Restatements of Quarterly Earnings: Evidence on Earnings Quality and Market Reactions to the Originally Reported Earnings

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Abstract

This study uses a unique database of quarterly earnings restatements to provide evidence on the quality of earnings that would be subsequently restated, and whether investors correctly assess the lower quality of these earnings at the time of the original disclosure. We find that variables hypothesized to proxy for earnings management incentives are also associated with the likelihood of subsequent restatements of quarterly earnings, indicating that the originally reported earnings may have been strategically managed. We are also able to focus on restatements where earnings management is more likely because the restated earnings fall short of an earnings benchmark, but the originally-reported earnings exceed it (or are even lower as in a "bath" behavior). Our results suggest that investors do not completely ignore the component of the originally reported earnings which would subsequently be restated, although they seem to understand its lower quality. We also show that investors assign a lower earnings valuation coefficient to earnings of firms that restate earnings subsequently, and also to future earnings of firms that had restated earnings at least once in the past.

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1. Introduction

This study uses a unique database of quarterly earnings restatements to study whether subsequent restatements reflect lower quality of the originally reported earnings, and whether investors are able to anticipate these restatements and correctly price the associated lower quality of the originally reported earnings. The practical motivation for the current study stems from recent cases of corporate failures associated with seemingly egregious cases of earnings management (e.g., Enron and WorldCom), where restatements of previously issued earnings provided one of the first signals of serious corporate problems. The academic motivation for the current study stems from three strands of literature that investigate earnings management, earnings restatements, and market reactions to announcements of restatements or earnings that are suspected to contain earnings management. The current study combines evidence relevant to these three strands of literature.

Unlike most previous studies of restatements of *annual* earnings, this study uses restatements of *quarterly* earnings which are likely to reflect different economic and environmental factors than restatements of annual results. Quarterly restatements are likely to better reflect *actual* earnings management than annual restatements, because quarterly earnings are not audited, and in many cases are reviewed by the external auditor only during the year-end audit work. This allows management the opportunity to engage in minor and short-term earnings management. Restatements of annual earnings are

typically of larger magnitudes, involve more than one year, and are associated in many cases with an enforcement action by the SEC (Callen et al, 2003a). Quarterly earnings restatements are much smaller, frequently not announced formally by the firm, and can be caused by management or the firm's auditor without any other external pressure. Thus, they are likely to be more representative of initial earnings management that does not result in subsequent formal restatement announcements.

Given our data, we are able to focus on subsets of firms with restated earnings that fall short of achieving an earnings benchmark (meeting analyst forecasts, showing growth in earnings or avoiding a loss), but where the originally reported earnings exceeds the benchmark, consistent with income-increasing earnings management, or where the originally reported earnings is even lower than the restated earnings, consistent with income-decreasing (bath) earnings management. Thus, we are able to provide further evidence on restatements of quarterly earnings that are more likely to reflect the initial earnings management, the specific components of earnings affected by these restatements, and the correspondence between discretionary accruals and the magnitude of quarterly earnings restatements.

Unlike most of the restatements literature which examines market reactions around the restatement announcement, we focus on market reactions to the originally reported earnings, and examine whether market participants correctly assess the lower quality of the originally reported earnings. Thus, our study is similar in spirit to previous studies of market reactions to earnings announcements of firms that are likely to engage in earnings management such as DeFond and Park (2001) and Balsam et al (2002). However, we focus on actual, subsequent restatements of the originally reported earnings, instead of on

estimates of discretionary accruals to examine the market reactions at the time of the original announcements of earnings.

Our results show that quarterly earnings restatements occur in a small fraction of the population - around 7,500 firm-quarters out of a total population of about 220,000 firm-quarters. We show that total and discretionary accruals of restating firms are higher than non-restating firms, and that restating firms also have higher associations with variables that the literature posits to be related to earnings management. However, our results indicate that discretionary accruals have relatively low associations with the magnitude of the restatement, even in cases where earnings management is more likely as is evident by failing to meet earnings benchmarks.

Results from our market tests indicate that investors react significantly to the component of earnings surprise that would be subsequently restated, indicating that they are unable to completely see through the managed, erroneous, or just initially reported earnings that would evaporate upon future restatements. However, our results also indicate that investors attach a lower valuation coefficient to the component of earnings that would subsequently be restated than the remaining earnings surprise, consistent with an understanding that this component has lower quality. Our results also show that investors correctly assess the quality of earnings of restating firms to be lower than that of non-restating firms.

Our study has implications for practitioners and academic researchers. Practitioners should carefully examine earnings in cases of firms that are barely able to meet a benchmark for possible evidence of earnings management or lower quality components of earnings. They should also examine more carefully the earnings of firms that restated quarterly earnings in the past, particularly if those restatements were not formally

announced in press releases to investors. Academic research based on quarterly earnings in the Compustat database that contains restated earnings should carefully consider the bias that may be introduced into the research design through restated data instead of the originally reported data, and, in particular, where the originally reported earnings may have been motivated by earnings management.

The remainder of the paper is as follows. Section 2 provides a background discussion and literature review. The sample and research design are discussed in Section 3. Section 4 presents the results and Section 5 concludes the study.

2. Background and Literature Review

2.1 Restatements

Under GAAP, there are two main categories of restatements: (1) restatements as a result of changes in accounting principles; and (2) restatements as a result of accounting errors (Callen et al 2003a). The latter category involves admission by management to non-GAAP financial reporting, and is likely to include cases where management knowingly and intentionally engaged in earnings manipulation (Richardson et al., 2002). The literature on restatements can be generally classified into studies which examine the characteristics of restating firms as compared to other firms, and the market reactions to the announcements of restatements.

DeFond and Jiambalvo (1991) examine cases where restatements occurred due to accounting errors and compared the characteristics of restating firms to a control sample of non-restating firms. They find that restatements are more likely to be driven by an initial overstatement of earnings for firms with a lower growth in earnings, diffuse

ownership, fewer alternatives to increase income under GAAP, and less frequent audit committees. Palmrose and Scholtz (2000) investigate the relationship between restatements and auditor litigation, classifying restatements into "economic", those involving the core transactions and accounts of the business, and "technical", which are the remainder of all restatements in their sample. They show that auditors are more likely to be sued when the restatements involve economic restatements, and, in particular, revenue restatements. Callen at al (2003a) classify restatements into various categories, including whether they decrease or increase income, and examine their relationships to SEC enforcement actions. They conclude that income-increasing restatements are different from income-decreasing restatements along several dimensions.

Various studies examine market reactions to announcements of restatements. Wu (2002) shows that restatement announcements are typically associated with negative abnormal returns at the time of the announcement, and provides a comparison of market reactions to various classifications of restatements. Palmrose at al (2001) also provide evidence about negative market reactions at the time of the restatement announcements, which are greater the greater is the income reduction due to the restatement and the number of accounts affected by the restatement. Evidence about negative market reactions to restatement announcements is also provided by Richardson et al (2002). In contrast, Callen at al (2003a) show that market reactions are insignificantly different from zero when restatements increase earnings, consistent with better future prospects and indications of weak accounting (and potentially operating) systems offsetting each other.

The restatements literature seems to implicitly assume that restatements occur primarily when managers attempt to manage earnings initially, and subsequently are forced to change their (primarily too aggressive) originally reported earnings. The

evidence in DeFond and Jiambalvo (1991) is certainly consistent with this assumption. Richardson et al (2002) explicitly attempt to relate restatements to earnings management. They show that restating firms are more likely to need and raise future financing, have lower debt levels, have higher growth in earnings, and are attempting to show a longer string of earnings growth than non-restating firms. They also show that analysis of accruals and discretionary accruals is consistent with restatements that are driven by initial earnings management.

2.2 Quarterly versus Annual Restatements

The above studies are all based on restatements of annual earnings, as is typical to the restatement literature. One exception is Kinney and McDaniel (1989) which examines a sample of 73 companies that disclosed quarterly restatements in a footnote to their 1976-1985 annual reports. They find that these companies are smaller, more highly levered, have lower earnings, are growing more slowly and have more operating uncertainty than non-restating firms. They also show that these companies have typically negative abnormal returns from the announcement of the initial quarterly earnings until the subsequent restatement.

