Auditor Characteristics and Early Accounting Error Detection: Evidence from Financial Restatements

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We investigate auditor attributes that may help determine the time it takes auditors to detect and have clients correct financial statement misstatements. The attributes include auditor tenure, client importance, and auditor industry specialization. We find that the length of the restatement period is positively associated with auditor tenure. However, this positive relationship applies only to the pre-Sarbanes Oxley Act period. The results imply that regulation imposed by Sarbanes Oxley has helped mitigate the impairment from long auditor tenure on auditors' ability to make timely detection and correction of improper accounting. Thus, mandatory auditor rotation may not be needed.

INTRODUCTION

Restatements due to errors or irregularities involve corrections of deviations from GAAP that occurred in prior financial statements.[1] By issuing restatements, firms admit that there are misstatements in their prior financial reports that need to be adjusted so that users of these reports are no longer mislead by the information. The number of restatements has increased substantially in recent years, reaching a record high of 1,876 in 2006 (Audit Analytics, 2006). Restatements undermine public confidence in financial reporting and are perceived negatively by investors (Dechow et. al., 1996; Palmrose, Richardson and Scholz, 2004). The Securities and Exchange Commission regards restatements as "the most visible indicator of improper accounting" (Schroeder, 2001). Prior studies provide evidence that auditors risk damages to their reputations and client bases by being associated with restated financial statements. Toth (2008) shows that auditors that have a higher proportion of their former clients restating financial reports are at a disadvantage in attracting new clients. Choy and Gul (2008) find that restatements are followed by a decline in fees received by audit firms and a decrease in the market value of firms that share the same auditor with a restatement firm.

Given the potentially high costs of restatements, the extant literature investigates various auditor attributes (auditor tenure, client importance, industry specialization) that affect the *likelihood* of a client making a restatement (e.g., Stanley and DeZoort, 2007; Romanus et. al., 2008). However, in addition to the likelihood, the *length* of the restatement period is important. As the restatement period (i.e., the

number of years of financial reports restated) increases, stakeholders are more likely to question why it took the auditor such a long time to detect and have the client correct the misstatement(s). Hence, the validity of the auditor's opinion and the underlying auditing process become increasingly questionable with longer restatement periods. Further, any losses suffered by stakeholders as a result of a financial statement misstatement are likely to increase with the length of the restatement period.

We select a sample of restatements from Government Accountability Office (GAO) reports from January 1, 2000 through September 30, 2005. Our analysis of the sample demonstrates substantial variation in the restatement period; from one quarter to a maximum of seven years of financial reports. Moreover, it suggests that restatements over longer periods tend to be more serious and lead to greater risk for auditors. Restatements over longer periods affect more accounts, are more likely to involve irregularities, and have a higher chance of leading to a lawsuit against the auditor. Therefore, it is crucial to examine auditor attributes that affect the time it takes to detect and correct financial statement misstatements.

Our regression analysis shows that the length of the restatement period is positively associated with auditor tenure and has no significant association with auditor industry specialization or the economic importance of a client to the audit firm. Since our sample period spans the passage of the Sarbanes-Oxley Act (SOX), we investigate whether SOX affected the association between restatement period and auditor attributes. Our test results indicate that in the pre-SOX era, auditor tenure has a positive relationship with the length of the restatement period but that in the post-SOX era, auditor tenure no longer affects the restatement period. The results suggest that during the pre-SOX era, auditors' ability and/or willingness to detect and challenge clients' doubtful accounting practices on a timely basis was impaired by long-term auditor-client relationships. However, enhanced regulation imposed by SOX has helped mitigate this problem.

This study makes several contributions to the accounting literature. Prior restatement literature focuses on issues related to the likelihood and consequences of firms issuing restatements. Despite the fact that there is considerable variation in the length of restatement period, ours is the first study (to our knowledge) to examine auditors' attributes that may affect the length of restatement period. The results of our study also have policy implications for standard setters and regulators. SOX requires the GAO to study the potential effects of mandatory audit firm rotation. Our finding that auditor tenure no longer affects auditors' ability to make timely detections and corrections of misstatements after the passage of SOX suggests that mandatory audit firm rotation may not be needed.

HYPOTHESES DEVELOPMENT AND LITERATURE REVIEW

Audit firm tenure is the length of time the audit firm has been auditing the client's financial statements. For many years, various groups have pushed for mandatory auditing firm rotation due to potential problems stemming from long auditor tenure. One argument is that a long-term relationship between the auditing firm and the client can damage the independence of the audit. As the auditing firm's partners and staff become more personally associated with the client's management, the auditing firm may become less impartial and perhaps attempt, intentionally or unintentionally, to present its client's management in a positive manner (Hoyle, 1978; Geiger and Raghunanthan, 2002). As a result, the auditor may be more willing to forgo correcting a financial statement error or irregularity that can tarnish management's reputation. Further, as the auditor gains increased client-specific knowledge over time, overconfidence resulting from the long auditor-client relationship may induce the auditor to scale back its effort below an appropriate level (Shockley, 1981; Johnson et. al., 2002). This would in turn reduce the auditor's ability to find an error/irregularity that warrants a financial statement restatement.

