



## Calhoun: The NPS Institutional Archive

---

Faculty and Researcher Publications

Faculty and Researcher Publications Collection

---

2012

# Impact of internal audit function quality and contribution on audit delays

Pizzini, Mina

---

<http://hdl.handle.net/10945/47547>



Calhoun is a project of the Dudley Knox Library at NPS, furthering the precepts and goals of open government and government transparency. All information contained herein has been approved for release by the NPS Public Affairs Officer.

**Dudley Knox Library / Naval Postgraduate School  
411 Dyer Road / 1 University Circle  
Monterey, California USA 93943**

<http://www.nps.edu/library>

## **The Impact of Internal Audit Function Quality and Contribution on Audit Delays**

Mina Pizzini<sup>a</sup>

Graduate School of Business and Public Policy  
Naval Postgraduate School  
Monterey, CA  
[wjpizzin@nps.edu](mailto:wjpizzin@nps.edu)

Shu Lin

Craig School of Business  
California State University, Fresno  
Fresno, CA  
[shulin@csufresno.edu](mailto:shulin@csufresno.edu)

Douglas Ziegenfuss

College of Business and Public Administration  
Old Dominion University  
Norfolk, VA 23529  
[dziegenf@odu.edu](mailto:dziegenf@odu.edu)

September, 2012

We thank the Institute of Internal Auditors for access to the Global Auditing Information Network (GAIN) database. We thank Barry Brian, Chris Hogan, Jason L. Smith, Mark Vargus, David Wood, and seminar participants at the University of Tennessee, George Washington University, University of California – Irvine, Texas Christian University, North Carolina State University, Naval Postgraduate School, University of Delaware, College of William and Mary, University of Virginia, Drexel University, Georgia State University, Clemson University, University of South Carolina, American University, the 2011 Audit Section Research Conference, and the 2011 AAA Annual Meeting for their helpful comments. We thank Scott Bronson for giving us the data on audit delays and preliminary earnings announcements used in Bronson et al. (2011).

<sup>a</sup> Corresponding author

## **The Impact of Internal Audit Function Quality and Contribution on Audit Delays**

### **ABSTRACT**

This study investigates whether measures of internal audit function (IAF) quality and the IAF's contribution to the financial statement audit affect audit delay. We conduct empirical tests using 292 observations from 216 firms that responded to the Institute of Internal Auditor's Global Auditing Information Network survey. Results indicate that audit delay is decreasing in IAF quality, and that this decrease is primarily driven by the competence of the IAF and the quality of their fieldwork. Audit delay is also at least four days shorter when the IAF contributes to the external audit by independently performing relevant work, but not when IAF personnel directly assist the external auditor. We further examine factors that affect the external auditor's decision to use IAF work. The likelihood that external auditors use independently performed IAF work is increasing in IAF quality, internal auditor availability, and audit committee effectiveness, and decreasing in external auditor availability. The likelihood that IAF personnel directly assist external auditors is decreasing in IAF quality and increasing in audit committee effectiveness.

**Key Words:** Audit delay, internal audit, internal audit contribution, internal audit quality

# **The Impact of Internal Audit Function Quality and Contribution on Audit Delays**

## **1. Introduction**

This study investigates the internal audit function's (IAF's) role in the financial statement audit by examining whether measures of IAF quality and the IAF's contribution to the financial statement audit affect audit delay. Audit delay, measured as the number of days between a firm's fiscal yearend and the audit report date, generally captures the time required to complete fieldwork (Ashton et al. 1987). The auditing literature has long recognized the importance of audit delay research because audit delays affect the timeliness with which financial and audit information is publicly disclosed (Givoly and Palmon 1982). Current interest in audit delay stems from recent accelerations in reporting deadlines and the implementation of Section 404 of the Sarbanes-Oxley Act (SOX), which together require auditors to perform more work in less time (U.S. Congress 2002; Ettredge et al. 2006; Bronson et al. 2011; Lambert et al. 2011). Specific interest in the IAF arises from the implementation of SOX Sections 302 and 404, which have increased IAF responsibilities surrounding internal control over financial reporting (ICFR), and Auditing Standard No. 5 (AS 5), which facilitates external auditor reliance on the IAF (U.S. Congress 2002; PCAOB 2007a; Schneider 2009). The sizeable literature on audit delay determinants has examined factors associated with firm risk and the audit process, without consideration of the IAF.

Audit failures of the early 2000s have raised concerns regarding the timeliness and reliability of accounting reports (Ettredge et al. 2006). Undue reporting delays compromise the SEC's ideal of equal access to information among market participants (Hakansson 1977; Chambers and Penman 1984; Bamber et al. 1993; SEC 2002). Pursuant to Section 409 of SOX, a

2002 SEC ruling gradually shortened 10-K reporting deadlines for accelerated filers from 90 days to 60 days over a three-year period (U.S. Congress 2002; SEC 2002).<sup>1</sup> At the same time, SOX 404 significantly expanded attestation requirements and Auditing Standard No. 3 (AS 3) increased audit documentation requirements (PCAOB 2004a). Both preparers and auditors expressed concern over their ability to accurately compile and effectively audit the reports within the shorted time frame, especially given the expanded attestation requirements. Consistent with these concerns, Lambert et al. (2011) and Bronson et al. (2011) suggested that managers face a tradeoff between the accuracy of accounting information and the timeliness with which information is reported. In particular, Bronson et al. (2011) documented that SOX 404 and AS 3 increased audit delay; yet, firms did not correspondingly alter the timing of preliminary earnings announcements (PEAs). Consequently, the number of firms that released earnings prior to the completion of the audit increased from 37 percent of accelerated filers in 2002 to 87 percent in 2005, the first full fiscal year for which SOX 404 was effective. PEAs that preceded audit completion were more likely to be subsequently revised, suggesting lower earnings reliability.

In response to auditors' and preparers' concerns regarding reporting deadlines and to facilitate efficient SOX 404 compliance, the PCAOB enacted AS 5, which instructs external auditors to give greater attention to entity-level controls in determining the nature and extent of testing and increases the instances in which external auditors can use the work of others

---

<sup>1</sup> An interim filing deadline of 75 days became effective for accelerated filers for reports released after December 15, 2003, while the 60-day deadline was originally scheduled to become effective on December 15, 2004. In response to a multitude of opposing comments, the SEC twice postponed the effective date of the 60-day deadline (SEC 2004, 2005). In 2005, the SEC also limited firms subject to the deadline to "large" accelerated filers. In 2005, the SEC also limited firms subject to the deadline to "large" accelerated filers. Thus, there are now two classes of accelerated filers (SEC 2005). The term "accelerated filer" refers to firms with common equity public float greater than or equal to \$75 million, but less than \$700 million as of the last business day of the most recently completed second fiscal quarter; and, "large accelerated filer" refers to firms with common equity public float of \$700 million or more. Only one class of accelerated filer existed during our sample time period; therefore, we use the term "accelerated filer" to refer to firms with \$75 million or more in public float.

(PCAOB 2007a). The standard thereby implies an expanded role for internal auditing because the IAF can help management strengthen entity-level controls through consulting and assurance activities, and the IAF can perform work that external auditors can use to formulate their opinion (Gramling et al. 2004; Schneider 2009; Institute of Internal Auditors [IIA] 2011).<sup>2</sup> Specifically, Statement on Auditing Standard 65 (SAS 65) stipulates that internal auditors may contribute to the financial statement audit by either working as assistants under the direct supervision of the external auditors or independently performing relevant work throughout the audit year on which the external auditors can rely (AICPA 1991). Given the potential tradeoff between the timeliness and reliability of disclosures and the increased opportunity for the IAF to affect the financial statement audit, it is important to investigate the IAF's role in audit report timeliness and factors that influence this role.<sup>3</sup>

We conduct our tests using data on 216 firms providing detailed responses to the IIA's Global Auditing Information Network (GAIN) survey for the four-year period immediately *prior* to the implementation of SOX 404.<sup>4</sup> Based on professional standards and following prior research, we use GAIN data to develop multiple measures of IAF quality and the IAF's contribution to the financial statement audit (AICPA 1991; Prawitt et al. 2009; IIA 2011; Lin et al. 2011). Results indicate that a one-standard deviation increase in our comprehensive quality measure corresponds to a reduction in audit delay of approximately three-to-four days, and that this reduction is primarily driven by the competence of the internal audit staff and the quality of their fieldwork. Audit delay is also significantly shorter (4.7 to 8.2 days) when the IAF

---

<sup>2</sup> We cite IIA standards and guidance issued after the time period of our sample (2001-2003). However, prior standards and guidance in place during the time period of our sample similarly discuss consulting and assurance services as key IAF activities.

<sup>3</sup> The term "financial statement audit" is used to refer to both an audit of the financial statements and an audit of internal control over financial reporting that is integrated with an audit of the financial statements.

<sup>4</sup> Fiscal yearends range from December 31, 2000 to November 14, 2004.

contributes to the financial statement audit by independently performing relevant work, but not when the IAF works under the direction of the external auditor. Audit delay reductions of three-to-eight days are economically relevant for our pre-SOX 404 sample, as accelerated filers released earnings an average of seven days prior to the audit's completion during this time period. While data availability confines our analysis to the period prior to SOX 404's implementation, we expect that the impact of IAF quality and contribution would be even larger in a sample of firms drawn from the current period. SOX 404 substantially increased the IAF's potential to contribute to the financial reporting process (Gramling et al. 2004, 196), and both audit and client firms have had almost ten years to adjust audit processes to meet the standard.

We also provide evidence on factors that influence the IAF's contribution to the financial statement audit. IAF quality is positively associated with the likelihood that external auditors use independently performed IAF work and negatively associated with the likelihood that they use the IAF as direct assistants, suggesting that lower quality internal auditors require direct supervision. Audit committee effectiveness is positively and significantly associated with both methods of contribution, consistent with the premise that effective audit committees reduce control risk. The likelihood that external auditors rely upon independently performed IAF work is increasing in IAF availability and decreasing in the availability of external audit resources.

This study makes several important contributions to the auditing literature. First, while research finds significant control problems are associated with longer audit delays (Kinney and McDaniel 1993; Ettredge et al. 2006), this is the first study to consider the effect of the IAF on audit delays. Second, our results suggest that external auditors behave in accordance with the audit risk model, *i.e.*, they reduce audit effort, as measured by audit delay, in response to

reductions in control risk arising from greater IAF quality. Prior research finds mixed support for the audit risk model with respect to control risk (O’Keefe et al. 1994; Stein et al. 1994; and Felix et al. 2001; Hogan and Wilkins 2008). Third, this study extends prior research that investigates the impact of IAF contribution on external audit fees and hours (Stein et al. 1994; Felix et al. 2001 and Prawitt et al. 2011). Audit fees and hours measure only external auditor effort, while audit delay encompasses both external and internal auditor effort. Fourth, this study contributes to the literature that examines auditors’ reliance decision by using actual, archival measures of IAF quality, audit committee effectiveness, misstatement risk, and auditor availability to identify factors that influence different methods of IAF contribution. Finally, we build upon prior studies that use GAIN data to document associations between IAF quality and both earnings quality and the prevention and detection of material weaknesses (Prawitt et al. 2009, Lin et al. 2011). Together, these studies suggest that the IAF affects the quality of reported earnings and both the effectiveness and timeliness of the reporting process.

This research should be of interest to preparers, auditors, standard-setters, and regulators. The results suggest that managers can reduce audit delays by increasing IAF quality and structuring the IAF so that it can help the external auditor to complete the financial statement audit. Reducing audit delays from their current levels back to their pre-SOX 404 timing could potentially reverse the decline in the reliability of PEAs reported by Bronson et al. (2011).<sup>5</sup> In 2010, 93 percent of accelerated filers released earnings early, with the PEA predating audit completion by an average (median) of 15.7 (13) days. Moreover, evidence on the benefits of the IAF helps managers and auditors fully understand the potential risks associated with reducing the IAF during tough economic times. Such evidence is particularly timely given a 2008 PCAOB practice alert warning auditors that poor economic conditions may prompt firms to reduce

---

<sup>5</sup> Median audit delays for accelerated filers increased from 43 days in 2002 to 68 days in 2005.



personnel charged with internal control-related duties (PCAOB 2008). The results should also be of interest to regulators, who set reporting deadlines, and the PCAOB, who provides professional guidance for using the work of others in financial statement audits.

