Auditor Industry Specialization and Accounting Restatements

Robin N. Romanus
Department of Accounting and Information Systems
Pamplin College of Business
Virginia Tech
Blacksburg, VA 24061-0101
e-mail: rromanus@vt.edu

(Corresponding author)

John J. Maher
Professor and Mahlon Harrell Research Fellow
Department of Accounting and Information Systems
Pamplin College of Business
Virginia Tech
Blacksburg, VA 24061-0101
e-mail: jmaher@vt.edu
phone: 540.231.4505

Damon M. Fleming
Assistant Professor
School of Accountancy
San Diego State University
San Diego, CA 92182
e-mail: dfleming@mail.sdsu.edu

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ABSTRACT

The increasing incidence of accounting restatements illustrates the critical significance of both audit and financial statement quality. Recent research findings associate auditor industry specialization with various proxies for audit and financial statement quality. However, the role the industry specialist auditor plays in the likelihood of firms issuing restatements has yet to be empirically established. The recent proliferation of financial report restatements presents an excellent environment in which to examine this important relationship. We examine a relatively large sample of restatements over the period 1998-2003 and find that auditor industry specialization exhibits a significant negative association with the occurrence of restatement. We also document a significant negative association between auditor industry specialization and accounting restatements that affect operating (core) accounts as opposed to non-operating (non-core) accounts. Our findings are consistent with the theory that industry specialist auditors have an enhanced ability to detect errors within their specialization, particularly in core account groups.

Keywords: Auditor industry specialization; financial restatements; audit quality.

Data Availability: All data are available from public sources.

INTRODUCTION

Accounting restatements are central to the public policy debate concerning the quality of externally reported financial statements for publicly traded companies. The public trust depends upon the confidence investors place in reported financial statements when making their initial and ongoing investment decisions. Unfortunately, the incidence of financial report restatements has intensified substantially in recent years, nearly doubling in 2005 to a record 1,195 restatements (Reilly 2006). This escalation in the number of financial report restatements has drawn substantial public scrutiny of auditors' roles in ensuring the quality of financial statements and reported corporate earnings. The Securities and Exchange Commission (SEC) has stated it considers accounting restatements as "the most visible indicator of improper accounting" (Schroeder 2001). Contemporaneous congressional attention spurred the General Accounting Office (GAO) to investigate the proliferation of restatements and issue a report addressing their potential causes and implications (GAO 2002).

The underlying causes for this amplification in occurrence of financial report restatements have been debated in both the popular press and academic research. Richardson et al. (2002) suggest that capital market pressures motivate companies to adopt more aggressive accounting policies that lead to restatements. External auditors play a critical role in the financial reporting process by ostensibly providing an objective review of the reported financial statements thereby ensuring firms do not engage in overly aggressive accounting practices that could lead to lower quality financial statements. Research suggests that industry specialization plays an important role in determining both audit quality and accounting quality (Hogan and Jeter 1999; Solomon et al. 1999; Owhoso et al. 2002). Our research adds to the existing literature by providing empirical evidence concerning the association between auditor industry

specialization and audit quality. Specifically, we examine the relationship that exists between auditor industry specialists and the incidence of financial report restatements. This relationship is particularly relevant because an actual accounting restatement provides reasonably direct evidence that the auditor failed to detect or report a misrepresentation of GAAP (DeFond and Francis 2005).

Industry specialists are widely considered to be auditors whose training and experience are largely concentrated in a particular industry (Solomon et al. 1999). Experimental research suggests that auditors with industry specific knowledge are more likely to possess a comprehensive understanding of a company's error characteristics, which enhances their methods of error detection (Maletta and Wright 1996). Some support for this theory can be found in archival research that indicates industry specialist auditors mitigate the use of accrual-based earnings management more than non-specialist auditors (Krishnan 2003a). Moreover, Balsam et al. (2003) show that companies with industry specialist auditors have lower levels of discretionary accruals and higher earnings response coefficients than companies with non-specialist auditors. Taken together, these studies provide some evidence that companies with industry specialist auditors have higher earnings quality than companies with non-specialist auditors. Extrapolating this same logic, these companies should theoretically have fewer financial report restatements.

To examine this conjecture, we investigate the influence of industry specialist auditors on a fairly direct measure of audit quality, accounting restatements. We gather a sample of 482 firms that restated annual financial statements between 1998 and 2003 along with a matched set of 482 control firms and empirically examine the relationship between auditor industry specialization and the likelihood of restatement. Our results indicate a significant negative

association between auditor industry specialization and the likelihood of restatement. To test the robustness of our results, we utilize several alternative measures of auditor industry specialization and continue to find each measure to be negatively associated with the likelihood of financial report restatement.

We also extend our analysis by investigating the sub-sample of firms that have had actual financial report restatements in order to determine whether auditor industry specialization has a beneficial effect on restatements affecting core accounts (operating accounts) as compared to those restatements affecting non-core accounts. Our underlying logic regarding this test is that industry specialist auditors should be most concerned with those accounts that are highly critical in elucidating the firms' ongoing business operations, and hence provide more insight into its permanent earnings. Consistent with our expectations, we find that firms that engage industry specialist auditors are less likely to have restatements that impact core operating accounts. In other words, restatements involving industry specialist auditors are more likely to involve non-core accounts, which are typically considered less critical to the ongoing operations of the firm. We provide robustness tests on sub-samples related to account types and find similar results.

Our research contributes to the existing literature in at least three important ways. First, our results document the importance of auditor industry specialization in reducing the likelihood of financial report restatements. This suggests that recent shifts by the Big 4 auditing firms in the direction of greater industry concentration could improve financial reporting quality (Balsam et al. 2003). Second, our results suggest that allowing firms to engage and retain an industry specialist may benefit the efficiency of the capital markets by reducing the number of restatements and increasing current and potential investors' confidence in firm financial statements. Although many studies have examined the association between auditor industry

specialization and various proxies for audit and earnings quality, our study is the first to make an explicit link between the benefits of auditor specialization and one irrefutable measure of financial report quality, accounting restatements. This has direct implications for the current debate involving mandatory auditor rotation, particularly if the rotation were to result in a change from an industry specialist auditor to a non-industry specialist. When considered in combination with prior empirical results (Balsam et al. 2003; Krishnan 2003a; Carcello and Nagy 2004b), our study provides persuasive evidence that permitting firms to maintain an industry specialist provides explicit capital market benefits that could be forfeited as a result of mandatory rotation.

