

## **Mandatory Auditor Rotation: Evidence from Restatements**

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### **Abstract**

In this study, we provide evidence on the potential impact of mandatory audit firm (auditor) rotation on financial reporting quality. To do this, we analyze a sample of public companies that announced financial statement restatements between January 1997 and October 2001. We compare these to a matched set of non-restating public companies. We find that mature companies are more likely to have longer auditor tenure and are generally less likely to make restatements. We find that auditor tenure is not significantly related to the probability of restatement in the overall sample, but, controlling for company age, we find that auditor tenure is significantly related to the probability of restatement in certain subsamples. Specifically, misstatements that do not increase non-core earnings are *less* likely as the auditor-client relationship lengthens. On the other hand, misstatements that increase core earnings are *more* likely as tenure lengthens, but further examination reveals that this result is associated with restatements of quarterly financial statements, which are reviewed rather than audited. Auditor tenure is not associated with a significant increase in the propensity for restatements of annual financial statements. Focusing on just the restatement sample, we find no evidence that changing auditors affects the likelihood that the auditor identifies the need for the restatement. Further, we find no evidence of an association between the nature or severity of the restatement and auditor tenure. Given our findings – that the association between auditor tenure and the propensity for restatements is context-specific, that the association can be either positive or negative, and that the positive association involves restatements of quarterly but not annual financial statements – our evidence provides no clear support for mandatory auditor rotation.

Keywords: auditor tenure, restatements, mandatory rotation

Data availability: All data used in this study are publicly available.

# **Mandatory Auditor Rotation: Evidence from Restatements**

## **I. INTRODUCTION**

In this study, we provide evidence on the potential impact of mandatory audit firm (auditor) rotation on financial reporting quality. The mandatory rotation of audit firms has long been recommended as a means to improve audit effectiveness and, in turn, improve the quality of financial reporting. For example, the Report of the Commission on Auditors' Responsibilities (Cohen Commission) (1978) suggests that mandatory rotation might change auditor incentives and bring a "fresh viewpoint" to audit engagements. The authors reason that "[s]ince the tenure of the independent auditor would be limited, the auditor's incentive for resisting pressure from management would be increased" (p. 108).

While there is currently no requirement for U.S. public companies to rotate audit firms, pressure to enact such a requirement has increased in the wake of a series of large financial statement restatements.<sup>1</sup> For example, the Public Oversight Board, in its Final Report (2002), calls for mandatory auditor rotation every seven years. Further, certain institutional investors have announced plans to oppose shareholder approval of any audit firm that has been retained by a company for more than five years (Benson 2002), and the Sarbanes-Oxley Act (2002) requires the Comptroller General to conduct a study of the potential effects of requiring the mandatory rotation of auditors registered under the Act.

One of the reasons that mandatory rotation has not yet been instituted is because of concerns that it could diminish, rather than enhance, audit effectiveness and thereby lower financial reporting quality. A number of studies suggest that this outcome is not unlikely. For

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<sup>1</sup> Internationally, periodic audit firm rotation has been mandated in some countries (e.g., Italy, Greece, and Spain) and has been included in legislative proposals in the European Union and Germany and in the recommendations of the Cadbury Committee in Britain (Arrunada 1997).

example, the Cohen Commission (1978), in studying cases of substandard auditor performance, found indications that a lack of familiarity with new clients' businesses, operations, and systems, in first- or second-year audits was potentially more detrimental to audit quality than was any "over familiarity" or close relationship due to long-term auditor tenure. Further, the National Commission on Fraudulent Financial Reporting (Treadway Commission) (1987) recommended that the peer review program of the AICPA's SEC Practice Section pay closer attention to first-year audits of public clients, in part because the Commission's review of fraud-related cases revealed that a significant number involved companies that had recently changed auditors (p. 54). Finally, based on an analysis of reported cases alleging audit failure between 1979 and 1991, the Quality Control Inquiry Committee (QCIC) of the AICPA's SEC Practice Section concluded that such allegations occurred almost three times as often on first- or second-year audits (AICPA 1992). If mandatory auditor rotation would, in fact, diminish audit effectiveness, the public interest would not be well served by instituting such a system.

To gain some insight on the relation between auditor tenure and audit effectiveness, we consider the length of the auditor-client relationship at the time financial statements are misstated. That is, we examine the issue of mandatory rotation in the context of financial statement restatements. To do this, we analyze a sample of public companies that announced financial statement restatements between January 1997 and October 2001. Our sample is limited to reports initially filed with the SEC (quarterly or annual) that violated existing GAAP. We do not include changes due to the adoption of new standards, write-offs, or changes in estimates because these accounting events may be attributable to changing information rather than the misapplication of existing standards.

Thus, our restatement sample is a particularly suitable setting for addressing the issue of audit effectiveness because it represents situations in which the auditors' quarterly review or annual audit failed to detect client departures from extant accounting standards for recording and reporting business activities. In addition, from a policy perspective, restatements are a major focus of regulator and investor concerns over the quality of auditing and financial reporting, so our results provide insights into a phenomenon that has been a motivating factor in recent calls to impose mandatory rotation of audit firms.

For a number of analyses, we utilize an expanded sample in which each restatement company is matched with a control company that did not restate their financial statements for the period, in the same industry, with the same auditor, and of similar size at the time of the initial misstatement. We examine the association between auditor tenure and the existence of a restatement to assess whether misstatements are more likely in the earlier years of the auditor-client relationship, when, opponents of mandatory rotation would claim, the auditor is less familiar with the client's business etc., or whether misstatements are more likely in the later years of the auditor-client relationship, when, proponents of mandatory rotation would claim, audit effectiveness may suffer because of over-familiarity (e.g., from auditor complacency or a lack of skepticism) and/or independence may be diminished.

We compare the auditor tenure for our 562 restatement companies to that for the matched sample of 562 non-restating companies, and use logistic regression to examine whether auditor tenure is associated with financial statement misstatements. We also perform similar analyses on subsamples of core (and non-core) earnings restatements and quarterly (and annual) financial statement restatements, and consider the directional affect on income. In addition, for the 69 restatement companies that switch auditors prior to the restatement announcement, we determine

whether the new auditor (rather than the company or regulators) identified the need for the restatement. If so, this evidence would provide some support for mandatory auditor rotation, which brings a “fresh look” by a new auditor. Finally, we examine the 562 restatement companies (without the matched control companies) to assess any association between the nature or severity of the misstatement and auditor tenure.