Section 2 reviews the audit delay literature and presents hypotheses; Section 3 describes the research design. Results are discussed in Section 4, with concluding remarks in Section 5.

## **2. Literature Review and Hypothesis Development**

### **2.1. The influence of IAF quality and contribution on audit delay**

#### 2.1.1 Background on audit delay

A large literature investigates potential determinants of audit delay. Much of this research focuses on the content of earnings disclosures, firm characteristics, and external auditor characteristics. Firm characteristics investigated include size, industry, fiscal yearend, and various proxies for complexity (e.g., Givoly and Palmon 1982; Ashton et al. 1989; Newton and Ashton 1989; Bamber et al. 1993). External auditor characteristics investigated include audit technology, audit staffing, audit work timing, hourly fees, auditor changes, and designation as a “Big N” auditor (Ashton et al. 1989; Newton and Ashton 1989; Bamber et al. 1993; Schwartz and Soo 1996; Knechel and Payne 2001; Leventis et al. 2005; Ettredge et al. 2006).

Only three studies address the strength of a firm’s internal control system, which is a key determinant of the total amount of work required for the external audit. Ashton et al. (1987) measured internal control quality using external auditors’ perceptions; they found that internal control quality was negatively and significantly associated with audit delay in their subsample of 381 non-public U.S. firms, but not in their subsample of 107 public firms. Kinney and McDaniel (1993) used misstatements in the quarterly earnings reports of 85 firms as a joint proxy for internal control quality, yearend audit effort, and auditor/client discussions. They found that

audit delay for restating firms was 17 days longer than that of matched firms without such corrections, and the change in delay from the prior year was eight days longer. They concluded that while internal control quality was a contributing factor to audit delay, not all of the substantial delay could be attributed to quality. Some of the delay was likely due to the existence of the accounting error, *per se*, as it required the external auditor to expand audit scope and it increased time devoted to internal-external auditor negotiations. Ettredge et al. (2006) measured the strength of ICFR using material weaknesses reported under Section 404 of SOX and found that firms reporting a material weakness experienced significantly longer delays (16 days) than those with effective ICFR. Again, part of this delay was likely driven by increased external auditor-client negotiations regarding the material weakness. Together these studies provide useful evidence on the relation between internal control quality and audit delay. We extend this line of research by considering a critical determinant of internal control quality, the internal audit function. Managers and audit committee directors set IAF attributes and activities. Accordingly, the IAF provides managers and directors with a way to improve the accuracy of preliminary earnings numbers if IAF attributes and actions can reduce audit delay.

The internal audit function (IAF) can influence external audit activities in two ways. First, the IAF is part of a firm's control environment and hence affects control risk. Statement of Audited Standards (SAS) No. 65 specifically mandates that external auditors consider the IAF when assessing a firm's control environment (AICPA 1991, Section 322.04). External auditors' assessment of control risk determines the nature and amount of substantive audit procedures required to achieve an acceptable level of overall audit risk (AICPA, 1983). Second, external auditors can rely on work performed by internal auditors, either independently or under their

direction, in completing the financial statement audit (AICPA 1991, Sections 322.24-27; PCAOB 2004, 2007a).

### 2.1.2. IAF quality

Management, and not the IAF, is responsible for maintaining ICFR; however, the IAF can support management in this endeavor as long as the IAF remains objective (IIA 2004, 3). The IIA has long advocated that management consult with the IAF on various control related issues in addition to relying on the IAF to provide assurance services (IIA 2011). In its role as consultant, the IAF can assess relevant risks and advise management in designing and implementing controls throughout the reporting process. In its traditional assurance role, the IAF reviews and tests the effectiveness of controls. IIA guidance pertaining to SOX 302 specifically advocates that the IAF conduct assurance activities to support management assertions as to the adequacy of ICFR (IIA 2004). If control problems are identified, internal auditing should assess management's plans for correcting them and perform follow-up reviews. Finally, the IAF is charged with ensuring that the results of ongoing internal audit activities are communicated to appropriate parties, including the audit committee and the external auditors.

Although practitioners and academics alike have long recognized that the IAF can affect internal control quality, only recently have researchers begun to provide direct empirical evidence of this relation. Using firms in the GAIN database, Prawitt et al. (2009) found a positive relation between a comprehensive measure of IAF quality and earnings quality, as measured by accruals. Lin et al. (2011) also used the GAIN database to investigate IAF quality. Their results suggest that certain IAF activities (use of quality assurance techniques, audits of financial reporting activities, and follow-up monitoring) help prevent material weaknesses in ICFR from occurring, while other activities improve SOX compliance processes. To the extent

that a higher quality IAF results in improved ICFR, and correspondingly lower control risk, it follows from the audit risk model that external audit effort should be negatively associated with IAF quality. This premise is consistent with Simunic (1980) who modeled internal and external auditing as diminishingly substitutable resources in preventing misstatements. The assumption that less external audit effort results in fewer audit days leads to the following hypothesis:<sup>6</sup>

*H1: Audit delay is negatively associated with IAF quality.*

### 2.1.3. IAF contribution to the financial statement audit

External auditing standards have consistently acknowledged internal auditing as a potentially valuable resource in the financial statement audit (SAS 65, AICPA 1991; AS 2, PCAOB 2004; AS 5, PCAOB 2007a). These standards allow external auditors to rely on relevant work performed independently by the IAF or under the direction of the external auditors (hereafter referred to as independently performed IAF work and direct assistance, respectively), as long as the IAF is deemed to be of acceptable quality. Reliance on work performed by the IAF can improve the efficiency and effectiveness of the external audit (Schneider 2009). According to the PCAOB (2005, 11), “an auditor who appropriately uses the work of others enhances the overall efficiency of the audit.” In both of its inspection reports on SOX 404 compliance, the PCAOB cites external auditors’ failure to use the work of others as a cause of inefficiency (PCAOB 2005, 2007b). As part of a comprehensive effort to make SOX 404 compliance more efficient, the PCAOB increased the opportunity for external auditors to rely on the IAF by

---

<sup>6</sup> A lower level of effort will not result in fewer audit days if the external auditors decide to reduce the amount of resources allocated to the audit on a daily basis instead of maintaining the same effort level per day and reducing the number of days. Similarly, lower effort levels will not result in fewer audit days if external auditors instead choose to allocate more time to high-risk areas or expand the scope of the audit. Such allocations would bias our tests against finding results that support the hypothesis. To address reallocations of external auditor time, we control for external audit fees.

permitting auditors to use the work of others as principal evidence (Fogelman et al. 2007; PCAOB 2007a; Woodlock 2007).<sup>7</sup>

Few empirical studies have directly tested relations between external audit effort and the extent to which the external auditor uses IAF work.<sup>8</sup> Using survey data from 108 audits in the financial services industry, Stein et al. (1994) measured contribution with a dichotomous survey question and external auditor effort with hours and fees. Contrary to their predictions, contribution was positively associated with hours and not associated with audit fees. In a study of 70 firms, Felix et al. (2001) measured contribution using external auditors' perceptions of the percentage of the external audit completed by the IAF. Consistent with their predictions, they found that external audit fees were decreasing in IAF contribution. Using GAIN data on 235 firms, Prawitt et al. (2010) measured IAF contribution with the percentage of IAF time devoted to providing "external audit assistance," and "auditing annual accounts, financial statements and reports." The audit assistance measure, a proxy for direct assistance, was significantly ( $p < 0.05$ , one-tailed) and negatively associated with audit fees. The second question, which measured external auditors' reliance on independently performed IAF work, was not significantly associated with audit fees.

The two later studies suggest that when external auditors use work performed by the IAF, there is a corresponding reduction in external audit resources required to complete the financial statement audit, and hence, a reduction in audit fees. Audit delay provides a useful complementary proxy to audit fees because it reflects both internal and external audit resource

---

<sup>7</sup> Under AS 2, external auditors were only permitted to use the work of others to supplement evidence they had obtained firsthand (PCAOB 2004).

<sup>8</sup> Several studies have indirectly measured IAF contribution to the external audit using proxies such as internal control expenditures, internal audit payroll costs, and the number of internal auditors (Chung and Lindsay 1988; Gist 1992; Raman and Wilson 1992; Anderson and Zeghal 1994; Gerrard et al. 1994; Adams et al. 1997; Goodwin-Stewart and Kent 2006).

consumption; and, it is not subject to measurement error arising from “low balling,” cross-subsidization, and other pricing policies (O’Keefe et al. 1994). Moreover, some managers may value a reduction in audit delay more than a reduction in fees. Given that the IAF can provide additional resources that the external auditor can use to complete the financial statement audit, we expect that reliance on the IAF should reduce the number of days required to complete the audit, as stated in H2.

*H2: Audit delays for firms whose external auditors use work performed by the IAF, either independently or under the direction of the IAF, are shorter than those for firms whose external auditors do not use IAF work.*

## **2.2. Determinants of IAF contribution**

Given the potential for IAF contribution to reduce both audit delays and fees and the increased opportunity for external auditors to use IAF work under AS 5, it is important to understand factors affecting external auditors’ decisions to rely on the IAF. Auditing standards and prior research suggest that IAF contribution is determined by IAF quality, audit committee effectiveness, misstatement risk, and audit resource availability. Several experiments have investigated whether, and how, external auditors incorporate different aspects of IAF quality (competence, objectivity, and fieldwork) into their reliance decisions (see Gramling et al. 2004 for a review); yet, there is relatively little archival evidence on the external auditor’s reliance decision. Felix et al. (2001) is the only archival study of which we are aware that proposes and tests a comprehensive model of IAF contribution. Accordingly, we build upon their important research and use a larger, more recent, and more comprehensive dataset to overcome some of the data limitations of their analysis of 66 firms. A key advantage of our data set is that it combines objective survey questions with data from publicly available sources. For example, we formulate a multi-dimensional measure of quality based on average years of IAF audit experience,

percentage of IAF staff with audit certifications, chief audit executive (CAE) reporting lines, and other objective measures; and, measures of internal and external auditor availability are exogenously determined by the timing of the financial statement audit. Felix et al. (2001) relied solely on external auditors' perceptions of IAF contribution and its determinants to test their hypotheses. We also expand upon Felix et al.'s (2001) analysis by modeling different forms of IAF contribution (direct assistance and independently-performed work) and investigating the direct effects of external auditor availability and factors associated with misstatement risk.

### 2.2.1. IAF Quality

External auditors can only rely on work performed by the IAF if the IAF is deemed to be of sufficient quality. IAF quality is determined by the competence and objectivity of IAF personnel, together with the effectiveness of their fieldwork (SAS 65 AICPA 1991; AS 5, PCAOB 2007a). The more highly competent and objective the IAF, and the more thorough their fieldwork, the more the external auditor can rely on work performed by the IAF. Prior experimental research has found positive relations between IAF quality and auditors' decisions to rely on internal auditors' work (Abdel-khalik et al. 1983, Maletta 1993, and Maletta and Kida 1993). Felix et al. (2001) identified a significantly positive association between external auditors' perceptions of IAF quality and the IAF's contribution to the external audit. Consistent with prior research, we expect that IAF contribution will be increasing in IAF quality, as stated in H3a.

*H3a: The likelihood that external auditors use work performed by the IAF to complete the financial statement audit is positively associated with IAF quality.*

### 2.2.2. Misstatement risk

Few academic studies have addressed the impact of risk factors on auditors' reliance decisions. Experimental research indicates that risk affects the extent to which different aspects of IAF quality (objectivity, competence, work performed) influence the reliance decision, and

that auditors employ more complex interactive decision processes to evaluate internal auditors when inherent risk is greater (Maletta and Kida 1993, Maletta 1993). Felix et al. (2001) found that as inherent risk increased, auditors moved away from simple decision criteria (such as IAF availability) and toward more analytical decision functions. Glover et al. (2008) reported that external auditors' tendency to rely more on work performed by an outsourced internal auditor as compared with an in-house internal auditor was increasing in the level of inherent risk. While the aforementioned studies clearly demonstrate that risk is an important consideration in the reliance decision, they do not measure the direct impact of risk on the reliance decision.