Our third contribution relates to the metric used to measure industry specialization auditors. In addition to two traditional measures of industry specialization, we also utilize an innovative *weighted market share* measure of auditor industry specialization. Most researchers have previously operationalized auditor industry specialization via auditor *market share* and/or *portfolio share*. Market share measures differentiation within a single industry across competing audit firms while portfolio share considers each firm individually, assessing firm differentiation across industries (Neal and Riley 2004). Although both metrics have been used in prior literature, Neal and Riley (2004) suggest market and portfolio share capture different attributes of specialization; thus, the choice of metric can significantly impact research findings. To address this issue, in addition to the two traditional metrics, we utilize *weighted market share*, developed by Neal and Riley (2004), which is calculated by multiplying the traditional market share by the portfolio share. Weighted market share is intended to capture the complementary relationship between the two metrics. Our primary inferences remain consistent across the various industry specialist metrics, but our detailed results support the recommendations of Neal and Riley (2004)

that future auditor industry specialization studies, particularly studies related to audit or financial statement quality, use the weighted market share measure.

The remainder of this paper is organized as follows. The next section provides additional motivation for the study and develops the hypotheses. The method section follows with a description of the sample development process and the details of the research design. The results section covers both the univariate and multivariate findings. Finally, the paper concludes with a summary and discussion of the implications of our results.

HYPOTHESES DEVELOPMENT

Auditor Industry Specialization

A growing literature demonstrates a link between auditor industry specialization and various measures of financial reporting quality; however, the effects of auditor specialization on financial report restatements have yet to be examined. Accounting restatements provide an interesting and relevant domain in which to examine the influence of auditor industry specialization because one of the key factors leading to accounting restatements is the failure of the external auditor to detect a misstatement prior to the issuance of the financial statements (Eilifsen and Messier 2000). A big advantage of utilizing accounting restatements is "they provide more direct evidence that the auditor failed to either detect or report an accounting treatment that is inconsistent with GAAP" than other common proxies for audit quality such as abnormal accruals (DeFond and Francis 2005). Given the burgeoning increase in restatements and, concurrently, the large audit firms' emphasis on developing industry expertise (Gramling and Stone 2001), a thorough examination of this relationship is critical to the accounting profession.

Gramling and Stone (2001) acknowledge a limited amount of research associates audit industry specialization with audit quality. However, there exists a growing literature connecting industry specialization with various proxies for audit quality. For example, Gramling et al. (2001) find a positive association between auditor industry specialization and the ability of client earnings to predict future cash flows. Balsam et al. (2003) find that industry specialist clients have lower levels of discretionary accruals and higher earnings response coefficients. Similarly, Krishnan (2003a) finds clients of specialist auditors have lower levels of discretionary accruals, suggesting that specialists might help mitigate accruals-based earnings management tactics.

Research also directly associates industry specialization with less fraudulent financial reporting. Carcello and Nagy (2002) find a strong negative relation between clients of industry specialists and accounting fraud. Specifically, they find that industry specialist clients are less likely to be involved in SEC enforcement actions. Carcello and Nagy (2004b) also investigate the impact client size has on the negative association between specialization and fraudulent financial reporting. They find a weaker negative association for large clients than for small clients, indicating highly differentiated clients may moderate the effect of expertise on audit quality.

Several recent studies also investigate the relationship between auditor industry specialization and various aspects of financial reporting quality. Dunn and Mayhew (2004) find that companies with industry specialist auditors are ranked by financial analysts as having higher disclosure quality than companies with non-specialist auditors. Krishnan (2005) examines the association between industry specialists and the speed with which bad news regarding future cash flows is recognized in earnings. He finds that clients who engage industry specialist auditors reflect bad news more promptly than clients who engage non-specialists. In summary,

existing research tends to support the conjecture that industry specialist auditors may be superior at ensuring the quality of financial statements.

Accounting Restatements

Several studies have also investigated the impact of financial reporting and audit quality on restatements. In a sample of restatement firms between 1988 and 2001, Richardson et al. (2003) provide evidence indicating larger operating and investing accruals are positively associated with earnings restatements. Additionally, the authors group all firms into ten equal sized portfolios based on level of total accruals and report the frequency of restatements within each portfolio. They find the highest concentration of restatements in the portfolio with the highest level of total accruals. Desai et al. (2005) provide additional support for the association between accruals and restatements by demonstrating that short sellers accumulate positions in restatement firms several months in advance of the restatement announcement and subsequently unwind the positions following the announcements. They find the largest increases in short interests are for firms with the highest levels of accruals.

Additional research associates corporate governance, audit committee, and chief financial officer (CFO) characteristics with the incidence of restatements. Agrawal and Chadha (2005) find evidence that certain corporate governance characteristics, such as the independence of audit committee members and board directors, are negatively associated with the likelihood of restatement. Aier et al. (2005) find restatements are negatively associated with CFO's financial expertise. Similarly, Abbott et al. (2004) find audit committees with at least one financial expert are negatively associated with the occurrence of restatements.

Although the above studies do not directly investigate the independent auditor's expertise, they demonstrate the impact the expertise of financial officers and audit committee members can

have on the occurrence of restatements. Furthermore, the positive association between earnings management and restatements, coupled with the negative relationship between auditor industry specialization and accrual based earnings management, strongly suggest specialist auditors should have a superior ability to detect and prevent accounting misstatements. Given industry specialists' knowledge of the characteristics of industry and its accounting practices and polices, we believe that auditor industry expertise will provide a greater ability to detect and minimize earnings management and unintentional accounting errors before the financial statements are issued. Thus, we predict auditor industry specialization is negatively associated with the incidence of accounting restatements.

> H_{1A}: *Firms with industry specialist auditors are less likely to restate their financial statements than firms without industry specialist auditors.*

Although industry specialist auditors are likely to help mitigate restatements, given the overall corporate environment, it is unlikely that companies with industry specialist auditors will *never* be required to restate. Palmrose and Scholz (2004) investigate the effects of specific circumstances involving restatements on the resolution of litigation. In their study, they determine that the 334 restating firms included in their sample experienced an average decrease in net income of 137%. However, this figure varied greatly depending on the type and number of account groups affected by the restatement. Restatements involving core accounts (i.e., revenue, cost of goods sold and operating expenses) resulted in an average decrease to net income of 246%, while those involving non-core accounts (e.g., special items) resulted in a 35% increase to net income. These results indicate that while issuing a restatement may indicate a failure by either management or the auditor to detect a misstatement, the number and types of account groups affected vary greatly.

