Do investors see through mistakes in reported earnings?

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Abstract:

This paper investigates whether investors are misled by misstated earnings and whether they anticipate earnings restatements. Using a comprehensive sample of restating firms, we find that investors see through mistakes in reported earnings at the time of earnings announcement. Investors react negatively to the component of the earnings surprise that will subsequently be restated and attach higher valuation coefficient to this component than to the rest of the earnings surprise. Firms that overstate earnings have negative abnormal returns in the second half of the error period, which extends from the first misstated period to the day of restatement announcement, suggesting that investors anticipate restatements. This result is more pronounced for firms that overstate core accounts such as revenue and expense. We find that both overstating and understating firms stocks' suffer significant losses at the restatement announcement. Overall, our study suggests that the large negative restatement announcement effects shown in earlier studies are not a reversal of misvaluation caused by misinformed investors, but rather could reflect the expected costs associated with a restatement.

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1. Introduction

This study investigates whether investors are misled by materially misstated earnings and whether they anticipate earnings restatements. Recent corporate scandals involving overstated earnings (Wu (2002) and Huron (2005)) have motivated several Securities and Exchange Commission (SEC) rules and Sarbanes-Oxley Act of 2002 provisions aimed at boosting the integrity of financial reports. The premise of these rules is that investors typically do not see through earnings manipulations. But investors could use other private and public information sources to validate reported earnings, making the new rules unnecessary.

Surprisingly, earlier studies spend little time examining whether investors are fooled by erroneous financial statements. Instead, most focus on the large negative abnormal returns observed when firms announce that they will correct their earnings with a restatement[1]. Congress and the popular press also focus on the extreme cases where firms overstate earnings and later suffer large stock price declines.

The reason that earlier studies focus on negative restatement returns is that it is often assumed that they represent a correction for overvaluation caused by overstated earnings. However, we find that firms that understate their earnings also suffer significant stock price declines at restatement announcement, which is inconsistent with the notion that investors underpriced the stocks using erroneously low earnings. Negative returns at restatement announcement could instead reflect the serious reputation, operating and legal costs associated with admitting to and correcting reporting mistakes. One of the

[1] Most studies that examine more recent samples document a negative abnormal reaction to the announcement of restatements of around 9% around a two-day restatement announcement period (Palmrose, Richardson and Scholz (2004), Dechow, Sloan and Sweeney (1996), Wu (2002), GAO (2002), Turner et. al. (2001), and Agrawal and Cooper (2007)).

largest such costs is the cost of litigation. Cande and Lewis (2008) find that the more likely a firm is to be sued, the larger is the partial anticipation effect and the smaller is the filing date effect. In case of restatements, investors are likely to assess the likelihood of being sued at the restatement announcement. Consistent with this notion, Palmrose and Scholz (2004) find that restatement announcement period return is -22% for firms that are sued compared to -4% for the non-sued sub-sample. Jones and Weingram (1997) show that restatement increases the likelihood of litigation more than other litigation-triggering events such as equity issuance, insider trading, SEC enforcement actions and other announcements that trigger ten percent or more drops in stock prices. Other costs associated with restatement include increased capital costs and operating costs (Graham, Li, and Qiu, 2008; Hribar and Jenkins, 2004). Restatement firms are also likely to suffer substantial reputation costs. Karpoff, Lee and Martin (2007a) find that firms subject to SEC and Department of Justice enforcement actions suffer reputational penalty that is 7.5 times larger than the sum of legal and regulatory penalties. A significant portion of reputation costs is realized at the time of the announcement of the events triggering the investigation, which are often the announcements of restatements.

The goal of this paper is to provide a comprehensive analysis of investors' ability to see through mistakes in financial statements. Our study differs from prior literature that examined market reaction to restatement announcement in that it focuses on market reaction to the original announcement of misstated earnings and studies the valuation of restating firms in the error period, which extends from the first misstated period to the day of restatement announcement[2]. In the absence of mistake in financial statements,

[2] For example, the error period of a company with a fiscal year end on December 31 that restated 1999 and 2000 annual reports on April 10, 2001 starts on December 31, 1999 and ends on April 9, 2001

abnormal returns to earnings announcement are shown to be an increasing function of earnings surprises. If investors are fooled by earnings misstatement, then abnormal returns to announcement of erroneous earnings should differ from returns predicted by deviation of correct earnings from their expectations and should be an increasing function of mistake in earnings[3]. If investors are mislead by erroneous earnings, than misvaluation can persist beyond three day earnings announcement window, which would result in abnormal performance in the error period that is positively related to the mistake in earnings. Negative abnormal returns in the error period of firms that overstate earnings would indicate investor's ability to anticipate a restatement.

We analyze a sample of 492 restatements of annual and quarterly reports announced between 1997 and July of 2002. We find that investors are not misled by mistakes in reported earnings at the time of earnings announcement. Investors react negatively and significantly to the component of the earnings surprise that will subsequently be restated and attach higher valuation coefficient to this component than to the rest of the earnings surprise.

Our examination of firm valuation in the error period suggests that market starts anticipating downward, but not upward, restatement of earnings as early as in the second half of the error period. When firms overstate earnings, our results show that abnormal

[3] Mistakes in financial statements can be either intentional or unintentional. Some mistakes in financial statements can be due to pure internal control failure or judgment error, while the management of some firms can be intentionally misleading investors. Richardson, Tuna and Wu (2003) say that "it is reasonable to assume that earnings restatement firms can be characterized as firms who knowingly and intentionally engaged in earnings manipulation." We do not make judgment regarding the intent of the company that makes a mistake and do not differentiate between intentional and unintentional mistakes in this study. Our focus is on the impact of mistakes on stock returns irrespective of the intent. We do differentiate between firms that acknowledged fraud during the announcement of the restatement. However, the identification of fraud is very difficult because motivations for fraud and aggressive accounting are the same (DeFond and Jiambalvo (1991) and Dechow and Skinner (2000)). Moreover, the acknowledgement of fraud as a reason for restatement can be due to embezzlement by lower rank employees rather than misdoing of top level management.

returns at the start of the error period are positive but insignificant, and quickly turn negative and significant. Firms that make mistakes in core accounts, such as revenue and cost, underperform even more than other restating firms in the second half of the error period. Fraudulent restatements mislead investors more in the first half of the error period.

We also analyze firms that understate earnings, but that sample is much smaller than the sample of downward restatements. We find no evidence of firm undervaluation during the error period for these firms. However, like overstating firms, they suffer losses at the restatement announcement. If investors are fooled by understated earnings, understating firms' stocks should increase at the announcement of the upward restatement. Therefore, negative market reaction to the announcement of upward restatements must reflect other costs associated with restatements.

In addition to examining valuation of restating firms in the error period, we also estimate returns of restating firms during: (1) the period prior to the mistake (pre-error period); (2) and the period after the restatement announcement (post-restatement period). We find that overstating firms exhibit positive buy-and-hold abnormal returns two years prior to the beginning of the error period. Efendi, Srivastava and Swanson (2007) find the same result but for one year prior to the error period. They suggest that managers could be motivated to overstate earnings in order to sustain superior performance, consistent with Jensen's (2005) theory of overvalued equity. But we show that such earnings manipulations produce only insignificant initial stock price increases, and those increases are quickly reversed. With respect to post-restatement performance, we find that

overstating firms suffer significant negative abnormal returns for several years following restatements.

To the best of our knowledge, this paper is the first to estimate market reaction to originally reported earnings that are subsequently restated and to examine market valuation of restating firms in the error period. Several prior studies provided partial evidence regarding firm valuation in different parts of the error period. However, no prior study, with an exception of Kinney and McDaniel (1989), properly define error period and mix returns in pre-mistake, error- and post-restatement periods. Kinney and McDaniel (1989) examine the error period and find negative abnormal returns (measured for the full error period) for a limited sample (73 quarterly restatements filed between 1976 and 1985). But they do not examine whether abnormal returns are first positive and then negative during the error period, and they do not control for size, book-to-market, and industry effects. Furthermore, unlike other studies, they find no significant negative abnormal returns at the restatement announcement, suggesting that their sample is not representative of more recent restatements.

Agrawal and Chadha (2005) examine cumulative abnormal monthly returns of restating firms relative to control firms for two years prior to, and one year after, restatement announcements. But monthly returns over a fixed two-year period prior to restatements do not precisely capture the pattern of returns over the error periods, because the length of the error period differs across firms. Kedia and Phillippon (2007) examine annual abnormal returns around restatements as a small part of their study. They measure abnormal returns compared to a control sample during the error period, but only at fiscal year ends. The main use for the annual returns is as independent variables in a regression.

Annual returns cannot capture a precise error period unless a restatement is announced at year-end, which is seldom the case. Palmrose, Richardson and Scholz (2004) estimates buy and hold return for restating firms for 120 days prior to restatement. This window mixes error period and pre-mistake returns for some of their companies. Most importantly, the return is not adjusted for any risk factors, such as market, size, industry, or book-to-market. Burns and Kedia (2006) report cumulative abnormal returns for the period of 120 days before and after restatement, therefore mixing pre-mistake, error period, restatement announcement, and post-restatement returns. Several papers show cumulative abnormal returns for up to 60 days prior to restatement announcement, but not for the entire error period (Palmrose, Richardson and Scholz (2004), Hribar and Jenkins (2004)). We focus on precisely defining the error period, and examining daily abnormal returns over different portions of it.

The rest of the paper proceeds as follows. Research hypotheses are formulated in Section 2. Section 3 describes the data and Section 4 discusses results and their implications. Section 5 concludes the paper.

2. Research Hypotheses and Related Literature

2.1. Overview and definitions

Firms that restate financial statements can be characterized by the following timeline. The management announces earnings with mistake, *M,* at the beginning of the error period ($D_0^{mistake}$, $D_0^{restatement}$) (Figure 1). On day $D_0^{restatement}$, the management corrects earnings and reveals their true value, I_t.

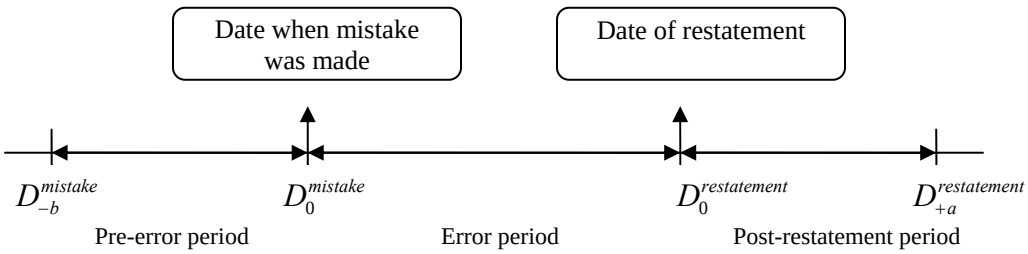

Figure 1: Restatement Timeline

Finance theory suggests that investors value stock using expected future cash flows, however, investors often rely on reported earnings to help them estimate expected cash flows. Graham, Harvey and Rajgopal (2005) document that the majority of firms view earnings as the key metric for an external audience, more so than cash flows. Earnings are also used as part of price earnings ratios, the most widely-used valuation method of stock analysts (see Block, 1999). Therefore, erroneous reported earnings could lead investors to over- or under-value stocks.

Investors do not rely solely on reported earnings, however; they estimate earnings and future prospects using other information sources. Industry and government statistics, competitors' earnings announcements, and suppliers' and customers' information could help investors make accurate estimates of earnings prior to financial statement releases. Although investors are unlikely to completely ignore firms' misstated earnings, earnings that diverge significantly from those implied in other information sources, could be partially discounted by investors.