In multivariate analyses of our full sample of restatement and matched companies, we find that tenure is not significantly associated with the probability of financial statement misstatements. Further, tenure is not significantly associated with misstatements of annual financial statements. However, tenure is significant when considering various subsamples and controlling for age. Specifically, we find that misstatements that do not increase non-core earnings are *less* likely as the auditor-client relationship lengthens. On the other hand, we find that income-increasing misstatements, core earnings misstatements, and income-increasing core earnings misstatements are *more* likely as the auditor-client relationship lengthens, but further analysis reveals that these results are due to restatements of quarterly financial statements, which are reviewed rather than audited. Analysis of the restatement sample reveals that changing auditors does not affect the likelihood that the auditor identifies the restatement. Finally, we find no evidence that the nature or severity of the restatement is related to auditor tenure.

The remaining sections of this paper are organized as follows. Section II summarizes the related extant research. In Section III, we describe our sample and examine the relation between auditor tenure, company age, and the propensity for companies to misstate earnings. We present our multivariate results in Section IV, and summarize and conclude in Section V.

## II. AUDITOR TENURE AND FINANCIAL REPORTING QUALITY

Consistent with the findings of the Cohen and Treadway Commissions and the QCIC, research on auditor litigation and SEC enforcement actions provides evidence that alleged audit failures are more likely in the early years of an auditor-client relationship. For example, St. Pierre and Anderson (1984) report that 23 percent of their litigation cases involve public accountants who had audited the client for three or less years. Similarly, Stice (1991) finds that auditor tenure is three years or less for approximately 30 percent of companies in his litigation sample, versus 2 to 22 percent in control samples of non-litigation companies, and that auditor tenure is significantly negative in one specification. Finally, Beasley et al. (2000) report that for 38 percent of their sample of SEC enforcement actions against auditors, the audit in question was an initial audit.

Geiger and Raghunandan (2002) provide similar evidence, albeit using a different approach for determining “audit/financial reporting failures.” They define a “reporting failure” as a bankrupt company that did not receive a going-concern modified audit report from the auditor prior to bankruptcy. They find significantly more “reporting failures” in the earlier years of auditor-client relationships, suggesting a negative relationship between auditor tenure and audit quality.

In a recent study, Myers et al. (2003) use a number of accruals measures to proxy for earnings and audit quality, and find that many important accruals measures actually *decrease* with auditor tenure. Specifically, they find that the magnitude of both discretionary and current accruals decline with longer auditor tenure, and that longer auditor tenure is associated with *less* extreme income-increasing accruals and income-decreasing accruals. Similarly, Ghosh and Moon (2003) find that the absolute value of discretionary accruals is negatively associated with

auditor tenure. Further, Ghosh and Moon examine the effect of tenure on earnings response coefficients and find these to be increasing in tenure, consistent with investor confidence in audit quality and financial reporting increasing as the auditor-client relationship lengthens. They also find that Standard & Poor's common stock rankings and subordinated debt ratings improve with auditor tenure, and interpret this to suggest that financial intermediaries perceive audit quality to increase as the auditor-client relationship lengthens. Thus, the results of these studies are consistent with the notion that as the auditor-client relationship lengthens, auditors are more likely to restrict management from making extreme reporting decisions.

Contrary to those described above, some studies report results that support a decrease in audit and/or financial reporting quality with increased auditor tenure. For example, from the perspective of financial reporting quality, Davis et al. (2002) suggest that longer auditor tenure is associated with the use of discretionary accruals to manage earnings and, thus, lower financial reporting quality.<sup>2</sup> Further, in a study of school district audits by small audit firms, Deis and Giroux (1992) find that longer tenure is associated with reduced audit quality as proxied by quality control reviews. However, the results of this study may not generalize to publicly-traded companies.

Other studies provide evidence on auditor tenure from which it is more difficult to make inferences about the link between auditor tenure and audit and/or financial reporting quality. For example, Knapp (1991) finds that audit committee member perceptions of audit quality are positively correlated with auditor tenure when comparing new auditors to those with 5 years of

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<sup>2</sup> Davis et al. (2002) find a positive relation between auditor tenure and absolute discretionary accruals and a negative relation between auditor tenure and absolute analyst forecast errors. They interpret these results as consistent with management gaining greater reporting flexibility and being able to meet earnings forecasts more easily as auditor tenure increases. They also find a significant negative relation between auditor tenure and discretionary accruals and a significant positive relation between auditor tenure and analyst forecast errors. They interpret these results as consistent with management using its reporting flexibility to reduce reported earnings, which does not diminish management's ability to exceed earnings forecasts.

experience with a given client, but negatively correlated when comparing auditors with 5 years of experience with a given client to those with 20 years of experience with a given client. That is, audit committee members perceive audit quality to increase over the first 5 years of an audit engagement but to decrease at some point over the next 15 years. In the context of auditor changes, Krishnan and Krishnan (1997) examine a joint hypothesis that litigation risk is higher in the early years of an auditor-client relationship and that auditors are more likely to resign (rather than be dismissed) from engagements with high litigation risk. They conjecture and find that auditors are more likely to resign from new or recent engagements and to be dismissed from longer-standing ones. Frankel et al. (2002) study the relation between fees billed by audit firms and discretionary accruals and find a significantly negative relation between auditor tenure and absolute discretionary accruals. However, auditor tenure is not significant in a regression with income-increasing discretionary accruals as the dependent variable, and is significantly positive in a regression with income-decreasing discretionary accruals as the dependent variable. Furthermore, tenure is not significantly associated with their two other measures of earnings management – narrowly meeting or beating analyst expectations and reporting a small increase in earnings. Finally, Mansi et al. (2003) find that for investment grade companies, investors require higher rates of return on corporate debt as the length of the auditor-client association increases but for non-investment grade companies, investors require lower rates of return on corporate debt as the length of the auditor-client association increases. They interpret this as suggesting that mandatory rotation would be detrimental to non-investment grade companies.