Material misstatement risk is the likelihood that a material misstatement exists and a firm's control system will not detect the misstatement. SAS 65 instructs auditors to assess the risk of material misstatements when deciding whether to rely on the IAF (AICPA 1991). Evidence obtained through an auditor's direct personal knowledge is generally more persuasive than information obtained indirectly (AICPA 1991, Section 322.18) and the responsibility for the opinion rests solely with external auditor. Accordingly, as misstatement risk increases, the need for the external auditor to perform his or her own tests of assertions increases (AICPA 1991, Section 322.20). While the external auditor still considers IAF work in high-risk conditions, the IAF's work alone cannot reduce audit risk to a level that eliminates the necessity for external auditors to perform their own tests. Financial restatements provide an "explicit acknowledgement of material omission or misstatement in prior financial statements" (Abbott et al. 2004). Accordingly, H3c predicts a negative relation between restatements and IAF contribution.

*H3c: The likelihood that external auditors use work performed by the IAF to complete the financial statement audit is negatively associated with restatements.*

### 2.2.3 Audit Committee Effectiveness



The audit committee is responsible for overseeing the financial reporting process. A more effective audit committee has been found to reduce the occurrence of restatements and fraud (Kinney and McDaniel 1989, Abbott et al. 2000, Abbott et al. 2004). Audit committee effectiveness is captured by the Blue Ribbon Committee (BRC) recommendations, which address audit committee member independence, financial literacy, and expertise; audit committee size and authority over the appointment of the external auditor; and disclosures regarding audit committee charters and communications with shareholders and external auditors (Abbott et al. 2004). For example, the objectivity of the IAF is strengthened when the IAF reports to an audit committee that does not include a former or current member of management (Rahundandan et al. 2001); and a certain level of financial acumen is necessary to understand the complex accounting issues that arise in compiling the financial statements. An effective audit committee can help lower the risk of a material misstatement, which in turn, increases the opportunity for the external auditor rely on the internal auditor, as stated in H3d.

*H3d: The likelihood that external auditors use work performed by the IAF to complete the financial statement audit is positively associated with audit committee effectiveness.*

#### 2.2.4. External and internal auditor availability

The availability of both external and internal auditing resources is an important consideration in determining the nature and extent of the IAF's role in the financial statement audit. When all of the audit firm's personnel are fully employed, as is generally case during the "busy" season, firms have a strong economic incentive to rely on the IAF. Using IAF work during this period potentially enables external auditors to serve more clients and/or reduce overtime expense.<sup>9</sup> In contrast, during slack periods, substituting internal audit work for external

---

<sup>9</sup> We assume that the use of the IAF is not accompanied by a fee decrease that exceeds the marginal revenue earned by assigning external auditors to other clients or the external audit firm's marginal cost of performing the work with its own staff.

audit work potentially reduces revenues without reducing professional labor costs. Thus, we expect that the external auditor will be less likely to rely on the IAF outside of the “busy” season.

Just as resource constraints affect external auditors’ demand for IAF resources, IAF resource constraints affect client firms’ willingness to contribute IAF personnel to the financial statement audit. The more time the IAF has available after fulfilling a firm’s internal auditing requirements, the greater the potential for the IAF to contribute to the external audit. Consistent with this premise, Felix et al. (2001) found that external auditors’ perceptions of IAF availability were significantly and positively associated with perceptions of IAF contribution. However, it is quite possible that client firm managers simultaneously choose the extent to which the IAF contributed to the external audit and the amount of IAF resources that would be available to assist external auditors, and Felix et al. (2001) did not address simultaneity. Our research design overcomes this limitation by investigating the impact of an exogenous reduction in IAF availability arising from the implementation of SOX 302, which substantially increased firms’ internal control attestation requirements, and correspondingly, firms’ demand for internal audit work. Thus, we expect that firms’ internal audit functions had less time available to assist external auditors with the financial statement audit after SOX 302’s implementation than prior to implementation. The previous discussion on auditor availability leads to H3d:

*H3d: The likelihood that external auditors use work performed by the IAF to complete the financial statement audit is lower outside of the “busy” season and lower in the periods after the implementation of SOX 302.*

### **3. Research design**

#### **3.1 Data and sample selection**

Data for this study come from multiple sources. We use firm-level data collected by the IIA through their 2003 and 2004 GAIN surveys. The GAIN database consists of chief audit

executives' (CAEs') responses to a comprehensive survey designed to measure various aspects of an organization's internal audit activities.<sup>10</sup> Next, we collect firm financial data from COMPUSTAT and audit fee and restatement data from Audit Analytics. Our initial sample contained 1,356 responses from 935 GAIN survey respondents pertaining to fiscal years 2000 through 2004. We then eliminate ten observations for fiscal years ending on or after November 15<sup>th</sup>, 2004, the effective date of SOX 404. Since firm names are not reported in the survey data, we employ a matching algorithm to identify firms based on reported SIC code, total assets, revenues, and number of employees.<sup>11</sup> We eliminate 1,026 observations that could not be matched with COMPUSTAT data, 18 observations with missing GAIN data, and nine observations missing data for audit delay or control variables. The resulting sample contains 293 firm-year observations from 223 firms with fiscal years ending on or after December 31<sup>st</sup>, 2000, and prior to November 15<sup>th</sup>, 2004 (Table 1, Panel A).<sup>12</sup>

Panel B of Table 1 depicts the breakdown of the sample by year and regulatory regime. Recognizing that the impending implementation of SOX 404 potentially affects our hypothesized relationships, we perform the analyses on both the full sample of 293 observations and a subset of 189 observations that predate SOX 404's implementation by at least 22 months. We expect that SOX 404's impending implementation will have relatively little effect on the hypothesized relations for this portion of the sample. Also, each of the 189 observations in the subsample

---

<sup>10</sup> The data were subject to various validation checks, including validation measures built into the questionnaire and manual procedures and reasonableness tests applied after the data had been collected. The GAIN database covers a wide range of institutions including publicly traded companies, private companies, educational institutions, divisions within companies, and governmental institutions. More information can be found at the GAIN web site: <http://www.theiia.org/guidance/benchmarking/gain/>.

<sup>11</sup> Prawitt et al. (2009) and Lin et al. (2011) also employed this matching algorithm.

<sup>12</sup> We eliminate firms with missing values for *IASize*, *Experience*, *Education*, and *Certifications*, and set missing values to zero for *Fieldwork QA* and *Financial Focus*. There are no missing values for *IA Contribution*. Eliminating all firm-year observations with missing values for any IAF variables produces materially similar results.

comes from a different firm, alleviating concerns regarding the independence of observations from the same firm. We control for SOX 302's implementation with an indicator variable rather than partitioning the sample because there are not enough observations from the pre-SOX 302 period to test the hypotheses for this portion of the sample. Moreover, while SOX 302 clearly increased management's and the IAF's internal control responsibilities, the passage of SOX 404 had a much larger impact. In particular, Bronson et al. (2011, Table 2) reported that audit delay increased by less than one day from 2001 to 2002, the year in which SOX 302 was implemented as compared with a 12-day increase from 2003 to 2004, the year in which SOX 404 became effective. Ettredge et al. (2006) tested how audit delay differed between the pre-404 and post-404 periods for the same firms and found that the first year implementation of SOX 404 was associated with 34-day increase in audit delay. They concluded that the increase in audit delay was due to Section 404 itself, and not SOX in its entirety (Ettredge et al. 2006, p 3).

### 3.2 Determinants of audit delay

To test H1 and H2, we model audit delay as a function of the quality of the IAF, the IAF's contribution to the financial statement audit, and a set of control variables (Equation 1),

$$\begin{aligned}
 \text{Delay} = & \beta_0 + \beta_1 \text{IAF Quality} + \beta_2 \text{IAF Contribution} & \text{(Eq. 1)} \\
 & + \mu_1 \text{Financial Ind} + \mu_2 \text{Utility} + \mu_3 \text{Size} + \mu_4 \text{Segments} + \mu_5 \text{ROA} \\
 & + \mu_6 \text{Leverage} + \mu_7 \text{Loss} + \mu_8 \text{Extra} + \mu_9 \text{Restate} + \mu_{10} \text{AFee} \\
 & + \mu_{11} \text{EA Tenure} + \mu_{12} \text{NotBusy} + \mu_{13} \text{AC Effectiveness} \\
 & + \mu_{14} \text{Post302\_02} + \mu_{15} \text{Post302\_03} + \varepsilon
 \end{aligned}$$

*Delay* is the number of days between a firm's fiscal year-end and the date of the audit report.<sup>13</sup>

IAF Quality represents either a single comprehensive measure of quality (*IA Quality*), or a set of five variables that capture different individual aspects of quality (*Competence, Objectivity,*

---

<sup>13</sup> The two largest observations for audit delay exceeded the mean by 8.3 and 4.5 standard deviations, respectively. These observations were winsorized to the 99<sup>th</sup> percentile to prevent extreme observations from biasing the results. Results using unwinsorized values do not differ materially from those using the raw values.

*Fieldwork Qual*, *Financial Focus*, and *IA Size*). IAF Contribution is either a single dichotomous variable indicating whether the auditor uses the work of the IAF to complete the financial statement audit (*IA Contribution*), or two dichotomous variables indicating the form of IAF contribution (*DirectAssit* or *IndepWork*). Variables are discussed below and defined in Table 2.

### **3.2.1 Measures of IAF quality**

Professional standards and prior research suggest that measures of IAF quality encompass competence, objectivity, fieldwork quality, fieldwork scope, and investment in internal auditing (AICPA 1991, Gramling et al. 2004; Prawitt et al. 2009, IIA 2009, Lin et al. 2011). Prawitt et al. (2009) were the first to use the GAIN data to develop a comprehensive measure of IAF quality. Building on Prawitt et al. (2009), Lin et al. (2011) focused on measuring the individual components that make up IAF quality, including competence, objectivity, fieldwork quality, audit scope, and investment in the IAF. We draw on Prawitt et al. (2009) and Lin et al. (2011) in selecting one or more GAIN survey items to develop proxies for each component of quality, as well as a single composite quality measure. Where possible, we test the validity of our measures by correlating them with relevant GAIN survey questions.

#### **Five components of IAF quality**

The competence of internal auditing personnel is calculated from four variables, *Experience*, *Education*, *Certification*, and *Training* (SAS 65, AICPA 1991; Prawitt et al. 2009; Lin et al. 2011) (See Appendix A for descriptive statistics). *Experience* is the average number of years of internal and external auditing experience of the audit staff; *Education* is the average number of years of undergraduate and graduate education; *Certification* is the percentage of professional staff members with one or more audit certifications; and *Training* is the average annual hours of training per staff member. As these variables are measured on different scales,

we first standardize each variable to have a mean of zero and a standard deviation of one.

*Competence* is measured by the average of these four standardized variables, and re-centered to be a continuous positive variable.<sup>14</sup> We weight the individual standardized variables equally in computing *Competence* because the extent literature gives little direction on the relative importance of experience, certification, training, and education in assessing competence. For example, Messier and Schnieder's (1988) results indicated that experience was the most important factor, while Gramling and Myers (1997) found that CIA designation was important. Brown (1983) reported that IAF training programs, professional certification, and CPE were key criteria. Lin et al. (2011) found that education level was negatively and significantly associated with the likelihood that a firm reported a material weakness.<sup>15</sup>

In their summary of the internal auditing literature, Gramling et al. (2004) found that external auditors used the reporting relationship for the Chief Audit Executive (CAE) most often to evaluate IAF objectivity. Following Prawitt et al. (2009), Messier et al. (2011), and Prawitt et al. (2011, 2012), we measure IAF objectivity with an indicator variable, *Objectivity*, that equals one if the CAE functionally reports to the audit committee.<sup>16</sup>

---

<sup>14</sup> An alternate method of combining variables measured on different scales is to convert them to dichotomous variables by assigning a value of one to those observations that equal or exceed the median, and 0 to those that do not, and then computing the average. However, information is lost in dichotomizing continuous variables. For example, the median for *Experience* is 8 years, thus the dichotomous measure would treat an IAF with an average experience level of 8 years to be the same as an IAF with an average experience level of 4 years, but different from one with an average experience level of 8.5 years. In robustness tests, *Competence* was measured by dichotomizing the variables to combine them, and the significance level for *Competence* was the same.