Gaining insights into the industry specialist's ability to affect the type of restatement (core vs. non-core) issued is critical because core earnings receive particular attention in fundamental financial statement analysis, correspondingly increasing their importance to capital market participants (Palmrose and Scholz 2004). Additionally, Palmrose et al. (2004) provide evidence that core restatements have significantly lower average cumulative abnormal returns (-13% vs. -4%) following the announcement date than those restatements affecting only non-core accounts. Continuing our previously developed logic, we propose that in instances where an industry specialist auditor is not able to mitigate the restatement entirely, it is likely that the industry specialist's improved effectiveness is more likely to reduce the probability of restatements affecting core account groups. That is, industry specialists' expertise is first and foremost in the area of the client's primary recurring operations. As such, industry specialists are expected to have a greater capacity to detect and prevent errors associated with core accounts rather than non-core accounts. Based on this premise, we predict a negative relation between auditor industry specialization and core restatements. This leads to the following hypothesis:

H_{2A}: *Restating firms with industry specialist auditors are less likely to issue core account restatements than firms without industry specialist auditors.*

METHOD

Sample

The restatement sample for this study consists of all companies that restated their annual financial statements between the years 1998 and 2003. The sample was identified through two sources. First, we utilized the GAO (2002) report which provides a list of all companies announcing restatements between January 1997 and June 2002. This list includes the company name, ticker, restatement announcement date, and to whom the restatement is attributed (e.g., the

auditor, restating company, SEC, or some other entity). Second, we conducted appropriate keyword searches for restatements in the Lexis-Nexis News Library between July 2002 and 2004 to capture additional restatements within the study window. We ultimately collected data on all firms that restated at least one annual financial statement during the study window and were listed on one of the three major stock exchanges (NYSE, AMEX, NASDAQ). The sample was limited to annual restatements to control for potential variation in the degree of audit scrutiny between quarterly and annual reports (Abbott et al. 2004).[1] The initial sample consisted of 986 annual restatements.

Using a combination of restatement announcements and 10-K reports, information was gathered on both the type and number of account groups affected by the restatement. All restatements caused by routine events such as mergers and acquisitions, discontinued operations, and stock splits were eliminated. Furthermore, any additional retroactive restatements required by GAAP for accounting changes were eliminated (Palmrose and Scholz 2004). Finally, all companies that announced a restatement but did not ultimately restate their financial statements were removed. These steps reduced our sample by 134 restatements, providing a subtotal of 852 restatements.

Firms with non-Big N auditors were dropped from the sample because the auditor industry specialization metrics are reasonably calculated using only the Big N firms.[2] Furthermore, prior research finds a relation between auditor size (Big N vs. non-Big N) and audit quality. Big N audit firms are more likely to have specialized training and peer reviews, as well as utilize more sophisticated technologies to aid in the detection of errors and/or earnings management (Becker et al. 1998; Krishnan 2003b). This suggests that Big N auditors should

[1] A rule requiring timely interim reviews was adopted by the SEC in 1999. However, a quarterly review does not contain the rigor of the formal audit process; therefore, we include only annual restatements.
[2] For the years 1998 to 2001, Big N refers to the Big 5 audit firms and to the Big 4 for the years thereafter.

provide superior quality audits. Thus, this aspect of audit quality is held constant across the sample, which reduced the sample by 135 restatements.[3] Missing Compustat data (n = 210) and several other minor data issues explained in detail in Panel A of Table 1 resulted in a final sample of 482 restatements.

Table 1

Control Firms Selection

Consistent with prior research, each restatement firm was matched with a control firm on the same stock exchange, two-digit SIC code, and market value of equity within 30 percent of the sample firm (Abbott et al. 2004). The control firm with the closest market value of equity to the sample firm was selected whenever possible.[4] We also verified that none of the control firms selected restated their financial statements during the study window. An independent samples t-test indicated the restatement firms and control firms did not differ with regards to market value of equity (p=.731). Panel A of Table 1 shows that we were unable to locate control firms for 22 sample firms which were subsequently dropped as well as the remaining three financial institutions (Richardson et al. 2005). Panel B of Table 1 provides a detail of the industries represented in our final sample, and Panel C shows the sample observations by year. [5]

[3] Research also provides evidence that during the period 1997 to 2001, the Big 5 accounting firms did not differ with regard to restatement frequency (Eisenberg and Macey 2004), providing evidence that the type of general audit quality that may be associated with financial reporting quality is relatively constant across the Big 5 firms.
[4] If a control firm was missing a data item that would require it be dropped from the analysis, we moved to the next best match.
[5] The number of annual restatements we collected is dependent upon the year the need for restatement was identified. Because our restatement announcement collection period ended in December 2004, it is conceivable that a number of firms announced restatements subsequent to December 2004 that affect periods prior to December 2003. These plausible observations are not included in our sample.

Research Design

Dependent Variables

Our first hypothesis examines whether firms with industry specialist auditors are less likely to restate their financial statements than firms without industry specialist auditors. The dependent variable *(RESTATEMENT*) is equal to 1 if the firm experienced an accounting restatement and 0 otherwise. Based on prior research, we expect to find a significant negative association between auditor industry specialization and restatements. Our second hypothesis examines the relationship between auditor industry specialization and core account restatements. This is an important issue because core account restatements involve accounts that affect normal recurring operating activities such as revenue and cost of goods sold. Non-core restatements involve non-normal operations resulting in earnings that are thought to be transitory such as asset impairments and restructurings. Hypothesis two is tested using only restatement firms, with *CORE* as the dependent variable where *CORE* is equal to 1 if the restatement affected a core account and 0 if the restatement affected only non-core accounts. Following Palmrose and Scholz (2004), our initial classification of the core and non-core restatements classify restatements as core if they affect even one core account despite any additional effect on non-core accounts. Table 2 presents a breakdown of the accounting issues involved in the classification.[6]

Table 2
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[6] It should be acknowledged that the classifications of restatements as either core or non-core involved a reasonable level of judgment but considerable care was taken to insure the accuracy of the classifications.