One striking difference between quarterly and annual financial statement data is that annual data is audited whereas quarterly data (with the exception of the fourth quarter) is not subject to the rigor of a formal audit process.[1] This has implications for the context in which restatements and earnings management is examined, because auditors' and managers' decisions often combine and/or offset each other in the financial reporting

[1] The SEC requires registrants to report interim financial information with their quarterly filings. During our sample period, regulation requires a review of the interim earnings by auditors, but this can be done at the time of the annual audit (i.e. retrospective review) (SAS 71, 1992). The one exception, however, is that the auditors must conduct a formal audit of the fourth-quarter earnings in conjunction with the year-end audit before earnings can be released.

process (Nelson, Elliott and Tarpley, 2002). Since audited financial statements are a joint statement by management and the external auditor (Antle and Nalebuff, 1991), the analysis of post-audit financial statements introduces noise due to auditors' adjustment decisions (Nelson et al., 2002). The implicit assumption underlying prior studies of annual restatements is that restating firms knowingly and intentionally engage in earnings management *and* their auditors either do not detect the earnings management behavior or waive this behavior *at the time of the alleged manipulation*. Hence, the incentives to manage earnings in annual reports and the controls in place to detect such earnings management may differ from the incentives and controls related to earnings management in quarterly reports.

Another important difference between quarterly and annual restatements is related to the announcement and magnitude of the restatement. Annual restatements are typically large in magnitude, may involve more than one year, and are typically announced in a separate press releases, which are likely to attract investors' attention. In contrast, quarterly restatements are typically smaller than annual restatements, and in many cases are not formally announced in separate press releases. Many of the quarterly restatements become known to the market only upon filing of Form 10-K that includes quarterly earnings which are different from those released initially in the preliminary quarterly earnings announcements. Thus, quarterly restatements may be substantially different from annual restatements in their magnitudes, motivation, and method of disclosure, making them an interesting area of analysis. They may also be different than annual restatements in managerial ability to strategically report desired short-term earnings without auditors' intervention until much later.

2.3 Earnings management

The literature has so far not yielded an accepted definition of earnings management. For example, it is represented as the "…purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed) to, say, merely facilitating the neutral operation of the process)…" (Schipper 1989, 92). More recently, Healy and Wahlen (1999, 368) suggest that "(e)arnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers." In his now familiar speech on earnings management at NYU in 1998, Arthur Levitt (former Chairman of the SEC) characterizes earnings management as a game among market participants, whereby managers, auditors and analysts (and the financial community in general) consensually foster earnings management activities and the incentives to beat specified benchmarks (e.g. analysts' forecasts). Whilst the first two characterizations of earnings management are widely accepted in the academic literature, they are nevertheless difficult to implement since they are anchored on *managerial intent* (Dechow and Skinner 2000). Since the academic literature offers little evidence on *actual* earnings management (Healy and Wahlen 1999), academics typically direct their research in areas where managerial incentives for earnings management are more likely such as avoiding losses and meeting analysts' forecasts (see Healy and Wahlen, 1999 and Dechow and Skinner, 2000, for an overview of managerial incentives to manage earnings).

In their review of the earnings management literature, Dechow and Skinner (2000) suggest that academic studies using *statistical* definitions of earnings management to

examine large samples of firms have not been particularly powerful at identifying *actual* cases of earnings management. More specifically, noise is introduced in the estimation process when estimates of discretionary accrual models (e.g., the Jones (1991) or modified Jones model) are used to detect earnings management (Dechow, Sloan and Sweeney, 1996; Subramanyam, 1996).[2] Conversely, actual instances of identified earnings management have often been cases where managers clearly adopt overly-aggressive accounting policies that violate GAAP and thus constitute fraud *ex post* (leading among other things to accounting enforcement actions by the SEC). Since these instances of earnings management are among the most spectacular and fraudulent, they cannot be readily generalized to more *subtle* cases of earnings management (Dechow et al., 1996). Other 'detected' cases of actual earnings management in practice include instances that involve shareholder litigation, qualified audit reports and earnings restatements (Marquardt and Weidman, 2002). Since it is difficult to define earnings management, identifying companies that engage in earnings management can be *ad hoc* and *ex post* (Dechow and Skinner, 2000).[3]

The earnings management incentives to meet benchmarks (e.g., meeting analysts' quarterly earnings forecasts, reporting increases in seasonally-adjusted quarterly earnings,

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[2] The Jones (1991) model attempts to control for changes in the firm's economic circumstances on nondiscretionary accruals. The Jones model for nondiscretionary accruals (NDA) in the event year t is $NDA_t = \alpha_1(1/TA_{t-1}) + \alpha_2(\Delta Sales_t / TA_{t-1}) + \alpha_3(PPE_t / TA_{t-1})$, where TA_{t-1} is the total assets at the end of year t-1, Δ $Sales_{t-1}$ is sales in year t less sales in t-1, and PPE is gross property, plant and equipment at the end of year t; and α_1, α_2 and α_3 are firm-specific parameters. The firm-specific parameters are estimated from the regression: $TOTA_t / TA_{t-1} = \alpha_1(1/TA_{t-1}) + \alpha_2(\Delta Sales_t / TA_{t-1}) + \alpha_3(PPE_t / TA_{t-1}) + \varepsilon_t$, where $TOTA_t$ is the total accruals in year t. The residual, ε_t, represents the firm-specific discretionary accruals. The modified Jones model (DeFond and Jiambalvo 1994) adjusts for management's discretion over revenue recognition by estimating parameter α_2 in the nondiscertionary model using the difference between the change in sales and the change in accounts receivables.

[3] Naturally, it might be empirically difficult to distinguish between firms that make an unintentional error, engage in aggressive accounting, or fraud. DeFond and Jiambalvo (1991) suggest that these factors may all be motivated by the same types of economic incentives and thus be difficult to empirically tease out.

or avoiding a loss) imply that managers face pressures to meet earnings targets in the short-run. Hence, given the pervasiveness of these short-term incentives compared to the contracting incentives traditionally studied by researchers (e.g., the bonus plan or debt covenant incentives, Dechow and Skinner, 2000), it seems reasonable to focus on quarterly restatements as actual cases where management attempted to influence originally reported earnings, but was subsequently forced to restate those earnings figures.

We provide evidence on the *frequency* and *magnitude* of restatements in the entire population of quarterly reports. We then focus on a subset of these restatements whereby managers' incentives to meet simple benchmarks are more pronounced. We also examine whether the magnitude of the earnings restatement is related to other managerial incentives traditionally examined by researchers (e.g., debt covenants and maintaining earnings growth). In addition, we are able to shed some light on what specific accounts are being managed, about which there is limited evidence on this in the literature (except for Marquardt and Weidman, 2002 for the general population and Beaver and Engel, 1996, and Petroni et al, 2000 for the banking and insurance industries).

2.4 Investors' Reactions to Earnings Management Behavior

Early studies support claims that stock prices act as if investors are able to see through distortions in accounting numbers. These studies consistently document that stock prices reflect accounting information in a relatively timely fashion and that stock prices do not respond to accounting changes in a mechanistic manner (see Kothari, 2001, for a review of this research). However, more recently, a growing number of studies document that investors do not necessarily see through various forms of earnings management. For instance, Dechow, Sloan and Sweeney (1996) find normal market

reactions to the initial earnings announcements of firms that are subsequently challenged by the SEC for aggressive accounting. Sloan (1996) documents a mean-reverting process for accruals which investors appear not to fully recognize in their valuation. Collins and Hribar (2000) show that investors do not fully utilize the information about accruals in quarterly earnings as well, and that this anomaly is independent of the post-earnings-announcement drift. This suggests that investors do not fully undo the effects of managed earnings or that investors are unable to separate the valuation implications of discretionary and nondiscretionary earnings (Healy, 1996). In contrast, DeFond and Park (2001) find that marker prices are set as if investors are able to understand the valuation implications of discretionary accruals and how they differ from the remaining surprise in quarterly earnings. Similarly, Balsam et al. (2002) find that institutional investors seem to incorporate accruals information into prices when quarterly earnings are announced, and when suspicions about earnings management are heightened. Thus, the literature is inconclusive about whether market participants are able to see through managed earnings.

To add some evidence to the prior restatements and earnings management literature, we design our tests to examine whether there is a systematic difference in the market's reaction to the quarterly earnings announcements for firms that subsequently restate earnings versus those that do not. Firms that subsequently restate quarterly earnings may be construed to be firms that initially engage in earnings management, although not aggressive enough to warrant an SEC enforcement action or a qualified audit opinion. If the market is able to see through the initial distortion in earnings, we expect a lower valuation weighting on the earnings surprise for restating firms than non restating firms, and more so for those firms that are likely to have engaged in earnings management (i.e., a lower earnings response coefficient for these firms). In addition, we

can use the magnitude of the restatement to design a more precise test of the valuation implications of the *amount* of earnings that are being subsequently restated, as compared to the remaining earnings surprise. If the market acts in a mechanistic fashion, then we would expect to observe the same valuation coefficient for the restatement magnitude and the remaining earnings surprise. Thus, our results can shed additional light on whether restatements of quarterly earnings are associated with earnings management and whether the market can see through those attempts when earnings are originally disclosed.