Our study is distinct from much of the prior research on auditor tenure that proxies for earnings and audit quality using AAERs, litigation, discretionary accruals, and missed going concern reports in that, by definition, our restatements involve material violations of GAAP –

precisely those items that auditors are responsible for identifying and correcting. While the SEC may issue AAERs after restatements, prior evidence suggests that only a small proportion of restatements result in AAERs. Related to this, Palmrose and Scholz (2004) document that 13 percent of restatement announced from 1995 to 1999 also received AAERs. Similarly, they document that only 38 percent of restatements announced during that time period resulted in litigation against the company and 13 percent in litigation against the auditor. Further, allegations of misstated financial statements made in legal arguments are not always substantiated. With respect to the use of discretionary accruals as a proxy for poor quality financial reporting, such accruals may or may not be attributable to accounting that violates GAAP. That is, while accruals may exploit gray areas or estimations allowed by GAAP, thus reducing reporting quality, the auditor would not necessarily have the backing of GAAS and GAAP if (s)he were to require a change in reporting. Finally, missed going concern reports do not reflect on the accuracy of the accounting used to prepare the financial statements.

### **III. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS**

#### **Sample Selection**

Our initial sample consists of 693 firms that announce financial statement restatements between January 1997 and October 2001. (We conclude with October 2001 to avoid confounding our analysis with post-Enron events.) We identified the restatement sample from public sources including Lexis-Nexis News Library, Lexis Disclosure of other corporate events, and Form 8-K's on Lexis, using key-word searches for restatements and for specific accounting

issues, such as in-process research and development (IPR&D).<sup>3</sup> We also added restatement companies identified in other sources discussing restatements.<sup>4</sup>

In order to preserve comparability with our non-restatement (control) companies, we require that information about the restatement companies be available on the 2001 Compustat Merged Industrial file. We eliminate 65 restatements because we cannot identify the company on Compustat, 41 additional restatements because Compustat does not contain the required financial information for the first year of the misstatement, and 25 observations because the auditor code is missing.<sup>5</sup> This results in a sample of 562 different restatements made by 529 companies. With respect to the effect of the misstatement on income (as originally reported), 381 misstatements are income increasing, 28 do not affect reported income, and 153 are income decreasing.

We identify the control companies by finding the company closest to the restatement company in size (as determined by total assets) having the same auditor, drawn from the same (2-digit SIC code) industry and year in which the misstatement initially occurs. For each restatement and control company, we calculate the length of the auditor-client relationship as of the first year of the misstatement, by counting the number of years that the client has had the same auditor since 1980 according to Compustat.<sup>6</sup>

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<sup>3</sup> Key words used were “revise!” “restat!” “adjust!” and “error!”

<sup>4</sup> These sources include the *Securities Class Action Alert* and the financial press. We also reviewed each of the 794 companies listed in GAO (2002) as having announced restatements during 1997-2001. The GAO list includes a number of companies that changed accounting policies and are not restatements to correct non-GAAP accounting. We excluded these companies from our initial sample. A meaningful number of exclusions involve companies adopting SEC SAB 101 (which was issued in December 1999) in accordance with guidance provided in the SAB.

<sup>5</sup> Although we could conceivably collect the missing financial and auditor information for these 66 firms by searching their 10-K filings, we chose not to do so, so that comparability with the Compustat universe would be preserved.

<sup>6</sup> Here we consider mergers of audit firms and code changes to a merged firm as a continuation of the old auditor.

## **Descriptive Statistics**

Table 1 Panel A presents descriptive statistics for the 562 restatement companies and the Compustat population in 1999, the mid-year of our sample period. We find that Compustat companies are significantly older and have longer auditor tenure than do our sample companies. Further, Compustat companies are also significantly less likely to have a merger or acquisition in the year and are significantly more likely to be profitable than our sample companies. Not reported in the table, we find that 87 percent of our sample companies have Big Five auditors compared to 80 percent of the 1999 Compustat population.

### Insert Table 1

Table 1 Panel B presents descriptive statistics for our sample companies and the 562 matched control companies. By construction, the book value of assets is very similar for the restatement and control companies, with the median restatement company reporting \$125 million in assets in the first year of misstatement and the median control company reporting \$115 million in assets in the same year. Further, mean auditor tenure, company age, and leverage are not significantly different, at conventional levels, between the two groups. The median auditor tenure is four years for both groups, and the median age is six years for restatement companies and seven years for control companies. The ratio of liabilities to assets is .53 for the sample companies and .51 for the control companies. The only significant differences between the two groups are the percentage profitable and the percentage involved in a merger or acquisition during the year. Forty-eight percent of the restatement companies are profitable in the first year of the misstatement compared to 59 percent of the control companies. Further, 42 percent of our sample companies are involved in a merger or acquisition during the year versus 30 percent of

control companies. Although these differences are highly significant ( $p = 0.0001$ ), restatement companies and control companies appear to be otherwise quite similar.

### **Restatement Sample: Further Descriptive Statistics and Analyses**

Additional descriptive statistics and analyses, not tabulated, provide a number of other relevant insights regarding restatements. For example, 282 observations are misstatements of quarterly financial statement numbers only.<sup>7</sup> In other words, the misstatement affects the annual report in only 280 of the 562 restatement observations. However, companies that misstate only the quarterly financial statements do not significantly differ from the companies that misstate annual financial statements in terms of auditor tenure, age, size, leverage, profitability, or merger and acquisition activity.

Further, more than 95 percent of the restatements occur within three years of the first year misstated, 15 percent are restated in the same calendar year in which the misstatement occurred, and the median restatement occurs 311 days after the date of the first misstated financial statement. The median restatement company misstates three quarters of data, and while one company misstated 31 quarters, in 19 percent of the cases, the misstatement persists for only one quarter.

Approximately 8 percent of the restatement companies acquired new auditors between the misstatement and the restatement, and 30 percent replaced their auditor within three years of the misstatement. The party responsible for identifying the need for a restatement is unknown in

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<sup>7</sup> In late 1999, the SEC mandated timely reviews of quarterly financial statements before filing 10-Q's with the Commission, rather than at year-end. However, the largest audit firms had already been performing timely reviews on most public clients long before the SEC requirement. Since few companies disclose whether they have timely reviews (Ettredge et al. 1994), we are unable to determine which companies in our sample do so.

173 cases. In the remaining 389 cases, 122 misstatements were identified by the auditor, 145 were identified by the SEC, and 122 were identified by the company.