Auditor Industry Specialization

While some variation exists in the measures of auditor industry specialization, the two most common metrics utilized in the literature are auditor market share and auditor portfolio share. Different metrics are often used because each metric captures a different attribute of specialization (Neal and Riley 2004). Auditor *market share* captures with-in industry differentiation and is intended to capture an audit firm's commitment to gaining specific knowledge and audit technologies within a given industry (Neal and Riley 2004). *Market share* is calculated by dividing the total sales of each auditor's clients in each industry by total industry sales:

$$MarketShare_{ik} = \frac{\sum_{j=1}^{J_{ik}} Sales_{ijk}}{\sum_{k=1}^{I_K}\sum_{j=1}^{J_{ik}} Sales_{ijk}} \quad (1)$$

where Sales represents revenue and the numerator is the sum of all J_{ik} clients of audit firm i in industry k. The denominator in Equation (1) is the sales of J_{ik} clients in industry k summed over all I_k audit firms in the sample with clients (J_{ik}) in industry k.[7]

The *portfolio share* approach considers each audit firm individually by estimating the distribution of services spread among industries within each specific firm. This approach considers auditors specialists in industries where they generate the most revenue and therefore are likely to devote the maximum amount of their resources (Neal and Riley 2004). Similar to the market share approach, portfolio share leaders should possess industry specific knowledge and advanced audit technologies. *Portfolio share* is calculated as an auditor's revenue in each industry served divided by the auditor's total revenue:

[7] Both market share and portfolio share are calculated using the Big 5 audit firms for the period 1998 to 2001 and the Big 4 audit firms thereafter . Two digit SIC codes are used to identify industry categories.

$$PortfolioShare_{ik} = \frac{\sum_{j=1}^{J_{ik}} Sales_{ijk}}{\sum_{k=1}^{K}\sum_{j=1}^{J_{ik}} Sales_{ijk}} \quad (2)$$

where Sales represents sales revenue, and the numerator is the sum of the sales of all J_{ik} clients of audit firm *i* in industry *k*. The denominator in Equation (2) is the sales of all clients of audit firm *i* summed over *k* industries.

Neal and Riley (2004) indicate many studies require a metric that captures the attributes measured by both the market and portfolio measures. They explicitly note that audit quality may be affected by the attributes captured in each metric because auditors may perform above average in areas where they have differentiated themselves from their competitors (*market share*) or devoted considerable firm resources to industry specific training and technologies (*portfolio share*). As such, they propose an alternative measure *weighted market share,* which is the traditional market share multiplied by the portfolio share. We utilize this metric as the primary measure of auditor industry specialization (*AUDSPEC)* in our analysis and expect a negative relationship with the likelihood of restatement.

Control Variables

The control variables in our model are based on those previously identified in the literature as being associated with restatements. The first series of control variables relate to the debt covenant hypothesis. Based upon existing research, debt agreements containing accounting based covenants such as interest coverage and liquidity ratios, provide managers with incentives to make decisions that reduce the likelihood of violating the agreements (Dechow and Skinner 2000; Dichev and Skinner 2002; Richardson et al. 2002). DeFond and Jiambalvo (1994) examine companies reporting debt covenant violations and find that in the year prior to the

violation abnormal accruals are significantly positive, indicating management may have manipulated earnings in an attempt to avoid the impending violation. More recently, Saleh and Ahmed (2005) provide evidence that firms undergoing debt contract negotiations manage earnings downward. Jaggi and Lee (2002) examine companies with both impending debt covenant violations and undergoing debt restructuring and demonstrate that the firms will upwardly bias earnings to avoid violations but downwardly bias earnings during the restructuring phase. Because earnings management has been associated with the incidence of restatements (Richardson et al. 2002; Callen et al. 2004), managers with high outstanding levels of debt, ceteris paribus, have greater incentives to participate in behavior that may result in restatements. Therefore, we include a proxy for debt covenants, *leverage (LEV)*, as a control variable.[8] We expect *leverage* to be positively associated with the incidence of restatement.

Earnings management has also been associated with the need to access external capital markets. The cost of capital contains a risk premium related to earnings variability (Collins and Kothari 1989; Barth et al.1995), providing management with an incentive to attempt to reduce capital costs by smoothing earnings. Specific instances of earnings management have been documented in firms that issue seasoned equity offerings (SEO). For example, Rangan (1998) provides evidence that firms experience poor stock price performance in periods immediately following SEOs because earnings management techniques are sometimes used to elevate earnings prior to the SEO and those earnings levels are not sustainable in future periods. Teoh et al. (1998) find similar evidence that companies managing earnings via discretionary accruals prior to a SEO demonstrate lower post issue returns. Furthermore, Yoon and Miller (2002) present evidence that financially distressed firms opportunistically use discretionary accruals to

[8] Dichev and Skinner (2002) recognize that leverage can be a noisy proxy for closeness to debt covenants but nevertheless represents a commonly used metric. Richardson et al. (2002) find Leverage to be significantly higher for Restatement firms when partitioning the firms by Industry-adjusted characteristics.

increase earnings in the year prior to the SEO. Collectively, these findings indicate that firms seeking external financing have economic incentives to engage in earnings management practices that can often lead to lower quality earnings and the potential for subsequent financial report restatements.

From a related perspective, in a comparison of restating with non-restating firms, Richardson et al. (2003) find that restatement firms attract significantly more external financing. Their research provides additional support for the theory that capital market pressures can burden firms, potentially influencing management to adopt aggressive accounting practices which could result in restatements. Based upon this evidence, and following Richardson et al. (2003), we include two variables to control for these market pressures: *financing raised (FIN)* and *ex-ante financing raised (EX-ANTE)*. *FIN* captures the extent to which the firm was active in capital markets during the restatement year and is measured as the sum of the additional cash raised from the sale of common and preferred stock deflated by average total assets. *EX-ANTE* captures the extent to which the firm may need external financing in the future and is an indicator variable equal to 1 if the firm's free cash flow < -0.1 and 0 otherwise, where free cash flow is calculated as the difference between earnings and total accruals (Richardson et al. 2003). We anticipate that both *financing raised* and *ex-ante financing raised* will be positively associated with the likelihood of restatement.

Research suggests that growth stocks are more sensitive to negative earnings surprises than positive earnings surprises. Skinner and Sloan (2002) provide evidence that this reaction is the result of expectational errors regarding future earnings performance on the part of investors. As such, firms trading at considerable multiples of earnings and book value may feel pressure to manipulate earnings in order to meet certain growth targets (Richardson et al. 2003). Companies

with low earnings-price and book-to-market ratios may therefore be more likely to engage in earnings management. Furthermore, Richardson et al. (2003) find the earnings-price and book-to-market ratios to be significantly associated with restatements. Thus, we include both the *earnings-price ratio (EPR)* and *book-to-market ratio (BTM)* as additional control variables. We expect both variables to exhibit a negative relationship with the occurrence of restatements.