3. Sample and Research Design

3.1 The Original Compustat Quarterly Data

Data entry into the Compustat databases has been performed in a fairly structured manner over the years. When a firm releases its preliminary earnings announcement, Compustat takes as many line items as possible from the preliminary announcement and enters them into the quarterly database within 2-3 days. The preliminary data in the database are denoted by an update code of 2, until the firm files its Form 10-Q (10-K) with the SEC or releases it to the public, at which point Compustat updates all available information and uses an update code of 3. Unlike the Compustat Annual database, which is maintained as originally reported by the firm (except for restated items), the Compustat Quarterly database is further updated when a firm restates its previously reported quarterly results. For example, if a firm engages in mergers, acquisitions, or divestitures at a particular quarter and restates previously reported quarterly data to reflect these events, Compustat inserts the restated data into the database instead of the previously reported numbers. Similarly, when the annual audit is performed and the firm is required

to restate its previously reported quarterly results by its auditor as part of the disclosure contained in Form 10-K, Compustat updates the quarterly database to reflect these restated data.

Charter Oak Investment Systems, Inc. (Charter Oak) has collected the weekly original CD-Rom that Compustat sent to its PC clients, which always contained updated data as of that week. From these weekly updates, Charter Oak has constructed a database that contains for each firm in the Compustat Quarterly database three numbers for each Compustat line item in each quarter. The first number is the preliminary figure that Compustat inserted into the database when it bore the update code of 2. The second number is the "As First Reported" (AFR) figure when Compustat first changed the update code to 3 for that firm-quarter. The third number is the number that exists in the current version of Compustat, which is the one academics use to conduct various research studies, including earnings management (e.g., Balsam et al., 2002).

The Charter Oak database allows us to determine whether a restatement has occurred in any quarterly earnings by comparing the earnings reported in the current Compustat database with the AFR earnings in the Charter Oak database. Many of these restatements occur due to mergers, acquisitions and divestitures, where the firm restates previously issued quarterly reports to conform to the new entity. However, quarterly footnotes to the sales figure and a general footnote about quarterly data comparability provide information about events that cause data incomparability across periods due to mergers, acquisitions, discontinued operations, fiscal year change, or annual data are not available for 12 months. We exclude restatements to earnings due to these events, but leave those due to accounting changes. Cases where the data is not comparable because of both accounting changes and the previously mentioned events of M&A, discontinued

operations, fiscal year change, etc. are excluded from our sample of earnings restatements.

Our approach to the identification of earnings restatements does not allow us to distinguish between voluntary restatements of earnings in prior quarters and mandatory restatements due to new accounting pronouncements. For example, a firm may adopt SFAS 142 (FASB, 2001) at a specific quarter instead of any other quarter during the relevant period. This may lead to a restatement of that specific quarter if the selected adoption quarter is an earlier rather than the current quarter. However, one can argue that even in such cases the strategic reporting of earnings is manifested by the specific adoption timing.

The main advantage of our approach is that quarterly restatements are often much smaller and are not necessarily introduced in a formal separate announcement by the firm. In many cases, the restatement is introduced in a subsequent quarterly 10-Q or in a footnote to the annual 10-K, sometimes without a specific mention that previously issued 10-Q figures were restated. Thus, the quarterly restatements may reflect minor cases of earnings management, rather than the severe attempts to mislead investors, which are the subject of study by Dechow et al (1996), and Richardson et al. (2003). Furthermore, the frequency of quarterly restatements is likely to be greater than that of restatements of annual data because quarterly reports are often not reviewed by the auditor until year end (Ettredge et al., 2000).

3.2 Sample Selection

The initial population for the study consists of all firm-quarters in the Compustat database between 1988 and 2002 that have quarterly sales and market value of equity at quarter end in excess of $1 million. In addition, the firm's stock has to be traded on the

NYSE, AMEX or NASDAQ. The size of this initial population is 354,466 observations (firm-quarters).

We further place other data requirements as follows:

1. The preliminary earnings announcement date is available from Compustat.
2. The Cumulative Abnormal Return (CAR) can be calculated for the short window (-1,+1), where day zero is the preliminary earnings announcement date. The daily abnormal return is calculated as the raw daily return from CRSP minus the daily return on the portfolio of firms with the same size (the market value of equity as of June) and book-to-market (B/M) ratio (as of December). The daily returns (and cut-off points) for the size and B/M portfolios are obtained from Professor Kenneth French's data library, based on classification of the population into six (two size and three B/M) portfolios.[4] The daily abnormal returns are cumulated over the period (-1,+1).
3. Total assets at quarter end or at the beginning of the quarter exceed $2 million. This is done to ensure proper scaling of the total and discretionary accruals variables that are explained below.
4. We further delete observations where the absolute value of earnings before extraordinary items (henceforth earnings, Compustat quarterly data item 8) scaled by beginning of the quarter's market value exceeds two, or if the ratio of end-of-quarter book to market value of equity at the beginning of the quarter exceeds two, or if the absolute value of the restatement amount is greater than the market value of equity at the beginning of the quarter. These deleted observations are likely to denote extreme events which can distort our analysis.

[4] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

5. We further delete observations where the absolute value of the difference between the predicted IBES income and either the AFR income or the current Compustat income is greater than the market value of equity at the beginning of the quarter. These observations are also likely to denote extreme events.
6. Consistent with prior studies of the relationship between CAR and earnings surprises, we eliminate the top and bottom 0.5% of CAR and earnings surprises in each quarter. The earnings surprise is defined as the originally-reported earnings before extraordinary items and discontinued operations minus expected earnings, scaled by market value at the beginning of the quarter. Expected earnings is the median analyst forecast of EPS from IBES times the number of shares outstanding from IBES, if IBES data are available, or earnings for the same quarter in the prior year.
7. We delete cases where the absolute value of the scaled earnings surprise is greater than one.

The final sample used in this study comprises of 220,485 observations (firm-quarters). Some observations are further excluded for various tests because of data availability for specific variables.

3.3 Estimation of Total Accruals and Discretionary Accruals

We estimate total accruals as the originally-reported (AFR) income minus the quarterly operating cash flow. Total accruals are scaled by total assets at the beginning of the quarter, and winsorized to one (-1) if the scaled total accruals are greater (lower) than one (-1).The cross-sectional Modified Jones model (as per Defond and Jiambalvo, 1994) is used for estimating discretionary accruals. We first classify firms into 2-digit SIC industries with at least 10 observations for the industry for a specific quarter (all

observations from industries with fewer than 10 firms during the quarter are lumped into the "other" industry, and the process continues for this "other" industry). Within each industry and for each quarter, we estimate the following regression:

$$TAC_{ijt} / TA_{ijt-1} = \alpha_{jt}[1/TA_{ijt-1}] + \beta_{1jt}[\Delta REV_{ijt} / TA_{ijt-1}] + \beta_2[PPE_{ijt} / TA_{ijt-1}] + \varepsilon_{ijt} \qquad (1)$$

where TAC_{ijt} is the total accruals for sample firm *i* in industry *j* (henceforth omitted in the discussion) for year *t*; where ΔREV_t is the change in revenues for sample firm *i* in industry *j* for year *t*; PPE_t is gross property plant and equipment for sample firm *i* in industry *j* at the end of year *t*, and TA_{t-1} is total assets for firm *i* in industry *j* at the end of year *t-1*. We measure total accruals as net income before extraordinary items minus operating cash flows. We employ OLS to obtain industry-specific estimates of the parameters in (1).

The cross-sectional modified Jones model takes into account managers' discretion over revenue recognition. In this model, nondiscretionary accruals (NDA) are estimated during the year which earnings management is hypothesized to occur as follows:

$$NDA_{ijt} = \hat{\alpha}_0(1/TA_{ijt-1}) + \hat{\beta}_1[(\Delta REV_{ijt} - \Delta REC_{ijt})/TA_{ijt-1}] + \hat{\beta}_2(PPE_{ijt} / TA_{ijt-1}) \qquad (2)$$

where ΔREC_t is the change in net receivables in for sample firm *i* in industry *j* at year *t,* and $\hat{\alpha}_0$, $\hat{\beta}_1$ and $\hat{\beta}_2$ are the estimated parameters from (1).

To reduce the influence of extreme observations, we winsorize observations with absolute value of either the scaled change in sales or the ratio of PP&E to assets that

exceed two. Discretionary (scaled) accruals is equal to the difference between TAC_{ijt} and NDA_{ijt}.

3.4 The Restatements and Earnings Management Sub-Samples

To narrow the sub-sample of restatements to those that are more likely motivated by upwards earnings management, we focus on three cases where management has an incentive to manage earnings because of a missed benchmark. The first is falling short of analyst forecasts, the second is falling short of earnings in the same quarter of the previous year, and the third is avoiding a loss. Specifically, we define dummy variables equal to one if each of these conditions exists, and then another dummy variable that is equal to one if any of the individual dummy variables are equal to one:

(1) Earnings in the current Compustat database is lower than the IBES predicted earnings, but the as-first-reported earnings in the Charter Oak database is greater than the IBES predicted earnings. The IBES predicted earnings is the median analyst forecast of EPS for the quarter as of the last month in the quarter, multiplied by the number of shares outstanding from IBES. This sample represents firms that fail to meet analysts' forecasts and thus have an incentive to manage earnings upwards to meet the forecasts.