On the other hand, the auditing literature suggests that auditors with shorter tenure may face barriers in the auditing process. A lack of client-specific knowledge for a new auditor may lead to a longer restatement period as the new auditor takes longer to uncover misstatements (Beck et. al., 1988; Johnson et. al., 2002). As the tenure of the audit firm gets longer, the auditor accumulates better knowledge of the client's business, industry, and internal controls (Beck et. al., 1988). Further, in the early years of an audit

engagement, the auditor will likely have an incentive to establish a long-term relationship with the client to recover start-up costs and eventually collect quasi rents (Johnson et. al., 2002). This argument indicates that auditors may be more lenient with clients and less likely to press for financial statement restatements in the early years of audit engagements.

Geiger and Raghunandan (2002) find that audit failures are more likely in the early years of audit engagements. Stanley and DeZoort (2007) document a negative association between auditor tenure and the likelihood of a restatement.

However, Myers et al. (2003) find that the relationship between auditor tenure and restatements can be positive or negative, depending on the context. Davis et al. (2009) show that there is a higher use of discretionary accruals to meet or beat earnings forecasts when there is a short-term or a long-term auditor-client relationship.

As previously discussed, there are potential problems with both short and long auditing firm tenures. Thus, we make no prediction on the association between restatement period and auditor tenure. Our first hypothesis is stated in the null form as follows:

> **Hypothesis 1:** There is no association between the restatement period and the auditor's tenure with the client.

If an auditing firm has more economic dependence on a client, the auditing firm has more to lose if the client switches to another auditor. The auditing firm may feel pressure to withhold a financial statement restatement so as not to upset a large client. Anecdotal evidence on conceding to a major client is provided by Arthur Andersen's massive failure in auditing Enron. Ahmed et al. (2006) show that earnings management is more prevalent for audit firm clients that are more important at the audit firm's office level and have weak corporate governance. However, Chung and Kallapur (2003) find no association between client importance and earnings management as proxied by abnormal accruals. Reynolds and Francis (2000) examine client importance at the office level for Big 5 audit firms and find that large clients of Big 5 firms actually report more conservatively. In addition, Li (2009) finds that after the passage of SOX, relatively more important clients are more likely to receive a going concern audit opinion than less important clients. Due to prior mixed empirical findings, we make no prediction on the relationship between client importance and the restatement period. Thus, our second hypothesis is as follows:

> **Hypothesis 2:** There is no association between the restatement period and the proportion of the auditing firm's revenue that is provided by the client.

If an auditor has more clients in an industry, there are more opportunities for its staff and management to acquire deep knowledge of the industry (Francis, 2004). Prior research generally indicates that auditors with expertise in an industry have better knowledge of the industry's fundamentals and accounting peculiarities and are better able to detect misstatements than auditors with less expertise in the industry (Maletta and Wright, 1996; Solomon et. al., 1999). Carcello and Nagy (2004) find a significantly negative relation between auditor industry specialization and financial fraud from the client. Romanus et al. (2008) find a negative association between auditor industry specialization and the likelihood of a restatement. Based on the previous discussion, our third hypothesis is the following:

> **Hypothesis 3**: There is a negative association between the restatement period and the auditing firm's industry expertise.

SOX has made a profound impact on the accounting profession through heightened oversight of auditors, financial reporting, and corporate governance. It has established the PCAOB as a supervising body for auditors, requires mandatory rotation of audit partners in charge every five years, and bans most consulting services for auditors. These measures aim at strengthening auditor independence and

improving audit quality. However, the extant literature has mixed findings regarding the impact of SOX on auditor independence and audit quality. On the one hand, some prior research provides evidence on improved audit quality after the passage of SOX. Lobo and Zhou (2006) show that firms have lower discretionary accruals and report more conservatively after SOX relative to before SOX. Cohen et al. (2008) and Bartov and Cohen (2009) find a significant decline in earnings management through accruals after the passage of SOX. Moreover, although Davis et al. (2009) show that although short and long auditor tenures were associated with increased earnings management before the enactment of SOX, these relationships have disappeared since the implementation of SOX.

On the other hand, some researchers question the efficacy of SOX in improving financial reporting quality. Francis (2004) shows that the annual rate of outright audit failure was much less than one percent before SOX, which suggests that auditors had been effective in maintaining audit quality. Defond and Francis (2005) argue that it is not clear "whether auditing was sufficiently 'broken' in the first place to warrant the radical reforms and changes effected by the Sarbanes-Oxley Act of 2002 (SOX)" and that "many of the solutions embodied in SOX are not likely to solve the profession's alleged problems." Ahmed et al. (2006) examine the relationship between client importance and abnormal accruals. Their results suggest that auditor independence was not widely compromised before SOX and the adverse effects of client importance on auditor independence before SOX for firms with weak governance mechanisms have remained after SOX. Due to the mixed findings in prior research, we make no prediction on changes in the relation between auditor attributes and the restatement period after the passage of SOX. Therefore, our fourth hypothesis, stated in the null form, is as follows:

> **Hypothesis 4:** There is no change in the association between the attributes of auditors and the restatement period after the passage of Sarbanes Oxley relative to before the passage of Sarbanes Oxley.