<sup>15</sup> To help validate the *Competence* measure, we use Messier et al.'s (2011) finding that IAFs that serve as management training grounds are of lower quality than those that consider internal auditing to be a career position. Consistent with their results, mean and median values of *Competence* are significantly lower for firms that use the IAF as a management training ground.

<sup>16</sup> Lin et al. (2010) used the amount of control-related information the CAE reviews with the audit committee to measure objectivity. We do not use Lin et al.'s measure because more meetings between the CAE and audit committee may be indicative of internal control problems, which would lead to an increase in audit delay. To help validate this measure, we correlated it with a survey question asking respondents whether the CAE meets privately with the audit committee and found that for 90 percent of all observations, CAEs that report to the audit committee also meet privately with the audit committee.

Early studies used the following criteria to evaluate the quality of IAF work performance: management's overall support of the IAF (Clark, et al. 1980), external auditor's satisfaction with previous IAF work, supervision of IAF work, follow-up procedures, and IAF scope (Clark et al. 1980; Brown et al. 1983; and Messier and Schneider 1988). Consistent with this, Lin et al. (2011) found that firms reported fewer material weaknesses when their IAF's used more quality assurance techniques (including supervision) and followed up on previously-identified control problems. They also found evidence that the IAF practice of issuing grades in audit reports, a practice promoted by IIA guidance, helped identify control problems (IIA 2009, 2011).<sup>17</sup>

Following Lin et al. (2011), fieldwork quality (*Fieldwork Qual*) is constructed from four survey questions pertaining to the use of quality assurance practices, one question on follow-up procedures, and one on grading (See Appendix A for questions and descriptive statistics). These are the only survey items that directly relate to fieldwork quality. Questions addressing quality assurance practices have three-point response scales (never, sometimes, always) for each of four different practices (direct supervision, independent working paper review, audit client feedback, and peer review), thus, responses "never", "sometimes", and "always" are coded as zero, one, and two, respectively. The questions for follow-up procedures and grading use two-point response scales (no, yes); responses "no" and "yes" are coded as zero and two, respectively.<sup>18</sup> We acknowledge that combining the six survey questions (four quality assurance practices, one follow-up question, one grading question) requires subjectivity; however, the extant literature provides little direction regarding the manner in which these items should be weighted.

---

<sup>17</sup> A grade is a succinct means of documenting and conveying an opinion on the risk posed for a specific area or system and the IIA provides specific guidance on the practice of grading (IIA 2009). Grading requires the IAF to establish standards and a methodology to support their assessments. PricewaterhouseCoopers (2006) considers it to be a best practice.

<sup>18</sup> Coding "yes" as 1 does not materially affect results.

Moreover, calculating measures from multiple survey items reduces the error associated with any single item.

Messier and Schneider (1988) found that the most important aspect of fieldwork was the extent to which financial reporting activities were included in the scope of IAF fieldwork. The scope of IAF fieldwork is distinct from the quality of fieldwork because it is possible that the IAF can perform low quality audits of many activities related to financial reporting. Accordingly, we measure fieldwork scope with a separate variable. Following Lin et al. (2011), the extent to which IAF activities are relevant to the financial statement audit, *Financial Focus*, is an average of five survey questions that rate the frequency with which the IAF audits financial activities (adequacy of internal accounting controls; accuracy, reliability, and completeness of financial records; impact of changes in accounting rules or regulations; externally-reported interim financial results) and compliance with GAAP (See Appendix A for questions and descriptive statistics). We choose these survey items because they directly address activities that are relevant to the financial statement audit. Prawitt et al. (2009) and Prawitt et. al. (2012) measured fieldwork scope with a survey question that asks respondents to record the percentage of audit staff time devoted to “Financial - auditing annual accounts, financial statements and reports” and denoted, *TimeFin*. As in Lin et al. (2011), we do not use this question to measure scope because the response rate (71 percent) is significantly lower than response rates for other relevant GAIN questions (98-99 percent) in the COMPUSTAT-matched sample. Furthermore, analysis of *TimeFin* and *Financial Focus* suggests that they both measure similar underlying constructs.<sup>19</sup>

---

<sup>19</sup> The correlation of the two variables is 0.42 ( $p < 0.001$ , two-tailed). Mean values for *TimeFin* by response category (never, occasionally, regularly) for four of the five items used to construct *Financial Focus* increase significantly ( $p < 0.001$  to  $p < 0.10$ , one-sided) in moving across the categories from “never” to “regularly.”



Finally, investment in the IAF, *IA Size*, is calculated by taking the natural log of total IAF annual operating costs scaled by total assets (Lin et al. 2011). We use a logarithmic transformation because the ratio of IAF costs to total assets is highly skewed and the untransformed variable is highly correlated with a key control variable, external audit fees, used in tests of the hypotheses.<sup>20</sup>

### Comprehensive measure of quality

We combine the five individual components of IAF quality into a single, comprehensive, continuous measure of IAF quality (*IA Quality*). One challenge to combining the five variables is that *Objectivity* is dichotomous and the remaining variables are continuous. To combine them, we standardize the four continuous variables so that each has a mean of 0 and a standard deviation of one. We assign *Objectivity* a value of negative one if the CAE does not report to audit committee; and one if the CAE does. Thus, having a CAE that does not report to the Audit Committee corresponds to being one standard deviation below the mean on the scales for the other variables. We combine the five variables by taking a simple average of them and adding a constant so that all values are positive.<sup>21</sup>

We weight each of the five components of quality equally because the literature provides little guidance on this subject. Experimental studies assessing the relative importance of competence, fieldwork, and objectivity suggest that the quality of work performance is of

---

<sup>20</sup> Following Prawitt et al. (2009), an industry-adjusted measure of size was also computed. In untabulated tests, the industry-adjusted measure yields materially similar results as our primary measure when used to compute the comprehensive quality measure (Equation 1). However, the industry-adjusted measure is not significantly associated audit delay when included as a separate variable in the regression model.

<sup>21</sup> We also combine the five variables by dichotomizing the four continuous variables based upon whether an observation is above below the median. These variables are added to *Objectivity* to produce an ordinal measure of quality ranging from 0 to 6. Significance levels using the dichotomous approach are highly consistent with the standardized approach. We use the standardized approach in the main tests because information is lost when converting continuous variables to dichotomous variables.

greatest importance (Gramling et al. 2004, p 210). Consistent with this, Lin et al. (2011) found measures of fieldwork quality and scope to be significantly associated with the existence and/or detection of material weaknesses. However, Prawitt et al. (2009), who were the first to develop a comprehensive IAF quality measure, gave the greatest weight to competence.<sup>22</sup>

### 3.2.3 IAF Contribution measures

Following Lin et al. (2011), we measure the IAF's contribution to the financial statement audit with a survey item that asks respondents whether the IAF coordinates audit services with the external auditors. Respondents who affirm that coordination takes place are then asked to specify the method(s) of coordination from the following list (multiple methods are permitted): (1) loan staff to external auditors, (2) perform complete or partial audit of specific locations, products or functions, (3) conduct joint planning sessions, and (4) conduct joint risk or control sessions. Sections 322.23 – 27 of SAS 65 discuss methods of internal-external audit coordination and thus provide guidance for coding this question into variables (AICPA 1991). Coordination methods (1) and (2) refer to IAF audit work that contributes to the completion of the financial statement audit, while coordination methods (3) and (4) are practices used to plan and monitor the audit. Accordingly, the variable, *IA Contribution*, equals one if the IAF uses coordination methods (1) or (2) (192 observations). Conversely, if the IAF *only* coordinates with the external auditors through meetings (methods (3) and/or (4), 75 observations), or the IAF does not coordinate at all with the external auditors (26 observations), *IA Contribution* equals to zero.<sup>23</sup>

---

<sup>22</sup> Prawitt et al. (2009) equally-weighted three different components of competence (*Experience*, *Certifications*, and *Training*), one measure of objectivity, one measure of scope, and one measure of investment. In robustness tests, we used this approach and the coefficient on this quality measure dropped slightly in one-tailed significance from 0.01 to 0.05 when compared to the measure presented in Table 5 for tests of H1.

<sup>23</sup> SAS 65 (Section 322.23), "Coordination of the Audit Work With Internal Auditors," describes practices that external auditors commonly use to identify risks, plan the audit, and monitor progress, including, "holding periodic meetings, scheduling audit work, providing access to internal auditors' working papers, reviewing audit reports, and discussing possible accounting and auditing issues" (AICPA, 1991). Accordingly, we assume that coordination

Appendix B contains the exact wording of the survey question and shows how responses are coded.

We further investigate whether either of the first two practices individually affects audit delay by creating separate indicator variables for them. According to Section 322.27 of SAS 65, “Using Internal Auditors to Provide Direct Assistance to the Auditor,” direct assistance relates to work the external auditor “specifically requests the internal auditors to perform to complete some aspect of the (external) auditor’s work” (AICPA 1991). External auditors are required to supervise, review, evaluate and test such work. We interpret coordination method (1) “Loan staff to External Auditors” as providing direct assistance to the external auditor, and set the variable *DirectAssist* equal to one if the IAF loans staff to the external auditor, and zero otherwise. SAS 65 Sections 322.24-322.26, “Evaluating and Testing the Effectiveness of Internal Auditors’ Work,” provide guidance for evaluating independently performed IAF work that will significantly affect the nature, timing and extent of the EA procedures (AICPA 1991). Coordination method (2) “Perform complete or partial audits of specific Locations, Products, or Functions” corresponds to these sections of the standard; and, we set the variable, *IndepWork*, equal to one if the IAF uses this method of coordination; and zero, otherwise. We acknowledge that IAF audits of specific locations, products or functions could be performed under the direction of the external auditor; however, this coordination method was presented as an option distinct from “loan staff to external auditor.” Thus respondents likely chose method (1), “loan staff”, to indicate that staff worked under the direction of the external auditor and method (2),

---

methods (3) and (4) (conducting joint planning and joint risk or control sessions) address this type of internal-external auditor coordination and that the external auditor did not rely on IAF work if methods (3) and (4) were the *only* means of internal-external auditor coordination. Validation tests discussed below are consistent with this assumption.

“perform complete, ...”, to indicate that the IAF performed work on which the external auditor relied, but did not work as direct assistants.

The survey question we use to measure IAF contribution method differs from that used by Prawitt et al. (2011) and Messier et al. (2011). They used a survey question that asks respondents to allocate IAF staff time across 15 different activities. Two of these activities, time devoted to “external audit assistance” and “auditing annual accounts, financial statements and reports,” were used as proxies for direct assistance (*TimeEA*) and independently performed work (*TimeF*), respectively. We did not use *TimeEA* and *TimeF* in our main tests for two reasons. First, the question used to form these variables does not directly enquire about different methods of internal-external coordination, rather it asks about the relative amount of time IAF staff devote to various activities. It is not clear whether respondents interpreted time devoted to “external audit assistance” as *only* referring to direct assistance and not referring to all forms of external auditor assistance. Conversely, it seems that the practice of loaning IAF staff to the external auditor could only be interpreted as providing direct assistance. Second, the response rate for the time allocation question (71%) was significantly ( $p < 0.001$ , two-tailed) lower than the response rates for other relevant GAIN questions (98-99%) in the COMPUSTAT-matched sample. This suggests that respondents may not have understood the question or that they did not have the data to accurately answer the question.