Numerous studies also associate various accrual metrics with both earnings management and earnings quality. Dechow et al. (1996) provide evidence that companies subject to enforcement actions by the SEC have higher accruals than a control group of firms. Bartov et al (2000) demonstrate that abnormal accruals are positively associated with audit qualifications. Furthermore, Francis and Krishnan (1999) show auditors are more likely to issue qualified audit reports for firms with high levels of total accruals. Marquardt and Wiedman (2004) investigate different earnings management incentives with the accruals of specific accounts and find that the motives behind the suspected earnings management affect the method used to achieve desirable earnings benchmarks. As a final example, Richardson et al. (2002) associate three types of accruals, non-cash working capital, net non-current operating asset, and net financial asset, with earnings restatements. Based on the apparent positive association between earnings management and accruals, we include *accruals (ACCRUALS)* as a control variable and expect it to be positively associated with the likelihood of restatement. Following Richardson et al. (2002) and Richardson, Sloan, Soliman and Tuna (2005), we measure accruals as the total change in each type of accruals scaled by total assets. The details regarding each component of this accrual calculation are provided in Table 3.

Table 3

Prior research has also indicated that firms have incentives to engage in earnings management to refrain from breaking consistent earnings strings. For example, Myers et al. (2005) find evidence that managers attempt to increase earnings per share when failing to do so would result in the break of consistent earnings increases. They also find that firms with consistent earnings strings have smoother earnings and report more discretionary earnings components than a group of control firms. Barth et al. (1999) find negative price-earnings multiples significantly diminish when an earnings decrease is preceded by multiple earnings increases. Consistent with these findings providing motivation for earnings management, Richardson et al. (2003) find constant strings of earnings growth to be associated with the likelihood of restatements. Following Richardson et al. (2003), we control for *EPS growth (EPSGROWTH)* by counting the number of consecutive quarters of increased earnings preceding the restatement year. Our variable captures up to eight consecutive quarters (value of 0 to 7) of positive earnings growth counting backwards beginning with the year prior to the year of restatement. Our expectation is that *EPS growth* will be positively related to the likelihood of restatement.

Firm *size (SIZE)* is controlled for by including the natural log of total assets because larger firms may be subject to closer scrutiny by regulatory agencies and, correspondingly, by the auditing staff (Balsam et al. 2003; Richardson et al. 2003; Carcello and Nagy 2004a). We anticipate a positive association between *size* and restatement occurrence. We also include an additional measure of firm performance, *return on assets (ROA)* (Ferguson et al. 2004). We expect firms that are better performers will have fewer incentives to manage earnings and therefore anticipate *return on assets* to be negatively associated with the occurrence of restatements.

Our final control variable deals with the association between the occurrence of restatement and an auditor change. Auditors manage litigation risk in a variety of ways: increasing audit fees, dropping risky clients, and requiring more conservative accounting practices (Krishnan and Krishnan 1997). More recent evidence suggests auditors may also manage litigation risk by requiring new clients to restate previously issued financial statements. Using a unique sample of only quarterly restatements, Lazer et al. (2004) find firms with new auditors experience a significantly greater likelihood of restatement than firms with a continuing auditor. Based on this research, we include *auditor change* (*AUDITORCHANGE)*. Auditor change is equal to 1 if the auditor changed in the year of the restatement and 0 otherwise. Thus, we expect a positive association between *auditor change* and the likelihood of restatement.

Regression Model

Our primary research design is similar to that utilized in other studies investigating factors affecting the likelihood of restatement (Richardson et al. 2003; Abbott et al. 2004; Aier et al. 2005). Auditor industry specialization coupled with our ten control variables render the following regression model:

$$RESTATEMENT(CORE) = \alpha + \beta_1 AUDSPEC + \beta_2 LEV + \beta_3 FIN + \beta_4 EPR + \beta_5 BTM + \beta_6 ACCRUALS + \beta_7 EX\_ANTE + \beta_8 EPSGROWTH + \beta_9 SIZE + \beta_{10} ROA + \beta_{11} AUDITORCHANGE + \varepsilon$$

All variables are summarized in panel B of Table 4.

Table 4

RESULTS

Descriptive Statistics and Univariate Results

Panel A of Table 4 presents the means, medians, and standard deviations for the restatement firms along with their matched control firms. The restatement and control firms differ significantly with respect to auditor industry specialization, financing raised, accruals, ex-ante financing raised, EPS growth and auditor change, (all p-values<.01). The mean auditor specialization score for restatement firms is .010 which is .002 less than the control firms.[9] Additionally, the earnings-price (*EPR*) and book-to-market (*BTM*) ratios are also significantly different (p<.05). However, EPR is higher for the restatement firms while BTM is higher for the control firm group. The difference in three of the eleven variables in our model (leverage, size, and return on assets) was not significant between the restatement and control groups. The results of our matching process are similar to prior research (e.g. Abbott et al. 2004) and should provide a suitable sample with which to test our hypotheses.

Table 5 displays the Pearson correlations between the independent variables. We find numerous significant correlations between auditor industry specialization (*AUDSPEC)* and our control variables (p<.05). However, only the correlation between auditor industry specialization (*AUDSPEC)* and size (*SIZE)* exceeds .25. Carcello and Nagy (2004) document the negative association between auditor industry specialization and fraudulent financial reporting is weaker for larger clients. We address this issue in our sensitivity analysis. Regression diagnostics on the multivariate results reported in the next section do not indicate the presence of multicollinearity among any of the explanatory variables in our model.

[9] While this difference may appear small, because the weighted market share is calculated by multiplying two percentages together (market share * portfolio share), a firm with a 10% score for each would result in a weighted market share of only 1%.

Multivariate Results

Table 6 provides the regression results which allow us to examine the effects of auditor industry specialization on financial report restatements. The results strongly support hypothesis one. The results indicate the overall model is highly significant (χ^2 = 88.62, p= .0001) and all but three of the ten control variables significant in the expected direction. Our primary variable of interest, AUDSPEC, is negatively associated (p=.013) with the incidence of financial report restatements as predicted by H1. These results are consistent with the theory that auditor industry specialization plays a role in audit quality. Consequently, firms that engage industry specialists to audit their external financial reports may benefit from a reduced likelihood that they will need to restate financial statements subsequent to their issuance.