SAMPLE SELECTION AND RESEARCH DESIGN

Sample Selection Criteria

We include restatement announcements contained in GAO publications (GAO-03-138; GAO-06-678) from January 1, 2000 to September 30, 2005. We do not use restatements announced before 2000 because audit fee data required to construct some of our main testing variables are not available for those years. Table 1 shows the sample selection process. We start with 1,940 financial statement restatement announcements. A total of 149 restatements are eliminated because they are either due to the SEC's Staff Accounting Bulletin (SAB) 101 or SAB 101 related Emerging Issues Task Force (EITF) decisions on accounting treatment. These are in effect mandated restatements that do not leave the auditing firm or its client with a restatement decision. We also drop 152 restatements due to the SEC's letter on lease accounting to the American Institute of Certified Public Accountants (AICPA) in 2005 because of a reason similar to the deletion of SAB 101 related restatements. We eliminate 64 restatements because they are press release restatements.[2] Further, we remove 50 observations for which no financial statement time period is identified or which have no supporting filings.[3] Additionally, 137 restatement observations are eliminated because there is more than one announcement associated with the restatement.[4] Another 562 observations are dropped due to missing *Compustat* or *CRSP* information required for the upcoming tests (almost half are dropped due to missing segment or merger and acquisition information). Finally, 294 observations are lost due to the requirement of audit fee data from the Audit Analytics database and audit committee data. This results in 532 observations in our final sample (see Table 1). Additionally, the Appendix contains a description of the variables used in the study.

TABLE 1
NUMBER OF RESTATEMENT ANNOUNCEMENTS IN THE SAMPLE

Total announcements:	**1,940**
(-) SAB 101 restatements or SAB 101 related EITF restatements	149
(-) Lease related restatements due to SEC letter to AICPA on Feb. 7, 2005	152
(-) Press release restatements	64
(-) No clear restating period identified or no supporting filings	50
(-) Multiple restatement announcements	137
(-) Variables not available in *Compustat* or *CRSP*	562
(-) Audit fee data not available in *Audit Analytics* database	272
(-) Audit committee data not available	22
Sample of restatement announcements	**532**

Examining the Significance of Restatement Period to the Auditor

We begin our analysis by exploring the significance and relevance to the auditor of the early detection of misstatements. Table 2 presents relationships between restatement period and variables that reveal information on auditors' risk exposure to restatements. We sort the sample into quintiles by the length of restatement period and calculate the quintile mean for the number of reasons for the restatement (Affected), the proportion of restatements that involve irregular financial reporting (Irregular), the proportion of restatements that lead to a lawsuit against the auditor (Auditor_litigation), the proportion of restatement firms that became bankrupt or delisted from major exchanges within one year following restatements (Inactive), and the proportion of restatements that involve restating core operating accounts (Core). Restatements that affect more areas, are related to irregularities, lead to auditor litigation, are associated with bankruptcy or delisting, or misstate core operating accounts are considered more risky and potentially could cause more damage to an auditor's reputation and business.

The data in Table 2 show that the variables Affected, Irregular, and Auditor_litigation increase with the length of the restatement period. For example, the average number of reasons given for restatements in the shortest restatement period quintile is 1.11, where the average is 1.36 for restatements in the longest restatement period quintile. Similarly, the proportion of restatements that likely involve irregular reporting increases from 8 percent to 32 percent as the restatement period becomes longer. While only 1 percent of the restatements in the shortest restatement period quintile lead to auditor litigation, the percentage increases to 12 percent for restatements in the longest restatement period quintile. There are no clear patterns in the relations between restatement period and the variables Inactive and Core. The results suggest that as the restatement period increases, the misstatement corrected by the restatement becomes more serious and poses greater risk for the auditor.[5]

TABLE 2
RELATIONS BETWEEN RESTATEMENT PERIOD AND VARIABLES THAT REVEAL INFORMATION ON AUDITORS' RISK EXPOSURE

Restatement period rank	Mean Affected	Mean Irregular	Mean Auditor_litigation	Mean Inactive	Mean Core
1	1.11	0.08	0.01	0.05	0.61
2	1.23	0.14	0.03	0.09	0.47
3	1.32	0.12	0.03	0.07	0.54
4	1.39	0.25	0.11	0.09	0.58
5	1.36	0.32	0.12	0.07	0.59

Notes: Firms ranked in ascending order according to restatement period (1 – shortest restatement periods, 5 – longest restatement periods). For variable definitions, see the Appendix.

Investigation of Auditor Attributes Affecting Length of Restatement Period

To investigate auditor attributes that may affect the restatement period and thus test Hypothesis 1 through Hypothesis 3, we regress Restate_period on a number of variables that could affect the incentives for or the ability of auditors to discover and correct misstatements in financial statements. Further, we include a number of control variables. The regression model is specified as follows (firm and time subscripts suppressed):

$$\begin{aligned}\text{Restate\_Period} &= a_0 + a_1\text{Tenure} + a_2\text{Firmfeeratio} + a_3\text{Officefeeratio} \\ &+ a_4\text{Firmexpertise} + a_5\text{Officeexpertise} + a_6\text{Big4} + a_7\text{M\&A} + a_8\text{ForeignOps} \\ &+ a_9\text{Numseg} + a_{10}\text{Salesgrowth} + a_{11}\text{Ln\_size} + a_{12}\text{A\_indep} + a_{13}\text{A\_size} \\ &+ a_{14}\text{A\_meeting} + \varepsilon\end{aligned}$$

where the variables and the expected signs are as follows:

