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Returns and Risk in the Year After a Restatement Announcement*

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ABSTRACT

We extend prior work documenting negative immediate investor responses to restatement announcements by examining the stock returns of restatement firms in the year following an announcement. Using several alternative return measures, we document statistically and economically significant positive returns in the six months after negative restatement announcements, after controlling for the effects of traditional risk factors such as size, book-to-market and momentum. These returns are robust across a variety of subsamples formed on the basis of firm and restatement characteristics. We find that analyst forecast dispersion increases around restatement announcements and decreases 3-6 months afterward, consistent with an initial increase and subsequent decrease in firm-specific uncertainty and information risk. The post-announcement changes in forecast dispersion are significantly related to concurrent abnormal returns, consistent with the post-announcement decrease in information risk driving the positive post-announcement returns. Our evidence is largely inconsistent with the positive post-announcement returns being attributable to initial investor overreaction.

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1. Introduction

A large body of prior research has documented significant negative returns which occur when a firm announces a restatement (Palmrose, Richardson, and Scholz [2004], Files, Swanson and Tse [2008], and Lev, Ryan and Wu [2008]). Negative investor responses to restatements potentially reflect investors' reassessment of the quality of the management team and of previously reported earnings as well as increases in investors' required rates of return due to heightened uncertainty. For example, Palmrose, Richardson and Scholz [2004] find more negative reactions to restatements involving fraud, affecting more accounts, or failing to quantify the restatement. Lev, Ryan and Wu [2008] show more negative returns for restatements which shorten histories of earnings growth. And Kravet and Shevlin [2009] show an increase in the pricing of information risk, associated with negative returns. Yet prior work has focused on the immediate response to restatement announcements and we know little about how restatement firms' stock prices respond in the longer term. In this paper, we examine the stock returns of restatement firms in the year after a restatement. We argue that examination of stock returns beyond the narrow announcement window is necessary to fully understand the implications of restatements, particularly since prior work indicates that restatements can have long-lived impacts. For example, restatements are associated with significant changes in the composition of the board (Srinivasan [2005]) and of the management team (Desai, Hogan and Wilkins [2006]). In addition, they can trigger lawsuits (Palmrose and Sholz [2004]) and result in less favorable analyst coverage (Hribar and Jenkins [2004]).[1]

We document significant positive returns in the one through six months following a restatement announcement. While the positive returns are not of the same magnitude as the pre-

[1] See also Anderson and Yohn [2002] and Hirschey, Palmrose, and Scholz [2005], for studies of returns, bid-ask spreads, and delistings.

event and event-period negative returns, they are large, amounting to roughly 5-10% over the three months in the 3-6 month window after the announcement. Abnormal returns are significantly positive and large in magnitude over the 3-6 month window using several alternate models to control for firm characteristics and systematic risk factors, ranging from 4-7%. These results show that prices rebound significantly, though not completely, from the market's initial negative reaction. We test two potential explanations for this finding. One is that the negative initial response to restatements documented in prior studies represents investor overreactions that subsequently reverse. An alternative explanation is that the initial negative responses are partly related to increases in information risk and positive returns are realized as information risk subsequently decreases.

We find that the return rebound is strongest for firms with low institutional ownership. Prior literature has shown that these firms have higher concentrations of retail investors (Kumar and Lee [2006]) and has argued that institutional ownership is an effective proxy for investor sophistication (see for example Bartov, Radhakrishnan and Krinsky [2000], Ali, Hwang and Trombley [2003]). The fact that the positive post-announcement returns are strongest for firms with low institutional ownership suggests that the return pattern may indicate an investor "overreaction" to the restatement announcement and a gradual correction in prices. Investors may fail to take into account improvements firms might make post-restatement or investors may simply react more negatively to the restatement announcement than warranted.

However it is also possible that the return pattern is driven by changes in information risk. Kravet and Shevlin [2009] show that priced information risk increases at the time of a restatement announcement, corresponding with negative announcement-window returns. Similarly, a post-restatement decrease in information risk (for example from firm actions such as changes to internal controls or disclosure, or from increased sell-side analyst coverage) would

drive positive post-restatement returns. Individual investors may be less privately informed than institutional investors and thus more sensitive to information risk, potentially explaining the result that post-restatement rebounds are stronger for firms with lower institutional ownership.