Beaver (1968), Landsman and Maydew (2002), Ball and Kothari (1991), Chari et al (1988), and Cohen et al (2007) have established that news announcements revealed to investors prior to financial reports do not fully preempt them. But the degree to which

investors rely on reported earnings is still an open issue. To shed light on this issue, we construct and test the following null hypotheses.

2.2. Market reaction to the announcement of misstated earnings

Hypotheses stated in this and following sections are constructed to reflect the common beliefs of regulators and others, that restating firms' stocks are mispriced because investors are seriously misled by misstated earnings. The general alternatives to these hypotheses flow from the semi-strong form of the efficient market hypotheses. Simply stated, stocks are not misvalued because investors use other public information besides misreported earnings to make reasonably accurate estimates of true earnings.

First we examine market reaction to the initial announcement of misstated earnings. Prior literature has shown that earnings announcement returns are a positive function of how much earnings deviate from expectations.

$$R_t = \alpha + \beta_1(I_t - E_{t\text{-}1}(I_t)) + \varepsilon_t = \alpha + \beta_1 SUE + \varepsilon_t \qquad (1)$$

Where, R_t is the abnormal announcement return at time *t*, I_t is the firm's correctly stated net income at time *t*, and $E_{t\text{-}1}(I_t)$ is market's expectation of net income just prior to earnings announcement. $I_t - E_{t\text{-}1}(I_t)$ is termed standardized unexpected earnings (*SUE*) in the literature. If investors are misled by an earnings overstatement (understatement), then the abnormal announcement return will be higher (lower) than what equation (1) predicts:

$$R_t = \alpha + \beta_1(I_t - E_{t\text{-}1}(I_t)) + \beta_2 M_t + \varepsilon_t = \alpha + \beta_1 SUE_t + \beta_2 Mistake_t + \varepsilon_t \qquad (2)$$

Where *M (Mistake)* is the amount by which earnings are misstated. If the market is misled, the coefficient β_2 on *Mistake*, should be positive. If coefficient β_2 on *Mistake*

is positive and equal in magnitude to β_1 coefficient on *SUE*, than investors are treating misstated component of earnings the same as the correctly stated component. Positive β_2 that is smaller than β_1 would indicate that investors are able to correctly discount the quality of misstated earnings and are only partly fooled. Negative β_2 would indicate that investors see through mistakes in reported earnings at the time of initial earnings announcement. We use diluted earning per share numbers for all right hand side variables and standardize them by stock price.

Hypothesis 1: Coefficient β_2 on Mistake in equation (2) is positive and equal in magnitude to β_1 coefficient on SUE.

2.3. Error period valuation of restating firms

Next, we examine if firms are misvalued in the error period and if misvaluation is related to mistake in reported earnings. We test the following hypotheses.

Hypothesis 2: Investors overvalue (undervalue) firms that materially overstate (understate) earnings in the error period.

Hypothesis 3: The magnitude of the misvaluation is positively related to the magnitude of the mistake.

Misvaluation is measured by Cumulative Abnormal Returns (CARs) where abnormal is defined relative to the overall market or Buy and Hold Abnormal Returns (BHARs), where abnormal is defined relative to a sample of control firms matched by size, book-to-market, and industry. Hypothesis 2 implies that error period CARs and BHARs should be positive (negative) for firms that materially overstate (understate) earnings in the error period. Hypothesis 3 predicts that abnormal returns are increasing in the magnitude of the mistake.

We also examine whether investors rely more on core accounts. Previous literature found that markets react more strongly to surprises in on-going operating income than to one-time special items (Elliott and Hanna (1996)). Therefore, misstatement of core accounts should result in greater misvaluation[4].

Hypothesis 4: Investors are misled more by restatements in core accounts.

Our final hypothesis deals with the issue of fraudulent misstatement of earnings. Arguably, fraudulent behavior is more difficult for investors to anticipate than mistakes and makes it more difficult for investors to estimate true earnings. Hence, restatements due to fraud could cause greater misvaluation. Prior studies find that the pressure to sustain positive earnings growth, inflation of CEO compensation, and issuance of equity and debt at favorable prices can motivate managers to intentionally misreport (Richardson, Tuna and Wu (2003), Efendi, Srivastava and Swanson (2007), Burns and Kedia (2006) and Lev, Ryan and Wu (2007)). Offsetting these motivations is the fact that restatement of financial reports is a negative event for the management of the firm -- management loses credibility with shareholders, customers and employees and is often forced to resign (Desai, Hogan, and Wilkins (2006), Collins, Reitenga and Sanchez (2006) and Srinivasan (2005)). Executives identified as responsible parties by SEC and Department of Justice enforcement actions for financial misrepresentation (many of which involve restatements) suffer substantial financial losses and in 28% of the cases face criminal charges (Karpoff, Lee and Martin (2007b)).

[4] Following Palmrose, Richardson and Scholz (2004), core accounts are defined as revenue recognition and expense accounts.

Our last hypothesis is based on the premise that fraudulent misstatements of earnings are harder for investors to distinguish. In testing this hypothesis, we rely on the firm's restatement announcement to identify cases where fraud was involved.

Hypothesis 5: Investors are misled more by restatements that involve fraud.

Most previous research that has studied the error period has focused on trading behavior, not returns. For example, Efendi, Kinney and Swanson (2004) and Desai, Krishnamurthy and Venkataraman (2006), show that short interest increases prior to restatements and declines thereafter, and the larger the short interest, the larger the short-term stock price decline at the restatement announcement. These studies examine fixed time intervals prior to the restatement date instead of defining the precise error periods for each firm and therefore mist error- and pre-mistake periods.

These studies of short sellers do not show whether short-seller trading causes negative returns, or if negative returns cause short-sellers to sell shares of restating firms. Aggrawal and Cooper (2007) show that insiders sell more shares before restatements, and Demirkan (2007) finds that large investors decrease their stock holdings before restatement announcements. Griffin (2003) analyzes the behavior of insiders, short-sellers, and analysts around restatements and other corrective disclosures that led to fraud allegations in 847 federal Rule 10b-5 class actions (not all of these involve restatements)[5]. He finds that insiders and short-sellers predict corrective disclosures.

[5] Securities class action lawsuits filed under Rule 10b-5 allege material flaws pertaining to firms' disclosure. Allegedly, firms' misstatements cause inflation in the stock price during the class action period. Most of these lawsuits are filed on behalf of shareholders who bought the stock during the period of inflated stock prices and are entitled to compensation (Jones and Weingram (2005)).

These studies' results are consistent with the notion that sophisticated investors see through misstated earnings.

All of these studies used the Government Accountability Office (GAO) sample of restatements. The GAO sample includes many restatements due to changes in accounting standards (such as FASB 101, FASB 142 and others) that do not necessarily represent an accounting error, and can be more easily anticipated. We reviewed all restatements on the case by case basis and deleted restatements that were caused by a change in accounting standard and did not correct an accounting error.

2.4. Post-restatement performance of restating firms

Several studies document a negative abnormal reaction to the announcement of restatements. Aggrawal and Cooper (2007) find a -10.1% CAR during a three-day restatement announcement period for a sample of 518 restatements announced between 1997 and 2002. Palmrose, Richardson and Scholz (2004) find a -9% CAR during a two-day restatement announcement period for a sample of 403 restatements announced between 1995 and 1999. Anderson and Yohn (2002) find a -3.49% CAR during a 7-day window for 161 restatements announced from 1997 to 1999. Similar results were found by Dechow, Sloan and Sweeney (1996), Wu (2002), GAO (2002), and Turner, Anderson, Bailey (2001). Palmrose, Richardson and Scholz (2004), Wu (2002), and Anderson and Yohn (2002) find that restatements associated with fraudulent activity, or that affect core accounts cause the greatest stock price declines.

Short-term market reaction is not always indicative of the full impact of an event, especially in cases where the market anticipates the event and the full ramification of the

event is revealed gradually over time. Therefore, we examine post-restatement performance over a longer window. Chung and Cheng (2005) document negative abnormal returns subsequent to large downward restatements; we study both upward and downward restatements of all magnitudes for a larger sample of restatements.

3. Data

Restatement dates and restatement characteristics were hand collected from the Lexis-Nexis and Factiva databases. The Lexis-Nexis and Factiva databases were researched using key words "restatement," "restat," "revis," "adjust," "error" and "responding to guidance from the SEC" for the period January 1, 1997 through June 30, 2002. We selected this period for two reasons. First, the GAO made a sample of restatements announced in this period publicly available. Second, all restatements precede the Sarbanes-Oxley Act. Therefore, all restatements in our sample were made in the same regulatory environment.

We cross-checked our sample with the GAO sample. The Lexis-Nexis and Factiva search alone would have omitted some restatements. Table 1, Panels A and B compare our sample to that of the GAO and present the reasons for deleting GAO restatements. Overall, we deleted 431 restatements out of the total of 918 restatements in the GAO sample. We excluded restatements that were caused by an adoption of new accounting rules (130 restatements), and retained only restatements due to a mistake (including fraud) or an improper interpretation of GAAP. We also deleted restatements that affected only the timing of item recognition and had no impact on annual net income

(44 restatements). In addition, we deleted restatements if we were unable to obtain the necessary data from CRSP and COMPUSTAT (187 restatements).

<<<Insert Table 1 here>>>

This procedure resulted in 492 restatements made by 465 firms (Table 1, Panel C). Most of the firms (95%) restate their financial reports only once in the sample period. After identifying the sample of companies announcing restatements, we collected additional data on the restatements in the firms' amended SEC reports (Form 10-K/A(s) and Form 10-Q/A(s)). We collected the following data from these sources: date of the restatement announcement, years and quarters restated, and original and restated net income in each period. We obtained accounting variables from COMPUSTAT and return data from CRSP.

Table 2, Panels A and B, report sample characteristics for the fiscal year end preceding the year or quarter of the first mistake *(r-1*) and for the first year after the restatement announcement *(r+1)*. Our average firm is smaller and less levered than the average COMPUSTAT firm. Restating firms have a mean book value of assets of $1.92 billion in the year preceding a mistake compared to $2.91 billion for all COMPUSTAT companies (measured at 1997 fiscal year end). The mean ratio of long-term debt to total assets is eighteen percent for our sample, compared to a mean of twenty-two percent for all COMPUSTAT companies (measured at 1997 fiscal year end). Comparison of data in Panels A and B suggests that market value decreases subsequent to restatement, while leverage remains unchanged.

<<<Insert Table 2 here>>>

Table 2 also reports statistics for the year prior to restatement (Panel C). The problem with this period is that for some firms it is part of the error period, and COMPUSTAT does not report the original figures. Despite this problem, we report statistics for this period to compare with earlier restatement studies[6]. Our sample of firms is larger than the 403 firms analyzed by Palmrose, Richardson and Scholz (2004). Our sample has a lower mean, but higher median leverage than theirs.[7]

The majority of restating firms are listed on the NASDAQ (64.0%), with 29.7% listed on the NYSE (Table 2, Panel D). In twelve percent of our observations, the firm announced that the restatement was due to fraud (Table 2, Panel E). This definition of fraudulent behavior is conservative because it is based solely on self-reported fraud and potentially omits instances of fraud that are only revealed by subsequent investigations. Approximately half of restatements impact core accounts (Table 2, Panel E).

Table 3 shows the distribution of restatements by industry. The following five industries account for 44.51% of all restatements in our sample period: business services, industrial machinery and equipment, electronic and other electric equipment, instruments and related products and depository institutions.

<<<Insert Table 3 here>>>

[6] Statistics presented in Table 2, Panels A and B, correctly show reported earnings.