Further analysis reveals that changing auditors does not significantly affect the probability that the auditor identifies the restatement.<sup>8</sup> Specifically, for the subset of companies that acquire new auditors between the misstatement and the announcement of the restatement, the new auditor identifies 30 percent of the misstatements, but this is not significantly different from the 42 percent of misstatements that are identified by the auditor for the group of companies that do not change auditors between the misstatement and the announcement of the restatement.

Overall, these descriptive statistics and analyses provide no compelling evidence that auditor tenure affects the probability of restatements or the detection of misstatements. Auditor tenure is not significantly different for restatement and control companies, and changing auditors after a misstatement does not significantly alter the probability that the auditor will identify the misstatement. Thus, this evidence does not provide support for the claims made by proponents of mandatory auditor rotation.

### **Audit Tenure, Firm Age, and the Frequency of Restatements**

As previously discussed, the call for mandatory auditor rotation is predicated on the belief that as the auditor-client relationship lengthens, audit quality declines, whether from auditor complacency or a loss of skepticism with “over-familiarity” (thereby diminishing auditor expertise) or from the auditor becoming less independent presumably from developing economic ties to the client (thereby diminishing auditor incentives to detect and/or reveal misstatements)

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<sup>8</sup> Here we analyze company disclosures for attribution. For a discussion of issues related to attribution see Palmrose et al. (2003).

(Mautz and Sharaf 1961; U.S. Senate 1976). Proponents link a decline in audit quality with a reduction in financial reporting quality, which could manifest itself in an increased likelihood of financial statement misstatements. That is, if lengthened auditor tenure reduces audit quality in a way that allows reduced financial reporting quality, then longer auditor tenure could result in more frequent misstatements.

The simplest test of whether lengthened auditor tenure increases the probability of misstatements is to examine the frequency of misstatements for differing levels of tenure. We use restatements as a proxy for misstatements and the universe of company-year observations between 1992 and 2001 (the misstatement period) that report non-negative sales and non-missing auditors on the 2002 Merged Industrial Compustat tape, and calculate the proportion of companies with restatements for various levels of auditor tenure. The results appear in Figure 1.

Insert Figure 1

When we consider all companies listed on Compustat during the misstatement period, the proportion of restatement companies ranges from a high of 1 percent in years four and five of tenure to a low of 0.32 percent in year ten of tenure. On average, a greater percentage of companies misstates during the first five years of auditor tenure than over longer auditor tenure. While this result suggests that longer audit tenure is associated with fewer restatements (supporting claims made by opponents of mandatory auditor rotation), the analysis is incomplete because company age should be considered.

Recall that Table 1 Panel A reveals that more mature companies are less likely to restate financial statements. Further, audit tenure and company age should also be correlated.<sup>9</sup> Finally, we cannot measure longer auditor relationships for companies new to Compustat, which also confounds the analysis. After considering company age, the relationship between auditor tenure

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<sup>9</sup> The Pearson correlation coefficient for age and tenure in our sample is 68 percent.

and the likelihood of restatement is less obvious. To further explore this relationship, we eliminate companies that are less than ten years old in figure 1. When we consider only the more mature companies on Compustat, we find that the proportion of companies restating is much lower for all years of tenure less than ten. Moreover, the proportion that restate in the first five years of auditor tenure is not much different from the proportion that restate after ten years of auditor tenure. Even so, inferences from this analysis should be made cautiously because the analysis excludes many companies that are the focus of concerns over audit and financial reporting quality in the early years of an auditor-client relationship, such as those with recent IPOs.

Nonetheless, the analysis does indicate the need to consider the effects of company age in assessing the association between auditor tenure and the propensity for misstated financial statements. Along with age, we also consider several other factors that may affect management incentives to misstate. These are described and discussed in the following section.

#### **IV. MULTIVARIATE RESULTS**

To gain additional insights on the association between auditor tenure and the propensity for restatements, we perform a number of multivariate analyses. First, we run logistic regressions, where the dependent variable is an indicator for whether or not the company restated, controlling for company size, leverage, whether the company is profitable, and whether the company has undergone a merger or acquisition during the year. We also control for age in one specification because, as previously noted, age and tenure are correlated.

We include leverage and an indicator for whether the company is profitable because we suspect that, at least for some subsamples of misstatements, companies with higher leverage and

loss companies have greater incentives to misstate financial reports. Further, some prior research finds that restatement companies tend to be less profitable and have higher leverage than non-restating companies (Kinney and McDaniel 1989; DeFond and Jiambalvo 1991). Similarly, we include an indicator variable for merger and acquisition activity because prior literature suggests that managers have incentives to manage earnings prior to these events (Erickson and Wang 1999), and because Kinney et al. (2003) find that the likelihood of restatement increases with acquisitions. Therefore, we expect a positive coefficient on leverage and on the merger and acquisition indicator, and a negative coefficient on age and on the profitability indicator. Finally, even though our restatement and control companies are matched on size as measured by assets, we include an additional size-related control variable based on sales. The inclusion of this variable recognizes that assets and sales need not similarly measure size. It also avoids any correlated omitted variable issues in our analyses that focus on earnings misstatements.

Our two models are as follows:

$$Restatement_t = \beta_0 + \beta_1 Tenure_t + \beta_2 Age_t + \beta_3 Size_t + \beta_4 Leverage_t + \beta_5 Profitable_t + \beta_6 Merger_t + \varepsilon_t \quad (1)$$

and

$$Restatement_t = \beta_0 + \beta_1 Tenure_t + \beta_2 Size_t + \beta_3 Leverage_t + \beta_4 Profitable_t + \beta_5 Merger_t + \varepsilon_t \quad (2)$$

where Restatement = 1 if the company restates its financial statements, and 0 otherwise

Tenure = the number of consecutive years since 1980 that the company has retained the auditor

Age = the number of years for which sales was reported in Compustat since 1980

Size = the natural log of Sales

Leverage = Total Liabilities / Total Assets

Profitable	= 1 if earnings (as initially reported before being restated) was greater than \$0, and 0 otherwise
Merger	= 1 if the Compustat footnotes indicate a merger or acquisition in the year, and 0 otherwise <sup>10</sup>
t	= the first year of misstated financial data.