	Restate_period	=	number of years of financial statements restated. Some restating firms have changed auditors during the restatement period. In such cases, we define the restatement period as the period that the primary auditor has audited or reviewed the financial statements. A primary auditor is an auditor who 1) served the longest during the restatement period, or 2) is the last auditor when there are multiple auditors who audited or reviewed the restated financial statements and who served the same length of time.
?	Tenure	=	a dummy variable that equals 1 if the primary auditor has been auditing the client's financial statements for five or more years at the start of the restatement period and 0 otherwise.[6]
?	Firmfeeratio	=	the ratio of all annual fees earned by the primary auditor from the client, including audit fees, tax service fees and consulting fees, over the auditor's total annual revenues, averaged over the restatement period.
?	Officefeeratio	=	the ratio of all annual fees earned by the primary auditor from the client, including audit fees, tax service fees and consulting fees, over an auditor metropolitan office's total annual revenues, averaged over the restatement period.[7]
-	Firmexpertise	=	the ratio of audit fees earned by the primary auditor from firms in a client's two-digit SIC industry, over all audit fees from all firms in that industry, averaged during the restatement period.
-	Officeexpertise	=	the ratio of audit fees earned from a client's two-digit SIC industry by the primary auditor's office located in the metropolitan area, over all audit fees from all firms in that industry in the metro area, averaged during the restatement period.
-	Big_4	=	a dummy variable that equals 1 if a primary auditor is a Big 4 auditor and 0 otherwise.
+	M&A	=	a dummy variable that equals to 1 if a restating firm had a merger and acquisition in the restatement period and 0 otherwise.
+	ForeignOps	=	a dummy variable that equals 1 if a restating firm has substantial foreign operations and 0 otherwise. A firm is deemed as having substantial foreign operations if its income from foreign operations comprises more than 5 percent of its pretax income during the restatement period.
+	Numseg	=	a restating firm's average number of business segments as reported in *Compustat* segment data during restatement period.

+	Salesgrowth	=	the restating firm's mean quarterly abnormal sales growth rate over the restatement period. Abnormal sales growth rate is calculated as the firm's sales growth rate over the same quarter of the prior year, minus the same period median sales growth rate of its industry as measured by four-digit SIC code.
+	Ln_size	=	the natural log of the mean of a client's total assets during the restatement period.
-	A_indep	=	a dummy variable that equals 1 if all audit committee members are independent directors at any time during the restatement period and 0 otherwise. An independent director is defined by the criteria that the Investor Responsibility Research Center (IRRC) uses to classify board affiliation for each director.[8]
-	A_size	=	a dummy variable that equals to 1 if at any time during the restatement period the audit committee has three or more members and 0 otherwise.
-	A_meeting	=	average number of meetings held by audit committee per quarter during the restatement period.

The above discussed independent variables represent the three components of the audit risk model: detection risk, inherent risk and control risk.

The six auditor-related independent variables bear on detection risk and measure auditors' incentives and ability to make timely detections of misstatements in clients' financial reports and effectively confront problematic accounting practices of clients. Tenure measures whether the auditor has been auditing the client's financial statements for five years or longer as of the beginning of the restatement period[9] and is the variable used to test Hypothesis 1. Firmfeeratio and Officefeeratio measure all fees (audit, tax and consulting fees) collected from a client as a proportion of the auditor's total revenues at the firm and metropolitan office levels, respectively. These two variables represent auditors' economic dependence on the clients and are used to test Hypothesis 2. Firmexpertise (Officeexpertise) measures all audit fees collected by the primary auditor from firms in the client's two-digit SIC code (at the metropolitan office level), as a proportion of all audit fees collected from all firms in the two-digit SIC code (at the metropolitan office level). These variables measure auditor expertise and are used to test Hypothesis 3. The variable Big_4 is a dummy variable that proxies for whether the auditing firm is a Big 4 (or Big 5 or Big 6 in earlier periods) firm. This measure is used to control for any difference in audit quality between Big 4 and non-Big 4 auditors.

Five variables are included in the model to control for clients' characteristics that are related to the complexity of their businesses and financial reporting systems and thus reflect inherent risk for auditors. The variable M&A identifies firms that undertook mergers and acquisitions during the restatement period and the variable ForeignOps represents firms that have substantial foreign operations. The other three variables measure the number of business segments (Numseg), the reporting firms' sales growth rates (Salesgrowth)[10], and firm size (Ln_size). All five variables represent factors that increase financial reporting complexity and auditing risk and thus are expected to be positively related to restatement period (Palmrose and Scholz, 2004; Stanley and DeZoort, 2007; Romanus et. al., 2008).

Three control variables measure attributes of audit committees that may affect the effectiveness of board of directors' supervision over the financial reporting process. These variables reflect control risk for auditors. The variables are A_indep, which is a dummy variable that equals one if at any time during the restatement period all audit committee members are independent directors; A_size, which is a dummy variable that equals one if the audit committee has three or more members at any time during the restatement period; and A_meeting, which equals the average number of audit committee meetings per quarter over the restatement period. Prior research indicates that these attributes of audit committees enhance the effectiveness of internal control and reduce misstatements. Abbott et al. (2004) find that audit committee independence and activity level are negatively associated with the likelihood of making

restatements. Bedard et al. (2004) find that the presence of a large, independent, and active audit committee effectively reduces aggressive earnings management. Therefore, the three audit committee related variables are expected to have a negative association with restatement period.