[7] Table 2, Panel C shows that the mean book value of assets as reported at the fiscal year end prior to the restatement announcement *(r-1)*, is $2.60 billion compared to $1.14 billion for the sample analyzed by Palmrose, Richardson and Scholz (2004). The mean ratio of long-term debt to total assets is 19 percent (14 percent) for our sample, compared to a mean (median) ratio of 21 percent (6 percent) for Palmrose, Richardson and Scholz (2004).

4. Results

4.1. Descriptive Statistics

Table 4 presents summary statistics for the length of the *Error Period* and the *Number of Restated Years*. The Number of Restated Years is the number of years in which the company made a mistake and reported erroneous earnings. Number of Restated Years is always less than or equal to the length of the error period. The average number of years restated is 1.4 years while the average error period is 1.9 years. Table 4 also shows statistics for the length of the error period and the number of restated years for sub-samples of quarterly and annual restatements. *Quarterly* restatements are defined as restatements of quarterly financial statements only and no restatement of an annual (audited) report. *Annual* restatements include a restatement of at least one annual (audited) report. Sixty three percent of restatements in our sample are annual restatements. The average number of periods restated is approximately half a year in the quarterly sub-sample and two years in the annual sub-sample. The average length of the error period is 0.79 years and 2.52 years for quarterly and annual restatements, respectively. Statistics for upward and downward sub-samples are similar.

<<<Insert Table 4 here>>>

Table 5 shows the impact of mistakes on Net Income and Net Income Per Share.[8] The majority of mistakes (85%) overstated Net Income. Only 60 firms in our sample understated Net Income. Restatement of Net Income per share is of similar magnitude for annual and quarterly restatements, and upward and downward restatements. However,

[8] Statistics in Table 5, Panel A equals *–Mistake*, where *Mistake* is the difference between originally reported and restated diluted earning per share, divided by price at the end of the quarter or year.

change in Net Income *(NI_Change)* is much more negative for quarterly downward restatements than for annual downward restatements.

<<<Insert Table 5 here>>>

4.2. Market reaction to the announcement of misstated earnings

To test hypothesis 1, we estimate equation (2) for a sample of restating and control firms. The rationale behind using control firms in the regression and not the entire universe of firms available on Compustat is to restrict the sample to earnings announcements with and without misstatements that are similar in other respects. Control firms are matched on industry, size and book-to-market.[9] Size is measured by the market value of equity. Book-to-market ratio is calculated as the ratio of equity book value to equity market value in period *m-1* (*m* is the fiscal year of the firm's mistake). If the firm is restating several periods, we calculate the ratio for the year before the first restated year or quarter.[10] We follow Lyon, Barber and Tsai's (1999) approach to selecting among possible control firms and eliminate all restating firms from the pool of potential control firms. We also require control firms to have CRSP data at least one year prior to the mistake and one year subsequent to the restatement.

We use $CAR_{(-1,+1)}^{\text{Earnings announcement}}$ as a dependent variable in equation (2). It is calculated as market adjusted abnormal return on a stock based on equally weighted index with dividends, cumulated from day -1 through one day after earnings

[9] Control firms for three companies had to be found within one digit SIC code to satisfy data requirements.
[10] The matching is based on fiscal, not calendar year. For example, if a firm's fiscal year ends on March 31 and it made the first mistake in year ending March 31, 1999, then the size and book-to-market for period m-1 correspond to the year of March 31, 1998 (in COMPUSTAT, fiscal year 1997). The matching firm is then found based on size and book-to-market ratios calculated for 1997 fiscal year irrespective of the month of the fiscal year-end for the matching firm.

announcement day. Earnings announcement day is obtained from Compustat quarterly file and returns are obtained from CRSP. We searched Lexis-Nexis to identify restated periods.

Consistent with prior literature, we define the earnings surprise (SUE) as actual earnings minus expected earnings, scaled by stock price at the end of the quarter or year. Expected earnings at time *t* are diluted earnings per share in previous year *t-1* adjusted for stock splits for annual restatements and in the same quarter of previous year *t-4* for quarterly restatements[11]. When the firm restates more than one period, previous year or quarter earnings as originally reported contain material mistakes. If investors are fooled by mistakes, then originally reported earnings in previous period would be the correct measure of expected earnings. However, if investors completely see through mistakes in earnings, then actual (restated) earnings in previous period would be the correct measure of expected earnings. If investors only partially see through mistakes, then expected earnings are somewhere in between restated and originally reported earnings in previous period. To deal with this issue, we use two measures of *SUE:* 1) *SUE_RR* uses restated EPS as a proxy for expected earnings; 2) *SUE_RO* uses originally reported EPS as a proxy for expected earnings. We also estimate equation (2) for the first restated period only for both annual and quarterly restatements, since for these sub-samples previous period earnings were not restated. We measure *Mistake* as the difference between originally reported and restated diluted earnings per share.

Table 6 shows the results of estimating equation (2) for different sub-samples. We estimate question (2) separately for annual and quarterly restatements. For annual

[11] Following Livnat and Mendenhall (2006) we adjust only expected earnings for stock splits. This reflects the original data reported by the firm and observed by investors.

restatements, we find that consistent with prior literature earnings response coefficient (β_1) is positive and significant for all models. We find that coefficient β_2 on *Mistake* is negative and highly significant for all models for annual sub-sample. This result is inconsistent with hypothesis 1 and suggests that investors are not fooled by mistakes in financial statements. Moreover, we find that β_2 is larger in absolute terms than β_1, suggesting that the presence of the mistake in earnings has a greater impact on announcement returns than deviation of true earnings from expectations. Our results are the strongest for the sub-sample of the first restated year.

Results for quarterly restatements are similar to results for annual restatements. The only difference is that we no longer find positive and significant earnings response coefficient β_1. Insignificance of β_1 for quarterly subsample and its lower magnitude in annual sub-sample compared to previous studies is not surprising given that both true earnings and expected earnings are measured with significant error for restating firms at the time of earnings announcement. Even if investors see through mistakes in financial statements, restated earnings do not necessarily reflect perceived true earnings at the time of earnings announcement. Moreover, as discussed earlier, expected earnings measure is also noisy whenever more than one period is restated. Therefore, because of the noise in the measurement of SUE for the sample of restating firms, one would expect earnings response coefficient to be closer to zero for our sample than for other samples. Consistent with this, we find that when we limit our sample to first restated year only, for which SUE is measured with less noise, we find that β_1 is larger and closer in magnitude to earnings response coefficients found in other papers for the entire universe of firms (see for example Livnat and Mendenhall (2006)).

Overall the results for the announcement of originally reported earnings reject hypothesis one and suggest that investors are not misled by mistakes in earnings at the time of earnings announcement.

4.3. Error period valuation of restating firms

4.3.1. Calculation of abnormal returns

To test the hypotheses 2-5, we examine CARs and BHARs in the pre-error, error, and post-restatement periods. We can select the same fixed-length pre-error and post-restatement periods for all firms, but the error periods differ across firms. In plotting the abnormal returns over the error period, the longest period one can show for all firms in the sample is the minimum number of trading days during the error period, where the minimum is taken over all firms in the sample.

In defining all time periods, we use the following notation. We identify all specific dates relative to key events, where D_n^e is day *n* relative to event *e*. A negative value of *n* indicates days before the event, while a positive *n* indicates days after the indicated event. For example, the superscript *mistake* indicates that the date is specified relative to the day of the mistake, with the day of the mistake being day zero. Superscript *restatement* indicates that days are numbered relative to the day of the restatement, with the day of the restatement being day zero. Thus, the symbol, $D_{-b}^{mistake}$ refers to the trading day *b* days before the mistake occurs, and $D_a^{restatement}$ indicates the trading day that falls *a* days after the restatement announcement. Furthermore, the days relative to mistake are in bold font, and days relative to restatement are in italic.

Given these definitions, we plot CARs for three periods:

1) The Pre-error period $(D_{-b}^{mistake}, D_{0}^{mistake})$,

2) The Error period, including three subperiods

   a. Early error period $(D_{1}^{mistake}, D_{+m}^{mistake})$[12],

   b. Midpoint $[D_{+m+1}^{mistake}, D_{-m-1}^{restatement}]$,

   c. Late error period $(D_{-m}^{restatement}, D_{-1}^{restatement})$, and

3) The Post-restatement period $(D_{0}^{restatement}, D_{+a}^{restatement})$.

Here $-b$ and $+a$ are fixed constants which are set to be -250 and 250 in plotting Figures 2.1-2.5. For example, for the subsample of 206 downward annual restatements, the minimum error period covers 267 trading days and hence m=133, $D_{+m}^{mistake}$=133, $D_{+m+1}^{mistake}$=134, $D_{-m-1}^{restatement}$=*-134.* (See Figure 2.1). The CARs are calculated around mistakes for the period (-250, 133*)* and around restatements for the period *(-133, 250).* Abnormal returns in the period $(D_{+m+1}^{mistake}, D_{-m-1}^{restatement})$ are averaged into a one day return and are plotted as a single day's abnormal return. For a firm with the minimum error period of 267 days, this is a one day window. For other firms this period varies in length. As a result, the graph shows the minimum error period of length 267 for all firms, even though the error period is firm specific.

CARs are calculated as the difference between raw returns and market model predicted returns. Market model parameters are estimated for the period of 250 trading days ending on day -265 relative to the date of the mistake, in order to allow us to measure abnormal returns over the year prior to the mistake. Richardson, Tuna and Wu

[12] We define *m* to be one less than half the minimum number of trading days in the error period if the number of trading days is even and one-half less than half the minimum number of trading days if the number of trading days is odd.

(2003) show that mistakes and earnings manipulations generally follow a year of positive stock price performance, however, they estimate only raw buy-and-hold returns prior to mistakes. Efendi, Srivastava and Swanson (2007)) find an upward trend in CARs twelve months prior to the beginning of the error period. Positive CARs prior to mistakes that overstate net income are consistent with the claim that aggressive accounting is due to pressure on managers to sustain abnormal performance.

Barber and Lyon (1997) and Kothari and Warner (1997) document that event studies that rely on long-term abnormal returns are misspecified, yielding excessive rejection levels.[13] Barber and Lyon (1997) conclude that a conventional t-statistic applied to BHARs calculated using size/book-to-market matched control firms yields well-specified results in random samples. Lyon, Barber and Tsai (1999) also show that the size/book-to-market matched control firm approach corrects reasonably well for cross-sectional dependence due to the relation between size, book-to-market ratios, and returns.

Therefore, we also analyze BHARs of restating firms relative to size, book-to-market and industry matched control sample in three periods: pre-error, error and post-restatement. Following Speiss and Affleck-Graves (1999), we calculate a buy-and-hold return ($BHR_{i,\tau}$) over period τ for firm *i* as the geometric return:

$$BHR_{i,\tau} = \prod_{t}^{T} (1 + R_{it}), \tag{1}$$

[13] They note three main reasons for the misspecification: (1) new listing or survivor bias; (2) rebalancing bias; and (3) skewness bias. New listing bias occurs when the control sample includes firms that begin trading subsequent to the event. Rebalancing bias arises when returns on the reference portfolio are calculated assuming periodic rebalancing, while the returns of the event firm are compounded without rebalancing. Skewness bias occurs when the distribution of long-run abnormal returns is positively skewed, inducing misspecification of test statistics.

where R_{it} is the i^{th} firm return on the t^{th} day, and T is the number of trading days in period τ. $BHR_{i,\tau}$ represents the actual experience of an investor who passively holds a sample firm for the period τ.