Table 6

To investigate further, we examine the effects of auditor industry specialization on the type of accounts (i.e. core vs. non-core) that are affected when a financial report restatement does occur. Hypothesis two predicts that even when a restatement is necessary, the severity of the restatement will be minimized when the external auditor is an industry specialist. Alternately stated, the restatement is more likely to affect non-crucial accounts (non-core accounts) that do not represent vital ongoing operations when the external auditor is an industry specialist.

The results of this examination strongly support our conjecture that industry specialist auditors are less likely to be involved with financial report restatements that affect the core operations of the organization (i.e. the firm's permanent earnings). These results are shown in Table 7. While numerous control variables are not significant for this particular sub-sample of companies, the overall model is solidly significant (χ^2 = 25.8, p=.0035). Importantly, the auditor industry specialization variable (AUDSPEC) is highly significant (p=.0034) supporting the

theory that industry specialist auditors are less likely to be involved in restatements that affect core accounts which are typically the accounts considered most crucial to the firm's ongoing operations.

Table 7

Sensitivity Analysis

To help ensure the robustness of our results, we further explore three primary issues related to the first hypothesis: (1) alternative auditor industry specialization metrics, (2) potentially omitted correlated variables, and (3) the possible interaction of client size with auditor industry specialization. With respect to the alternative metrics for auditor industry specialization, we calculate both the *market* and *portfolio* share measures. As expected, the coefficient estimates remain negative using either metric. While *market* share is strongly significant (p=.005), portfolio share is marginally significant at conventional levels (p=.08).

In addition to the ten control variables included in our base model, audit firm tenure has frequently been associated with audit quality in the extant literature with mixed findings (Frankel et al. 2002; Johnson et al. 2002; Myers et al. 2003a; Myers et al. 2003b; Carcello and Nagy 2004). To explore the effects on our results, we include a variable for *audit firm tenure* in our test of H1. We measure audit firm tenure as the length of the auditor/client relationship up to a period of twenty years prior to the year the restatement was issued. The non-tabulated results indicate that *audit firm tenure* is not significantly related to the likelihood of restatement. Furthermore, the inferences related to our auditor industry specialization (*AUDSPEC)* variable remain unchanged.

Our final sensitivity test associated with H1 relates to firm size. Carcello and Nagy (2004b) find size impacts the relationship of auditor industry specialization on the incidence of fraudulent financial reporting. We test this same interaction and our results reinforce the findings of Carcello and Nagy (2004b). A positive significant coefficient on the auditor industry specialization by size (*AUDSPECxSIZE)* interaction indicates the negative association between auditor industry specialization and the likelihood of restatements is weaker for larger firms.

We also perform sensitivity testing related to our second hypothesis. First, we test the alternative specifications of the auditor industry specialization metric. The results indicate auditor *market* share is not significantly related to core restatements; however, *portfolio* share remains negatively associated with the core restatements (p=.002). This finding potentially demonstrates that an audit firm's allocation of resources to a particular industry within its own firm may be more central to the characteristics associated with core account group restatements than the audit firm's allocation of resources compared to its competitors. Second, we reduce the restatement sample to exclude restatements that affect both a core and non-core account (n = 408). The primary inferences remain the same with auditor industry specialization being significantly negatively associated with core restatements. In summary, our sensitivity tests continue to support the conclusions of our primary analyses that engaging an industry specialist auditor should facilitate a reduced incidence of financial report restatements. Moreover, if a restatement should be required, it is less likely to affect critical core accounts.

SUMMARY AND CONCLUSION

Our research examines the relationship between auditor industry specialization and financial report restatements. We conjecture auditors considered industry specialists should

excel in performing the financial statement audit, and consequently, this should result in a reduced likelihood of financial report restatements. Our results support this contention and are consistent with the theory that firms engaging industry specialists as their external auditors are less likely to be required to restate their financial reports. We also examine and provide support for the supposition that for the sub-sample of restating firms, those firms that engage industry specialists issue restatements that are less likely to affect core accounts.

Our findings contribute to the existing accounting and audit literature and contain several important practical implications for practice. The notion of industry specialist auditors is reinforced and shown to make a practical difference in the quality of financial statements, as measured by financial report restatements. Reducing the likelihood of financial report restatements provides a direct benefit to companies because they will not suffer the loss of investor confidence and negative capital market repercussions associated with restatements (GAO 2002; Palmrose et al. 2004). Reducing the incidence of restatements will also improve the efficiency and effectiveness of our capital market system by helping to restore investor confidence in both corporate financial reports and the role of the auditing profession in the financial reporting process.

Our results are also consistent with industry specialist auditors reducing the gravity of restatements by being more likely to limit the restatements to core accounts which are typically considered to have a more permanent affect on earnings than non-core accounts. Investors and creditors are typically trying to evaluate and predict firm value by extrapolating information about core operations. Restatements of core accounts are likely to be considered more severe because they directly affect estimates of cash flows of ongoing operations which are used to make future cash flow estimates for firm valuation analyses. A reduction in the incidence of

core account restatements could help improve the accuracy of firm valuation analyses, thereby reducing investor uncertainty and firm risk assessments.

Our findings should also be of interest to those involved in the mandatory auditor rotation debate. Research supporting the advantages of industry specialist auditors can be utilized by the profession to encourage and support the ongoing use of industry specialist auditors. If mandatory rotation results in a reduction in the availability of industry specialists to firms in certain industries, our research helps support the conjecture that this action could result in lower quality audits.