In un-tabulated tests, we compared mean and median values of *TimeEA* for different methods of IAF contribution. Mean and median values for *TimeEA* were significantly higher ( $p < 0.001$ , two-tailed) for IAFs that only loan staff (mean = 3.11, median = 2) and IAFs that only audit specific locations, products, or functions (mean = 3.82, median = 2.5) than for IAFs that do not coordinate at all with the external auditor, or coordinated only by meeting with the external

auditor (mean = 0.59, median = 0). This suggests that just meeting with the external auditor does not constitute the provision of any kind of assistance to the external auditor. *TimeEA* does not differ significantly by form of IAF contribution (*DirectAssist* or *IndepWork*). This could indicate that *TimeEA* encompasses both forms of IAF contribution. Alternatively, it could indicate that *DirectAssist* and *IndepWork* are both measuring direct assistance. However, we argue that the former is more likely to be the case, given the wording of the questions.

To help validate *IndepWork*, we compared mean and median values for *TimeF* and *Financial Focus* across different contribution methods. IAFs that spend more time auditing financial items and audit more activities related to financial reporting are more likely to perform work that will be useful to the external auditor. Consistent with this expectation, *TimeF* and *Financial Focus* are both significantly larger ( $p = 0.07, 0.004$ , one-tailed, respectively) for IAFs that only coordinate with the external auditor by performing audits of specific locations, products, and functions (*IndepWork* = 1 and *DirectAssist* = 0) than for IAFs that only loan staff to the EA (*DirectAssist* = 1 and *IndepWork* = 0).

### **3.2.4 Control variables**

Extant research has identified several factors, in addition to the IAF, that likely affect audit delay including: industry, size, complexity, financial condition, losses, extraordinary items, restatements, auditor characteristics, qualified audit opinions, and material weaknesses (Ashton et al. 1987; Ashton et al. 1989; Bamber et al. 1993; Kinney and McDaniel 1993; Schwartz and Soo 1996; Leventis et al. 2005; and Ettredge et al. 2006). Control variable selection directly follows Ettredge et al.'s (2006) recent and comprehensive model of audit delay, with minor alterations.<sup>24</sup> Consistent with prior studies, an indicator variable for financial service firms

---

<sup>24</sup> Ettredge et al. (2006) found that audit delay was significantly shorter for firms in the high technology sector. We do not control for high technology firms because there are only 25 such observations in the entire sample. Our

*(Financial Ind)* is included in the model.<sup>25</sup> We also control for observations from the utility industry (*Utility*) because utilities are subject to significant regulation, which likely affects the objectives and responsibilities of the IAF. Moreover, 21 percent of sample observations come from utilities and inclusion of an indicator variable ensures that these observations do not bias the results. We control for the effects of size and complexity with the natural log of total assets (*Size*) and the number of different segments in which the firm operates (*Segments*). Return on assets (*ROA*) and leverage (*Leverage*) proxy for financial condition. Indicator variables are included to identify observations with negative earnings (*Loss*) and extraordinary items (*Extra*). Quarterly and yearend restatements pertaining to each firm-year observation were obtained by searching the Audit Analytics database for the years 2000-2008. The indicator variable, *Restatement*, identifies firm-years observations for which quarterly or yearend earnings were restated. Following Ettredge et al. (2006), we include audit fees scaled by total assets (*EA Fee*) in the model to control for potential risk factors that are not addressed by other control variables. The indicator variable, *NotBusy*, equals one if the fiscal yearend falls between January 31 and December 1; and, zero otherwise; and, external auditor tenure (*EA Tenure*) controls for the external auditor's experience with the client firm.

We also control for audit committee effectiveness because firms with more effective audit committees potentially require less audit effort and may also tend to invest more in IAF quality. Following Prawitt et al. (2009) and Prawitt et al. (2011) audit committee effectiveness

---

model also does not directly control for auditor changes because there are only 25 auditor changes in the sample. Instead, auditor tenure (number of years the same auditor has audited the firm) is used to address differences in audit delay attributable a new external auditor's learning curve. The model does not include controls for modified opinions or internal control deficiencies because only three firms received a modified opinion of any type and four firms disclosed internal control deficiencies under SOX 302. Excluding these seven observations from the analyses does not materially affect the size or significance of the coefficients in tests of the hypotheses.

<sup>25</sup> Removing financial services firm from the sample does not materially affect the significance of the quality or contribution measures, nor does it impact the conclusions.

(*AC Effectiveness*) is measured using a GAIN survey question that asks respondents which applicable Blue Ribbon Committee recommendations that have been implemented by the firm. According to Abbott et al. (2004, 70), the Blue Ribbon Committee recommendations “represent an organized set of best practices that are expected to result in more effective audit committee oversight of the financial reporting process.”

Finally, we include variables to control for year and SOX 302’s implementation. As shown in Panel B of Table 1, 75 observations have fiscal yearends that predate SOX 302’s effective date, August 29, 2002. The indicator variable, *Post302\_02*, identifies firms with fiscal yearends between August 29, 2002 and December 31, 2002, inclusive; and, *Post302\_03* identifies firms with fiscal yearends between January 1, 2002 and November 14, 2004, inclusive. Observations within each of these time periods (pre-302, *Post302\_02*, *Post302\_03*) come from different firms; therefore, inclusion of these indicator variables controls for independence of observations from the same firm in tests that use the full sample.

### 3.3 Determinants of IAF contribution

H3 predicts that IAF contribution is determined by IAF quality, audit committee effectiveness, material misstatement risk, and the availability of external and internal audit resources. H3 is tested using the model specified in Equation 2.

$$\text{Log} \frac{\text{Pr}(\text{IAF Contribution}=1)}{1-\text{Pr}(\text{IAF Contribution}=1)} = \gamma_0 + \gamma_1 \text{IA Quality} + \gamma_2 \text{AC Effectiveness} + \gamma_3 \text{Restatement} + \gamma_4 \text{NotBusy} + \gamma_5 \text{Post302\_02} + \gamma_5 \text{Post302\_03} + \eta_1 \text{FinInd} + \eta_2 \text{Utility} + \eta_3 \text{Size} + \eta_4 \text{Loss} + \eta_5 \text{Contract} + \varepsilon \quad (2)$$

All variables have been defined previously. IAF Contribution is one of the three contribution measures discussed previously, *IA Contribution*, *DirectAssist*, or *IndepWork*. *IA Quality* measures IAF quality, *AC Effectiveness* measures audit committee effectiveness, and *Restatement* indicates whether quarterly or annual financial statements were subsequently

restated. The variable, *NotBusy*, proxies for the availability of external auditing resources, which is expected to be higher outside of the busy season. The variables *Post 302\_02* and *Post 320\_03* proxy for the availability of internal auditing resources, which likely decreased with the implementation of SOX 302. H3d predicts that all three of these indicator variables will be negatively associated with IAF contribution.

We control for industry (*Financial* and *Utility*), size (*Size*), financial condition (*Loss*), and the extent to which internal audit work is outsourced to third parties. Variation in industry standards and complexity may affect external auditors' reliance decision. Similarly, *loss* controls for financial condition, which likely affects both risk and IAF availability. Outsourcing arrangements are potentially related to both the quality of the IAF and the extent to which external auditors rely on IAF work, thus we include a variable that addresses outsourcing, *Outsource* (Prawitt et al. 2012). *Outsource* is measured with a GAIN question that ask respondents to indicate the extent to which general audit and IT work is outsourced to third parties.

## **4. Results**

### **4.1. Descriptive statistics**

Table 3 contains descriptive statistics for the full sample of 293 firm-years, and a subsample of 189 observations from the years 2000-2002. Mean (median) audit delay is 41.9 (39) days, which is considerably smaller than the 50.3 days reported in Ettredge et al. (2006) for their 2003 sample of firms. This likely reflects the differences in size and profitability of the samples. In particular, our sample firms are larger and exhibit fewer losses than those in Ettredge et al.'s sample; audit delay tends to be shorter for larger firms and those reporting positive



earnings relative to smaller firms and those reporting losses (e.g., Ashton et al. 1989; Bamber et al. 1993; Ettredge et al. 2006).

Table 4 provides Pearson correlation coefficients for the independent variables in the models. Correlations between investment in the IAF (*IA Size*) and *Financial Ind* ( $r = -0.438$ ), *Size* ( $r = -0.653$ ), and *EA Fee* ( $r = 0.635$ ) are large and significant ( $p < 0.01$ ). This inhibits ability to isolate the effective IAF investment on audit delay. None of the correlations for the remaining measures of IAF quality or IAF contribution is large enough to confound the results. Contribution measures (*DirectAssist*, *IndepWork*) and availability measures that identify time periods (*Post 302\_02*, and *Post 302\_03*) are significantly correlated with each other by construction.

## **4.2. Multivariate results**

### 4.2.1. Determinants of audit delay

Table 5 reports the results of ordinary least squares (OLS) regressions of audit delay on measures of IAF quality, IAF contribution to the financial statement audit, and a set of control variables. The first three models use the full sample of 293 firm-years. Adjusted r-squared values for all three models is approximately 0.21 and the F-statistics are highly significant ( $p < 0.001$ ). Consistent with H1, audit delay is negatively and significantly associated with the comprehensive quality measures ( $p < 0.01$ , one-tailed) in Models 1 and 3. The coefficient for *IA Quality* in Model 1 indicates that a one-unit increase in quality corresponds to a 7.0-day reduction in audit delay. Given that the standard deviation for *IA Quality* is 0.44, a one-standard deviation improvement in IAF quality is associated with an approximate 3.1-day reduction in audit delay. The size of this reduction is material as earnings announcement dates *preceded* audit completion dates by an average of 7.4 days for comparable firms during the sample period. A

one standard deviation improvement in *IA Quality* reduces this difference by almost 50 percent, and thus, lowers the likelihood that the earnings number disclosed in a PEA is incorrect.

Model 2 suggests that the negative relation between the comprehensive quality measure and delay is driven by the individual quality components, *Competence*, *Fieldwork Qual*, and *IA Size*, which have significantly ( $p < 0.01$  to  $p < 0.10$ , one-tailed) negative coefficients. These variables are measured on different scales; therefore, we express their impact on audit delay using standard deviations for ease of comparison. One-standard deviation increases in *Competence*, *Fieldwork Qual*, and *IA Size* correspond to audit delay reductions of 2.5, 2.2, and 2.4 days, respectively. The coefficients on *Objectivity* and *Financial Focus* are not significant, although the negative sign for *Objectivity* is consistent with H1.

Models 4-8 use a subsample of 189 observations that predate SOX 404's implementation by at least 22 months. Model 6 uses backward stepwise estimation because several independent variables are not significant in Models 4 and 5 and the sample size is relatively small. The high removal criterion of 0.50 ensures that even variables with marginal explanatory power are not excluded from the model. Overall, the explanatory power of the models is greater (adjusted R-square ranges from 0.24 to 0.26) in the subsample, and the significance levels and sizes of the coefficients for the quality measures are generally larger.<sup>26</sup> A one-unit (one standard deviation) increase in *IA Quality* corresponds to an 8.9-day (3.9-day) reduction in audit delay for the subsample. One-standard deviation increases in the *Competence* and *Fieldwork Qual* correspond to audit delay reductions of 2.7 and 2.4 days, respectively. Also, the coefficient on *Objectivity* is negative and significant ( $p < 0.10$ , one-tailed) in Models 5 and 6, indicating that audit delay is 3.7 days if the CAE reports to the audit committee rather than a chief officer within the firm.

---

<sup>26</sup> Seemingly unrelated estimation was used to compare the coefficients on the quality measures in Models 1 and 2 to those in Models 4 and 5. Results show that coefficients in the subsample do not significantly differ from those in the full sample.

Investment in the IAF, which is significant in the full sample, drops from significance in Model 5, but is significant in the stepwise regression. Consistent with the full sample result, *Financial Focus* is not significant in the subsample.