Then $BHAR_{i,\tau}$ is calculated as:

$$BHAR_{i,\tau} = BHR_{i,\tau} - E(BHR_{i,\tau}) \ , \qquad (2)$$

where $E(BHR_{i,\tau})$ is the τ period expected return for security *i*, proxied by the return on a size and book-to-market matched peer firm in the same industry (two digit SIC code) as the restating firm.[14]

To examine the trends in BHARs, we split the error period into quartiles and estimate daily BHARs for each quartile: $BHAR_{\text{ql}}^{\text{error}}$, $BHAR_{\text{q2}}^{\text{error}}$, $BHAR_{\text{q3}}^{\text{error}}$, and $BHAR_{\text{q4}}^{\text{error}}$. Each quartile represents one quarter of the entire error period for the specified restating firm. Thus, the length of a quartile is firm-specific and is calculated by dividing the number of trading days in the error period by four. We also examine the patterns of BHAR three years before mistake ($BHAR_{\text{3y}}^{\text{before mistake}}$, $BHAR_{\text{2y}}^{\text{before mistake}}$, $BHAR_{\text{1y}}^{\text{before mistake}}$) and three years after restatement ($BHAR_{\text{3y}}^{\text{after restatement}}$, $BHAR_{\text{2y}}^{\text{after restatement}}$, $BHAR_{\text{1y}}^{\text{after restatement}}$).

Daily buy-and-hold abnormal returns are found as follows:

$$BHAR_{\text{l}}^{\text{period}} = \sum_{i=1}^{N} \left((BHAR_{\text{restating, i, l}}^{\text{period}} - BHAR_{\text{control, i, l}}^{\text{period}}) / L_i \right) / N \qquad (3)$$

where $BHAR_{\text{l}}^{\text{period}}$ is the daily buy-and-hold abnormal return for one of three periods: pre-error, error, and post-restatement; of length *l*. $BHAR_{\text{restating, i, l}}^{\text{period}}$ ($BHAR_{\text{control, i, l}}^{\text{period}}$)

[14] See section 5.2 for more details regarding matching procedure.

is the buy-and-hold return for restating (control) firm *i* for period *l*. L_i is the number of trading days in the *period* for firm *i*. *N* is the number of firms.

4.3.2 Evidence using Cumulative Abnormal Returns (CARs)

According to hypothesis 2, firms that overstate (understate) net income should have positive (negative) BHARs in the error period and CARs that exceed (fall below) those of control firms during the error period.

Figures 2.1-2.5 show CARs 250 trading days prior to a mistake and 250 trading days subsequent to a restatement for downward annual restatements (206 observations), downward restatements of 2 years or more (100 observations), downward quarterly restatements (135 observations), downward restatements of two quarters or more (68 observations), and upward annual restatements (34 observations), respectively. They also show the evolution of returns in the error period of the minimum length. Market model parameters are estimated for the period of 250 trading days ending on day -265 relative to the date of the mistake. We use these figures to illustrate trends and differences in CARs between restating firms and control firms and not to test for statistical significance. The significance of the differences is tested using BHARs in the next section and in some cases differences between the restating sample and the control group that appear substantial in the figures are not statistically significant[15].

We created separate plots of CARs for annual and quarterly restatements because annual financial statements are audited by a third party and their restatement is generally deemed to be a more significant error. We also separate downward restatements from

[15] In results not shown, we tested statistical significance of CARs corresponding to the graph using t-tests. The results are consistent with those found using BHARs.

upward restatements because the predicted difference under Hypothesis 2 differs in sign. In addition, we include a separate plot for downward restatements where the error period is longer than two years because the longer error period provides more time for investors to gather information and adjust their valuation of the firm.

<<<Insert Figure 2.1 and 2.2 here>>>

Figures 2.1, 2.2, 2.3, and 2.4 plot CARs for the three analysis periods defined earlier for companies that overstated Net Income in the error period and restated it downward. Figures 2.1 and 2.2 show CARs for all annual restatements and annual restatements of two years or more, respectively. The graphs show that downward restating firms and control firms have very similar upward trending CARs prior to the error period, and that restating firms outperform control firms early in the error period[16]. The positive trend in CARs and outperformance of restating firms relative to control firms in the first half of the error period is consistent with hypothesis 2 that investors are misled by erroneous accounting statements, but the outperformance is small. The results for the second half of the error period are inconsistent with hypothesis 2 because the CARs for restating firms start to decline in the second half, while those of the control group continue to trend upward. This pattern suggests that investors begin to see through the erroneous reporting and the fact that the restating firms' CARs subsequently fall below the CARs for the control group suggests that investors begin to anticipate the restatement and its associated costs. The time pattern of CARs for the sample of firms that restate earnings for two years or more (Figure 2.2) is generally consistent with the results in Figure 2.1, except that the crossover between the two groups occurs somewhat

[16] Efendi, Srivastava and Swanson (2007)) examine CARs of 95 firms restating earnings between January 1, 2001 and June 30, 2002 for 12 months preceding the error period. They also find an upward trend in restating firms' CARs before erroneous earnings are released.

later in the error period and the downward trend in restating firm CARs is somewhat less steep. Overall, these figures suggest that investors begin to anticipate the restatement announcement by the last quartile of the error period.

Finally, looking at the post-restatement period, Figures 2.1 and 2.2 show that restating firms exhibit negative CARs subsequent to a restatement announcement, while the control sample experiences positive ones. These results are consistent with the negative abnormal buy-and-hold returns documented by Chung and Cheng (2005) and reflect the substantial costs incurred by restating firms that extend beyond sharp decline at the announcement of a restatement.

Figures 2.3 and 2.4 repeat the graphical analysis for all downward quarterly restatements and restatements of two quarters or more, respectively. When a firm is restating only one quarter, the error period is very short and there is little time for the market to revise their expectations about the accuracy of the firm's financial data based on comparisons with other firms. Therefore, we focus our discussion on the results for restatements of two quarters or more (Figure 2.4).

Firms restating quarterly financial statements downward exhibit performance similar to those restating annual reports in pre-error and error periods. Control firms, however, exhibit a negative trend in CARs in the pre-error and error periods. As a result, restating firms outperform the control sample during the entire pre-error and error periods. Therefore, even though the maximum difference in performance between restating firms and control firms is much larger during the beginning of the error period (15% to 35%) for quarterly restatement firms than annual restating firms, it cannot be

attributed to misstated earnings, because most of the outperformance comes before the erroneous earnings are released.

There are other differences between the annual and quarterly sample results. During the post-restatement period, the CARs of restating firms in the annual sample decrease compared to the control sample firms' stock prices. For the quarterly sample, restating firms and control firms perform about the same. Perhaps quarterly restatement filers face less probability of being sued because the restatement of only a quarter or two could provide less legal support to class action lawsuits. Therefore, we place less weight on the quarterly sample results because it is small and involves relatively short error periods.

<<<Insert Figures 2.3 and 2.4 here>>>

Upward restatements are restatements that result in a positive revision of Net Income. Our sample contains 60 upward restatements, 53 of which have sufficient data in CRSP for the calculation of the CARs over the full pre-error through post-restatement period (of these, 34 are annual and 19 are quarterly restatements). Because of the small sample size, we do not plot CARs for the upward quarterly restatements, nor do we have sufficient data to separately study firms with longer error periods. Although the sample of annual upward restatements is small, it is interesting for two reasons. First, if investors are misled by underreported earnings in the error period, the CARs of restating firms should lag those of the control group. The different expected performance of restating firms relative to the control group provides a natural control for unobserved factors. Second, a large negative reaction to the announcement of better than reported earnings similar to that of the downward restatements suggests that most of the negative

announcement effect is attributable to the expectation of future costs associated with restatements, and not to reevaluation of future earnings as speculated by Hribar and Jenkins (2004).

Figure 2.5 plots CARs for the same three periods for companies that understated Net Income in annual reports. It shows that the restating firms underperform the control group just prior to the error period. During the first half of the error period, the two groups of firms exhibit roughly similar performance, as measured by the trend in CARs. As with the downward restating firms, during the second half of the error period, the two lines cross; however, in this case, the restating firms outperform the control group until just prior to the restatement announcement. Once again, investors appear to anticipate the actual restatement and its associated costs and the CARs for the restating firms drop precipitously. Since, for these firms, the earnings news associated with the restatement announcement was favorable, the large decline in CARs for the restating group in the immediate vicinity of the announcement is attributable to post restatement costs.

<<<Insert Figure 2.5 here>>>

As a robustness test, we replicated figures 2.1-2.5 using more timely firm betas estimated with data starting on day -31 relative to the date of the mistake and ending on day -281. The resulting plots of CARs were similar to figures 2.1-2.5, except that there is no longer a negative trend for the control firms in the quarterly downward restatement figures (2.3 and 2.4).

4.3.3. Evidence using buy-and-hold abnormal returns

Table 7 shows daily buy-and-hold abnormal returns (BHARs) in pre-error, error, and post-restatement periods. BHARs in the post restatement period are calculated starting five days after the restatement announcement. We test whether the BHARs differ statistically from zero. Barber and Lyon (1997), and Lyon, Barber and Tsai (1999) show that the control firm approach used in this study eliminates new listing, rebalancing and skewness biases, and yields well specified t-tests. To avoid survivorship bias, we report results for a sample with firms that have any returns in the period studied, rather than a sample that had returns for the entire period (survivors). We also calculate BHARs for the survivor sample and the results for survivors and the full sample are similar. For brevity, in Table 7 we show only results for the full sample.

<<<Insert Table 7, Panels A.1, A.2, and A.3 here>>>

Table 7, Panel A.1 shows that firms making annual downward restatements have positive and significant buy-and-hold abnormal returns two and three years before the error period but not during the year immediately before the error period. A pattern of abnormal returns prior to mistake is consistent with an argument that firms which had been outperforming their competitors face increased pressure to maintain that outperformance. Our evidence raises questions about this interpretation, however, because we find that restating and control firms had similar performance during the year immediately before the error period.[17]

Firms making annual downward restatements have positive but not statistically significant abnormal returns in the first quartile of the error period. BHARs are negative

[17] Our study is the only one to examine BHARs prior to mistake. Prior studies examined monthly cumulative abnormal returns prior to mistake for restating and control firms (Efendi, Srivastava and Swanson (2007)).

and significant for second, third and fourth quartiles of the error period. BHARs decrease from quartile to quartile as the restatement announcement approaches.

These BHAR results reject hypothesis 2. In fact, BHARs for the last three quartiles of the error period suggest that, after a short lag, overstated earnings produce poor stock returns. Investors appear to anticipate restatements soon after the initial misstatements are released, and penalize firms for the associated costs. The significant negative performance of the downward restating firms continues throughout the post-restatement period.

The BHAR results for quarterly downward restatements are similar to those of annual downward restatements. Quarterly restating firms also have positive abnormal performance in the pre-error period, increasingly negative performance in the error period, and negative performance one year after restatement (Table 7, Panel A.2).

Table 7, Panel A.3 shows that firms making annual upward restatements do not exhibit statistically significant abnormal performance in any of the periods, other than at the restatement announcement. If investors had mistakenly used understated earning to project the future earnings and hence undervalued these firms, one would expect a positive market reaction when firms announce an upward earnings restatement. The negative announcement effect is more consistent with the notion that an earnings restatement, up or down, costs the restating firm in terms of reputation, operating expenses, opportunity costs and expected legal expenses.

To check the robustness of the results, we calculated BHARs for fixed length windows relative to the mistake and restatement. Specifically, we calculated BHARs for 3, 6, 9, 12, 15, 18, and 24 months relative to mistake and restatement for annual

restatements and for 3, 6, 9 and 12 months for quarterly restatements. The results are consistent with those found using firm specific quartiles of periods and are not shown for brevity. BHARs are negative and significant for all windows relative to the restatement announcement for annual and quarterly downward restatements and are insignificantly different from zero for all windows relative to the mistake. BHARs were not significant for any windows for upward restatements.