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TABLE 1
Sample Selection Results

Panel A: Restatement Sample Selection

	Number	%
Total Number of Annual Restatements Identified between 1998 and 2003	986	100.0
Less: Restatements for technical reasons not amounting to misstatements	(111)	(11.3)
Less: Companies that did not eventually restate	(23)	(2.3)
Less: Companies with Non-Big N auditor or auditor not identifiable	(135)	(13.7)
Less: Companies with missing data in Compustat	(210)	(21.3)
Less: Companies with no control firm located within 30% MVE	(22)	(2.2)
Less: Financial Institutions	(3)	(0.3)
Total Restatement Firm Sample	482	48.9

Panel B: Restatement Sample Observations by Two-Digit SIC Code

10 - Metal Mining	5	48 - Communications	27
12 - Coal Mining	1	49 - Electric, Gas, and Sanitary Services	16
13 - Oil and Gas Extraction	13	50 - Wholesale - Durable Goods	14
21 - Tobacco Products	11	51 - Wholesale - Non-durable Goods	11
23 - Apparel and Other Fabric Products	3	53 - General Merchandise Stores	1
26 - Paper Products	9	54 - Food Stores	5
27 - Printing and Publishing	2	55 - Auto Dealers and Gas Stations	1
28 - Chemical and Allied Products	34	56 - Apparel and Accessory Stores	8
29 - Petroleum Refining	1	57 - Home Furnishings and Equipment	4
30 - Rubber and Misc. Plastic Products	4	58 - Eating and Drinking Establishments	18
33 - Primary Metals	4	59 - Misc. Retail	9
34 - Fabricated Metals	5	72 - Personal Services	1
35 - Industrial Machinery, Computers	41	73 - Business Services	126
36 - Electronic Equipment	17	78 - Motion Pictures	2
37 - Transportation Equipment	6	79 - Amusement Parks	13
38 - Measuring, Analyzing Instruments	31	80 - Health Services	2
39 - Misc. Manufacturing Industries	3	82 - Educational Services	2
44 - Water Transportation	3	83 - Social Services	2
45 - Transportation by Air	5	87 - Engineering, Accounting, Research, & Mgmt Services	19
47 - Transportation Services	3		
Total			482

Panel C: Restatement Sample by Observation Year

1998	57
1999	70
2000	98
2001	114
2002	86
2003	57
Total	482

TABLE 2

Core and Non-core Account Descriptions/Classifications*

CORE ACCOUNTS:

- Revenue
  - Timing Differences
  - Permanent Changes
  - Unclear Changes
- Cost of Sales
- Operating Expenses
  - Operating Reserves
  - Capitalized Expenses
  - Expense Accruals
- Reclassifications between core accounts

NON-CORE ACCOUNTS:

- One-time/Special Items
  - Adjustments to Restructuring Costs
  - PP&E Impairments and Write downs
  - Impairments to intangible assets including goodwill
  - Adjustments impairments to investment (equity, mark to market)
  - Adjustments to non-extraordinary gains and losses
  - Adjust or record fines or settlements
- Merger Related Items
  - Change from pooling to purchase accounting
  - Adding merger previously considered immaterial
  - Adjustments to goodwill
  - Adjustments to IPR&D write-offs
  - Adjustments to acquisition accruals
- Non-Operating Items
  - Adjustments to tax accounts
  - Convertible debt/warrant beneficial interest
  - Adjustments to interest/others
  - Adjustments to other income/expense
  - Adjustments to account for discontinued operations
  - Adjustments to account for extraordinary items
- Other Items
  - Balance sheet reclassifications
  - Adjustment to EPS classifications
  - Consolidation errors
  - Adjustments to equity accounts

**From Palmrose and Scholz (2004)*

TABLE 3
Accruals Calculation*

Accruals	**=**	**ΔWC + ΔNCO + ΔFIN**
ΔWC	=	Δ Working Capital = WC_t-WC_{t-1} where t is year of restatement
WC	=	Current Operating Assets (COA) – Current Operating Liabilities (COL)
COA	=	Current Assets (Item 4) – Short Term Investments (Item 1)
COL	=	Current Liabilities (Item 5) – Debt in Current Liabilities (Item 34)
ΔWC	=	[(Item 4_t - Item 1_t)-(Item 5_t – Item 34_t)] - [(Item 4_{t-1} - Item 1_{t-1}) - (Item 5_{t-1} – Item 34_{t-1})]
ΔNCO	=	Δ Non-current operating assets = NCO_t - $NCO_{t-1}$where t is year of restatement
NCO	=	Non-current operating assets (NCOA) – Non-current operating liabilities (NCOL)
NCOA	=	Total Assets (Item 6) – Current Assets (Item 4) – Investments and advances (Item 32)
NCOL	=	Total Liabilities (Item 181) – Current Liabilities (Item 5) – Long-term Debt (Item 9)
ΔNCO	=	[(Item 6_t - Item 4_t - Item 32_t) - (Item 181_t - Item 5_t - Item 9_t)] - [(Item 6_{t-1} - Item 4_{t-1} - Item 32_{t-1}) - (Item 181_{t-1} - Item 5_{t-1} - Item 9_{t-1})]
ΔFIN	=	Δ Net Financial Assets = FIN_t – FIN_{t-1} where t is the year of the restatement
FIN	=	Financials Assets (FINA) – Financial Liabilities (FINL)
FINA	=	Short-term Investments (Item 193) + Long-term Investments (Item 32)
FINL	=	Long-term Debt (Item 9) + Debt in Current Liabilities (Item 34) + Preferred Stock (Item 130)
ΔFIN	=	[(Item 193_t + Item 34_t)]-[(Item 9_t + Item 34_t + Item 130_t)] - [(Item 193_{t-1} + Item 34_{t-1})]-[(Item 9_{t-1} + Item 34_{t-1} + Item 130_{t-1})]

**From Richardson, Sloan, Soliman and Tuna (2005)*

TABLE 4
Univariate Results

Panel A: Descriptive Statistics

	Restatement Firms (n = 482)			Control Firms (n = 482)					
Variable Name	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**Diff. in Means**	**t-stat**	
AUDSPEC	0.010	0.007	0.011	0.012	0.008	0.012	-0.002	2.599	***
LEV	0.240	0.218	0.217	0.216	0.199	0.196	0.024	-1.822	
FIN	0.187	0.079	0.332	0.110	0.027	0.227	0.077	-4.223	***
EPR	0.003	0.067	0.408	-0.026	0.066	0.436	0.029	-1.059	**
BTM	0.643	0.486	0.801	0.839	0.621	1.048	-0.196	3.260	**
ACCRUALS	0.005	0.012	0.455	-0.107	-0.023	0.375	0.112	-3.985	***
EX_ANTE	0.340	0.000	0.476	0.230	0.000	0.419	0.110	-4.097	***
EPSGROWTH	0.860	0.000	1.203	0.620	0.000	0.984	0.240	-3.341	***
SIZE	6.264	6.154	1.869	6.426	6.338	1.710	-0.162	1.403	
ROA	-0.078	0.017	0.413	-0.115	0.019	0.449	0.037	-1.336	
AUDITORCHANGE	0.137	0.000	0.344	0.085	0.000	0.279	0.052	-2.569	***