Investigating the Impact of SOX on the Relation between Auditor Attributes and Length of Restatement Period

We test Hypothesis 4 with an investigation of whether the passage of SOX in 2002 affects the relation between the length of restatement period and the auditor attributes. We classify restatements with restatement periods ending before the passage of SOX on July 30, 2002 as pre-SOX and restatements with at least half of their restatement period falling after the passage of SOX as post-SOX.[11] We obtain separate estimations of our model with the pre-SOX restatement sample and the post-SOX restatement sample.[12] The comparison of the coefficient estimates for auditor related variables generated with the pre-SOX and post-SOX subsamples provides information on the effect of the passage of SOX on the relation between restatement period and auditor characteristics that may be related to audit quality.

TEST RESULTS

Sample Statistics

Table 3 documents the sample summary statistics. The sample mean (median) restatement period is 2.00 (1.75) years with a standard deviation of 1.38.[13] The shortest restatement in the sample is 0.25 year, which is a quarter. The longest restatement period in the sample is seven years. The substantial variation in the lengths of restatement periods warrants further exploration of the factors that underlie the issue. The restatement firms account for a mean (median) of one (less than one) percent of audit firms' total revenues and four (one) percent of audit offices' total revenues. Also, the sample auditors earn a mean (median) of 23 (21) percent of the total audit fees generated by the two-digit SIC code overall and 34 (30) percent of the total audit fees generated by the two-digit SIC code in the applicable metropolitan area. The

TABLE 3
SUMMARY STATISTICS

	Mean	STD	Min	Quartile1	Median	Quartile3	Max	N
Restate_period	2.00	1.38	0.25	1.00	1.75	3.00	7.00	532
Tenure	0.71	0.46	0.00	0.00	1.00	1.00	1.00	532
Firmfeeratio	0.01	0.05	0.00	0.00	0.00	0.00	0.85	532
Officefeeratio	0.04	0.10	0.00	0.00	0.01	0.02	0.93	532
Firmexpertise	0.23	0.12	0.00	0.16	0.21	0.30	0.54	532
Officeexpertise	0.34	0.25	0.00	0.15	0.30	0.47	1.00	532
Big_4	0.92	0.28	0.00	1.00	1.00	1.00	1.00	532
M&A	0.35	0.48	0.00	0.00	0.00	1.00	1.00	532
ForeignOps	0.08	0.28	0.00	0.00	0.00	0.00	1.00	532
Numseg	6.45	4.62	1.00	3.00	4.00	9.50	22.00	532
Salesgrowth	0.21	0.63	-0.59	-0.08	0.04	0.25	2.99	532
Ln_size	5.98	2.02	1.99	4.48	5.90	7.33	11.11	532
A_indep	0.86	0.35	0.00	1.00	1.00	1.00	1.00	532
A_size	0.90	0.30	0.00	1.00	1.00	1.00	1.00	532
A_meeting	1.62	0.91	0.00	1.00	1.49	2.07	6.75	532

For variable definitions, see the Appendix.

sample firms have a mean (median) of 6.45 (4.00) business segments and a mean (median) abnormal sales growth rate of 21 (4) percent. The audit committees in the sample meet a mean (median) 1.62 (1.49) times per quarter, with some meeting more than six times. The means of dummy variables represent the percentage of observations with values equal to 1. Thus, the statistics show that 71 percent of restatement firms in the sample have an auditor that has been auditing the restatement firm for five years or more as of the beginning of the restatement period, 92 percent of the firms have a Big 4 auditor, 35 percent of the firms have had mergers and acquisitions shortly before the restatements, and 8 percent of the firms have substantial international operations. In addition, 86 percent and 90 percent of firms had audit committees composed of all independent members and audit committees with at least three members, respectively, at any time during the restatement period.

Variable Correlation Analysis

Table 4 presents Pearson correlations between key variables in this study. Restate_period has significantly positive correlations with Tenure, M&A, ForeignOps, and Ln_size. Restate_period has significantly negative correlations with A_indep, A_size, and A_meeting.

TABLE 4
PEARSON CORRELATION ANALYSIS

	Restate_period	Tenure	Firm fee ratio	Office fee ratio	Firm expertise	Office expertise	Big_4	M&A	Foreign ops	Num seg	Sales growth	Ln_ size	A_ indep	A_ size
Tenure	0.16 ***													
Firm fee ratio	-0.03	-0.04												
Office fee ratio	-0.01	-0.10 **	0.66 ***											
Firm expertise	0.02	0.15 ***	-0.21 ***	-0.30 ***										
Office expertise	-0.04	0.04	-0.14 ***	-0.07	0.44 ***									
Big_4	0.02	0.27 ***	-0.37 ***	-0.50 ***	0.55 ***	0.33 ***								
M&A	0.20 ***	-0.01	-0.07	-0.07	0.01	-0.01	0.08 *							
Foreign ops	0.08 *	-0.01	-0.03	0.03	0.09 *	0.05	0.06	0.05						
Numseg	0.02	0.04	-0.04	0.01	0.00	0.16 ***	0.13 ***	0.09 **	0.08 *					
Sales growth	-0.02	0.15 ***	0.02	0.04	-0.09 **	-0.10 **	-0.03	0.09 *	-0.05	-0.05				
Ln_size	0.15 ***	0.07	-0.12 ***	-0.16	0.27 ***	0.26 ***	0.33 ***	0.18 ***	0.11 **	0.45 ***	0.01			
A_ indep	-0.15 ***	-0.01	0.00	0.00	-0.06	-0.09 *	-0.08 *	-0.06	0.02	-0.08 *	-0.01	-0.18 ***		
A_ size	-0.14 ***	-0.08 *	0.03	-0.04	0.11 **	0.09 *	0.05	-0.03	0.08 *	0.10 **	-0.10 **	0.13 ***	0.01	
A_ meeting	-0.12 ***	-0.19 ***	-0.11 **	-0.05	0.13 ***	0.12 ***	0.09 *	0.05	0.13 ***	0.18 ***	-0.10 **	0.28 ***	0.02	0.21 ***