Overall, we do not find support for hypothesis 2 using BHAR as a measure of abnormal performance. On the contrary, we find strong evidence that firms making downward restatements underperform as early as the second quartile of the error period.

Next, we test hypotheses 3, 4 and 5 for annual downward and quarterly downward restatements. Due to small sample size, we do not test these hypotheses for annual upward restatements.

To test hypothesis 3, we partition the sample into restatements with above and below median impact on net income (we call them large and small mistakes, respectively). Hypothesis 2 suggests that firms with larger mistakes will have higher error period BHARs. Table 7, Panel B.1 shows error period BHARs for small and large mistake sub-samples and tests for the difference using the non-parametric Wilcoxon test. We find that there is no difference in error period returns for small and large mistakes for annual downward restatements. In results not shown, we also estimate equation (2) for the sample of restating firms using BHARs for four quartiles as a dependent variable for annual and quarterly subsamples. However, we find that such regressions are not statistically significant. This result in conjunction with results shown in Table 7 indicates

that investors anticipate negative restatements but do not anticipate the size of downward adjustment to earnings. Overall, we do not find support for hypothesis 3.

Next we compare error period BHARs for sub-samples of restatements of core and non-core accounts (Table 7, Panel B.2). We find that third quartile BHARs are much lower for the core sub-sample. This result rejects hypothesis 4 and suggests that firms making mistakes in core accounts start underperforming more in the error period. This result can be due to the fact that investors pay more attention to core accounts and start noticing mistakes in them sooner.

Table 7, Panel B.3 tests hypothesis 5 for annual downward restatements. It shows that first quartile BHARs are positive for fraud and non-fraud sub-samples and are significantly higher for the fraud sub-sample. Second quartile BHARs are positive for the fraud sub-sample and are negative and significant for the non-fraud sub-sample. The difference in second quartile BHARs is statistically significant. These results support hypothesis 5. It appears that fraudulent mistakes mislead the market more in the first half of the error period. BHARs are negative for third and fourth quartiles of the error period and are not different for fraud and non-fraud sub-samples. Therefore, hypothesis 5 is rejected for the second half of the error period.

<<<Insert Table 7, Panel B here>>>

Table 7, Panel C tests hypothesis 3 and 4 for quarterly downward restatements. We are unable to test hypothesis 5 for this sub-sample because it contains only 7 fraudulent mistakes. Table 7, Panel C.1 shows that firms making larger mistakes have much lower BHARs in the first quartile of the error period than firms making smaller mistakes. This result is inconsistent with hypothesis 3 and suggests that investors see

through larger mistakes in quarterly financial statements sooner. Results in Table 7, Panel C.2 reject hypothesis 4. BHARs for the core sub-sample are much more negative in the fourth quartile of the error period than BHARs for the non-core subsample, and are similar otherwise.

<<<Insert Table 7, Panel C here>>>

5. Conclusion

We study market reaction to the original announcement of misstated earnings and the valuation of restating firms in the error period, which extends from the first misstated period to the day of restatement announcement. In addition, we examine the long-run return performance of restating companies in (1) the period prior to the mistake (pre-error period); (2) and the period after the restatement (post-restatement period). We focus on the error period, which we split into four quartiles.

Results show that investors are not misled by misstated earnings even at the time of earnings announcement. Furthermore, our results show that the marginal investor starts to anticipate restatements shortly after erroneous reported earnings are issued. Restating firms' stock prices fall throughout all but the first quartile of the error period, as investors appear to penalize firms for their coming restatements, and the lawsuits that often follow. Firms that make mistakes in core accounts, such as revenue and cost, underperform even more than other restating firms in the second half of the error period. Fraudulent restatements mislead investors more in the first half of the error period.

An interesting question for future work is why restatement announcements trigger such large negative market reactions if investors see through mistakes in reported

earnings as early as the second quartile of the error period. One possibility is that they expect large costs associated with restatements (e.g. lawsuits) and, hence, the decision to admit to an offense which can bring on significant costs is an unpleasant surprise to investors.

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Figures 2. Cumulative abnormal returns (CARs)

Figures 2.1, 2.2, 2.3, 2.4, and 2.5 plot CARs for 206 downward annual restatements, 100 downward restatements of 2 years or more, 135 downward quarterly restatements, 68 downward restatements of 2 quarters or more, and 34 upward annual restatements announced between January 1, 1997 and June 30, 2002 and control firms, respectively. Market model parameters are estimated for the period of 250 trading days ending on day -265 relative to the date of the mistake using a value weighted CRSP index. *Annual* restatements are restatements that include a revision of at least one annual (audited) report. *Quarterly* restatements are defined as restatements of quarterly financial statements only and no restatement of an annual (audited) report. *Downward* (*upward*) restatements are defined as restatements that result in downward (upward) revision of net income. The numbers in regular font on the horizontal axis show days relative to the mistake. The numbers in italic show days relative to the restatement announcement. Point *Mistake* is the beginning of the year of the first mistake. Point *Restatement* is the day of the first restatement announcement.

We identify all specific dates relative to key events, where D_n^e is day *n* relative to event *e*. A negative value of *n* indicates days before the event, while a positive *n* indicates days after the indicated event. For example, the superscript *mistake* indicates that the date is specified relative to the day of the mistake, with the day of the mistake being day zero. Superscript *restatement* indicates that days are numbered relative to the day of the restatement, with the day of the restatement being day zero. Thus, the symbol, $D_{-b}^{mistake}$ refers to the trading day *b* days before the mistake occurs, and $D_a^{restatement}$ indicates the trading day that falls *a* days after the restatement announcement. Given these definitions, we plot CARs for three periods:

1) The Pre-error period $(D_{-b}^{mistake}, D_0^{mistake})$,
2) Three components of the Error period:
    a. Early error period $(D_1^{mistake}, D_{+m}^{mistake})$[18],
    b. Midpoint $[D_{+m+1}^{mistake}, D_{-m-1}^{restatement}]$,
    c. Late error period $(D_{-m}^{restatement}, D_{-1}^{restatement})$, and
3) The Post-restatement period $(D_0^{restatement}, D_{+a}^{restatement})$.

Here $-b$ and $+a$ are fixed constants which are set to be -250 and 250 in plotting Figure 2.1 For example, for the sample of 206 downward annual restatements, the minimum error period covers 267 trading days and hence m=133, $D_{+m}^{mistake}$ =133, $D_{+m+1}^{mistake}$ =134, $D_{-m-1}^{restatement}$ =*-134.* (See Figure 2.1). The abnormal returns are calculated around mistakes for the period (-250, 133*)* and around restatements for the period *(-133, 250).* Abnormal returns in the period $(D_{+m+1}^{mistake}, D_{-m-1}^{restatement})$ are averaged into a one day return and are plotted as a single day's abnormal return. For a firm with the minimum error period of 267 days, this is a one day window. For other firms this period varies in length. As a result, the graph shows the minimum error period of length 267 for all firms, even though the error period is firm specific.

Abnormal returns are calculated as the difference between actual returns and market model predicted returns. Control firms are matched by size and book-to-market within the same two digit SIC code. We compute size as the market value of equity: price per share times the number of shares outstanding. Book-to-market ratio is calculated as the ratio of book value in period *m-1* divided by the market value of common equity in period *m-1*. Here, *m* is the year of the firm's mistake (if the firm is restating several years, we calculate the ratio for the year before the first restating year). For example, if the company restates 1996 financial statements, we find the matching firm according to the size and book-to-market ratios as of 1995.

[18] We define *m* to be one less than half the minimum number of trading days in the error period if the number of trading days is even and one-half less than half the minimum number of trading days if the number of trading days is odd.

