</i> | -0.555 | 0.492 | 0.260 |
| <i>13_FIN STATEMENTS PCT</i> | -0.357 | 0.631 | 0.572 |
| <i>14_FIN STRENGTH PCT</i> | 1.112 | 0.824 | 0.178 |
| Observations | 330 | | |
| Pseudo R-squared | 0.421 | | |
| ROC Curve | 0.840 | | |

TABLE 3 (Continued)
Severe Deficiencies

| Panel B – Selected model | | | |
|---------------------------------|--------|-------|--------|
| <i>SIZE</i> | 0.613 | 0.159 | 0.000 |
| <i>LINVEST</i> | 1.729 | 1.058 | 0.103 |
| <i>ROTA</i> | -3.329 | 1.624 | 0.041 |
| <i>BIG N</i> | -0.989 | 0.413 | 0.017 |
| <i>NUMBER OF MEETINGS</i> | 0.115 | 0.077 | 0.136 |
| <i>CRISIS</i> | 0.976 | 0.443 | 0.028 |
| <i>PUBLIC PCT</i> | 1.490 | 0.923 | 0.107 |
| <i>PRIVATE PCT</i> | -3.702 | 1.976 | 0.062 |
| <i>SA WEAK</i> | 1.610 | 0.338 | <0.001 |
| <i>1_INTERNAL CONTROLS PCT</i> | -0.913 | 0.461 | 0.048 |
| <i>6_AC CHARTER PCT</i> | -1.608 | 0.627 | 0.011 |
| <i>7_EXPERT PCT</i> | -2.957 | 1.761 | 0.094 |
| <i>9_EXEC SESSION PCT</i> | 0.615 | 0.401 | 0.126 |
| <i>14_FIN STRENGTH PCT</i> | 1.315 | 0.704 | 0.063 |
| Observations | 330 | | |
| Pseudo R-squared | 0.397 | | |
| ROC Curve | 0.827 | | |

The following table presents the results from estimating a logistic regression model where the dependent variable is an indicator variable equal to one if the university had a severe deficiency in internal controls over financial reporting (significant deficiency or material weakness); zero otherwise. Panel A presents the results for the full model. Panel B only includes variables that are retained after estimating a backward elimination regression model. Presented p-values are two-tailed. Standard errors are clustered by university and year. Detailed variable definitions for each of the variables used in my analyses are provided in Appendices A and C.

TABLE 4
Total Deficiencies

| | Estimate | Standard Error | P-value |
|------------------------------|-----------------|-----------------------|----------------|
| <i>SIZE</i> | 0.400 | 0.168 | 0.017 |
| <i>LINVEST</i> | -0.235 | 0.583 | 0.687 |
| <i>TLTA</i> | -0.829 | 0.296 | 0.005 |
| <i>BIG N</i> | 0.916 | 0.180 | <0.001 |
| <i>PUBLIC PCT</i> | -0.897 | 0.205 | <0.001 |
| <i>3_ASSESS RISK PCT</i> | 0.394 | 0.402 | 0.327 |
| <i>7_EXPERT PCT</i> | -2.745 | 0.984 | 0.005 |
| <i>8_APPROVE MEETING PCT</i> | 0.475 | 0.649 | 0.465 |
| <i>10_ADT OVERSIGHT PCT</i> | 0.134 | 0.313 | 0.668 |
| <i>11_NAS PCT</i> | 0.400 | 0.168 | 0.017 |
| <i>12_IAUD PCT</i> | -0.235 | 0.583 | 0.687 |
| <i>13_FIN STATEMENTS PCT</i> | -0.829 | 0.296 | 0.005 |
| Observations | 118 | | |
| Pseudo R-squared | 0.151 | | |

The following table presents the results from estimating a negative binomial regression model where the dependent variable is equal to the total number of significant deficiencies and material weaknesses (in excess of zero) in internal controls over financial reporting. For brevity, this table only includes variables that are retained after estimating a backward elimination regression model. Presented p-values are two-tailed. Standard errors are clustered by university and year. Detailed variable definitions for each of the variables used in my analyses are provided in Appendices A and C.