Notes: ***, **, and * represent 1 percent, 5 percent, and 10 percent statistical significance, respectively (two-tailed). Salesgrowth and Ln_size are winsorized at the bottom and top 2 percent. For variable definitions, see the Appendix.

Analysis of Factors that Affect Restatement Period

Table 5 contains the test results on the factors that affect the timeliness with which misstatements are detected and corrected. The dependent variable Restate_period is positively associated with Tenure at the one percent significance level. The other auditor-related variables are insignificant. The significantly positive association between restatement period and tenure rejects Hypothesis 1 but confirms the argument that long-term relationships between auditing firms and clients can undermine auditors' ability and/or willingness to question clients' problematic accounting practices (Hoyle, 1978; Shockley, 1981; Geiger and Raghunanthan, 2002; Johnson et. al., 2002). Our failure to find a significant association between restatement period and proxies for the client's economic importance to an auditor at both the firm level (Firmfeeratio) and office level (Officefeeratio) indicates that Hypothesis H2 is not rejected. This result is consistent with prior research (Reynolds and Francis, 2000; Chung and Kallapur, 2003; Li, 2009), which shows that client importance does not undermine the auditor's ability to challenge clients' inappropriate accounting practices. The lack of significant associations between restatement period and variables related to auditor expertise at the firm (Firmexpertise) and office (Officeexpertise) levels rejects Hypothesis 3 and indicates that auditor industry expertise does not have a significant impact on the auditor's ability to make timely detections and corrections of accounting misstatements.

Of the client specific variables, M&A and Ln_size are significantly positive at the 1 percent significance level. Salesgrowth (A_indep, A_size, and A_meeting) is (are) negatively associated with Restate_period at the 5 (1) percent significance level. The above results indicate that it takes longer to discover and correct misstatements in the financial statements of reporting companies that are large, recently went through mergers and acquisitions, and have lower sales growth rates. Further, the restatement period is longer for clients with audit committees that have fewer members, have non-independent members, and meet less frequently. The signs of these variables, except Salesgrowth, are in accordance with what was predicted.

TABLE 5
OLS ANALYSIS OF FACTORS THAT AFFECT LENGTH OF RESTATEMENT PERIOD

Variable	Coefficient	P-value
Intercept	**2.42**	**<.01**
Tenure	**0.41**	**<.01**
Firmfeeratio	1.15	0.37
Officefeeratio	-0.12	0.83
Firmexpertise	0.56	0.33
Officeexpertise	-0.17	0.50
Big_4	-0.35	0.21
M&A	**0.52**	**<0.01**
ForeignOps	0.34	0.11
Numseg	-0.02	0.22
Salesgrowth	**-0.18**	**0.04**
Ln_size	**0.12**	**<.01**
A_indep	**-0.41**	**0.01**
A_size	**-0.66**	**<.01**
A_meeting	**-0.19**	**<.01**

Number of observations = 532
adjusted R^2 = 0.12
Notes: All p-values are two tailed. Salesgrowth and Ln_size are winsorized at the bottom and top 2 percent. For variable definitions, see the Appendix.

Analysis of the Impact of SOX on Restatement Period

We investigate whether the passage of the Sarbanes-Oxley Act affects the association between restatement period and auditor characteristics. As shown in Table 6, we estimate the model with the pre-SOX and the post-SOX subsamples of restatements separately. In the pre-SOX sample period, Tenure is positively associated with restatement period at the 5 percent level (p-value = 0.02), while other auditor related variables are insignificant. The results show that in the pre-SOX period, long auditor-client relationships significantly weakened the ability and/or willingness of auditors to challenge and correct clients' accounting errors/irregularities. In contrast, in the post-SOX period, Tenure becomes insignificant. Hence, Hypothesis H4 is rejected for auditor tenure. The loss of significance for Tenure after the passage of SOX indicates that the enhanced regulation from SOX helps improve audit quality and helps alleviate the concern that a long-term auditor-client relationship impairs auditor independence. These findings are consistent with extant research (Lobo and Zhou, 2006; Cohen et. al., 2008), which finds an improvement in audit quality and financial reporting quality in the post-SOX period. The lack of a significant association between length of restatement period and auditor tenure in the post-SOX era suggests that mandatory rotation of audit firms as considered by SOX may not be necessary.