Figure 2.1. CARs for Annual Downward Restatements

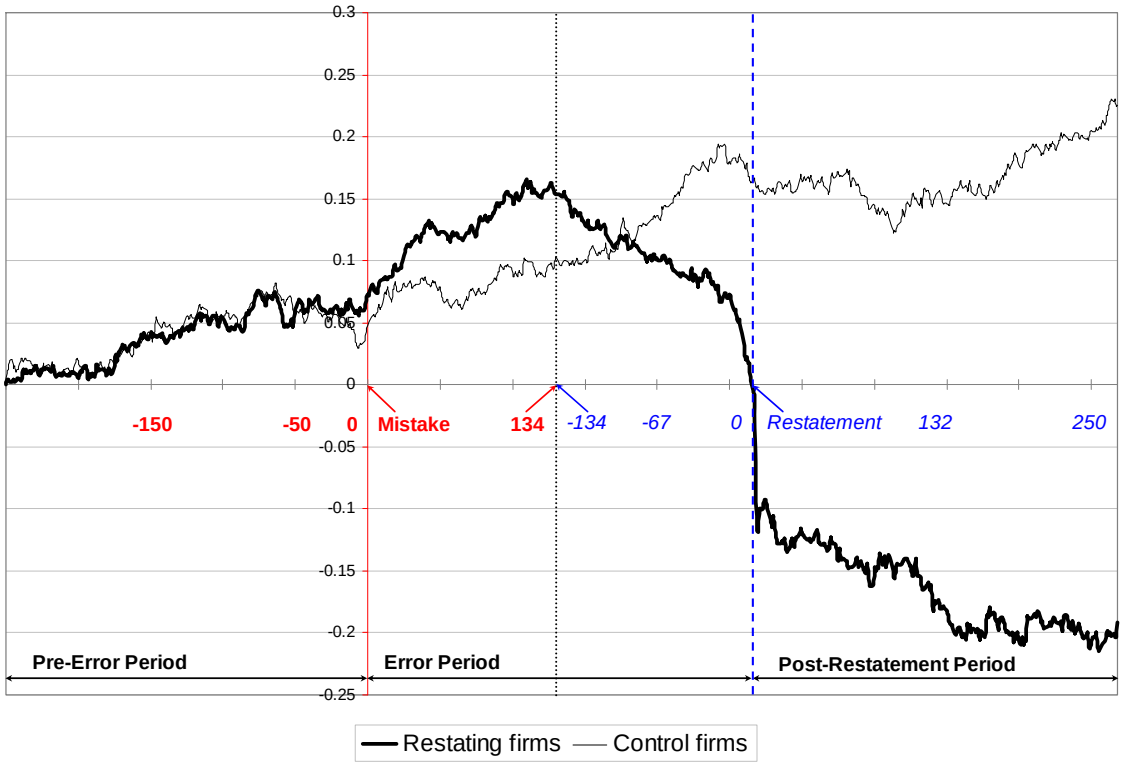

Figure 2.2. CARs for Downward Restatements of 2 Years or More

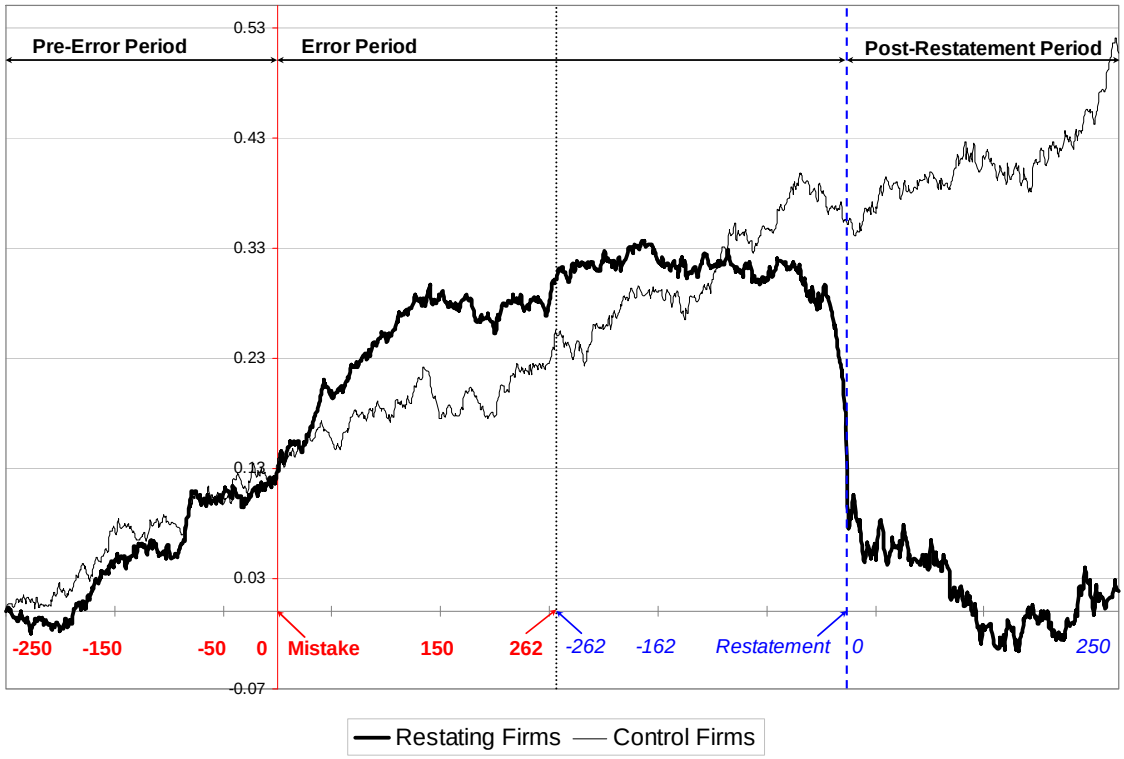

Figure 2.3. CARs for Quarterly Downward Restatements

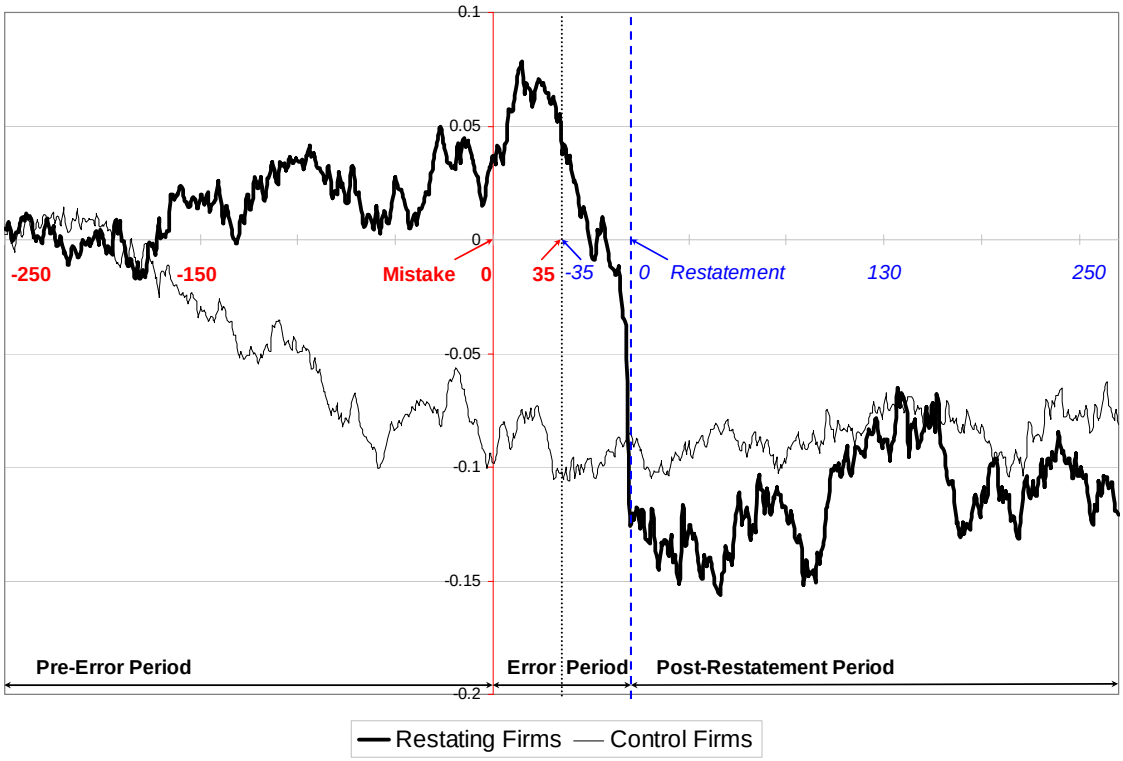

Figure 2.4. CARs for Downward Restatements of 2 Quarters or More

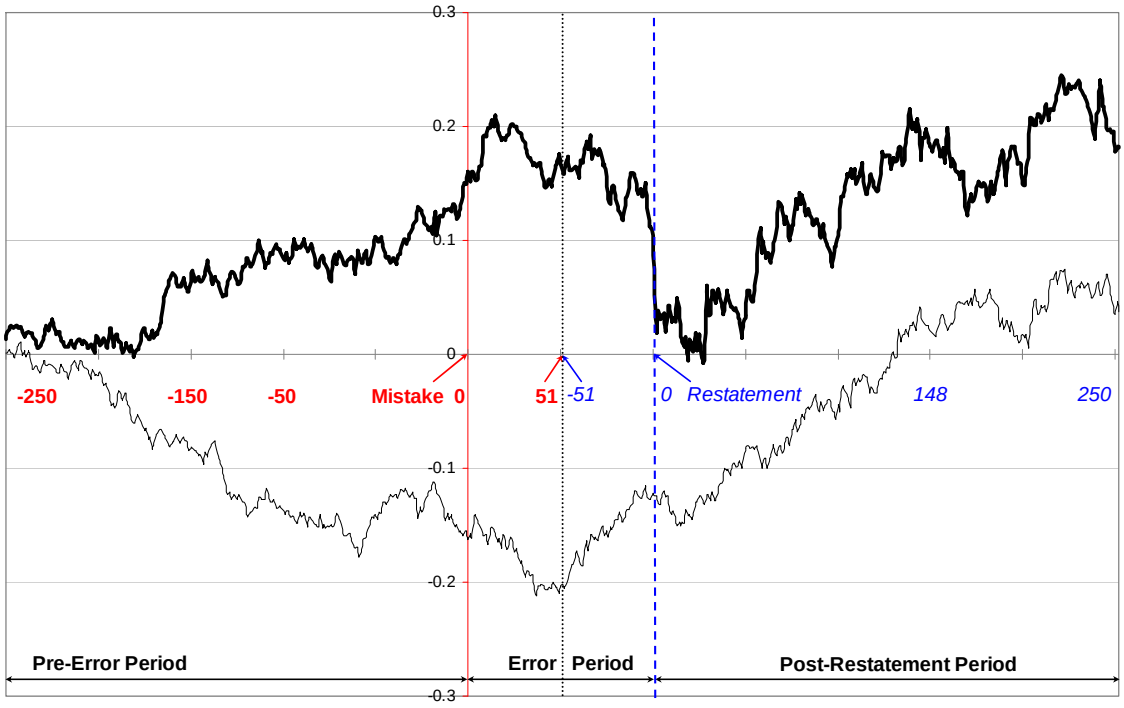

Figure 2.5. CARs for Annual Upward Restatements

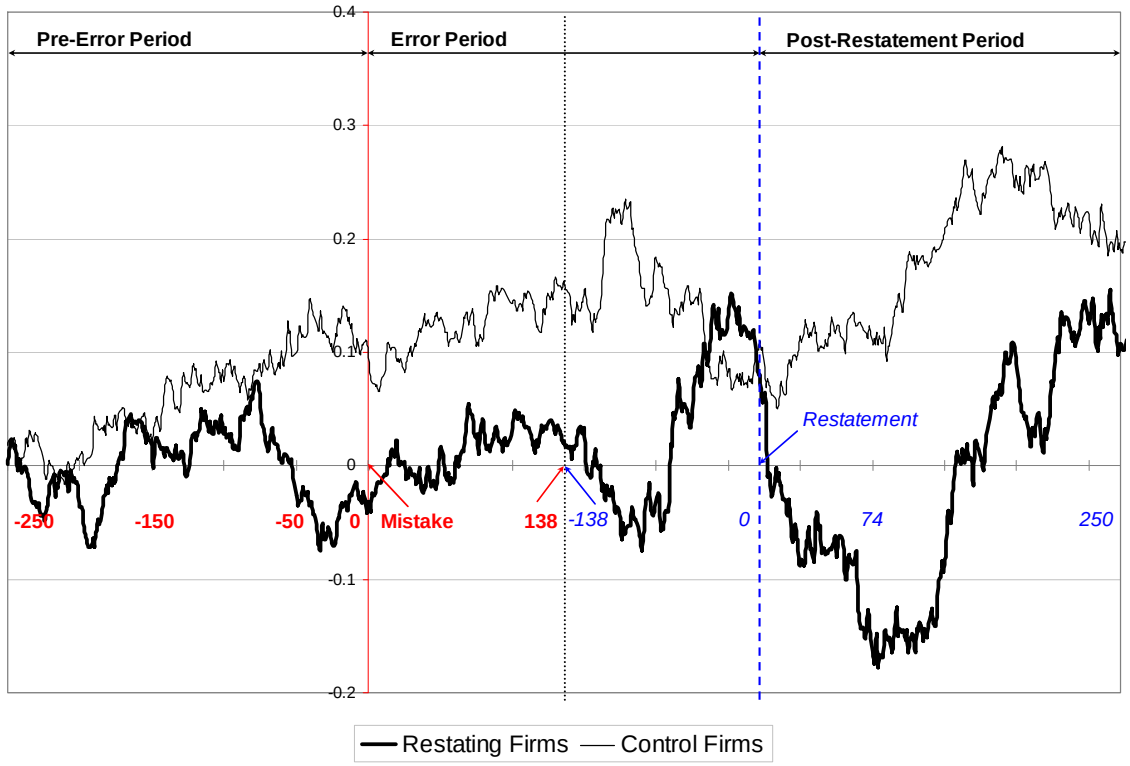

Table 1. Sample Description

Restatement dates and characteristics were hand collected from the Lexis-Nexis and Factiva databases. The Lexis-Nexis and Factiva databases were researched using key words "restatement" "restat" "revis" "adjust" "error" and "responding to guidance from the SEC" during the period January 1, 1997 - June 30, 2002. We crossed checked our sample with the sample released by the GAO. Unlike the GAO sample, we excluded restatements that were caused by an adoption of new accounting rules, and retained only restatements due to a mistake or an improper interpretation of GAAP rules. After identifying the sample of companies announcing restatements, we find further data on restatements in amended statements (Form 10-K/A(s) and Form 10-Q/A(s)).