Our findings suggest that the quality of the IAF affects control risk, and that external auditors appropriately assess control risk and accordingly adjust the nature and extent of audit procedures in a manner consistent with the audit risk model. Prior tests of the audit risk model provide limited evidence of a negative relationship between control risk and auditor effort. Pre-SOX studies found no relation between internal control reliance and audit effort, as measured by audit fees or hours (O'Keefe et al. 1994; Stein et al. 1994; Hackenbrack and Knechel 1997; Felix et al., 2001). Conversely, Hogan and Wilkins (2008) used data from 2003-2004 and found that external auditors exerted more effort when they audited firms with weak ICFR, as measured by internal control deficiencies reported under SOX 302 of SOX. The consistency of our findings with those of Hogan and Wilkins supports their contention that external auditors became more sensitive to risk after the audit failures of the early 2000s (Hogan and Wilkins 2008, 222). Our results also have implications for practice because they suggest that managers can potentially improve reporting timeliness by raising the competence level of IAF staff, improving fieldwork quality, and making greater investments in the IAF.

We H2 using all three contribution measures (*IA Contribution*, *DirectAssist* and *IndepWork*). As predicted, audit delays are approximately 4.7 days shorter ( $p < 0.05$ , one-tailed) in the full sample and 8.2 days shorter ( $p < 0.001$ , one-tailed) in the 2000-2002 subsample for firms with IAF's that contribute to the financial statement audit compared with those that do not (Models 1 and 4). Results in Models 3 and 7 indicate that the relation between IAF contribution and audit delay varies with the method of contribution. Consistent with H2, audit delays are

approximately 4 days shorter ( $p < 0.05$ , one-tailed) in the full sample and 6.6 days shorter ( $p < 0.001$ , one-tailed) in the subsample if the IAF contributes to the external audit by independently performing audit work. While the coefficients on *DirectAssist* are consistent with predictions, they are not significant. The nature of the internal-external auditor relationship provides a potential explanation as to why *DirectAssist* is not significantly associated with delay. When the IAF provides direct assistance, an internal auditor is performing work in place of an external audit staff member. In such cases, the external auditor must supervise the internal auditor, and IAF work is subject to more scrutiny and testing than work performed by external audit staffers. Consequently, substituting an internal auditor for an external auditor may not significantly reduce the time it takes to complete the audit. Another possible explanation is that much of the independent IAF work is performed throughout the year, rather than at yearend. Thus, reliance on this work prevents the external auditor from having to perform similar procedures at yearend, when resources are constrained. Conversely, the practice of loaning staff likely takes place when the external auditor is onsite at yearend performing the financial statement audit. A final reason the results for *DirectAssist* do not support H2 may arise from the sample. There are 24 observations from IAFs that *only* loan staff to the external auditors; therefore, it is difficult to isolate the effects of IAF contribution arising from direct assistance from those arising from independently performed IAF work.

As with the coordination measures, the size and significance levels of the contribution measures are larger in the subsample of observations from 2000-2002. Seemingly unrelated estimation (SUE) indicates that the absolute values of the coefficients for *IA Contribution* and *IndepWork* in the subsample (Models 4 and 7, respectively) are significantly ( $p = 0.021$  and  $p = 0.096$ , two-tailed) larger than the corresponding coefficients for the full sample (Models 1 and 3,

respectively). This result suggests that the SOX 404's impending implementation reduced the extent to which internal-external auditor coordination affected audit delay, as both client and external audit firms adjusted work processes to meet the new regulation.

The findings are relevant for research that examines the effect of the IAF's contribution on audit fees and hours (Stein et al. 1994; Felix et al. 2001; Prawitt et al. 2011). The results are consistent with Felix et al. (2001), whose comprehensive contribution measure was negatively associated with audit fees; however, they differ from Prawitt et al. (2011), who found that direct assistance was associated with a reduction in fees, while independently performed IAF work was not. The contrast in results potentially arises from differences in the choice of survey questions used to measure different forms of IAF contribution, as discussed in Section 3.2.3. It may also be attributable to differences between the underlying constructs that fees and delay measure. Audit fees reflect only external auditor effort, while delay reflects total audit effort (both internal and external). Thus, direct assistance may indeed reduce external audit fees, as relatively low-cost IAF hours are substituted for more expensive external auditor hours. However, as discussed previously, the substitution of internal auditor hours for external audit hours does not necessarily reduce the overall amount of external and internal audit time required to complete the audit.

Results for the control variables are generally consistent with prior research. The coefficient for the financial industry indicator is negative, as expected, but not significant. Audit delay is significantly ( $p < 0.01$ , two-tailed) longer for utilities in the full sample, potentially reflecting the complex regulatory requirements of this industry. Audit delay is also significantly longer for more highly leveraged firms ( $p < 0.05$ , two-tailed) and loss firms ( $p < 0.10$ , two-tailed) in the full sample; however, as in Ettredge et al. (2004), *ROA* is not significantly associated with delay. As expected, external auditor tenure is significantly ( $p < 0.001$ , two-tailed)

and negatively associated with delay, reflecting the steep learning curve external auditors face with new clients. Consistent with the audit risk model, audit delay is significantly ( $p < 0.05$ , two-tailed) shorter for firms with more effective audit committees in the full sample. The insignificant coefficients for *Post302\_02* suggest that the implementation of SOX 302 had little effect on audit delay. However, audit delays were significantly longer in the 22-month period immediately preceding the implementation of SOX 404 (January 1, 2003 to November 14, 2004) when compared with the pre-SOX 302 period.<sup>27</sup>

As expected, audit fees are a highly significant ( $p < 0.01$ , two-tailed) determinant of audit delay across all models. The result that IAF quality and contribution are significant, even after controlling for audit fees, indicates that the effects of IAF contribution are not perfectly priced into audit fees. One potential explanation for this result is that a significant portion of the audit fee is set prior to the audit, with minimal adjustments made after the audit. Thus, differences between actual hours worked and budgeted hours that arise from IAF quality and contribution during the course of the audit are not perfectly reflected in the fee. However, such differences do appear to affect the number of days required to complete the audit.

The homogeneity of sample firms and the time period of the sample potentially limit the generalizability of our results. However, we expect that the negative relations between audit delay and both IA quality and contribution would be even larger in a more heterogeneous sample drawn from a more stable time period. The sample consists of very large firms that have relatively sophisticated IAFs and exhibit relatively little variation in audit delay. Audit delay for

---

<sup>27</sup> The filing deadline for sample firms was reduced from 90 days to 75 days on December 15, 2003. Thus, 10 observations from the *Post302\_03* time period (January 1, 2003 to November 15, 2004) were not subject to the 75-day filing deadline. Removing these 10 observations from the sample or grouping observations by filing deadlines does not materially affect the results or conclusions. The finding that audit delay increased significantly even though filing deadlines were reduced by 15 days suggests that increases in yearend audit work in preparation for SOX 404 had a greater effect on audit completion times than the reduction in filing deadlines.

this sample is an average of 5.7 days shorter than that reported for Bronson et al.'s (2011) sample of accelerated filers over the comparable time period. Given that the effects of IAF quality and contribution are material and significant even in this homogenous sample, we expect these effects would be even larger in a broader sample of firms exhibiting greater variation in size, IAF quality, contribution, and audit delay. Sample observations are drawn from the four-year period prior to SOX 404's implementation. Clearly this was a period of great change for both internal and external auditors. However, again, if the analysis produced significant results during a period in flux, we expect the results would be even stronger in a more stable period. Consistent with this, results in Table 5 for the 2000-2002 subsample are more robust than results in the full sample. Moreover, the results indicate that IAF quality and contribution enabled the financial statement audit to be completed in less time during a period of relatively low attestation requirements (pre-SOX 404). The more rigorous attestation requirements of SOX 404 expanded the IAF's potential to contribute to the financial reporting process (Gramling et al. 2004, 196), and therefore, if anything, should increase the impact of IAF quality and contribution on audit delay.

#### 4.2.2 Determinants of IAF contribution

Table 6 reports the results of logistic regressions of IAF contribution measures on proxies for IAF quality, restatements, audit committee effectiveness, and the availability of external and internal audit resources. The first three models use the full sample of 293 firm-years; and, the last three use a subsample of 189 observations that predate SOX 404's implementation by at least 22 months. Explanatory power for all models ranges from 0.077 to 0.106; and, the chi-square statistics are significant ( $p < 0.05$ ). IAF quality is positively and significantly ( $p < 0.01$ , one-tailed) associated with contribution when it takes the form of independently performed audit

work, but negatively and significantly ( $p < 0.01$ , two-tailed) associated with IAF contribution when it takes the form of direct assistance. This result suggests that higher quality internal auditors can independently perform work on which the external auditors can rely, while lower quality internal auditors can only assist in the financial statement audit when closely supervised by the external auditor. The results do not support H3b, which predicts a negative relation between restatements and contribution. Consistent with H3c, *AC Effectiveness* is positively and significantly ( $p < 0.01$ , one-tailed) associated with *IA Contribution* and *IndepWork*. *AC Effectiveness* is also positively associated with *DirectAssist*, but this association is not statistically significant ( $p = 0.105$ , one-tailed). Finally, the results show some support for predictions regarding external and internal auditor availability, but only when the IAF contributes to the financial statement by working independently. The negative and significant ( $p < 0.10$ , one-tailed) coefficients for *NotBusy* in the *IA Contribution* models indicate that external auditors are more likely to use work independently performed by the IAF for financial statement audits conducted during the busy season, when external auditing resources are constrained. Coefficients for *Post302\_302* are not significant; however, consistent with predictions, coefficients for *Post 302\_03* are negative and significant ( $p < 0.10$ , one-tailed) in the *IndepWork* regression. The results suggest that managers only began to significantly incorporate the IAF into assurance processes in preparation for SOX 404; therefore, IAF availability did not decline until just prior to SOX 404's effective date. Overall, results in Table 6 suggest that the nature of the IAF's contribution to the financial statement audit (direct assistance versus independent work) is quite important in identifying factors that influence contribution.

The results extend those of Felix et al. (2001). Their comprehensive measure of IAF quality was positively and significantly associated with IAF quality, while our results suggest



that this relation holds only when contribution takes the form of independently performed IAF work. Results investigating resource availability are consistent with those of Felix et al. (2001), but they are of lower significance and only hold for independently performed IAF work. Felix et al. (2001) found that that inherent risk moderates that the positive relation between availability and contribution and the results for *AC Effectiveness* suggest that control risk also directly affects contribution.

### **4.3. Extensions**

#### 4.3.1. Robustness tests

As in most cross-sectional studies, it is difficult to completely eliminate the possibility that the results have been confounded by endogeneity. Endogeneity may arise due to (1) correlated omitted variables (*i.e.*, there may be one or more unobserved variables, such as accounting system quality, that are correlated with both internal audit quality and the time it takes to complete the external audit), and (2) simultaneity (*i.e.*, internal audit quality and the audit completion date are simultaneously determined). We addressed the first concern in the models contained in Table 5 by including *Restatements* as a proxy for accounting system quality and *AC Effectiveness* to control for governance practices. Two alternative proxies for governance, the Gompers governance index and the extent of institutional ownership, were also included in un-tabulated robustness tests, but neither measure was significant. It is unlikely that simultaneity confounds the results because management and the audit committee are in charge of setting IAF quality and the external auditor controls audit delay. The external auditor is responsible for the nature and timing of audit procedures, and is legally liable if audit work does not support the audit opinion. Thus, the ability of managers and audit committee directors to directly influence the time it takes to complete the financial statement is limited. In un-tabulated

robustness tests, we addressed the potential effects of endogeneity using a two-stage-least squares (2SLS) model. Similar to Prawitt et al. (2009), IAF quality was modeled as a function of average quality for the industry, cash flow from operations, inventory, assets, external audit fees, audit committee effectiveness, and indicator variables designating different time periods. Industry quality, cash flows, and inventory served as instrumental variables, and the model predicting IAF quality was significant in both the full sample and subsample, with explanatory powers of 0.118 and 0.072, respectively. Delay was then regressed on the predicted value of IAF Quality obtained from the first stage regression, *IA Contribution*, and the control variables in Equation (1). In both samples, the predicted values for IAF quality were positive and significant ( $p < 0.01$  and  $p < 0.05$ , one-tailed). All other variables in the model had materially similar coefficients and significance levels.