We also separate the restatements into subsamples based on the direction of the misstatement (i.e., whether the misstatement increased reported income versus decreased/had no effect on reported income), whether core (versus non-core) earnings were misstated, and whether quarterly-only (versus annual) financial statements were misstated. These subsamples are described below.

Table 2 Panel A contains the results of our estimation of equations (1) and (2) for the full sample. Our analysis reveals that after controlling for company size, leverage, profitability, and mergers, auditor tenure is not significantly associated with the probability that companies will restate earnings, regardless of whether or not we control for company age. We also find that profitability is negatively associated with the probability of misstating, while company size and mergers are positively associated with this probability. That is, managers of companies that are (otherwise) profitable are less likely to misstate earnings, but larger companies and companies undergoing mergers and acquisitions in the year are more likely to misstate earnings.

Insert Table 2

### **Considering the Direction of the Misstatements**

Our analyses considering the directional effect of the misstatements on income are based on the presumption that auditors, investors, and regulators are differentially concerned about

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<sup>10</sup> We follow Collins and Hribar (2002) in using this method to identify firms undergoing mergers and acquisitions in the year.

misstatements that increase income versus those that decrease income.<sup>11</sup> Table 2 Panel B examines the subsample of 381 sample firms for which the misstatement increased reported earnings. Here, tenure is significantly positive only when age is included in the model. Company age is negatively associated with the probability of misstating, while the signs on all other controls are as in Panel A. That is, more mature companies and companies that are (otherwise) profitable are less likely to make income-increasing misstatements of earnings, but larger companies and companies with longer auditor tenure are more likely to make income-increasing earnings misstatements.

For completeness sake, we examine the subsample of 181 companies for which the misstatements did not increase reported earnings (non-income-increasing misstatements) in Table 2 Panel C. Here we find that auditor tenure is not significantly associated with the propensity for non-income-increasing misstatements. However, the greater the leverage, the less likely are misstatements that do not increase earnings, and firms that undergo mergers or acquisitions in the year or are more mature are more likely to understate earnings. The leverage result may be due to the fact that companies with higher leverage are in more danger of violating debt covenants (Duke and Hunt 1990; Press and Weintrop 1990; DeFond and Jiambalvo 1994; Sweeney 1994) and misstatements that decrease earnings would exacerbate those risks.

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<sup>11</sup> This presumption is based, in part, on stances taken by regulators when considering the issue of materiality. In this case, SEC staff determined that “if accounting practices were intentionally misleading ‘to impart a sense of *increased* earnings power,’ ... ‘then by definition amounts involved would be considered material’ ” [italics added] (Maremont and Weil, 2003). Further, see SEC SAB 99 on qualitative materiality considerations. Finally, for evidence on how income effects whether auditors waive adjustments for misstatements and on investor (market) reactions to restatements, see Nelson et al. (2002) and Palmrose et al. (2003), respectively.

## **Considering Whether the Misstatements Affect Core Earnings**

In addition to considering the direction of the misstatements, we also consider whether they affect core earnings. We make this distinction because we posit that investors do not value all earnings equally. Specifically, core earnings are more important to financial statement users because they consist of primary operating earnings generated by repetitive business. These earnings are considered to be persistent or sustainable into future periods, and are fundamentally linked to the expected future prospects of the company (Penman 2001, 383). That is, core earnings are more value relevant than are transitory earnings (Bradshaw and Sloan 2002). Prior research suggests that restatements of core earnings (and especially restatements of revenue) have a greater effect on stock prices than do restatements of non-core earnings (Turner et al. 2001; Andersen and Yohn 2002; Palmrose et al. 2003), and are associated with litigation against restating companies and their auditors (Palmrose and Scholz 2002).

In considering whether the misstatements affect core earnings, we follow Penman (2001) and define core earnings as normal, recurring earnings from primary operating earnings, pre-tax. Here, restatements that affect core earnings include adjustments to revenue, cost of sales, selling, general, and administrative expenses, and other recurring primary operating expenses. Therefore, we define non-core earnings as earnings from all other activities – nonrecurring, non-normal, or peripheral. Because a restatement may involve several accounts, some restatements affect both core and non-core earnings. We include these with the core group.

We find that 359 of the 562 restatements in our sample involve core earnings. Table 3 Panel A contains the results of our estimation of equations (1) and (2) on the subsample of the 359 companies (and their matched pairs) that misstate core earnings. Analysis reveals that auditor tenure is significantly associated with core earnings restatements only in specification (1)

where age is included in the model. Specifically, the longer that companies have retained the same auditor, the greater the probability that management will misstate core earnings. The results on all control variables are the same as those using the full sample.

### Insert Table 3

Eighty-seven percent (311 of 359) of the core earnings restatements increase reported (and core) income. Table 3 Panel B examines this subsample. Controlling for age, we find that auditor tenure is strongly associated with the recognition of income-increasing core earnings misstatements; the longer the auditor-client relationship, the greater the likelihood of management misstating core earnings in such a way as to increase core earnings and income. In Panel C, we estimate equations (1) and (2) on the 48 non-income-increasing misstatements of core earnings (and their matched pairs). None of the variables are significantly different from zero.

Non-core earnings are restated in the remaining 203 of 562 cases. Analyses, not tabulated, reveal that auditor tenure is not significantly associated with these restatements. Similarly, auditor tenure is not significant for the 70 observations with income-increasing misstatements of non-core items. In fact, the only variable that is significantly associated with income-increasing non-core misstatements is the profitability indicator; managers are significantly less likely to record income-increasing non-core misstatements when they are otherwise profitable. On the other hand, analysis of the 133 non-core misstatements that do not increase income reveals that managers are less likely to record these non-core misstatements when they are mature, when they are relatively highly levered, and when they are otherwise profitable. Further, the coefficient on auditor tenure is significantly *negative* in this specification; all else equal, managers are less likely to record non-core misstatements that do

not increase earnings as the auditor-client relationship lengthens.

### **Considering Whether the Misstatements Affect Only Quarterly Financials**

As previously discussed, approximately 50 percent of the restatement companies misstate only quarterly financial statements. Since quarterly financial statements are reviewed rather than audited, we partition our sample into two subsamples reflecting restatements of (1) quarterly-only and (2) annual financial statements.<sup>12</sup> Table 4 contains the results of our estimation of equations (1) and (2) on the subsample of 282 companies (and their matched pairs) that misstate only quarterly financial statements; Panels A, B, and C report the overall results and the income-increasing and non-income increasing subsets, respectively. For the annual subsample, tenure is not significant in any specification and the results are not tabulated.