(2) Earnings in the current Compustat database is lower than earnings (as first reported) in the same quarter of the prior year, but earnings as first reported in the Charter Oak database is higher than earnings in the same quarter of the prior year. This sample of firms represents firms that fail

to meet the earnings of the same quarter in the previous year and thus have an incentive to manage earnings upwards to beat those earnings.

(3) Earnings in the current Compustat database are negative, but are positive in the AFR database of Charter Oak. This sample of firms represents loss firms that have an incentive to manage earnings upwards to avoid reporting a loss.

The sub-sample of income restatements consists of 7,579 observations, about 3.4% of all sample observations. Out of these restatements, the sub-sample of benchmark-failing restatements, i.e. observations with at least one dummy variable of the above three equal to one, contains 1,554 observations, or about 20.5% of all restatements. We expect earnings management incentives to be heightened for this group of observations.

The restatements sub-sample consists of about 62.3% downward restatements (i.e., the AFR earnings exceeds the restated earnings, or a possible initial upwards earnings management). Earnings management can also be manifested by the desire to reduce earnings further, similar to a "bath". To further identify potential cases of a "bath", we focus on firms that failed to beat their benchmark with the restated earnings and where the AFR earnings figure is lower than restated earnings. These may be cases where management realized it would not meet the benchmark, and then managed earnings further downwards to set the bar low enough for better performance in the future. The "bath" sub-sample contains a total of 1,515 observations, again broken down to the three potential benchmarks above.

3.5 Models and Variable Definitions

3.*5.1 Restatements and Proxies of Earnings Management Incentives*

To examine whether the incidence of restatement is associated with variables proxying for managerial incentives to manage earnings, we estimate the following logistic regression:

$$\text{Re}state_i = \alpha_0 + \alpha_1 FIN_i + \alpha_2 FINREQ_i + \alpha_3 EP_i + \alpha_4 DEBT_i + \alpha_5 ROA_i + \varepsilon_i \qquad (3)$$

Specifically, $RESTATE_i$ is equal to one if firm i's quarterly earnings are restated (from now on, subscripts are ignored for expositional ease). FIN is defined as cash proceeds from issuance of common or preferred shares in the year of restatements and the following year, scaled by beginning of quarter's market value of equity. It is winsorized to 1. The financing requirement variable, FINREQ, is defined as a binary variable obtaining a value of one if the three-year sum of free cash flow (operating cash flow minus capital expenditures) is negative. Both of these financing variables indicate firms' incentives to manage earnings so they gain an easier access to the public equity and debt markets (Dechow et al., 1996). DEBT, a measure of the proximity to debt covenants is measured as the sum of short and long term debt, scaled by beginning of the quarter's market value. DEBT is winsorized to 10. It is expected that firms with higher debt levels will be encouraged to manage earnings upwards to prevent a violation of debt covenants. EP is earnings divided by market value of equity at the beginning of the quarter, and is used to measure growth. High-growth companies (low EP) are more likely to engage in earnings management, because missing a benchmark for a growth firm may be associated with a much stronger (negative) market reaction (Ertimur et al, 2003). The industry-

adjusted ROA (ROA) is the quarterly income before extraordinary items divided by total assets at quarter-end minus the 2-digit SIC industry median ROA. This variable is used to examine "bath" behavior. It is expected that firms with lower industry-adjusted ROAs are more likely to engage in "bath" behavior so that their future earnings would improve because of greater charges in the current quarter.

To measure the scaled *magnitude* of the earnings restatement, REST, we subtract earnings in the current Compustat file from the AFR earnings, scaled by market value at the beginning of the quarter. To examine which *components* of earnings are restated most often in each of the earnings restatement categories, we focus on cost of goods sold, selling, general and administrative expenses, depreciation, taxes, non-operating income, and special items (consistent with Marquardt and Weidman, 2002).

3.5.2 Market Tests

Unlike prior studies which test for market reactions at the announcement of the restatement (e.g., Palmrose et al., 2001, Callen et al, 2003a), we test whether investors suspect that a component of reported earnings may be restated in the future, causing different reactions to the perceived lower quality of earnings of restating firms. We denote X^{res} (X) to be the restated (originally-reported) earnings and F as forecasted earnings. The earnings surprise for the no-restatement firms is X-F, and the ex-post earnings surprise for the restatement firms should have been X^{res}-F. However, the restatement firms reported X originally, so we can decompose the "correct" earnings surprise (X^{res}-F) into (X-F)+(X^{res}-X). The first component, (X-F), is the traditional earnings surprise for all firms, and the second, (X^{res}-F), is the negative of the restatement amount, REST, as defined above. If investors behave as if they suspect that the restatement amount results in lower quality earnings, then the restatement amount should

not be significantly associated with investors' reactions, and at a minimum should have a lower coefficient than the first component (the traditional earnings surprise). Further, the Earnings Response Coefficient (ERC) should be lower for restating firms than for non-restating firms, indicating the additional risk inherent in the lower quality of earnings for restating firms. Formally, we estimate the following regression equation:

$$CAR_i = \alpha_0 + \alpha_1 SURP_i + \alpha_2 SURP_i * Dummy + \alpha_3 REST_i + \varepsilon_i \qquad (4)$$

CAR is estimated in the window (-1,+1) centered on the preliminary earnings release date (day 0). SURP is earnings as originally reported minus forecasted earnings, scaled by market value of equity at the beginning of the quarter, and forecasted earnings are either form IBES or from the same quarter of the previous year. REST is the restatement amount, defined as earnings as originally-reported minus restated earnings, also scaled by market value of equity at the beginning of the quarter. Dummy is a variable that obtains the value of one if the observation belongs to a particular earnings restatement sub-sample, and zero otherwise. We expect α_1 to be positive and significant, consistent with the many research findings of a positive and significant association between earnings surprises and abnormal returns (e.g., Easton and Zmijewski, 1989). We expect α_2 to be negative if investors assess correctly that firms in the restatement sub-sample have earnings with lower quality (and higher risk). Finally, we expect α_3 to be negative, significant and equal (in absolute vale) to α_1 if investors completely do not anticipate the subsequent restatement.

An additional market test we employ is based on matching restating and non-restating firms from the same industry and similar earnings surprise at the time of the original earnings release. If the matching on earnings surprise is effective and if market participants are unable to anticipate the future restatement of earnings for restating firms,

then abnormal returns should not be statistically different for restating and non-restating firms. If we find that the difference in CAR is related to the magnitude of the restatement, REST, after controlling for differences in earnings surprises (if the matching is not 100% effective), then we can conclude that market participants can see through the component of earnings that is subsequently restated.

3.6 Descriptive Statistics

Table 1 provides summary statistics for four sub-samples – (1) the sub-sample of firm-quarters with *no* income restatements (or income restatements that are caused by M&A, discontinued operations, etc.), (2) the sub-sample of income restatements, (3) the sub-sample of benchmark-failing income restatements, and (4) the sub-sample of "bath" restatements. The last two sub-samples are included in the second sub-sample.

As can be seen from the table, both the restatement and the no-restatement sub-samples have a wide distribution of size (market value of equity), with the restatement sub-sample having a wider size distribution. In contrast, the failing-benchmark and "bath" sub-samples have lower market values than the restatement sub-sample as a whole ($2.4 million and $2.7 million, respectively, versus $3.2 million). This is consistent with potentially greater earnings management practiced by smaller firms within the income restatements sub-sample. Both total accruals and discretionary accruals are larger (in absolute value) for the sub-sample of restatements than the no-restatements sub-sample. Discretionary accruals are also larger (in absolute value) for the benchmark-failing and bath restatements than the other groups, consistent with more earnings management in these two groups.

(Insert Table 1 about here)

The table reveals that the restatement sub-sample has a lower ratio of earnings to price (-0.005 compared to 0.002 for the no restatement sub-sample), consistent with the notion that growth companies may be more likely to manage earnings. The table also reveals that the restatements sub-sample has greater proportions of equity financing (0.069) or financing needs (0.442) than the no-restatements sub-sample, consistent with earnings management before accessing the public markets. Similarly, the restatements sub-sample has higher debt/market value of equity ratio (0.81) than the no restatements sub-sample (0.666), consistent with debt covenants providing potential motives for earnings management. The "bath" sub-sample has the lowest industry-adjusted ROA (-0.029), consistent with the motivation to engage in income-decreasing accruals when performance is worse than industry peers.