We directly test these two alternate, though not mutually-exclusive, explanations for the return pattern by examining analyst forecasts. Inconsistent with the overreaction explanation, we find little difference in forecast pessimism between the restatement firms and a comparison sample, i.e. analyst forecasts do not become overly negative, nor do they drift upwards 3-6 months after the restatement. Consistent with the information risk explanation, we find significant increases in analyst forecast dispersion around the restatement, and subsequent decreases in dispersion 3-6 months after the restatement.[2] Additionally, changes in forecast dispersion explain a statistically and economically significant portion of the concurrent 3-6 month positive returns. While there is a significant correlation between returns and changes in forecast levels, this correlation does not explain the positive returns. Patterns in implied volatilities, from option prices, support the conclusion that changes in overall risk, including idiosyncratic risks such as information risk, are a significant driver of the positive post-announcement abnormal return, although results from bid-ask spreads are mixed. Collectively our results are most consistent with the notion that the short and longer-term stock returns of restatement firms are affected by associated changes in information risk and its resolution.

This paper has broad relevance across the accounting and finance literatures. Our results are important to understanding restatements. We document a strong and significant return rebound in the six months after negative restatement announcements, across a wide selection of sub-samples and abnormal return measures, linked to a reduction in information risk. A manager, investor,

[2] These results are qualitatively consistent with Wilson [2008] who shows that earnings response coefficients (a proxy for earnings informativeness) decline after a restatement, but return to pre-restatement levels within a year of the restatement.

board member or judge who estimates the cost of a restatement by the restatement-period return alone would miss an important piece of the evaluation; the post-restatement returns associated with any actions a firm takes in response to the restatement or simply with the passage of time. Our paper also contributes to our understanding of the returns related to information risk. Easley, Hvidkjaer and O'Hara [2002] suggest that information risk is a priced risk factor. A large literature uses accrual quality as a proxy for information risk (Francis, LaFond, Olsson and Schipper [2005], Lambert, Leuz, and Verrecchia [2006], and Aboody, Hughes, and Liu [2005], among others). However this literature has not achieved consensus on whether information risk is priced and has been criticized because accrual quality may not be a satisfactory proxy for information risk (see for example, Cohen [2008], Core, Guay, and Verdi [2008] or Liu and Wysocki [2006]). Our paper takes a unique approach to addressing the impact of information risk on security prices, capturing returns around a discrete event which changes information risk.

The remainder of the paper is organized as follows. Hypotheses are developed in Section 2. Section 3 describes the data. We present results in Section 4, and Section 5 concludes.

2. Hypothesis Development

We seek to understand how the market responds to a restating firm in the year after a restatement is announced. A restatement can increase uncertainty in a firm's publicly available information by calling into question the firm's reporting quality, quality of management, or internal controls. In addition, firms face a variety of longer-term consequences and changes after a restatement, such as litigation and changes to the board and management. Finally, the market may miss-react initially, either underreacting or overreacting to the announcement. Therefore, a restatement might impact a firm for much longer than the days immediately after it is announced.

We first examine returns after a restatement announcement. If investors underreact to the negative restatement announcement initially, we would expect continued negative abnormal returns. If investors overreact, we should observe positive abnormal returns as prices correct.[3] Even if investors react correctly, changes in risk that are not captured by our return models could create "abnormal" returns. Easley and O'Hara [2004] develop a rational-expectations model in which information risk increases cost of capital and changes in information risk impact returns. Kravet and Shevlin [2009] show that restatements are associated with an increase in the sensitivity of returns to information risk, and this increase is associated with negative announcement returns. If this increased risk remains indefinitely, we should observe sustained positive abnormal returns. However, if priced idiosyncratic risk decreases, we should observe positive abnormal returns only in the medium-term, until information risk returns to pre-restatement levels. The following table summarizes the predicted effects:

Negative Market Reaction at the Time of the Restatement Announcement	
Underreaction	***Negative*** matched-firm abnormal returns ***sometime in the year*** following the restatement announcement, specifically while average expectations are revised downwards
Overreaction	***Positive*** matched-firm abnormal returns ***sometime in the year*** following the restatement announcement, specifically while average expectations are revised upwards
Increase in (Priced) Information Risk/Idiosyncratic Risk	
Sustained	***Positive*** matched-firm abnormal returns ***during the entire year*** following the restatement announcement
Temporary	***Positive*** matched-firm abnormal returns ***sometime in the year*** following the restatement announcement, specifically while information risk/idiosyncratic risk returns to normal

Because these conditional predictions vary, we state our first hypothesis in the null form:

H1: Post-announcement abnormal returns are zero.