Panel A: Sample Selection

Source	Number of restatements
GAO sample	918
Less deleted restatements	431
Plus additional restatements	5
Total Sample	**492**

Panel B: Reasons for Deleting GAO Restatements

Reason for deleting	Number of restatements
Data not available on either CRSP or Compustat	187
New rule adoption	114
In the sample period, companies adopted the following rules FASB 101, FASB 133, EIC-113, EITF 00-10, EITF 00-14, FASB 142, etc. Approximately 50% of new rule adoption restatements are due to adoption of FASB 101 revenue recognition rule.	
Change in method of accounting	16
No restatement was made despite the announcement of a possibility of restatement	20
No information found regarding restatement	25
Restatement due to timing	44
Other*	25
Total number of deleted restatements	**431**

Panel C: Number of Restatements and Restating Firms

Number of restatements by same firm in the sample period	Number of restating firms	Number of restatements
1	441	441
2	21	42
3	3	9
	465	**492**

Panel D: Restatements by Year

Year	Number of restatements
1997	63
1998	64
1999	111
2000	109
2001	76
2002 (through June 30, 2002)	69
	492

*16 of the restatement announcements in GAO sample were not announcements of new restatements, but rather releases of new information regarding already announced restatement. We deleted such announcements. This category also includes restatements that were not a result of a mistake or a misinterpretation of accounting rules (for example restatements due to changes in the number of shares).

Table 2: Characteristics of Restating Firms at Different Points in Time Relative to Mistakes and Restatements

Book-to-market ratio is calculated as the ratio of book value divided by the market value of common equity. *Leverage* is the value of long term debt divided by total assets. Restatement is considered to be due to fraud if a company states so in press-releases or notes to financial statements. Restatement that affect revenue or expense accounts are defined as core restatements.

Panel A: Year -1 Relative to Mistake

Variable	Mean	Maximum	Minimum	Std Dev	Lower Quartile	Median	Upper Quartile	N
Market Value	2032.17	131716.50	3.83	10011.98	45.81	173.41	738.10	442
Total Assets	1916.37	105129.90	0.54	8427.11	37.36	141.45	764.07	469
Book-to-market	0.52	4.42	-2.11	0.55	0.21	0.40	0.71	441
Leverage	0.18	1.66	0.00	0.22	0.00	0.12	0.28	466

Panel B: Year +1 Relative to Restatement

Variable	Mean	Maximum	Minimum	Std Dev	Lower Quartile	Median	Upper Quartile	N
Market Value	2063.87	115267.52	1.10	9595.23	23.66	94.87	434.95	401
Total Assets	2452.22	93169.93	2.58	8871.51	50.26	200.50	1147.68	406
Book-to-market	-1.52	9.47	-436.46	26.66	0.23	0.54	1.08	401
Leverage	0.18	2.85	0.00	0.24	0.01	0.11	0.29	404

Panel C: Year -1 Relative to Restatement

Variable	Mean	Maximum	Minimum	Std Dev	Lower Quartile	Median	Upper Quartile	N
Market Value	2210.07	112194.49	1.89	9201.38	44.30	179.19	681.39	462
Total Assets	2600.26	112839.00	1.75	10141.72	55.19	223.41	1092.91	466
Book-to-market	0.65	14.64	-2.90	0.97	0.19	0.46	0.85	461
Leverage	0.19	1.66	0.00	0.20	0.01	0.14	0.29	464

Panel D: Exchange Listing

Exchange	Number of Firms	As a %
NYSE	146	29.67%
Nasdaq	315	64.02%
Amex	31	6.30%

Panel E: Restatement characteristics

	Yes	as a %	No	as a %
Fraud	57	11.59%	435	88.41%
Core	272	50.75%	264	49.25%

Table 3. Distribution of Restatements by Industry

SIC Code	Code Description	Number of Restatements	SIC Code	Code Description	Number of Restatements
10	Metal mining	1	48	Communication	15
13	Oil and gas extraction	8	49	Electric, gas, and sanitary services	14
14	Nonmetallic minerals, except fuels	1	50	Wholesale trade – durable goods	14
15	General building contractors	1	51	Wholesale trade – nondurable goods	9
16	Heavy construction, except building	3	52	Eating and drinking places	1
17	Special trade contractors	1	53	General merchandise stores	2
20	Food and kindred products	10	54	Food stores	3
21	Tobacco products	1	55	Automotive dealers and service station	2
22	Textile mill products	2	56	Apparel and accessory stores	5
23	Apparel and other textile products	6	57	Furniture and homefurnishings stores	6
25	Furniture and fixtures	5	58	Easting and drinking places	4
26	Paper and allied products	4	59	Miscellaneous retail	7
27	Printing and publishing	6	60	Depository institutions	29
28	Chemicals and allied products	13	61	Nondepository institutions	6
29	Petroleum and coal products	3	62	Security and commodity brokers	6
30	Rubber and misc. plastics products	6	63	Insurance carriers	11
31	Leather and leather products	1	64	Insurance agents, brokers and services	2
32	Stone, clay, and glass products	3	65	Real estate	2
33	Primary metal industries	6	67	Holding and other investment offices	7
34	Fabricated metal products	4	70	Hotels and other lodging places	1
35	Industrial machinery and equipment	35	72	Personal services	1
36	Electronic and other electric equipment	29	73	Business services	95
37	Transportation equipment	13	76	Miscellaneous repair services	2
38	Instruments and related products	31	78	Motion pictures	5
39	Misc. manufacturing industries	6	79	Amusement and recreation services	6
41	Local and interurban passenger transit	1	80	Health services	9
42	Trucking and warehousing	4	82	Educational services	3
44	Water transportation	1	83	Social services	4
45	Transportation by air	2	87	Engineering and management services	9
47	Transportation services	2	99	Nonclassifiable establishments	3
				Total number of restatements	**492**

Table 4. Distribution of the Length of the Error Period and the Number of Restated Years

The *Error Period* is defined as the period between the beginning of the first error year or quarter and the restatement date. For example, if the company made a mistake in 1997 and announced a restatement of its 1997 annual report on March 15, 1998, the error period would span January 1, 1997 - March 15, 1998 and equal 1.20 years. *Quarterly* restatements are defined as restatements of quarterly financial statements only and no restatement of an annual (audited) report. *Annual* restatements include a restatement of at least one annual report. The *Number of Restated Years* is the number of years in which the company made a mistake.

Panel A: Error Period

Sample	Mean	Maximum	Minimum	Standard Deviation	Lower Quartile	Median	Upper Quartile	N
Full Sample	1.89	6.83	0.27	1.21	0.94	1.62	2.62	492
Annual	2.52	6.83	1.07	1.07	1.74	2.23	3.22	315
Quarterly	0.79	1.38	0.27	0.29	0.57	0.82	1.02	177
Annual downward	2.53	6.55	1.07	1.08	1.74	2.24	3.25	242
Quarterly downward	0.79	1.38	0.27	0.29	0.57	0.82	1.03	140
Annual upward	2.52	6.83	1.22	1.06	1.82	2.21	3.11	40
Quarterly upward	0.81	1.29	0.32	0.27	0.61	0.83	1.01	20

Panel B: Number of Restated Years

Sample	Mean	Maximum	Minimum	Standard Deviation	Lower Quartile	Median	Upper Quartile	N
Full Sample	1.40	6.00	0.25	1.06	0.50	1.00	2.00	492
Annual	1.94	6.00	1.00	0.96	1.00	1.75	2.75	315
Quarterly	0.45	0.75	0.25	0.21	0.25	0.50	0.75	177
Annual downward	1.96	6.00	1.00	0.97	1.00	1.75	2.75	242
Quarterly downward	0.45	0.75	0.25	0.21	0.25	0.50	0.75	140
Annual upward	1.93	5.50	1.00	0.94	1.00	1.75	2.38	40
Quarterly upward	0.48	0.75	0.25	0.20	0.25	0.50	0.63	20

Table 5. Impact on Net Income

Table 5 shows distribution of two measures of mistake. *Change in Net Income per Share* is defined as the difference between Net Income per share as restated and net income per share as originally reported summed over all restated periods, standardized by the stock price one year prior to restatement. *NI_Change* is calculated as the difference between restated Net Income (summed over the error period) and originally reported Net Income (summed over the error period) divided by originally reported Net Income (summed over the error period). These variables are unavailable for companies that went bankrupt or became private after restatement announcement and did not file restated financial statements. *Downward* (*upward*) restatements are defined as restatements that result in downward (upward) revision of net income. *Quarterly* restatements are defined as restatements of quarterly financial statements only and no restatement of an annual (audited) report. *Annual* restatements include a restatement of at least one annual (audited) report.

Panel A: Change in Net Income Per Share (Net Income Per Share Restated – Net Income Per Share Original)/ Stock Price

	Mean	Maximum	Minimum	Std Dev	Lower Quartile	Median	Upper Quartile	N
Full Sample	-0.03	1.85	-1.46	0.15	-0.03	-0.01	0.00	434
Annual	-0.04	1.85	-1.46	0.18	-0.05	-0.01	0.00	274
Quarterly	-0.02	0.25	-0.72	0.09	-0.02	-0.01	0.00	160
Downward	-0.05	0.29	-1.46	0.12	-0.05	-0.01	0.00	362
Annual downward	-0.06	0.29	-1.46	0.14	-0.07	-0.02	-0.01	225
Quarterly downward	-0.03	0.25	-0.72	0.09	-0.03	-0.01	0.00	137
Upward	0.07	1.85	-0.55	0.28	0.00	0.01	0.06	55
Annual upward	0.08	1.85	-0.55	0.33	0.01	0.02	0.06	37
Quarterly upward	0.03	0.18	0.00	0.05	0.00	0.01	0.03	18

Panel B: NI_Change (Net Income Restated- Net Income Original)/ Absolute Value (Net Income Original)

	Mean	Maximum	Minimum	Std Dev	Lower Quartile	Median	Upper Quartile	N
Full Sample	-2.37	6.75	-255.59	15.40	-0.79	-0.26	-0.05	449
Annual	-1.32	1.76	-168.55	10.11	-0.67	-0.18	-0.04	287
Quarterly	-4.22	6.75	-255.59	21.75	-1.48	-0.42	-0.06	162
Downward	-2.87	0.04	-255.59	16.65	-1.03	-0.35	-0.10	382
Annual downward	-1.64	0.04	-168.55	10.98	-0.76	-0.29	-0.08	242
Quarterly downward	-5.00	0.00	-255.59	23.31	-2.09	-0.50	-0.15	140
Upward	0.58	6.75	-0.37	0.95	0.09	0.32	0.79	59
Annual upward	0.47	1.76	0.02	0.47	0.10	0.28	0.67	38
Quarterly upward	0.77	6.75	-0.37	1.47	0.07	0.40	0.85	21

Table 6: Regression of Earnings Announcement CARs on Earnings Surprise and Mistake for Restated Periods

Table 6 presents results of regressing earnings announcement returns ($CAR^{\text{Earnings announcement}}_{(-1,+1)}$) on earnings surprise estimate (*SUE*) and mistake in earnings (*Mistake*) for the sample of restating and control firms.

$$CAR^{\text{Earnings announcement}}_{(-1,+1)} = \alpha + \beta_1(I_t - E_{t\text{-}1}(I_t)) + \beta_2 M_t + \varepsilon_t = \alpha + \beta_1 SUE + \beta_2 Mistake_t + \varepsilon$$

$CAR^{\text{Earnings announcement}}_{(-1,+1)}$ is market adjusted abnormal return on a stock based on equally weighted index with dividends, cumulated from day -1 through one day after earnings announcement day. *SUE* is calculated as restated diluted earnings per share minus expected earnings, scaled by price at the end of the quarter or year. Expected earnings are diluted earnings per share in previous year adjusted for stock splits for annual restatements and in the same quarter of previous year for quarterly restatements. *SUE_RR* uses restated EPS as a proxy for expected earnings; *SUE_RO* uses originally reported EPS as a proxy for expected earnings. *Mistake* is the difference between originally reported and restated diluted earning per share, divided by price at the end of the quarter or year. First row of each regression results shows regression coefficient and second row shows p-values of t-statistics. Panel B shows regression for first restated period only, for which expected EPS in previous period are not restated. *Annual* restatements are defined as restatements that include a revision of at least one annual report. *Quarterly* restatements are defined as restatements of less than four quarters and no restatement of an annual report. *, **, and *** indicates significance at 10%, 5% and 1% respectively.