The table also shows that the mean CAR is very close to zero in both the no-restatements and the restatements sub-samples, although the median CAR is positive for the restatements sub-sample (0.033). The mean scaled earnings surprise is close to zero for the restatement and no-restatement sub-samples (-0.003 and -0.006, respectively). The mean CAR is positive for the failing benchmark sub-sample (0.006) and negative for the bath sub-sample (-0.035), consistent with the direction of the mean earnings surprise in these two sub-samples.

Table 2 provides information about the number of quarterly restatements in each of the sample years 1988-2002. The number of restatements generally increases over time, reflecting also the growth in the sample observations over time. One year, 1992, has a larger number of restatements than any of its neighboring years. We could not find any specific reason for this phenomenon. The relatively lower number of restatements in 2002 will likely increase in the future when more recent data becomes available than at

the time of this study (first quarter of 2003). Table 2 also shows that there are typically fewer restatements in the fourth fiscal quarter than in the first three quarters. This is consistent with the notion that there is less opportunity for earnings management in the fourth quarter as a result of the formal year-end audit process.

3.7 Which Components of Earnings Are Most Frequently Restated?

Table 3 reports the percentage of various components of earnings where the restatement is classified into various sub-groups. Generally, the most frequently restated components of earnings are cost of goods sold (67% to 79% of all restatements) and the tax expense (56% to 83% of all restatements). Special items are usually the category with the lowest percentage of restatements. Note, however, that the bath restatements have typically more restatements of special items, and fewer restatements of all other categories than the failing-benchmarks categories. This is consistent with the notion that firms that are more likely to report special items tend to be experiencing some trouble (Elliott and Hanna, 1996; Collins et al., 1997).

(Insert Table 3 about here)

4. Results

4.1 Univariate Results

Table 4 provides formal tests of differences in total and discretionary accruals between the no-restatements and restatements sub-samples. Panels A and B examine the differences for firms with negative and positive total accruals, respectively. Panel C uses all firms but focuses on the absolute value of discretionary total accruals. As can be seen from Panel A, both total and discretionary total accruals are significantly more negative

for the restatements sub-sample with negative total accruals than the no-restatements sub-sample with negative total accruals ($p = 0.0001$). This is consistent with restating firms using greater discretion to lower their income than firms with no restatements. Similarly, both total and discretionary total accruals are significantly higher for restatement firms with positive total accruals than for firms with positive total accruals that did not have restatements ($p = 0.0001$). This is consistent with restating firms using greater discretion to increase income than firms with no restatements. Finally, the absolute value of discretionary total accruals is significantly greater for the restating firms than the no-restatement firms, consistent with restating firms using greater discretion than the no-restatement sub-sample to change income in the direction they wish ($p = 0.0001$). The results suggest that the pattern of accruals for restatement firms is consistent with earnings management practiced by these firms.

(Insert Table 4 about here)

4.2 Multivariate Results

Table 5 presents the results of Logistic Regression Analysis, where the dependent variable is equal to one if the observation (firm-quarter) belongs to the restatement sub-sample and zero if it does not. Consistent with prior intuition, restating firms either issue significantly more new equity than firms that did not restate income (FIN) ($p = 0.0001$), or have a significantly greater need for financing as evident by their 3-year sum of free cash flows (FINREQ) ($p = 0.0001$). Also consistent with prior intuition, restating firms have significantly higher ratios of debt/market value of equity than no-restatement firms (DEBT) ($p = 0.0001$), consistent with the fear of violating debt covenants as a motivation for earnings management. The earnings/price ratio (EP) is significantly lower in the

restatement than in the no-restatements sub-sample, consistent with a growth explanation for earnings management.

When the sample is split into positive and negative total accruals, we find that the equity financing and debt/market value of equity ratios have the predicted signs and coefficients that are significantly different from zero in both sub-samples. The EP variable is not significant in any of the positive or negative accruals groups. However, when the industry-adjusted ROA (ROA) is lower, firms with negative accruals are more likely to engage in restatements, more likely following a "bath" behavior ($p = 0.0001$). Overall, the univariate and multivariate results in Tables 4 and 5 suggest that firms in the restatements sub-sample are more likely to engage in earnings management than firms in the no-restatements sub-sample, as evidenced by the variables that are likely to be associated with earnings management.

(Insert Table 5 about here)

Table 6 presents the magnitude of restatement, total accruals and discretionary accruals, all scaled by total assets at the beginning of the quarter, for various years and sub-samples of earnings restatements. To the extent that earnings restatements reflect initial earnings management, and if the cross-sectional model for discretionary accruals is able to identify the magnitude of earnings management, then the magnitude of the restatement is expected to be close to the magnitude of discretionary accruals. As the table reveals, the mean earnings restatement is typically positive (consistent with a higher frequency of earnings-decreasing restatements) for most years and for the entire sample of restatements. In contrast, the mean total and discretionary accruals are typically negative, more consistent with a bath behavior, although the frequency of income-increasing restatements is lower in our restatements sample. Turning to the sub-samples

of earnings-decreasing and earnings-increasing restatements, it seems that the sign and magnitude of the restatement amount is similar to that of the discretionary accrual for the earnings-increasing sub-sample, but the magnitude is much different for the income-decreasing restatements.

(Insert Table 6 about here)

Table 6 also shows that for the failing-benchmarks sub-sample, the magnitude of the restatement amount and its sign are relatively close to that of discretionary accruals, pointing potentially to closer evidence of earnings management for this sub-sample. A further investigation of the three benchmarks that comprise this group shows that all have positive mean restatement amounts and discretionary accruals, with magnitudes that appear relatively close to each other. In contrast, for the bath sub-samples, although both the restatement amount and the discretionary accruals have negative means (-0.0127 and -0.0261, respectively), the magnitude of the mean discretionary accrual seems to be almost twice that of the restatement amount (in absolute value). Thus, the table provides inconclusive evidence about whether the magnitudes of earnings restatements and discretionary accruals reflect earnings management with the same level of accuracy.

To provide further evidence on the correspondence between discretionary accruals and the restatement magnitude, we regress the scaled restatement amount on the scaled discretionary accrual for various sub-samples. If the two measure the same construct, we expect the intercept to be zero, the slope coefficient to be close to one, and a high correlation between the two variables. Table 7 provides the results of these regressions for various sub-samples. Generally, the correlation between the two variables is low, with higher correlations for income-increasing (0.231) and bath restatements (0.311) than income-decreasing (0.038) and failing-benchmark restatements (0.109).

Thus, if one is willing to accept restatements as evidence of initial earnings management, the cross-sectional Modified Jones model does not appear overall to adequately measure the relative magnitude of earnings management.

(Insert Table 7 about here)

4.3 Market Reactions

We now present results on market reactions to the earnings announcement of firms that would subsequently restate earnings. Table 8 reports the results of the regression of CAR on the earnings surprise, SURP, on the restatement amount, REST, and on the interactive term for various definitions of the dummy variable. Consistent with prior studies, the coefficient on the earnings surprise is always positive and significantly different from zero at the 1% level of significance. The restatement amount is always negative, as expected, and is statistically different from zero at conventional levels, indicating that investors are "fooled" by treating the restatement component of earnings as value-relevant. However, the magnitude of the coefficient is (in absolute value) only about half of that of the earnings surprise, indicating that investors are able to assess that the restatement amount has lower earnings quality than the rest of the earnings surprise.[5] Finally, although the coefficient on the interaction of the earnings surprise and the dummy variable is generally negative, indicating a lower ERC for the restating firms, it is not significantly different from zero for most of the failing-benchmark categories and it is significant for the bath categories. Untabulated results show that the ERC of firms that had at least one prior restatement is significantly lower than firms with no prior restatements.

[5] As footnote 8 to Table 7 indicates, the two coefficients are statistically different from each other (in absolute value) at significance levels below 0.0001 for all sub-samples of restatements.

(Insert Table 8 about here)

To provide additional evidence about the market reactions to the restatement amount, we match each restatement observation with a control observation with *no* restatement from the same 2-digit SIC industry, with the closest earnings surprise and size. We are able to match 6,847 restatements, with control observations that have significantly lower market value of equity and significantly higher earnings surprise than the matched restating firms. Thus, we should expect CAR of the control firms to be slightly higher than that of the restating firms.

Table 9 shows the results of regressions where the dependent variable is the *difference* in CAR between control and restating firm, and the independent variables are the difference in scaled earnings surprise (to correct for the imperfect matching on earnings surprise) and the restatement amount. As can be seen in the table, almost none of the groups have any significant differences in CAR between control and restating firms (indicated by the insignificant R^2). Further, in most of the regressions, the coefficient on the restatement amount is statistically not different from zero, indicating that there are typically no significant market reactions to the restatement amounts in earnings, which means that investors are unable to correctly assess that this component of earnings would subsequently be restated.[6] The only two groups where the restatement amount has a significant coefficient are for the failing benchmarks group, and in particular, the failing earnings growth firms in that group. Thus, investors may have been able to detect the temporary distortions in earnings for these groups of firms.