TABLE 5
Quarter 4 Analyses

| Panel A – Severe Deficiencies | | | |
|--------------------------------------|-----------------|-----------------------|----------------|
| | Estimate | Standard Error | P-value |
| <i>SIZE</i> | 0.449 | 0.161 | 0.006 |
| <i>BIG N</i> | -0.845 | 0.393 | 0.033 |
| <i>SOX</i> | -1.209 | 0.690 | 0.081 |
| <i>CRISIS</i> | 1.022 | 0.449 | 0.024 |
| <i>PRIVATE PCT</i> | -3.643 | 1.973 | 0.066 |
| <i>SA WEAK</i> | 1.778 | 0.340 | <0.001 |
| <i>6_AC CHARTER PCT</i> | -3.223 | 1.252 | 0.011 |
| <i>11_NAS PCT</i> | 5.310 | 2.837 | 0.062 |
| <i>13_FIN STATEMENTS PCT</i> | -2.466 | 0.967 | 0.011 |
| Observations | 272 | | |
| Pseudo R-squared | 0.378 | | |
| ROC Curve | 0.821 | | |
| Panel B – Total Deficiencies | | | |
| <i>SIZE</i> | 0.442 | 0.100 | <0.001 |
| <i>LINVEST</i> | -1.010 | 1.057 | 0.339 |
| <i>BIG N</i> | -0.855 | 0.490 | 0.081 |
| <i>PUBLIC PCT</i> | -2.213 | 0.744 | 0.003 |
| <i>1_INTERNAL CONTROLS PCT</i> | 1.032 | 0.610 | 0.090 |
| <i>3_ASSESS RISK PCT</i> | 0.830 | 0.543 | 0.127 |
| <i>4_CODE OF CONDUCT PCT</i> | 2.590 | 0.888 | 0.004 |
| <i>9_EXEC SESSION PCT</i> | -0.748 | 0.444 | 0.092 |
| <i>10_ADT OVERSIGHT PCT</i> | 1.064 | 0.374 | 0.005 |
| <i>12_IAUD PCT</i> | -1.209 | 0.498 | 0.015 |
| Observations | 107 | | |
| Pseudo R-squared | 0.163 | | |

The following table presents the results from my fourth quarter discussion analyses. For brevity, this table only includes variables that are retained after estimating a backward elimination regression model. Panel A presents the results from estimating a logistic regression model where the dependent variable is an indicator variable equal to one if the university had a severe deficiency in internal controls over financial reporting (significant deficiency or material weakness); zero otherwise. Panel B presents the results from estimating a negative binomial regression model where the dependent variable is equal to the total number of significant deficiencies and material weaknesses (in excess of zero) in internal controls over financial reporting. All audit committee discussion variables are based on Quarter 4 of year t. All other variables are measured for year-end in period t. Presented p-values are two-tailed. Standard errors are clustered by university and year. Detailed variable definitions for each of the variables used in my analyses are provided in Appendices A and C.

TABLE 6
Quarter 1 Analyses

| Panel A – Severe Deficiencies | | | |
|--------------------------------------|-----------------|-----------------------|----------------|
| | Estimate | Standard Error | P-value |
| <i>ROTA</i> | -4.471 | 2.369 | 0.060 |
| <i>SA WEAK</i> | 2.685 | 0.365 | <0.001 |
| <i>6_AC CHARTER PCT</i> | -2.693 | 1.685 | 0.111 |
| <i>8_APPROVE MEETING PCT</i> | 2.142 | 1.140 | 0.062 |
| <i>2_FRAUD RISK PCT</i> | -2.140 | 1.418 | 0.133 |
| <i>13_FIN STATEMENTS PCT</i> | -2.391 | 1.088 | 0.029 |
| <i>12_IAUD PCT</i> | 2.854 | 1.269 | 0.026 |
| Observations | 229 | | |
| Pseudo R-squared | 0.436 | | |
| ROC Curve | 0.839 | | |
| Panel B – Total Deficiencies | | | |
| <i>SIZE</i> | 0.464 | 0.114 | <0.001 |
| <i>LINVEST</i> | -1.518 | 1.119 | 0.175 |
| <i>NUMBER OF MEETINGS</i> | 1.984 | 0.378 | <0.001 |
| <i>PUBLIC PCT</i> | 2.009 | 0.590 | 0.001 |
| <i>1_INTERNAL CONTROLS PCT</i> | -1.774 | 0.399 | <0.001 |
| <i>3_ASSESS RISK PCT</i> | -1.015 | 0.751 | 0.176 |
| <i>12_IAUD PCT</i> | -1.518 | 1.119 | 0.175 |
| Observations | 94 | | |
| Pseudo R-squared | 0.152 | | |

The following table presents the results from estimating my first quarter analyses. For brevity, this table only includes variables that are retained after estimating a backward elimination regression model. Panel A presents the results from estimating a logistic regression model where the dependent variable is an indicator variable equal to one if the university had a severe deficiency in internal controls over financial reporting (significant deficiency or material weakness); zero otherwise. Panel B presents the results from estimating a negative binomial regression model where the dependent variable is equal to the total number of significant deficiencies and material weaknesses (in excess of zero) in internal controls over financial reporting. All audit committee discussion variables are based on Quarter 1 of year t+1. All other variables are measured for year-end in period t. Presented p-values are two-tailed. Standard errors are clustered by university and year. Detailed variable definitions for each of the variables used in my analyses are provided in Appendices A and C.

VITA

Michelle Ann Draeger

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE EFFECT OF AUDIT COMMITTEE DELIBERATIONS ON
FINANCIAL REPORTING QUALITY: EVIDENCE FROM AUDIT
COMMITTEE MINUTES

Major Field: Business Administration (Accounting Concentration)

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Business Administration at Oklahoma State University, Stillwater, Oklahoma in May, 2018.

Completed the requirements for the Bachelor of Science in Business Administration at Marquette University, Milwaukee, Wisconsin in May, 2006.

Experience:

CliftonLarsonAllen, LLP, Greenwood Village, CO – Assurance Manager from 2008 – 2013

Deloitte and Touche, LLP, Milwaukee, WI – Assurance Staff from 2006-2008

Professional Memberships:

American Accounting Association (AAA)

American Institute of Certified Public Accountants (AICPA)