TABLE 6
OLS ANALYSIS OF FACTORS THAT AFFECT LENGTH OF RESTATEMENT PERIOD SURROUNDING PASSAGE OF SARBANES-OXLEY

	Pre-SOX		Post-SOX	
Variable	**Coefficient**	**P-value**	**Coefficient**	**P-value**
Intercept	**2.68**	**<.01**	**2.48**	**<.01**
Tenure	**0.71**	**0.02**	0.08	0.59
Firmfeeratio	5.22	0.55	-1.85	0.35
Officefeeratio	-2.19	0.16	0.38	0.74
Firmexpertise	0.70	0.42	-0.57	0.48
Officeexpertise	-0.02	0.96	-0.17	0.58
Big_4	-0.98	0.28	-0.04	0.91
M&A	**0.44**	**0.03**	**0.47**	**<0.01**
ForeignOps	0.28	0.61	0.12	0.64
Numseg	-0.03	0.27	**-0.03**	**0.09**
Salesgrowth	**-0.25**	**0.03**	-0.14	0.30
Ln_size	0.09	0.12	**0.08**	**0.05**
A_indep	**-0.52**	**0.04**	**-0.37**	**0.09**
A_size	**-0.43**	**0.07**	-0.52	0.14
A_meeting	**-0.37**	**0.05**	**-0.18**	**0.02**
Number of observations	132		247	
adjusted R^2	0.12		0.11	

Notes: All p-values are two tailed. Pre-SOX refers to the subsample of restatements for which the ending dates of restatement periods fall before the passage of the Sarbanes-Oxley Act on July 30, 2002. Post-SOX refers to the subsample of restatements with over half of their restatement periods falling in the period after the passage of the Sarbanes-Oxley Act on July 30, 2002. There are 153 restatements that are neither in the pre-SOX subsample nor in the post-SOX subsample because their restatement dates are after the enactment of SOX whereas less than half of their restatement periods fall in the time frame after the enactment of SOX on July 30, 2002. Thus, these restatements are dropped from the regression analyses using the pre-SOX and the post-SOX subsamples. Salesgrowth and Ln_size are winsorized at the top and bottom 2 percent. For variable definitions, see the Appendix.

CONCLUSIONS

We study the association between 1) auditor attributes that indicate auditors' ability or incentives to detect and correct accounting misstatements and 2) the length of the restatement period, which is the number of years of financial statements corrected in a restatement. Overall, we find a positive relationship between restatement period and auditor tenure and insignificant associations between restatement period and variables related to auditor industry expertise and client's economic importance to the auditor. In addition, this research documents that, in the pre-SOX period, long auditor-client relationships impair auditors' ability and/or willingness to detect and have the clients correct financial misstatements in a timely manner. In the post-SOX era, auditor tenure no longer has a significant effect on the ability of auditors to make timely detections and corrections of misstatements. Our failure to find a significant role of auditor tenure in the early detection of misstatements in the post-SOX period suggests that the enhanced regulatory measures imposed by SOX have improved audit quality and that mandatory audit firm rotation as considered by SOX may not be necessary in maintaining audit quality. Further, the findings from our study show regulators and stakeholders that client importance to the auditor and auditor expertise do not affect audit quality as measured by the length of the restatement period.

NOTES

1 The current study concentrates on restatements involving errors or irregularities and excludes restatements due to changes in accounting principles.

2 Some companies provide preliminary quarterly or annual results in the public press shortly after the fiscal period end and later restate their previously reported financial results when they file their final reports with the SEC. In these cases, most companies say "revise" rather than "restate" to distinguish errors in press releases from those in SEC filings. These revisions are not the auditor's responsibility.

3 Some companies announced forthcoming restatements, but did not actually file with the SEC after the announcements. This may be due to bankruptcy or an acquisition by another firm before the filing, or simply because the firm later concluded that that restatement is not necessary.

4 Some companies announced restatements with preliminary estimates and later made new announcements with updated information on the restatements when they filed restated financial reports with the SEC. The GAO often reports the preliminary announcements as separate restatement announcements, especially when later announcements include additional reasons for restatements. For example, Flow International Corporation announced a restatement on 9/20/2004 with preliminary estimates and then filed a complete restatement on 12/20/2004 with complete data. The GAO counts them as two separate events because the company added another reason for restatement when it was announced on 12/20/2004. In this study, we treat both announcements as one observation.

5 With the auditor litigation model used by Palmrose and Scholz (2004), we conduct a regression analysis of the association between auditor litigation risk and restatement period, controlling for various firm characteristics that affect litigation risk. We find a significantly positive association between auditor litigation risk and restatement period.

6 We set the cut-off for long tenure at five years because Sarbanes Oxley requires a five-year rotation of audit partners and has asked the GAO to study the need for a mandatory five-year rotation of audit firms.

7 Following Francis et al. (2005), auditor metropolitan level offices are identified based on metropolitan areas (MSA) defined by the US Census Bureau Office of Management and Budget. Audit clients are associated with specific MSAs based on the state and county codes of their headquarters' locations. The MSA codes are available from the US Census Bureau at http://www.census.gov/population/estimates /metro-city/99mfips.txt.

8 For restating firms on the IRRC Director database, we collect director type for each audit committee member from the database. The IRRC identifies three categories of directors: independent, employee, and linked. We identify audit committee members as independent directors if the IRRC classifies

them as independent directors. Otherwise we identify them as non-independent directors. For those companies not covered by the IRRC Director database, we collect director information from proxy statements and identify independent directors by applying similar criteria used by the IRRC. For example, if a director is a former employee, a relative of an executive in the company, provides professional service for the company, or has a business transaction with the company, we classifies her/him as a linked (or affiliated) director as does the IRRC. Linked directors are classified as non-independent in our tests.