(Insert Table 9 about here)

[6] Recall that the matching is done on the surprise estimated by using the originally-reported earnings, which includes the restatement amount for restating firms and zero restatement for the control firms. Thus, if investors are unable to tell the difference between earnings of the two groups, the coefficient on the restatement amount should not be significantly different from zero.

Overall, the evidence regarding market reactions to earnings of firms that would subsequently restate earnings suggest that the market is unable to completely anticipate the component of earnings that would be restated. However, investors seem to attach a lower coefficient to the component that would be restated in the future, and to the entire quality of earnings (or ERC) of restating firms.

V. Summary and Conclusions

This paper studies quarterly earnings restatements, which occur in about 3.4% of the studied population, or close to 7,600 firm-quarters over the period 1988-2002. Consistent with assertions that restatements reflect initial attempts to manage earnings, we find that firm-quarters with restatements have significantly larger total and discretionary accruals than firm-quarters without restatements. In addition, restating firms are more strongly associated with variables that proxy for earnings management incentives, such as the need for additional financing, financial leverage and whether the firm is a growth or value firm. The study further identifies a subset of restating firms that are more likely to reflect earnings management by focusing on subsets of restating firms that would have missed their earnings benchmarks without the upwards earnings management, or firms that engaged in a big "bath" to reduce earnings when they failed their earnings benchmarks. However, we find a low correlation between the discretionary accruals and the magnitude of earnings management for these two sub-samples, as well as for the remaining restating firms, suggesting that the discretionary accruals model provides earnings management measures with a high degree of noise.

Finally, we document that most of the earnings management is performed by using the cost of goods sold and tax components of income.

We also provide evidence on the ability of investors to anticipate subsequent restatements, or at least the lower quality of the component of earnings that would be restated in subsequent quarters. Our results suggest that the investors are unable to completely see through the component of earnings that would subsequently be restated. However, we observe that investors appear to assign a lower valuation weighting to the component of income which would be restated in subsequent periods, consistent with an understanding of its lower quality and precision. We also find that investors assign a lower ERC to the entire earnings number for firms that would subsequently restate earnings, as well as to the earnings of firms that had restated quarterly earnings at least once in the past.

The results in this study can help practitioners who should take into account in their analysis of financial statements the nature of firms most likely to be affected by earnings management and by future restatements of earnings. This can be done by a careful analysis of accruals and discretionary accruals, as well as other variables that proxy for the incentives of earnings management. The study also shows that previous restatements are a signal of lower quality earnings, which should be taken into consideration when analyzing financial statements. The results of this study have implications for future research that uses the Compustat quarterly database without specifically controlling for restatements in earnings. Such research may be biased if it attempts to identify or measure earnings management or earnings surprises, because the originally reported quarterly earnings may have been restated.

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Table 1
Summary Statistics

Panel A - No Restatements

Variable	N	Mean	Std Dev	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl
Market Value	212893	1714	10307	16	44	157	661	2515
Total Accruals/Assets	212875	-0.011	0.062	-0.061	-0.03	-0.009	0.011	0.041
Discretionary Accruals/Assets	212547	-0.002	0.059	-0.051	-0.021	-0.001	0.02	0.049
Earnings/Market	212867	0.002	0.073	-0.034	0.002	0.013	0.023	0.035
Equity Financing/Market	212893	0.057	0.148	0	0	0.006	0.029	0.168
Financing Requirement	212893	0.375	0.484	0	0	0	1	1
Debt/Market	212893	0.666	1.232	0	0.038	0.252	0.749	1.666
Industry-Adjusted ROA	212792	-0.004	0.052	-0.032	-0.006	0.001	0.012	0.026
CAR(-1,1)	212893	0.002	0.074	-0.076	-0.031	0	0.033	0.084
Scaled Earnings Surprise	211419	-0.003	0.058	-0.026	-0.004	0.001	0.005	0.017

Panel B - All Restatements

Market Value	7592	3198	13452	25	83	1477	5571	7592
Total Accruals/Assets	7592	-0.012	0.075	-0.064	-0.03	0.01	0.043	7592
Discretionary Accruals/Assets	7574	-0.004	0.07	-0.054	-0.021	0.019	0.05	7574
Earnings/Market	7591	-0.005	0.094	-0.053	-0.007	0.021	0.035	7591
Restatement/Market	7592	0.003	0.033	-0.006	-0.001	0.004	0.015	7592
Equity Financing/Market	7592	0.069	0.157	0	0	0.049	0.207	7592
Financing Requirement	7592	0.442	0.497	0	0	1	1	7592
Debt/Market	7592	0.81	1.386	0.002	0.076	0.929	1.992	7592
Industry-Adjusted ROA	7589	-0.013	0.059	-0.051	-0.014	0.007	0.021	7589
CAR(-1,1)	7592	0	0.078	-0.079	-0.034	0.033	0.083	7592
Scaled Earnings Surprise	7537	-0.006	0.072	-0.037	-0.008	0.005	0.019	7537

Panel C - Failing-Benchmark Restatements

Market Value	1554	2390	10703	21	65	236	986	3822
Total Accruals/Assets	1554	0.007	0.071	-0.043	-0.02	-0.001	0.025	0.065
Discretionary Accruals/Assets	1546	0.013	0.066	-0.038	-0.013	0.007	0.032	0.071
Earnings/Market	1554	0.01	0.044	-0.003	0.004	0.012	0.021	0.032
Restatement/Market	1554	0.017	0.036	0.001	0.002	0.006	0.017	0.041
Equity Financing/Market	1554	0.068	0.148	0	0.001	0.011	0.05	0.211
Financing Requirement	1554	0.466	0.499	0	0	0	1	1
Debt/Market	1554	0.737	1.282	0.001	0.058	0.298	0.848	1.901
Industry-Adjusted ROA	1554	-0.011	0.041	-0.04	-0.016	-0.004	0.004	0.015
CAR(-1,1)	1554	0.005	0.08	-0.079	-0.031	0.001	0.039	0.09
Scaled Earnings Surprise	1547	0.006	0.038	-0.006	0	0.001	0.004	0.016

Panel D – "Bath" Restatements

Variable	N	Mean	Std Dev	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl
Market Value	1515	2725	10467	27	79	325	1405	4748
Total Accruals/Assets	1515	-0.039	0.087	-0.117	-0.051	-0.02	-0.002	0.021
Discretionary Accruals/Assets	1513	-0.026	0.085	-0.102	-0.038	-0.01	0.009	0.033
Earnings/Market	1514	-0.039	0.123	-0.133	-0.043	-0.007	0.01	0.022
Restatement/Market	1515	-0.013	0.049	-0.023	-0.008	-0.002	-0.001	0
Equity Financing/Market	1515	0.076	0.164	0	0.001	0.01	0.065	0.226
Financing Requirement	1515	0.517	0.5	0	0	1	1	1
Debt/Market	1515	0.846	1.482	0.001	0.066	0.36	0.938	2.115
Industry-Adjusted ROA	1514	-0.029	0.072	-0.09	-0.031	-0.008	0.001	0.01
CAR(-1,1)	1515	-0.008	0.086	-0.103	-0.045	-0.007	0.026	0.078
Scaled Earnings Surprise	1510	-0.035	0.099	-0.115	-0.037	-0.009	-0.001	0.003

Notes:

1. The table is based on 220,485 firm-quarters spanning the period 1988-2002. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes. Failing-benchmark restatements are those where the restated earnings fall short of a benchmark, but the originally reported earnings exceed the benchmark. The benchmark is either median analyst forecast of earnings, earnings in the same quarter of the prior year or zero. "Bath" restatements are those where the restated earnings is below the benchmark, and the originally reported earnings is even lower than the restated earnings.
2. The market value is as of the previous fiscal quarter-end ($millions).
3. Total accruals are estimated as income before extraordinary items and discontinued operations minus net operating cash flow
4. Discretionary accruals are estimated by cross-sectional modified Jones model (as per DeFond and Jiambalvo, 1994).
5. The ratio of earnings to market is quarterly earnings divided by market value of equity at the previous fiscal quarter-end.
6. Equity financing is the amount of new common and preferred stock issued to the market in the current and the subsequent year, scaled by market value of equity at the previous fiscal quarter-end.
7. Financing requirement is an indicator variable obtaining the value of one if the firm's sum of the three most recent annual free cash flows (net operating cash flow minus capital expenditures) is negative, and zero if it is positive.
8. Debt/Market is short and long-term debt scaled by market value of equity at the previous fiscal quarter-end.
9. Industry-adjusted ROA is the earnings divided by total assets minus the median ROA of the 2-digit SIC industry.
10. CAR(-1,1) is the cumulative abnormal return from day -1 through day +1, where day zero is the preliminary earnings announcement date. The abnormal return is the raw return minus the average return on a same size-B/M portfolio (six portfolios), as provided by Professor French.
11. Scaled earnings surprise is originally-reported earnings before extraordinary items and discontinued operations minus expected earnings, scaled by market value at the beginning of the quarter. Expected earnings is the median analyst forecast of EPS from IBES times the number of shares outstanding from IBES, if IBES data are available, or the earnings for the same quarter in the prior year.