#### Insert Table 4

In Table 4, the coefficient on tenure is significant only in the analysis of income-increasing quarterly misstatements (Panel B) when we control for age. Here, tenure is significantly positive. Further, we find that income-increasing quarterly misstatements are more likely for larger, more highly levered companies, and companies undergoing mergers and acquisitions, and are less likely for more mature and otherwise profitable companies. In additional analyses, not tabulated, we find that the previously reported results for tenure on income-increasing and core misstatements exist in the quarterly-only subsample but not in the annual subsample.

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<sup>12</sup> The annual subsample includes companies restating both annual and quarterly financial statements.

## **Sensitivity Analyses**

To test whether the results that we document are sensitive to alternate approaches to considering company age, to revenue restatements, and to restatements related to in-process research and development (IPR&D), we perform a number of additional tests, which we describe in this section (without tabulation).

### ***Company Age***

First, we tried alternate specifications to control for company age. We attempted to include company age as an additional criterion in matching our restatement and control companies, but this severely reduces the pool for potential matches. Therefore, we partitioned our restatement companies by age based on three-, five-, and seven-year groupings (i.e., for the partition based on three-year groupings, we grouped companies into ages 1-3 years, 4-6 years, etc.), and we matched our sample companies with non-restating Compustat companies in the same year, industry, auditor, and age group category. The coefficients on tenure were not significant in any grouping, but this finding may be due to a loss of power in these analyses.

### ***Revenue Restatements***

There are 209 revenue misstatements in our sample. Of these, 183 increase income and 26 do not increase income. Since restatement research finds revenue to be the most frequent type of misstatement and a particularly influential component of core earnings (Palmrose and Scholz 2002), we separately analyzed revenue restatements. The regression results for revenue restatements are substantially similar to those reported for core restatements in Table 3. Further analysis finds that revenue misstatements do not drive the core earnings restatement results reported in Table 3, as the results for core restatements hold irrespective of whether or not core earnings misstatements involve revenue.

### ***In-Process Research and Development Restatements***

Finally, because restatement research reports IPR&D to be a frequent type of restatement in late 1998 and 1999 and because these misstatements primarily decrease income (Palmrose and Scholz 2002), we separately considered restatements involving IPR&D. First, we reran all of the analyses omitting the 91 observations where restatements were related to IPR&D. All of the results on tenure are robust to this omission. Further, we ran the analyses on the IPR&D group only and the results are not significant. Therefore, we are confident that restatements of IPR&D do not drive any results on tenure.

### **Analysis of Restatements Only**

To assess whether auditor tenure is associated with the nature or severity of the restatement, we separately analyzed our 562 restatement observations (without including the matched control companies). We considered both the absolute value of the restatement and the signed amount of the restatement, scaling by total assets. In addition to all misstatements, we also analyzed those that increase (versus do not increase) income, involve (versus do not involve) core earnings, involve (versus do not involve) revenue, and involve (versus do not involve) fraud. We ran both specifications (1) and (2). In no case was tenure significant or even marginally so. Thus, we conclude that given the occurrence of a misstatement, auditor tenure is not associated with the nature or severity of the misstatement.

## **IV. CONCLUSIONS AND IMPLICATIONS**

To provide evidence on the potential impact of mandatory auditor rotation on financial reporting quality, we analyze a sample of 562 public companies that announced financial

statement restatements between January 1997 and October 2001. We find no evidence that changing auditors before the announcement of a restatement affects the likelihood that the auditor (as opposed to the company or the SEC) identifies the need for restatement. Further, we find no evidence suggesting that the nature or severity of a misstatement is related to auditor tenure.

In frequency analysis, we find that, on average, a greater percentage of companies misstate during the first five years of an auditor-client relationship than over longer auditor tenure. This analysis, however, is confounded by a correlation between auditor tenure and company age. Specifically, restatements are generally less likely when companies are mature.

In our primary analyses, we compare auditor tenure for our restatement companies to that for a set of public non-restatement companies, matched on industry, year, auditor, and size. To understand the effects of the correlation between auditor tenure and company age, we run specifications of a logistic regression model (1) controlling for company age and (2) without controlling for company age. Across all analyses, auditor tenure is not significant in specification (2). Further, for the full sample, auditor tenure is not significant in either specification.

In supplementary analyses, we consider the direction of the misstatement (i.e., whether it increases income), whether the misstatement affects core (and non-core) earnings, and whether the misstatement involves quarterly but not annual financial statements. For the subsample of non-core misstatements that did not increase income, tenure is significantly negative. That is, the propensity for these misstatements decreases with auditor tenure. However, tenure is significantly positive in subsamples of income-increasing misstatements, core misstatements, and income-increasing core misstatements. Further analyses reveal that these positive and

significant results exist for restatements of quarterly financial statements, which were reviewed rather than audited, but not for restatements of audited annual financial statements.

Given our findings – that the association between auditor tenure and the propensity for restatements is context-specific, that the association can be either positive or negative, and that the positive association involves restatements of quarterly but not annual financial statements – our evidence provides no clear support for mandatory auditor rotation. That is, our results do not support arguments made by proponents of mandatory rotation – that auditor expertise or incentives to detect or reveal misstatements decline with the lengthening of an auditor-client relationship. Our results do, however, suggest that auditors should be aware of the need for skepticism when performing interim reviews on longer-standing clients. That is, auditors should be careful to avoid over-relying on prior experience with and knowledge of a long-standing client, especially with regard to analytical review and other interim procedures related to core earnings components.