Sub-sample	Earnings Surprise Variable	Intercept	Earnings Surprise	Mistake	N	R2	F-value
Annual restatements, full sample	SUE_RR	0.0056 (0.21)	0.0197 (0.07)*	-0.1245 (0.00)***	624	1.96%	6.21***
Annual restatements, full sample	SUE_RO	0.0057 (0.21)	0.0202 (0.06)*	-0.1232 (0.00)***	624	1.98%	6.29***
Annual restatements, 1st restated year only	SUE_RR=SUE_RO	0.0086 (0.09)*	0.0307 (0.01)***	-0.1182 (0.00)***	391	4.13%	8.36***
Quarterly restatements, full sample	SUE_RR	-0.0069 (0.23)	-0.0248 (0.57)	-0.1504 (0.06)*	570	0.70%	2.00
Quarterly restatements, full sample	SUE_RO	-0.0069 (0.23)	-0.0248 (0.56)	-0.1504 (0.06)*	570	0.70%	2.00
Quarterly restatements, 1st restated quarter only	SUE_RR=SUE_RO	-0.00201 (0.78)	-0.04808 (0.36)	-0.2155 (0.01)***	283	3.00%	4.32***

Table 7. Buy-and-Hold Abnormal Returns in Pre-Mistake, Error and Post-Restatement Periods

Daily buy-and-hold abnormal returns (BHARs) are found as the difference between buy-and-hold returns of restating firms and control firms in the same two digit SIC code matched by size and book-to-market in the year before the first mistake. BHARs one, two, and three years before the mistake ($BHAR_{1y}^{\text{before mistake}}$, $BHAR_{2y}^{\text{before mistake}}$, and $BHAR_{3y}^{\text{before mistake}}$) are calculated for the following windows, respectively: (-365, -1), (-730, -1), and (-1,095, -1). Calendar days are numbered relative to the mistake, with day 0 being the beginning of the first year containing a mistake. These returns are shown in the first three columns. Restatement announcement BHARs are calculated for windows (-1;+1) and (-1;+5), where days are numbered relative to restatement, with day 0 being the day of restatement announcement ($BHAR_{(-1;+1)}^{\text{restatement announcement}}$, $BHAR_{(-1;+5)}^{\text{restatement announcement}}$).BHARs one, two, and three years after restatement ($BHAR_{1y}^{\text{after restatement}}$, $BHAR_{2y}^{\text{after restatement}}$, and $BHAR_{3y}^{\text{after restatement}}$) are calculated for the following windows, respectively: (+6, +365), (+6, +730), and (+6, +1,095) respectively. Calendar days are numbered relative to restatement, with day 0 being the date of the restatement announcement. These returns are shown in the last three columns. BHARs for four quartiles of the error period are shown in the middle columns ($BHAR_{q1}^{\text{error}}$, $BHAR_{q2}^{\text{error}}$, $BHAR_{q3}^{\text{error}}$, and $BHAR_{q4}^{\text{error}}$). Each quartile represents one quarter of the entire error period. Thus, the length of a quartile is firm-specific and is calculated by dividing the number of trading days in the error period by 4. BHAR for the fourth quartile of the error period are calculated for up to and including day -6 relative to restatement. To summarize, BHARs are shown in the following order in Table 6 (from left to right): $BHAR_{3y}^{\text{before mistake}}$, $BHAR_{2y}^{\text{before mistake}}$, $BHAR_{1y}^{\text{before mistake}}$, $BHAR_{q1}^{\text{error}}$, $BHAR_{q2}^{\text{error}}$, $BHAR_{q3}^{\text{error}}$, $BHAR_{q4}^{\text{error}}$, $BHAR^{\text{error}}$, $BHAR_{(-1;+1)}^{\text{restatement announcement}}$, $BHAR_{(-1;+5)}^{\text{restatement announcement}}$, $BHAR_{1y}^{\text{after restatement}}$, $BHAR_{2y}^{\text{after restatement}}$, and $BHAR_{3y}^{\text{after restatement}}$.

Daily buy-and-hold abnormal returns are found as follows: $$BHAR_{l}^{\text{period}} = \sum_{i=1}^{N}\left((BHAR_{\text{restating, i, l}}^{\text{period}} - BHAR_{\text{control, i, l}}^{\text{period}}) / L_i\right) / N \qquad (3)$$

where $BHAR_{l}^{\text{period}}$ is the daily buy-and-hold abnormal return for one of three periods: pre-mistake, error, and post-restatement; of length *l*. $BHAR_{\text{restating, i, l}}^{\text{period}}$ ($BHAR_{\text{control, i, l}}^{\text{period}}$) is the buy-and-hold return for restating (control) firm *i* for period *l*. L_i is the number of trading days in the *period* for firm *i*. *N* is the number of firms.

Annual restatements are defined as restatements that include a revision of at least one annual report. *Quarterly* restatements are defined as restatements of less than four quarters and no restatement of an annual report. *Downward* (*upward*) restatements are defined as restatements that result in downward (upward) revision of net income. *Core* is a dummy variable that equals one if revenue or expense accounts were restated. *Fraud* is a dummy that equals one if the company announced fraud as a reason for restatement. *NI_Change* is calculated as the difference between restated Net Income (summed over the entire error period) and originally reported Net Income (summed over the error period) divided by originally reported Net Income (summed over the error period). *BHARs* are compared to zero using t-test. P values of t-statistics are in parentheses. BHARs of sub-samples are compared using Wilcoxon non-parametric test. *, **, and *** indicates significance at 10%, 5% and 1% respectively.

Table 7, *continued* : Buy-and-Hold Abnormal Returns in Pre-Mistake, Error and Post-Restatement Periods

	Year relative to mistake			Quartiles of the error period					Restatement Announcement		Year relative to restatement		
	-3	-2	-1	1	2	3	4	Error period	(-1;+1)	(-1;+5)	1	2	3
Panel A.1. Daily Buy-and-Hold Abnormal Returns for Annual Downward Restatements													
Mean	0.06%	0.08%	0.03%	0.05%	-0.05%	-0.07%	-0.15%	-0.07%	-3.43%	-1.69%	-0.32%	-0.31%	-0.30%
N	234	233	233	234	235	236	237	237	230	230	220	220	220
P value	(0.06)*	(0.01)***	(0.37)	(0.21)	(0.16)	(0.04)**	(<0.01)***	(<0.01)***	(<0.01)***	(<0.01)***	(0.01)***	(0.01)***	(0.02)**
Panel A.2. Daily Buy-and-Hold Abnormal Returns for Quarterly Downward Restatements													
Mean	0.05%	0.07%	0.10%	-0.09%	-0.22%	-0.28%	-0.38%	-0.24%	-3.28%	-1.03%	-0.25%	-0.10%	-0.11%
N	159	159	159	158	157	158	158	158	159	159	157	157	157
P value	(0.21)	(0.10)*	(0.04)**	(0.20)	(0.05)**	(<0.01)***	(<0.01)***	(<0.01)***	(<0.01)***	(<0.01)***	(0.02)**	(0.43)	(0.40)
Panel A.3. Daily Buy-and-Hold Abnormal Returns for Upward Annual Restatements													
Mean	-0.02%	-0.01%	-0.04%	0.08%	0.12%	-0.04%	-0.08%	0.43%	-1.49%	-0.56%	-0.01%	0.05%	0.03%
N	38	38	38	38	38	39	39	39	38	38	38	38	38
P value	(0.78)	(0.91)	(0.54)	(0.32)	(0.19)	(0.87)	(0.73)	(0.22)	(0.07)*	(0.25)	(0.92)	(0.42)	(0.61)

Table 7. Buy-and-Hold Abnormal Returns, *continued*

Panel B. Comparison of Daily Buy-and-Hold Abnormal Returns for Subsamples of Annual Downward Restatements

Panel B.1. Small vs Large Mistakes

	NI_Change is below median				**NI_Change is above median**			
	Quartiles of the error period				Quartiles of the error period			
	1	2	3	4	1	2	3	4
Mean	0.067%	-0.061%	-0.059%	-0.148%	0.033%	-0.026%	-0.091%	-0.154%
N	127	128	128	129	107	107	108	108
P value	(0.26)	(0.19)	(0.23)	(<0.01)***	(0.56)	(0.55)	(0.07)*	(0.01)***
Difference between Small and Large mistakes	0.03%	-0.03%	0.03%	0.01%				
Wilcoxon Pr > Z	(0.21)	(0.44)	(0.34)	(0.40)				

Panel B.2. Core vs Non-Core

	Core				**Non-Core**			
	Quartiles of the error period				Quartiles of the error period			
	1	2	3	4	1	2	3	4
Mean	0.033%	-0.066%	-0.145%	-0.191%	0.071%	-0.023%	-0.001%	-0.110%
N	117	118	119	120	117	117	117	117
P value	(0.63)	(0.15)	(0.01)***	(<0.01)***	(0.14)	(0.60)	(0.98)	(0.01)***
Difference between Core and None-Core	-0.038%	-0.043%	-0.144%	-0.081%				
Wilcoxon Pr>Z	(0.25)	(0.12)	(0.05)**	(0.26)				

Panel B.3. Fraud vs Non-Fraud

	Fraud				**Non-Fraud**			
	Quartiles of the error period				Quartiles of the error period			
	1	2	3	4	1	2	3	4
Mean	0.218%	0.064%	-0.068%	-0.142%	0.016%	-0.068%	-0.075%	-0.153%
N	41	41	41	42	193	194	195	195
P value	(0.11)	(0.31)	(0.39)	(0.03)**	(0.69)	(0.06)*	(0.06)*	(<0.01)***
Difference between Fraud and None-Fraud	0.20%	0.13%	0.01%	0.01%				
Wilcoxon Pr > Z	(0.04)**	(0.04)**	(0.49)	(0.31)				

Table 7. Buy-and-Hold Abnormal Returns, *continued*

Panel C. Comparison of Daily Buy-and-Hold Abnormal Returns for Subsamples of Quarterly Downward Restatements

Panel C.1. Small vs Large Mistakes

	NI_Change is below median				**NI_Change is above median**			
	Quartiles of the error period				Quartiles of the error period			
	1	2	3	4	1	2	3	4
Mean	-0.202%	-0.324%	-0.296%	-0.407%	0.049%	-0.095%	-0.253%	-0.349%
N	86	85	86	86	72	72	72	72
P value	(0.03)**	(0.08)*	(<0.01)***	(<0.01)***	(0.63)	(0.39)	(0.04)**	(<0.01)***
Difference between Small and Large Mistakes	-0.251%	-0.229%	-0.043%	-0.058%				
Wilcoxon Pr > Z	(<0.01)***	(0.49)	(0.41)	(0.32)				

Panel C.2. Core vs Non-Core

	Core				**Non-Core**			
	Quartiles of the error period				Quartiles of the error period			
	1	2	3	4	1	2	3	4
Mean	-0.046%	-0.201%	-0.237%	-0.514%	-0.142%	-0.243%	-0.329%	-0.204%
N	90	89	90	90	68	68	68	68
P value	(0.65)	(0.24)	(0.01)***	(<0.01)***	(0.08)*	(0.06)*	(0.01)***	(0.03)**
Difference between Core and None-Core	0.097%	0.042%	0.092%	-0.310%				
Wilcoxon Pr > Z	(0.24)	(0.39)	(0.46)	(0.02)**				