Table 2
Number of Restatements by Year and Quarter

Year	No-Restatements	Restatements	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1988	9487	458	131	122	119	86
1989	9778	274	63	86	68	57
1990	9423	261	70	74	71	46
1991	9211	356	97	107	94	58
1992	9561	840	259	257	238	86
1993	11486	340	77	95	91	77
1994	14136	295	80	97	75	43
1995	15705	277	68	72	71	66
1996	16743	345	79	92	85	89
1997	18221	450	113	120	109	108
1998	18575	697	177	197	204	119
1999	18531	599	156	168	154	121
2000	18765	1017	288	305	285	139
2001	18398	832	208	243	232	149
2002	14873	551	232	148	154	17
Total	**212893**	**7592**	**2098**	**2183**	**2050**	**1261**

Notes:

1. The table is based on 220,485 firm-quarters spanning the period 1988-2002. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes.
2. Quarter is fiscal quarter.

Table 3
Percentage of Firms that Restate Specific Components of Income

	N	Cost of Goods Sold	Selling, General and Administrative	Depreciation	Non-operating income (expense)	Special items	Tax
All Restatements	7592	71%	48%	44%	50%	24%	74%
Earnings-Decreasing Restatements	4734	73%	50%	43%	50%	23%	73%
Earnings-Increasing Restatements	2858	67%	44%	46%	51%	25%	76%
Failing analyst forecast	781	77%	54%	45%	48%	21%	83%
Failing earnings growth	769	76%	54%	48%	51%	24%	79%
Failing a loss	556	79%	61%	51%	52%	28%	72%
Failing benchmarks	1554	76%	54%	47%	50%	23%	79%
Bath - analyst forecast	756	72%	48%	47%	47%	35%	76%
Bath - earnings growth	1112	71%	46%	46%	50%	29%	74%
Bath - loss	827	70%	49%	48%	48%	35%	56%
Bath - all	1515	69%	45%	46%	49%	30%	71%

Notes:

1. The table is based on all restatements during the period 1988-2002. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes.
2. Earnings – Decreasing (Increasing) are restatements where the originally-reported earnings is subsequently restated downwards (upwards).
3. Failing analyst forecast (earnings growth, loss, benchmarks) represents restatements where the originally-reported earnings exceeds the analyst forecast of earnings (earnings of the same quarter in the prior year, zero, all of the above), but the restated earnings falls short of that benchmark. Bath categories are when the restated earnings is below the benchmark and the originally-reported earnings is lower than the restated earnings.

Table 4
Tests of Differences in Accruals between Firms with No Restatements and Restatement Firms

	N	Mean	t-statistic	Significance
Panel A- Firms With Negative Total Accruals				
Total Accruals				
No Restatements	134664	-0.037		
Restatements	4906	-0.041	**-4.430**	**0.0001**
Discretionary Total Accruals				
No Restatements	134472	-0.025		
Restatements	4896	-0.028	**-5.098**	**0.0001**
Panel B- Firms With Positive Total Accruals				
Total Accruals				
No Restatements	78065	0.036		
Restatements	2673	0.040	**4.336**	**0.0001**
Discretionary Total Accruals				
No Restatements	77930	0.038		
Restatements	2666	0.042	**3.818**	**0.0001**
Panel C- All Firms				
Absolute Value(Discretionary Total Accruals)				
No Restatements	212402	0.034		
Restatements	7562	0.038	**6.086**	**0.0001**

Notes:

1. Total accruals are estimated as income before extraordinary items and discontinued operations minus net operating cash flow. The total accruals are scaled by total assets at the end of the previous quarter.
2. Discretionary accruals are estimated by cross-sectional modified Jones (as per DeFond and Jiambalvo, 1994), and scaled by total assets at the end of the previous quarter.
3. The table is based on firm-quarters spanning the period 1988-2002. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes.

Table 5
Logistic Regression to Predict Restatements

$$\text{Re}state_i = \alpha_0 + \alpha_1 FIN_i + \alpha_2 FINREQ_i + \alpha_3 EP_i + \alpha_4 DEBT_i + \alpha_5 ROA_i + \varepsilon_i$$

	All Firms		Positive Accruals		Negative Accruals	
Variable	**Coefficient**	**Significance**	**Coefficient**	**Significance**	**Coefficient**	**Significance**
Intercept	**-3.5019**	**0.0001**	**-3.5725**	**0.0001**	**-3.4761**	**0.0001**
Equity Financing/Market (FIN)	**0.3063**	**0.0001**	**0.2354**	**0.0481**	**0.3022**	**0.0006**
Financing Requirement (FINREQ)	**0.2411**	**0.0001**	**0.2959**	**0.0001**	**0.1837**	**0.0001**
Earnings/Price (EP)	**-0.5633**	**0.0001**	-0.2152	0.5252	-0.0527	0.7647
Debt/Market (DEBT)	**0.0679**	**0.0001**	**0.087**	**0.0001**	**0.0671**	**0.0001**
Industry-Adjusted ROA (ROA)					**-1.6187**	**0.0001**
Total Observations	212867		78063		134582	
Restatement Observations	7591		2673		4902	
Significance of Regression	**0.0001**		**0.0001**		**0.0001**	
Percent Concordant	47%		48%		50%	
Percent Discordant	36%		35%		37%	

Notes:

1. The table is based on 220,485 firm-quarters spanning the period 1988-2002. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes. The dependent variable obtains a value of one if the observation is a restatement and zero otherwise.
2. Total accruals are estimated as income before extraordinary items and discontinued operations minus net operating cash flow. The ratio of earnings to price is quarterly earnings divided by market value of equity at the previous fiscal quarter-end.
3. Equity financing is the amount of new common and preferred stock issued to the market in the current and the subsequent year, scaled by market value of equity at the previous fiscal quarter-end.
4. Financing requirement is an indicator variable obtaining the value of one if the firm's sum of the three most recent annual free cash flows (Net operating cash flow minus capital expenditures) is negative, and zero if it is positive.
5. Debt/Market is short and long-term debt scaled by market value of equity at the previous fiscal quarter-end.
6. Industry-adjusted ROA is the earnings divided by total assets minus the median ROA of the 2-digit SIC industry.

Table 6
Mean Restatement Amounts, Total, and Discretionary Accruals

Year	N	Restatement/Assets	Total Accruals/Assets	Discretionary Accruals/Assets
1988	451	0.0022	-0.0051	-0.0035
1989	274	0.0026	-0.0093	-0.0033
1990	261	0.002	-0.0139	-0.0034
1991	356	0.0018	-0.0128	-0.0015
1992	839	0.0017	-0.0086	0.0008
1993	339	0.005	-0.0051	0.0052
1994	292	0.0038	0.0005	0.0065
1995	277	0.004	-0.0102	-0.0027
1996	345	0.0044	-0.013	-0.0021
1997	450	0.0059	-0.0138	-0.0039
1998	697	-0.0023	-0.0199	-0.0119
1999	598	0.0067	-0.0074	-0.0015
2000	1017	0.0044	-0.0122	-0.0024
2001	832	0.0007	-0.0227	-0.0112
2002	551	-0.0003	-0.0135	-0.0066
Total	7579	0.0026	-0.0122	-0.0036
Earnings-Increasing	2852	-0.0101	-0.0231	-0.0133
Earnings-Decreasing	4727	0.0103	-0.0056	0.0022
Failing analyst forecast	779	0.0126	0.0045	0.0104
Failing earnings growth	767	0.0219	0.0112	0.0161
Failing a loss	556	0.0317	0.015	0.0217
Failing benchmarks	1550	0.0173	0.0075	0.0134
Bath - analyst forecast	755	-0.0134	-0.0402	-0.0282
Bath - earnings growth	1111	-0.0123	-0.0412	-0.0286
Bath - loss	827	-0.0202	-0.0598	-0.0457
Bath - all	1514	-0.0127	-0.0387	-0.0261

Notes:

1. The table reports means for restatements spanning the period 1988-2002. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes. The restatement amount is the number as originally reported minus the restated earnings, scaled by assets at the beginning of the quarter.
2. Total accruals are estimated as income before extraordinary items and discontinued operations minus net operating cash flow. Discretionary accruals are estimated by cross-sectional modified Jones (as per DeFond and Jiambalvo, 1994).Both total and discretionary accruals are scaled by assets at the beginning of the quarter.
3. Earnings – Decreasing (Increasing) are restatements where the originally-reported earnings is subsequently restated downwards (upwards).
4. Failing analyst forecast (earnings growth, loss, benchmarks) represents restatements where the originally-reported earnings exceed the analyst forecast of earnings (earnings of the same quarter in the prior year, zero, all of the above), but the restated earnings fall short of that benchmark. Bath categories are when the restated earnings is below the benchmark and the originally-reported earnings is lower than the restated earnings.