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**TABLE 1**  
**Descriptive Statistics**

Group	Assets Mean (Median)	Age Mean (Median)	Tenure Mean (Median)	Leverage Mean (Median)	Merger Mean (Median)	Sales Mean (Median)	Profitable Mean (Median)
<b>Panel A: Restatement Companies and the Compustat Population (1999)</b>							
<b>Sample of Restatement Companies N = 562</b>	1,544.37 (125.30)	8.12 (6)	6.03 (4)	0.53 (0.53)	0.42 (0)	1,006.09 (98.30)	0.48 (0)
<b>Compustat Population In 1999 N = 8,798</b>	2,858.48 (123.23)	9.62 (7)	6.65 (5)	0.55 (0.55)	0.22 (0)	1,472.44 (93.43)	0.56 (1)
<b>Tests for Differences in Means (Medians)</b>	-1.54 0.58	-4.43*** -3.83***	-2.13** -1.02	-0.98 -0.98	11.19*** 11.13***	-1.52 1.03	-3.55*** -3.55***
<b>Panel B: Restatement Companies and Control Companies</b>							
<b>Sample of Restatement Companies N = 562</b>	1,544.37 (125.30)	8.12 (6)	6.03 (4)	0.53 (0.53)	0.42 (0)	1,006.09 (98.30)	0.48 (0)
<b>Control Companies N = 562</b>	1,241.36 (114.94)	8.70 (7)	6.06 (4)	0.51 (0.51)	0.30 (0)	942.73 (101.35)	0.59 (1)
<b>Tests for Differences in Means (Medians)</b>	0.84 (0.45)	-1.45 (-0.38)	-0.08 (0.44)	1.58 (1.68)*	4.38*** (4.35)***	0.31 (-0.05)	-7.32*** (-7.16)***

Notes:

Assets = Total Assets as reported on Compustat

Age = the number of years since 1980 that the company has reported non-missing sales on Compustat

Tenure = the length of the auditor-client relationship as of the first year of the misstatement, found by counting the number of years that the client has had the same auditor since 1980 according to Compustat

Leverage = Total Liabilities / Total Assets

Merger = 1 if the Compustat footnote codes indicate merger and acquisition activity during the year, and 0 otherwise

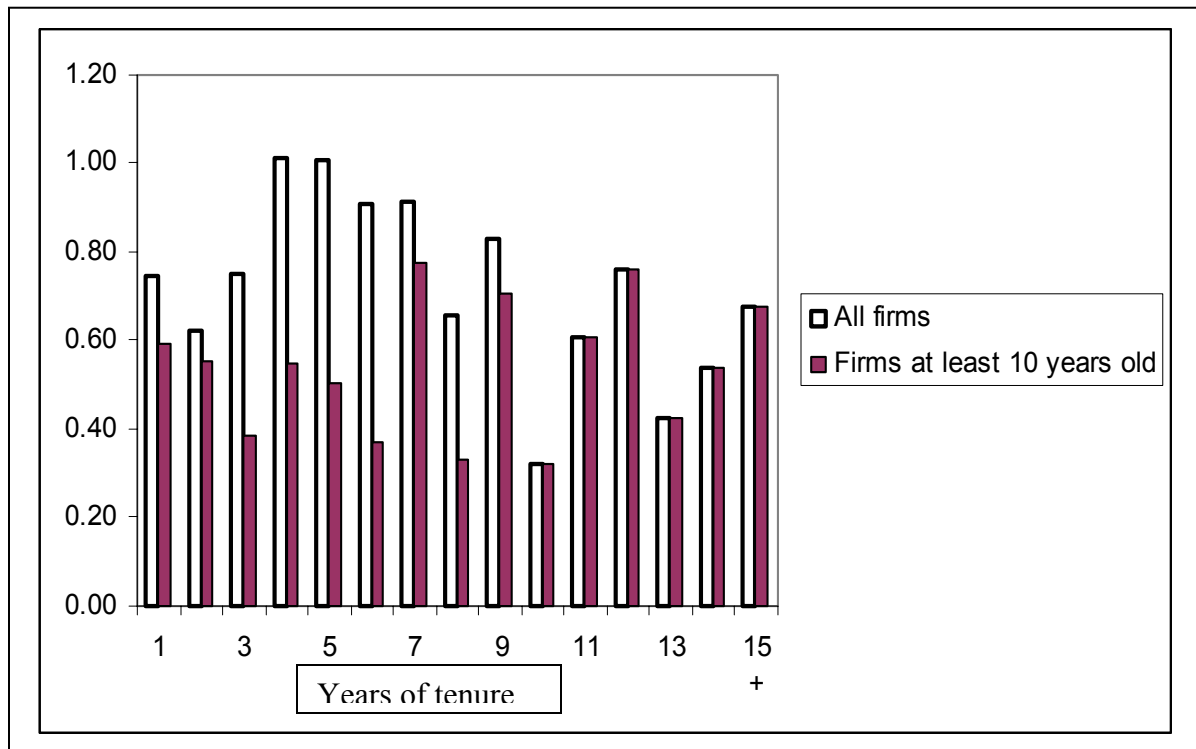
Sales = Sales as reported on Compustat

Profitable = 1 if earnings (as initially reported before being restated) was greater than \$0, and 0 otherwise

T-statistics are reported for Tests for Differences in Means and Z-scores are reported for Wilcoxon Tests of Differences in Medians

\*\*\* indicates significant at .01, \*\* indicates significant at .05, \* indicates significant at .10

**FIGURE 1**  
**Proportion of Compustat Companies Restating Financial Statements**



**TABLE 2****Logistic Regressions of Restatement Indicator on Auditor Tenure and Control Variables**

$$Restatement_t = \beta_0 + \beta_1 Tenure_t + \beta_2 Age_t + \beta_3 Size_t + \beta_4 Leverage_t + \beta_5 Profitable_t + \beta_6 Merger_t + \varepsilon_t$$

<b>Panel A: All Restatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.1128 [0.5326]	-0.1664 [0.3465]
Tenure	0.0209 [0.2331]	0.0045 [0.7343]
Age	-0.0221 [0.1513]	
Size	0.1123 [0.0012]	0.1069 [0.0019]
Leverage	0.0392 [0.8737]	0.0179 [0.9420]
Profitable	-1.1208 [<0.0001]	-1.1275 [<0.0001]
Merger	0.5217 [<0.0001]	0.5392 [<0.0001]
Percent Concordant	65.7	65.6
Max-rescaled R-Square	.1015	.0993
N	1,124	1,124

<b>Panel B: Income-increasing Misstatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.1786 [0.4191]	-0.3045 [0.1574]
Tenure	0.0450 [0.0379]	0.0042 [0.7965]
Age	-0.0549 [0.0037]	
Size	0.1458 [0.0007]	0.1333 [0.0016]
Leverage	0.4806 [0.1203]	0.3969 [0.1936]
Profitable	-1.4547 [<0.0001]	-1.4858 [<0.0001]
Merger	0.4188 [0.0145]	0.4614 [0.0067]
Percent Concordant	70.1	69.3
Max-rescaled R-Square	.1650	.1516
N	762	762

<b>Panel C: Non-income-increasing Misstatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.1837 [0.5794]	-0.0389 [0.9041]
Tenure	-0.0395 [0.2410]	0.0115 [0.6298]
Age	0.0674 [0.0295]	
Size	0.0239 [0.7046]	0.0484 [0.4307]
Leverage	-0.7246 [0.0953]	-0.7263 [0.0917]
Profitable	-0.3834 [0.1265]	-0.4114 [0.0987]
Merger	0.7680 [0.0006]	0.7246 [0.0010]
Percent Concordant	63.9	65.6
Max-rescaled R-Square	.0787	.0615
N	362	362

Notes: Each cell contains a coefficient estimate and p-values in square brackets.