9 Using the entire auditor tenure period that includes the restatement period will produce a mechanical relation between auditor tenure and restatement period. A longer restatement period increases the length of auditor tenure. Therefore, we exclude the restatement period from our measure of auditor tenure.

10 Firms with higher sales growth may feel pressure to manipulate financial statement information to give investors a perception of continuing growth. Thus, management of high sales growth firms with accounting misstatements could be more likely to attempt to hide them from their auditors since the misstatements may be more likely to involve accounting manipulations.

11 We make this classification to be sure that the post-SOX restatements were decided upon when SOX had been in effect for a substantial portion of the restatement period.

12 An alternative approach is to examine the effect of the passage of SOX for the whole sample by adding a dummy variable representing the passage of SOX and interaction terms that include the dummy variable and the test variables in the model. However, this approach leads to serious multicollinearity problems with our analysis, thereby generating distorted model estimates.

13 Some restating firms have changed auditors during the restatement period. In such cases, we define the restatement period as the period that the "primary auditor" audited or reviewed the financial statements. A primary auditor is an auditor who 1) serves the longest during the restatement period, or 2) is the last auditor if there is more than one auditor who audited or reviewed the restated financial statements and the auditors served the same length of time.

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APPENDIX

VARIABLE DEFINITIONS

1 *Auditor_litigation* is a dummy variable that equals 1 if the primary auditor was involved in litigation related to the restatement and 0 otherwise. A primary auditor is an auditor that 1) served the longest during the restatement period, or 2) is the last auditor if there is more than one auditor who audited or reviewed the restated financial statements and auditors served the same length of time.

2 *Restate_period* is number of years of financial statements restated. Some restating firms have changed auditors during the restatement period. In such cases, we define the restatement period as the period that the primary auditor has audited or reviewed the financial statements. A primary auditor is an auditor who 1) served the longest during the restatement period, or 2) is the last auditor if there are multiple auditors who audited or reviewed the restated financial statements and who served the same length of time.

3 *Core* is a dummy variable that equals 1 if the restatement is related to core operating activities and 0 otherwise. Restatements related to core operating activities are those related to revenue recognition or operating cost and expense as defined by the GAO.

4 *Affected* is number of reasons for the restatement as listed in the GAO report.

5 *Irregular* is a dummy variable that equals 1 if a firm meets one of the criteria defined by Hennes et al. (2009) and 0 otherwise. Hennes et al. (2009) define a firm as irregular if it meets one of the following criteria: (1) a key word search using "irregularities" or "fraud" uncovers the restatement, (2) there is an SEC or DOJ (Department of Justice) investigation, or (3) there is an (non-SEC) independent investigation into the misstatement.

6 *Inactive* is a dummy variable that equals 1 if a restating firm is bankrupt (chapter 7 or 11) or delisted as of the restatement announcement or goes bankrupt or is delisted within a year after the restatement announcement, and 0 otherwise.

7 *Salesgrowth* is the restating firm's mean quarterly abnormal sales growth rate over the restatement period. Abnormal sales growth rate is calculated as the firm's sales growth rate over the same quarter of the prior year, minus the same period median sales growth rate of its industry as measured by four-digit SIC code.

8 *Ln_size* is the natural log of the mean of the restating client's total assets over the restatement period.

9 *Big_4* is a dummy variable that equals 1 if the primary auditor is a Big 4 auditor and 0 otherwise.

10 *Tenure* is a dummy variable that equals 1 if the primary auditor has been auditing the client's financial statements for five or more years as of the beginning of the restatement period and 0 otherwise.

11 *Firmfeeratio* is the ratio of all annual fees earned by the primary auditor from the client, including audit fees, tax service fees and consulting fees, over auditor's total annual revenues, averaged over the restatement period.

12 *Officefeeratio* is the ratio of all annual fees earned by the primary auditor from the client, including audit fees, tax service fees and consulting fees, over auditor metropolitan office's total annual revenues, averaged over the restatement period.

13 *Firmexpertise* is the ratio of audit fees earned by the primary auditor from firms in a client's two-digit SIC industry, over all audit fees from all firms in that industry, averaged during the restatement period.

14 *Officeexpertise* is the ratio of audit fees earned from firms in a client's two-digit SIC industry by the primary auditor's office located in the metropolitan area, over all audit fees from all firms in that industry in the metro area, averaged during the restatement period.

15 *M&A* is a dummy variable that equals 1 if a restating firm had a merger and acquisition in the restatement period and 0 otherwise.

16 *ForeignOps* is a dummy variable that equals 1 if a restating firm has substantial foreign operations and 0 otherwise. A firm is deemed as having substantial foreign operations if its income from foreign operations comprises more than 5 percent of its pretax income during restatement period.

17 *Numseg* is a restating firm's average number of business segments as reported in *Compustat* segment data during restatement period.

18 *A_indep* is a dummy variable that equals 1 if all audit committee members are independent directors at any time during the restatement period and 0 otherwise. An independent director is defined by the criteria that the Investor Responsibility Research Center (IRRC) uses to classify board affiliation for each director

19 *A_size* is a dummy variable that equals 1 if audit committee has three or more members at any time during the restatement period and 0 otherwise.

20 *A_meeting* is average number of meetings held by audit committee per quarter during restatement period.

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