Table 7
Regression of Restatement Amount on Discretionary Accruals

Group	N	Intercept	Discretionary Accruals	Adjusted-R^2
All Restatements	7574	0.003	0.133	0.079
Earnings-Increasing Restatements	2854	-0.007	0.231	0.202
Earnings-Decreasing Restatements	4720	0.010	0.038	0.009
Failing analyst forecast	776	0.011	0.112	0.031
Failing earnings growth	767	0.020	0.094	0.021
Failing a loss	553	0.029	0.112	0.037
Failing benchmarks	1546	0.016	0.109	0.040
Bath - analyst forecast	755	0.000	0.467	0.416
Bath - earnings growth	1111	-0.004	0.299	0.265
Bath - loss	826	-0.004	0.353	0.314
Bath - all	1513	-0.005	0.311	0.292

Notes:

1. The table reports regressions where the dependent variable is the restatement amount (the number as originally reported minus the restated earnings, scaled by assets at the beginning of the quarter). The independent variable is discretionary accruals, estimated by the cross-sectional modified Jones model (as per DeFond and Jiambalvo, 1994), and scaled by assets at the beginning of the quarter.
2. Earnings – Decreasing (Increasing) are restatements where the originally-reported earnings is subsequently restated downwards (upwards).
3. Failing analyst forecast (earnings growth, loss, benchmarks) represents restatements where the originally-reported earnings exceed the analyst forecast of earnings (earnings of the same quarter in the prior year, zero, all of the above), but the restated earnings fall short of that benchmark. Bath categories are when the restated earnings is below the benchmark and the originally-reported earnings is lower than the restated earnings.

Table 8
Regression of Announcement Date CAR on Earnings Surprise and Restatement Amount

$$CAR_i = \alpha_0 + \alpha_1 SURP_i + \alpha_2 SURP_i * Dummy + \alpha_3 REST_i + \varepsilon_i$$

Dummy Variable	Intercept	Sig.	Earnings Surprise	Sig.	Earnings Surprise *Dummy	Sig.	Restatement/ Mkt	Sig.	R^2	Sig.
All Restatements	**0.003**	**0.001**	**0.132**	**0.001**	**-0.035**	**0.005**	**-0.067**	**0.005**	**0.011**	**0.001**
Earnings-Decreasing	**0.003**	**0.001**	**0.130**	**0.001**	0.003	0.806	**-0.076**	**0.001**	**0.011**	**0.001**
Failing analyst forecast	**0.003**	**0.001**	**0.131**	**0.001**	0.071	0.772	**-0.077**	**0.001**	**0.011**	**0.001**
Failing earnings growth	**0.003**	**0.001**	**0.131**	**0.001**	-0.027	0.847	**-0.075**	**0.002**	**0.011**	**0.001**
Failing a loss	**0.003**	**0.001**	**0.131**	**0.001**	0.023	0.655	**-0.077**	**0.001**	**0.011**	**0.001**
Failing benchmarks	**0.003**	**0.001**	**0.131**	**0.001**	0.032	0.520	**-0.078**	**0.001**	**0.011**	**0.001**
Bath - analyst forecast	**0.003**	**0.001**	**0.131**	**0.001**	-0.033	0.285	**-0.072**	**0.002**	**0.011**	**0.001**
Bath - earnings growth	**0.003**	**0.001**	**0.131**	**0.001**	**-0.044**	**0.050**	**-0.063**	**0.010**	**0.011**	**0.001**
Bath - loss	**0.003**	**0.001**	**0.132**	**0.001**	**-0.058**	**0.004**	**-0.060**	**0.012**	**0.011**	**0.001**
Bath - all	**0.003**	**0.001**	**0.132**	**0.001**	**-0.068**	**0.001**	**-0.053**	**0.029**	**0.011**	**0.001**

Notes:

1. The regression is based on all 220,485 firm-quarters spanning the period 1988-2002 with available data. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes.
2. CAR is the cumulative abnormal return from day -1 through day +1, where day zero is the preliminary earnings announcement date. The abnormal return is the raw return minus the average return on a same size-B/M portfolio (six portfolios), as provided by Professor French.
3. SURP, the scaled earnings surprise, is originally-reported earnings before extraordinary items and discontinued operations minus expected earnings, scaled by market value at the beginning of the quarter. Expected earnings is the median analyst forecast of EPS from IBES times the number of shares outstanding from IBES, if IBES data are available, or the earnings for the same quarter in the prior year.
4. The dummy variable is equal to one for the particular group and zero for all other observations.
5. The restatement amount is equal to the originally-reported earnings minus the restated earnings, scaled by market value of equity at the beginning of the quarter.
6. Earnings – Decreasing are restatements where the originally-reported earnings is subsequently restated downwards.
7. Failing analyst forecast (earnings growth, loss, benchmarks) represents restatements where the originally-reported earnings exceed the analyst forecast of earnings (earnings of the same quarter in the prior year, zero, all of the above), but the restated earnings fall short of that benchmark. Bath categories are when the restated earnings is below the benchmark and the originally-reported earnings is lower than the restated earnings.
8. In all rows, the absolute value of the coefficient on the restatement amount is statistically different from the coefficient on the earnings surprise at significance levels below 0.0001.

Table 9
Regression of Differences in Announcement Date CAR on Differences in Earnings Surprise and Restatement Amount between Sample and Control Firms

$$DCAR_i = \alpha_0 + \alpha_1 DSURP_i + \alpha_2 REST_i + \varepsilon_i$$

Dummy Variable	Intercept	Sig.	Difference in Earnings Surprise	Sig.	Restatement/ Mkt	Sig.	R^2	Sig.	N
All Restatements	0.002	0.247	-0.029	0.137	0.038	0.276	0.001	0.154	6797
Earnings-Decreasing	0.002	0.185	-0.043	0.101	0.053	0.313	0.001	0.156	4231
Failing analyst forecast	0.006	0.184	-0.513	0.075	-0.034	0.876	0.005	0.197	716
Failing earnings growth	-0.001	0.889	0.053	0.708	**0.247**	**0.009**	**0.010**	**0.030**	709
Failing a loss	0.001	0.862	-0.068	0.353	0.196	0.104	0.007	0.157	511
Failing benchmarks	0.001	0.635	-0.063	0.321	**0.190**	**0.020**	**0.005**	**0.035**	1423
Bath - analyst forecast	0.002	0.703	0.101	0.063	0.197	0.230	0.006	0.147	687
Bath - earnings growth	0.000	0.989	0.003	0.943	-0.076	0.440	0.001	0.676	1010
Bath - loss	0.000	0.990	-0.012	0.788	0.054	0.564	0.001	0.770	756
Bath - all	0.000	0.927	-0.036	0.332	0.023	0.763	0.001	0.497	1374

Notes:

1. The regression is based on all restatements during the period 1988-2002 with matching control observations from the same 2-digit SIC industry and the closest in earnings surprise and market value to the restatement firm. Restatements are these cases where the originally reported quarterly earnings figure is different from the current Compustat earnings figure, and there were no mergers and acquisitions, discontinued operations, or fiscal-year changes.
2. DCAR is the cumulative abnormal return from day -1 through day +1, where day zero is the preliminary earnings announcement date for the control firm minus the CAR for the restatement firm. The abnormal return is the raw return minus the average return on a same size-B/M portfolio (six portfolios), as provided by Professor French.
3. DSURP is the scaled earnings surprise for the control firm minus that of the restatement firm, where the scaled earnings surprise is the originally-reported earnings before extraordinary items and discontinued operations minus expected earnings, scaled by market value at the beginning of the quarter. Expected earnings is the median analyst forecast of EPS from IBES times the number of shares outstanding from IBES, if IBES data are available, or the earnings for the same quarter in the prior year.
4. The restatement amount is equal to the originally-reported earnings minus the restated earnings, scaled by market value of equity at the beginning of the quarter.
5. Earnings – Decreasing are restatements where the originally-reported earnings is subsequently restated downwards.
6. Failing analyst forecast (earnings growth, loss, benchmarks) represents restatements where the originally-reported earnings exceed the analyst forecast of earnings (earnings of the same quarter in the prior year, zero, all of the above), but the restated earnings fall short of that benchmark. Bath categories are when the restated earnings is below the benchmark and the originally-reported earnings is lower than the restated earnings.