Restatement = 1 if the company misstates financial statement amounts (in the way indicated in the title), and 0 otherwise

Tenure = the length of the auditor-client relationship as of the first year of the misstatement, found by counting the number of years that the client has had the same auditor since 1980 according to Compustat

Age = the number of years since 1980 that the company has reported non-missing sales on Compustat

Size = the natural log of sales

Leverage = Total Liabilities / Total Assets

Profitable = 1 if earnings (as initially reported before being restated) was greater than \$0, and 0 otherwise

Merger = 1 if the Compustat footnote codes indicate merger and acquisition activity during the year; and 0 otherwise

t = the first year of data which was misstated.

**TABLE 3****Logistic Regressions of CoreRestatement Indicator on Auditor Tenure and Control Variables**

$$\text{Core Restatement}_i = \beta_0 + \beta_1 \text{Tenure}_i + \beta_2 \text{Age}_i + \beta_3 \text{Size}_i + \beta_4 \text{Leverage}_i + \beta_5 \text{Profitable}_i + \beta_6 \text{Merger}_i + \varepsilon_i$$

<b>Panel A: All Core Restatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.2280 [0.3095]	-0.3607 [0.0968]
Tenure	0.0510 [0.0207]	0.0158 [0.3498]
Age	-0.0482 [0.0118]	
Size	0.1266 [0.0047]	0.1137 [0.0098]
Leverage	0.3281 [0.2912]	0.3076 [0.3198]
Profitable	-1.2050 [<0.0001]	-1.2163 [<0.0001]
Merger	0.4239 [0.0143]	0.4582 [0.0077]
Percent Concordant	67.0	66.5
Max-rescaled R-Square	.0924	.1122
N	718	718

<b>Panel B: Income-increasing Core Misstatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.2941 [0.2303]	-0.4363 [0.0671]
Tenure	0.0575 [0.0186]	0.0127 [0.4917]
Age	-0.0608 [0.0044]	
Size	0.1430 [0.0038]	0.1274 [0.0084]
Leverage	0.6274 [0.0717]	0.5629 [0.1023]
Profitable	-1.4557 [<0.0001]	-1.4799 [<0.0001]
Merger	0.4606 [0.0164]	0.4983 [0.0089]
Percent Concordant	70.5	69.8
Max-rescaled R-Square	.1744	.1587
N	622	622

<b>Panel C: Non-income-increasing Core Misstatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.1693 [0.7848]	-0.0035 [0.9951]
Tenure	-0.0102 [0.8699]	0.0169 [0.7285]
Age	0.0369 [0.4770]	
Size	-0.0415 [0.7354]	-0.0266 [0.8248]
Leverage	-0.7335 [0.3452]	-0.8131 [0.2888]
Profitable	0.6060 [0.2466]	0.5413 [0.2905]
Merger	0.6140 [0.1752]	0.5681 [0.2034]
Percent Concordant	64.9	63.8
Max-rescaled R-Square	.0674	.0607
N	96	96

Note: All variables are as defined in Table 2.

**TABLE 4****Logistic Regressions of Quarterly Restatement Indicator on Auditor Tenure and Control Variables**

$$Quarterly\ Restatement_t = \beta_0 + \beta_1 Tenure_t + \beta_2 Age_t + \beta_3 Size_t + \beta_4 Leverage_t + \beta_5 Profitable_t + \beta_6 Merger_t + \varepsilon_t$$

<b>Panel A: All Quarterly Restatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.2430 [0.3506]	-0.3015 [0.2373]
Tenure	0.0109 [0.6657]	-0.0086 [0.6452]
Age	-0.0264 [0.2488]	
Size	0.1093 [0.0226]	0.1040 [0.0287]
Leverage	0.3447 [0.3184]	0.2953 [0.3880]
Profitable	-1.0985 [<0.0001]	-1.1139 [<0.0001]
Merger	0.7171 [0.0002]	0.7452 [<0.0001]
Percent Concordant	67.0	66.8
Max-rescaled R-Square	.1219	.1190
N	564	564

<b>Panel B: Income-increasing Quarterly Misstatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.3205 [0.3252]	-0.4576 [0.1501]
Tenure	0.0600 [0.0745]	-0.0010 [0.9663]
Age	-0.0800 [0.0098]	
Size	0.1466 [0.0175]	0.1339 [0.0263]
Leverage	0.9387 [0.0364]	0.7230 [0.0955]
Profitable	-1.4725 [<0.0001]	-1.5326 [<0.0001]
Merger	0.4700 [0.0690]	0.5453 [0.0327]
Percent Concordant	72.1	70.6
Max-rescaled R-Square	.1952	.1728
N	364	364

<b>Panel C: Non-income-increasing Quarterly Misstatements</b>		
	<b>Model 1</b>	<b>Model 2</b>
Intercept	-0.3580 [0.4391]	-0.1919 [0.6688]
Tenure	-0.0648 [0.1403]	-0.0173 [0.6018]
Age	0.0676 [0.0960]	
Size	0.0470 [0.5788]	0.0714 [0.3866]
Leverage	-0.7412 [0.2173]	-0.6860 [0.2482]
Profitable	-0.4247 [0.2099]	-0.4414 [0.1890]
Merger	1.1562 [0.0001]	1.0860 [0.0003]
Percent Concordant	68.0	66.3
Max-rescaled R-Square	.1295	.1121
N	200	200

Note: All variables are as defined in Table 2.