***, *** Significant at p-value < .05, .01 respectively (All tests are two-tailed)*

Panel B: Variable Definitions

AUDSPEC	=	Weighted auditor market share; see methodology section
LEV	=	Leverage - Total debt deflated by total assets; short term debt (Compustat 34) plus long term debt (Compustat 9) divided by total assets (Compustat 6)
FIN	=	Financing Raised - Sum of additional cash raised from issuance of long term debt (Compustat 9), common stock (Compustat 108) and preferred stock (Compustat 111) deflated by total assets (Compustat 6)
EPR	=	Earnings price ratio; Income from continuing operations (Compustat 178) divided by market capitalization at the end of the year (Compustat 25 times Compustat 199)
BTM	=	Book to market ratio: Book value of equity (Compustat 60) divided by market capitalization at the end of the physical year (Compustat 25 times Compustat 199)
ACCRUALS	=	Change in non-cash working capital plus change in non-current operating assets plus change in net financial assets, scaled by total assets; See Table 3 for detailed accrual calculation description
EX_ANTE	=	Ex-ante Financing Raised - Indicator variable equal to 1 if firm's free cash flow is < -.1 and 0 otherwise where free cash flow is net income (Compustat 172) less accruals (defined above) divided by average of last three years capital expenditures (Compustat 128)
EPSGROWTH	=	Number of consecutive quarters of EPS growth for two years prior to restatement
SIZE	=	Log of total assets (Compustat 6) in the year of restatement
ROA	=	Return on assets in the year of restatement calculated with unrestated net income
AUDITORCHANGE	=	Indicator variable equal to 1 if auditor changed in the year of restatement, 0 otherwise

TABLE 5
Pearson Correlation Matrix

Variable	*AUDSPEC*	*LEV*	*FIN*	*EPR*	*BTM*	*ACCRUALS*	*EX-ANTE*	*EPSGROWTH*	*SIZE*	*ROA*	*AUDITOR CHANGE*
AUDSPEC	1.00										
	0.00										
LEV	0.17	1.00									
	0.00	0.00									
FIN	-0.07	0.12	1.00								
	0.03	0.00	0.00								
EPR	-0.04	0.11	0.05	1.00							
	0.25	0.00	0.17	0.00							
BTM	-0.01	-0.02	-0.07	-0.02	1.00						
	0.74	0.65	0.04	0.50	0.00						
ACCRUALS	-0.11	-0.13	0.02	0.20	-0.02	1.00					
	0.00	0.00	0.53	0.00	0.64	0.00					
EX_ANTE	-0.03	-0.24	0.13	-0.30	-0.06	0.10	1.00				
	0.43	0.00	0.00	0.00	0.05	0.00	0.00				
EPSGROWTH	-0.06	0.00	-0.04	0.01	-0.08	0.05	-0.02	1.00			
	0.05	0.96	0.19	0.66	0.02	0.16	0.58	0.00			
SIZE	0.28	0.33	-0.11	0.19	-0.07	-0.07	-0.21	-0.02	1.00		
	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.61	0.00		
ROA	-0.02	-0.02	-0.06	0.59	-0.03	0.26	-0.32	0.05	0.17	1.00	
	0.51	0.65	0.07	0.00	0.38	0.00	0.00	0.10	0.00	0.00	
AUDITORCHANGE	0.03	-0.01	0.02	-0.04	0.00	-0.03	0.08	0.03	-0.05	-0.03	1.00
	0.42	0.88	0.50	0.22	0.98	0.32	0.02	0.32	0.13	0.30	0.00

Note: p-values listed below correlation coefficients

TABLE 6

Logistic Regression of Financial Restatements on Auditor Industry Specialization and Control Variables

Regression Model:

$$RESTATEMENT = \alpha + \beta_1 AUDSPEC + \beta_2 LEV + \beta_3 FIN + \beta_4 EPR + \beta_5 BTM + \beta_6 ACCRUALS + \beta_7 EX\_ANTE + \beta_8 EPSGROWTH + \beta_9 SIZE + \beta_{10} ROA + \beta_{11} AUDITORCHANGE + \varepsilon$$

Independent Variable	Coefficient Estimate	Wald χ^2	p-value
Intercept			
AUDSPEC (-)	-14.239	4.964	.0130
LEV (+)	1.194	10.025	.0008
FIN (+)	0.645	4.923	.0133
EPR (-)	-0.025	0.013	.4050
BTM (-)	-0.219	6.099	.0068
ACCRUALS (+)	1.278	8.697	.0016
EX_ANTE (+)	0.494	6.555	.0055
EPSGROWTH (+)	0.197	9.376	.0011
SIZE (+)	-0.038	0.778	.1888
ROA (-)	-0.326	0.836	.1825
AUDITORCHANGE (+)	0.533	5.707	.0085
Observations	964		
Adjusted R^2	0.117		
Model χ^2		88.617	.0001

Restatement = 1 if financial statement is present, 0 otherwise
Independent Variables are defined in Table 4

TABLE 7

Logistic Regression of CORE Restatements on
Auditor Industry Specialization and Control Variables

Regression Model:

$$CORE = \alpha + \beta_1 AUDSPEC + \beta_2 LEV + \beta_3 FIN + \beta_4 EPR + \beta_5 BTM +$$
$$\beta_6 ACCRUALS = \beta_7 EX\_ANTE + \beta_8 EPSGROWTH + \beta_9 SIZE + \beta_{10} ROA +$$
$$\beta_{11} AUDITORCHANGE + \varepsilon$$

Independent Variable	Coefficient Estimate	Wald χ^2	p-value
Intercept	1.535	12.482	.0000
AUDSPEC (-)	-26.511	7.164	.0034
LEV (+)	0.576	1.138	.1430
FIN (+)	-0.907	7.932	.0025
EPR (-)	0.054	0.041	.4200
BTM (-)	-0.045	0.132	.3580
ACCRUALS (+)	0.540	1.670	.0980
EX_ANTE (+)	-0.492	3.794	.0255
EPSGROWTH (+)	0.039	0.191	.3310
SIZE (+)	-0.059	0.889	.1730
ROA (-)	-0.169	0.181	.3355
AUDITORCHANGE (+)	0.236	0.606	.2180
Observations	482		
Adjusted R^2	0.073		
Model χ^2		25.808	.0035

CORE = 1 if financial restatement affected a core account, 0 otherwise
Core accounts include revenue, cost of goods sold, and operating expenses
A detailed listing of core and non-core account descriptions is included in Table 2
Independent Variables are defined in Table 4