An industry-adjusted measure of audit delay was also used in tests of H1 because prior research found that industry was a significant determinant of audit delay and our sample size constrains the number of control variables that can be included in the model. Accordingly, we also computed audit delay for each observation relative to all firms in the same two-digit SIC code. The direct of the coefficients for *IA Quality* and the contribution measures were consistent with predictions and significance levels were comparable the results in Table 5.

#### 4.3.2 Mediating effects of IAF contribution on quality

Taken together, hypotheses H1, H2, and H3a propose that IAF quality has both direct and indirect effects on audit delay, as depicted in Figure 1. H1 posits that IAF quality directly reduces audit delay by reducing control risk. H3a and H2 predict that IAF quality is positively associated with the likelihood that external auditors use IAF work, which in turn, is negatively associated with the number of days required to complete the audit. Results in Tables 5 and 6 that

use *IndepWork* to measure contribution are consistent with the premise. Accordingly, we use a path model with maximum likelihood estimation to calculate the indirect effect of *IA Quality* on *Delay*, via *IndepWork* (Table 7).<sup>28</sup> The indirect effect is the product of the coefficient for *IA Quality* (0.191) in the model predicting *IndepWork* and the coefficient for *IndepWork* (-6.672) in the model predicting delay (Table 7). The indirect effect is significant, but relatively small (-0.776,  $p < 0.05$ , one-tailed), and thus indicates that reductions in audit delay associated with higher levels of IAF quality are primarily driven by stronger ICFR. The indirect effect of IAF Quality on audit delay via *IndepWork* is also negative and significant in the 2000-2002 subsample of firms (-1.009,  $p < 0.10$ , one-tailed), although complete results are not included in the tables. A natural extension of this study would be an investigation of whether the significant negative relations between contribution and delay are increasing in the quality of the IAF. Specifically, if audit delay is decreasing in IAF contribution, then a stronger IAF may produce greater reductions in audit delay relative to a weaker IAF. However, we are unable to conduct this analysis because correlations between interaction terms (*IA Quality\*IA Contribution* and *IA Quality\*IndepWork*) and the individual contribution measures (*IA Contribution* and *IndepWork*) are too large ( $r = 0.87$  and  $0.91$ ) to obtain reliable coefficients.

## 5. Conclusion

This study examines the role that the internal audit function (IAF) plays in the timeliness of financial reporting by investigating whether measures of IAF quality and the IAF's contribution to the financial statement audit are associated with audit delay. Results indicate that

---

<sup>28</sup> The coefficients from the logistic regression predicting the likelihood that *IndepWork* = 1 cannot be used to calculate the indirect effects (Table 6, Model 3). Maximum likelihood estimation produces coefficients that differ from the logistic regression in Table 6, but can be used to calculate indirect effects. Coefficients from the maximum likelihood estimation (MLE) of the direct effect of *IA Quality* on *Delay* in Table 7 are identical to those in the OLS regression in Model 3 of Table 5. Standard error calculations for MLE differ slightly from those produced by OLS regression, but the differences do not materially affect significance levels.

firms with higher quality IAFs experience significantly shorter audit delays: a one standard deviation increase in our comprehensive measure of IAF quality is associated with a 3.1-to-3.9-day reduction in audit delay, depending on sample period. The negative relation between IAF quality and audit delay is primarily driven by the competence of internal audit staff and the quality of their fieldwork. IAF investment and objectivity are also negatively associated with audit delay, but significance levels are sensitive to sample period. Contrary to predictions, the degree to which the IAF audits financial activities is not significantly associated with delay. Audit delay is also significantly shorter (4.7 to 8.2 days, depending on sample period) when the external auditor uses IAF work to complete the audit. This reduction is largely attributable to independently performed IAF work, and not direct assistance. The magnitudes of the aforementioned reductions in audit delay are economically significant, given that accelerated filers released earnings an average of 7.4 days prior to the audit completion date during our sample period.

This study also provides evidence on the determinants of internal audit contribution. IAF quality is significantly and positively (negatively) associated with contribution when it takes the form of independently performed audit work (direct assistance). This suggests that higher quality internal auditors can independently perform work for use in the financial statement audit, while lower quality internal auditors can only assist in the audit when closely supervised by the external auditor. Audit committee effectiveness, is positively and significantly associated with both methods of contribution, consistent with the expectation that effective audit committees lower control risk. As predicted, the likelihood that external auditor use is increasing (decreasing) in our proxies for internal (external) auditor availability, suggesting that resource availability affects the contribution decision.

As the first study to provide empirical evidence that both IAF quality and the IAF's contribution to the financial statement audit affect audit delay, this research makes several contributions to the literature. In particular, we extend studies that investigate determinants of audit delay, and thereby identify factors associated with the timeliness, and potentially the quality, of accounting information. The use of audit delay to measure audit effort compliments prior studies that use audit fees and hours to investigate the relation between IAF contribution and audit effort (Stein et al. 1994; Felix et al. 2001 and Prawitt et al. 2011). The results suggest that the nature of the IAF's contribution to the financial statement audit (independent work versus direct) is an important factor in understanding how IAF contribution influences the financial statement audit and in external auditors' decisions to use the work of the IAF. Finally, this research builds upon prior work that uses the GAIN database to further our understanding of the IAF's role throughout the financial reporting process (Prawitt et al. 2009, Lin et al. 2011, Prawitt et al. 2011).

The findings have important implications for managers and audit committee directors who structure the IAF, and for both managers/directors and external auditors who together determine the extent of the IAF's contribution to the financial statement audit. The results show mixed support for recent PCAOB guidance contending that external auditors can improve audit efficiency by making more extensive use of work performed by others, and thus indicate a need for more research that investigates the nature of the IAF's contribution (PCAOB 2005, 2007a, 2007b). In particular, studies could better distinguish between the different methods by which internal audit work contributes to the completion of the financial statement audit. Finally, this research should be of interest to regulators who set reporting deadlines.

This study is subject to several limitations. Most notably, the small size and homogeneity of our sample, combined with the large number of control variables, lowers the power of our statistical tests. In particular, models predicting IAF contribution have low explanatory power. Furthermore, large firms with relatively sophisticated IAFs and relatively little variation in audit delay tend to participate in the GAIN survey. While this limits our ability to generalize findings to firms that did not respond to the GAIN survey, we expect that the material negative relations between audit delay and both IA quality and contribution found in the current sample would be even larger in a more heterogeneous sample. Relatedly, few IAFs in the sample only contribute to the financial statement audit by providing direct assistance to the external auditor; therefore, it is difficult to isolate the effects of direct assistance from those of independently performed work. Another concern with this study is the pre-SOX 404 sample period, which was a time of significant change for both internal and external auditors. However, given that the analyses produced significant results even during this transitional period, we expect the results would be even stronger for a more stable period. Additionally, the rigorous attestation requirements of SOX 404 expanded the IAF's potential to contribute to the financial reporting process (Gramling et al. 2004 p. 196), and therefore, if anything, should increase the impact of IAF quality and contribution on audit delay in the post-SOX 404 period. Finally, it is possible that our results are confounded by endogeneity. While it is difficult to completely eliminate this concern, inclusion of controls for accounting system reliability and governance practices and results from a two-stage-least-squares regression indicate that endogeneity is not likely to be a significant problem. Despite these limitations, this study provides new evidence on the IAF's role in the financial statement audit and identifies areas for future research.

## REFERENCES

- Abbott, L. J., Y. Park, and S. Parker. 2000. The effects of audit committee activity and independence on corporate fraud. *Managerial Finance* 26(11): 55-67.
- \_\_\_\_\_, S. Parker, and G. F. Peters and K. 2004. Audit committee characteristics and restatements. *Auditing: A Journal of Practice & Theory* 23(1): 69-87.
- Adams, M., M. Sherris, and M. Hossain. 1997. The determinants of external audit costs in the New Zealand life insurance industry. *Journal of International Financial Management* 8(1): 69-86.
- American Institute of Certified Public Accountants (AICPA). 1983. Statement on Auditing Standards No. 47: Audit risk and materiality in conducting an audit. New York.
- \_\_\_\_\_. 1991. Statement on Auditing Standards No. 65: The auditor's consideration of the internal audit Function in an audit of financial statements. New York.
- Anderson, T., and D. Zeghal. 1994. The pricing of audit services: Further evidence from the Canadian market. *Accounting & Business Research* 24 (95): 195-207.
- Ashton, R. H., P. R. Graul, and J. D. Newton. 1989. Audit delay and the timeliness of corporate reporting. *Contemporary Accounting Research* 5(2): 657-673.
- Ashton, R. H., J. J. Willingham, and R. K. Elliott. 1987. An empirical analysis of audit delay. *Journal of Accounting Research*. 25(2): 275-292.
- Bamber, M. E., L. S. Bamber, and M. P. Schoderbek. 1993. Audit structure and other determinants of audit report lag: an empirical analysis. *Auditing: A Journal of Theory & Practice* 25 (2):1-23.
- Bronson, S. N., C. E. Hogan, M. F. Johnson, and K. Ramesh. 2011. The unintended consequences of PCAOB auditing Standard Nos. 2 and 3 on the reliability of preliminary earnings releases. *Journal of Accounting and Economics* 52(1-2): 95-114.
- Chambers, A. E. and S. H. Penman. 1984. Timeliness of Reporting and the Stock Price Reaction to Earnings Announcements. *Journal of Accounting Research* 22(1): 21-47.
- Chung, D. Y., and W. D. Lindsay. 1988. The pricing of audit services: The Canadian perspective. *Contemporary Accounting Research*. 5(1): 19-46.
- Ettredge, M. L., C. Li, and L. Sun. 2006. The Impact of SOX Section 404 Internal Control Quality Assessment on Audit Delay in the SOX Era. *Auditing: A Journal of Theory & Practice* 25 (2):1-23.

- Felix, W. L., A. A. Gramling, and M. J. Maletta. 2001. The contribution of internal audit as a determinant of external audit fees and factors affecting this contribution. *Journal of Accounting Research*. 39(3): 513-534.
- Fogelman, S. L., B. H. Peterson, W. G. Heninger, and M. B. Romney. 2007. New SEC interpretative guidance and AS5 give companies and auditors a chance to make internal controls more efficient. *Journal of Accountancy* Dec.: 62-65.
- Gerrard, I., K. Houghton, and D. Woodliff. 1994. Audit fees: The effects of auditee, auditor, and industry differences. *Managerial Auditing Journal* 9(7): 3-11.
- Glover, S. M., D. F. Prawitt, and D. A. Wood. 2008. Internal audit sourcing arrangement and the external auditor's reliance decision. *Contemporary Accounting Research* 25(1): 193-213.
- Gist, W. E. 1992. Explaining variability in external audit fees. *Accounting & Business Research* 23(89): 79-84.
- Givoly, D., and D. Palmon. 1982. Timeliness of annual earnings announcements: some empirical evidence. *The Accounting Review* 17(3):486-508.
- Goodwin-Stewart, J., and P. Kent. 2006. Relation between external audit fees, audit committee characteristics, and internal audit. *Accounting and Finance* 46: 387-404.
- Gramling, A. A., M. J. Maletta, A. Schneider, and B. K. Church. 2004. The role of the internal audit function in corporate governance: A synthesis of the extant internal auditing literature and directions for future research. *Journal of Accounting Literature*. 23: 194-244.
- Hackenbrack, K. E., and W. R. Knechel. 1997. Resource allocation decisions in audit engagements. *Contemporary Accounting Research* 14(3): 481-500.
- Hakansson. N. H. 1977. Interim disclosure and public forecasts: An economic analysis and a framework for choice. *The Accounting Review* 52(2): 396-416.
- Hogan, C. E., and M. S. Wilkins. 2008. Evidence on the audit risk model: do auditors increase audit fees in the presence of internal control deficiencies? *Contemporary Accounting Research* 25(1): 219-242.
- Institute of Internal Auditors. 2004. *Internal Auditing's Role in Sections 302 and 404 of the Sarbanes-Oxley Act*. Available at <http://www.theiia.org/iia/download.cfm?file=1655>.
- \_\_\_\_\_. 2009. *Formulating and Expressing Internal Audit Opinions*. Available at <http://www.theiia.org/guidance/standards-and-guidance/iffp/practice-guides/>.
- \_\_\_\_\_. 2011. *International Standards for the Professional Practice of Internal Auditing*. Available at <http://www.theiia.org/guidance/standards-and-guidance/ippf/standards/>.



- Jaggi, B., and J. Tsui. 1999. Determinants of audit report lag: Further evidence from Hong Kong. *Accounting and Business Research* 30(1): 17-28.
- Kinney, W. R., and L. S. McDaniel. 1989. Characteristics of firms correcting previously reported quarterly earnings. *Journal of Accounting and Economics* 11: 71-93.
- \_\_\_\_\_ and \_\_\_\_\_. 1993. Audit delay for firms correcting quarterly earnings. *Auditing: A Journal of Practice and Theory* 12(2): 135-142.
- Knechel, W. R., and J. L. Payne. 2001. Additional evidence on audit report lag. *Auditing: A Journal of Practice and Theory* 20(1): 137-146.
- Lambert, T. A., K. L. Jones, and J. F. Brazel. 2011. Unintended Consequences of Accelerated Filings: are Mandatory Reductions in Audit Delay Associated with Reductions in Earnings Quality? Working Paper. University of Massachusetts - Amherst.
- Leventis, S., P. Weetman, and C. Caramanis. 2005. Determinants of audit report lag: some evidence from the Athens stock exchange. *International Journal of Auditing* 9: 45-58.
- Lin, S., M. Pizzini, M. E. Vargus, and I. Bardhan. 2011. The role of the internal audit function in the detection and disclosure of material weaknesses. *The Accounting Review* 86(1): 287-323.
- Maletta, M. J. 1993. An examination of auditors' decisions to use internal auditors as assistants: The effect of inherent risk. *Contemporary Accounting Research* 9(2): 508-525.
- Maletta, M. J. and T. Kida. 1993. The effect of risk factors on auditors' configural information processing. *The Accounting Review* 68(3): 681-91.
- Messier, W.F., J.K. Reynolds, C.A. Simon, and D.A. Wood. 2011. The effect of using the internal audit function as a management training ground. *The Accounting Review* 86(6): 2131-2154.
- Newton, J. D., and R. H. Ashton. 1989. The association between audit technology and audit delay. *Auditing: A Journal of Practice and Theory* 8(Suppl.): 22-37.
- O'Keefe, T. B., D. A. Simunic, and M. T. Stein. 1994. The production of audit services: evidence from a major public accounting firm. *Journal of Accounting Research* 32 (2): 241-261.
- Prawitt, D. F., J. L. Smith, and D. A. Wood 2009. Internal audit function quality and earnings management. *The Accounting Review* 84 (4): 1255-1280.
- Prawitt, D. F., J. L. Sharp, and D.A. Wood. 2011. Reconciling archival and experimental research: Does internal audit contribution affect the external audit fee? *Behavioral Research in Accounting* 23(2): 187-206.

- \_\_\_\_\_, N.Y. Sharp, and D.A. Wood. 2011. Internal auditing outsourcing and the risk of misleading or fraudulent financial reporting: Did Sarbanes-Oxley get it wrong? *Contemporary Accounting Research* (forthcoming)
- \_\_\_\_\_. 2012. Reconciling archival and experimental research: does internal audit contribution affect the external audit fee? Working paper, Brigham Young University.
- PricewaterhouseCoopers (PwC). 2006. *2006 State of the Auditing Profession Study: Continuous auditing gains momentum*. Available at <http://www.pwc.com/us/en/internal-audit/publications/2009-study-internal-audit-profession.jhtml>.
- Public Company Accounting Oversight Board (PCAOB). 2004. *Auditing Standard No. 2: An Audit of Internal Control Over Financial Reporting Performed in Conjunction With an Audit of Financial Statements*. Available at [http://pcaobus.org/Rules/Rules\\_of\\_the\\_Board/Auditing\\_Standard\\_2.pdf](http://pcaobus.org/Rules/Rules_of_the_Board/Auditing_Standard_2.pdf).
- \_\_\_\_\_. 2005. *Report on the Initial Implementation of Auditing Standard No. 2, An Audit of Internal Control Over Financial Reporting Performed in Conjunction with an Audit of Financial Statements*. Release No. 2005-023. November 30. Available at <http://pcaobus.org/Inspections/Pages/PublicReports.aspx>.
- \_\_\_\_\_. 2007a. *Auditing Standard No. 5: An Audit of Internal Control Over Financial Reporting That Is Integrated with An Audit of Financial Statements*. Available at [http://pcaobus.org/Rules/Rules\\_of\\_the\\_Board/Auditing\\_Standard\\_5.pdf](http://pcaobus.org/Rules/Rules_of_the_Board/Auditing_Standard_5.pdf).
- \_\_\_\_\_. 2007b. *Report on the Second-Year Implementation of Auditing Standard No. 2, An Audit of Internal Control Over Financial Reporting Performed in Conjunction with an Audit of Financial Statements*. Release No. 2007-004. April 18. Available at <http://pcaobus.org/Inspections/Pages/PublicReports.aspx>.
- \_\_\_\_\_. 2008. *Staff Audit Practice Alert No. 3 Audit Considerations in the Current Economic Environment*. December 5. Available at [http://pcaobus.org/Standards/QandA/12-05-2008\\_APA\\_3.pdf](http://pcaobus.org/Standards/QandA/12-05-2008_APA_3.pdf).
- Raghunandan, K.R., and J.A. McHugh. 1994. Internal auditors' independence and interactions with audit committees. *Advances in Accounting* 12: 313-333.
- Raman, K. K., and E. R. Wilson. 1992. An empirical investigation of the market for 'single audit' services. *Journal of Accounting & Public Policy* 11(4): 271-295.
- Simunic, D. A. 1980. The pricing of audit services: theory and evidence. *Journal of Accounting Research* 18(1): 161-190.
- Schneider, A. 2009. The nature, impact and facilitation of external auditor reliance on internal auditing. *Academy of Accounting and Financial Studies Journal* 13(4): 41-53.

Schwartz, K. B. and B. S. Soo. 1996. The association between auditor changes and reporting lags. *Contemporary Accounting Review*. 13(1): 353-370.

Security and Exchange Commission (SEC), 2002. Release No. 33-8128 *Acceleration of Periodic Report Filing Dates and Disclosure Concerning Website Access to Reports*. Washington, D.C.: SEC.

\_\_\_\_\_. 2004. Release No. 33-8507 *Temporary Postponement of the Final Phase-in Period for Acceleration of Periodic Report Filing Dates*. Washington, D.C.: SEC.

\_\_\_\_\_. 2005. Release No. 33-864 *Revisions to Accelerated Deadlines for Filing Periodic Reports*. Washington, D.C.: SEC.

Stein, M. T., D. A. Simunic, and T. B. O'Keefe. 1994. Industry differences in the production of audit services. *Auditing: A Journal of Practice and Theory*. 13(Supplement): 128-142.

U.S. Congress. 2002. The Sarbanes-Oxley Act of 2002. Public Law 107-2004 [H.R. 3763], Washington, D.C.: Government Printing Office.

Woodlock, P. 2007. Auditing Standard No. 5: Implications for internal auditors and audit committees. *Internal Auditing*. 22(5): 9-1.

**Appendix A**  
**Descriptive Statistics for Survey Items Used to Construct *Competence, Fieldwork Qual,* and *Financial Focus***

**Survey items used to construct *Competence***

	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
<i>Experience</i>	8.69	8.00	4.03	0.00	24.00
<i>Education</i>	4.49	4.50	0.46	3.00	6.00
<i>Certification</i>	0.58	0.59	0.26	0.00	1.00
<i>Training</i>	56.06	50.00	27.87	0.00	178.00

*Experience:* Average number of years of auditing experience (internal and external) of the audit staff (B6a and B6b).

*Education:* Average of the number of years of undergraduate and graduate education of the audit staff, based on highest degree achieved. Associate, Bachelor, Master, and Ph.D. degrees are assumed to take 2, 4, 6, and 8 years of study, respectively (B5).

*Certifications:* Percentage of professional staff members with one or more audit certifications (B8).

*Training:* Annual hours of training per internal auditor (B15b).

**Survey items used to construct *Fieldwork Qual***

	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
Quality assurance					
Direct Supervision	1.76	2.00	0.49	0.00	2.00
Working paper review	1.48	2.00	0.72	0.00	2.00
Audit client feedback	1.65	2.00	0.63	0.00	2.00
Peer review	0.99	1.00	0.77	0.00	2.00
Follow Up	1.64	2.00	0.77	0.00	2.00
Grading	0.94	0.00	1.00	0.00	2.00

Quality assurance: How frequently do you employ the following quality assurance techniques during fieldwork? (Regularly = 2, Occasionally = 1, Never = 0)

Follow Up: Do you formally follow-up to test corrective action? (Yes = 2, No = 0)

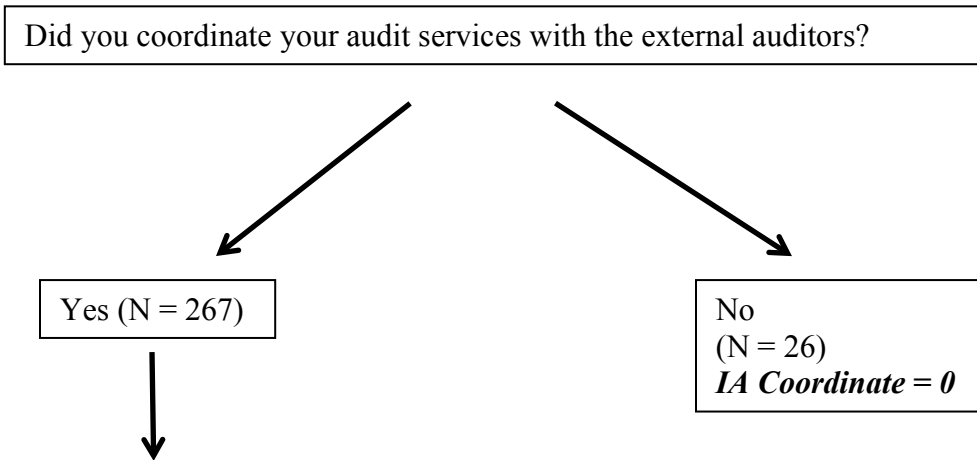
Grading: Does the final audit report include a “grade” or “score” as determined by the results of the audit? (Yes/Generally yes, but moving away from this practice = 2; No/generally no, but starting to implement this practice = 0)

**Survey items used to construct *Financial Focus***

How frequently were the following types of activities audited? (Regularly = 2, Occas. = 1, Never = 0)

	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
Adequacy of internal accounting controls	1.88	2.00	0.36	0.00	2.00
Accuracy, reliability & completeness of financial records	1.60	2.00	0.55	0.00	2.00
Impact of changes in acting. Rules or regulations	0.80	1.00	0.68	0.00	2.00
Interim quarterly financial results reported externally	0.52	0.00	0.75	0.00	2.00
Generally Accepted Accounting Principles	1.39	1.00	0.67	0.00	2.00

**Appendix B**  
**Coding of IAF Contribution Measures**



IF your answer was yes, then what means were used? (check all that apply)

- 1) Loan staff to External Auditors (N = 83)
  - 2) Perform complete or partial audits of specific Locations, Products, or Functions (N = 165)
- } 1) and/or 2) (N = 192)  
**IA Coordinate = 1**
- 3) Conduct joint annual Planning sessions (N = 183)
  - 4) Conduct joint Risk or Control Sessions (N = 117)
- } 3) and/or 4) ONLY (N = 75)  
**IA Coordinate = 0**

Cross tabulation of <i>DirectAssist</i> and <i>IndepWork</i>				
		<i>IndepWork</i> Perform complete or partial audits of specific Locations, Products, or Functions.		
		No	Yes	Total
<i>DirectAssist</i> Loan staff to External Auditors	No	101	107	208
	Yes	23	62	85
Total		124	169	293