[3] Papers on under-reaction to accounting events such as earnings surprises, analyst recommendations, and cash flow news include Bernard and Thomas [1989], Bjerring, Lakonishok, and Vermaelen [1983], Michaely, Thaler, and Womack [1995], and Cohen, Gompers, and Vuolteenaho [2002], among others. Papers that focus on over-reaction or negative serial correlation in prices include DeBondt and Thaler [1985 and 1987] as well as Lakonishok, Shleifer, and Vishny [1994] who note over-reaction to sales growth.

Among the four possibilities the return predictions for market underreaction and sustained increase in information risk are unique. However the return predictions for market overreaction and temporary change in information risk are identical. If we observe a positive matched-firm abnormal return sometime in, and not throughout, the year following the restatement announcement, we need additional tests to relate these returns to overreaction or information risk. If investors overreact, they would have overly negative expectations for the firm following the announcement. Analyst earnings forecasts can be used as a proxy for investor expectations, thus an overreaction should reveal itself in two ways: analyst earnings forecasts should drop around the announcement, and the forecasts should become pessimistic. The correction of this overreaction would reveal itself in expectations increasing over the course of the following year. Given the previously documented "walk-down" in analyst forecasts (Richardson, Teoh and Wysocki [2004]), we examine analyst forecast levels relative to those for a matched sample of firms as described in Section 3.2. We develop the following prediction, stated as H2a:

> **H2a: If medium-term positive post-restatement-announcement returns are driven by investor overreaction, analyst earnings forecasts will become overly negative immediately after the restatement announcement and will subsequently correct.**

An increase in firm-specific risk or uncertainty could take a variety of forms, which are likely to vary across firms. However, regardless of the form, analyst forecast dispersion will provide a summary statistic for firm-specific uncertainty. In particular, if uncertainty about the firm's future performance increases, forecasts are likely to fall in a larger range and dispersion will increase. Even if fundamental uncertainty remains the same, if information risk increases, analyst forecast dispersion will increase as well. This is because analysts generate their forecasts based on both public and private information. If information risk, which pertains to the reliability of

public information, increases then analysts will rely more on their private information. The analysts' lower reliance on the common public signal will by definition increase forecast dispersion. Zhang [2006], in a paper focusing on the pricing of information risk, also uses forecast dispersion to proxy for information uncertainty. Connecting this to returns, if positive post-announcement returns are driven by an announcement-period increase in uncertainty and/or information risk which subsequently decreases, we should find an increase in forecast dispersion around the announcement date, with a subsequent decrease over the following year, compared with the matched sample of firms. Thus, we develop a second prediction, stated as H2b:

> **H2b: If medium-term positive post-restatement-announcement returns are driven by changes in information risk, or firm-specific uncertainty, analyst forecast dispersion will increase immediately after the restatement announcement and subsequently decrease.**

Finally, we can directly relate our proxies for market reaction and information uncertainty to returns. If positive post-announcement returns are driven by a correction of negative overreaction (a decrease in information uncertainty), then the concurrent change in earnings forecast optimism (dispersion) should be related to the positive returns. Thus, we develop a third prediction:

> **H2c: If medium-term positive post-restatement-announcement returns are driven by investor overreaction that corrects (firm-specific uncertainty which decreases), the concurrent increase in forecast optimism (decrease in forecast dispersion) will be related to the positive returns.**

It is important to keep in mind that just as with any other factor which affects cost of capital, changes in the level of risk affect returns. Kravet and Shevlin [2009] show that loadings on an information risk factor increase after a restatement and this change explains a portion of the negative returns around a restatement. Similarly, a decrease in information risk after the announcement would drive positive returns over the corresponding window. Note also that the

investor overreaction and increased risk/uncertainty explanations for any positive returns are not mutually exclusive. These analyst-based tests are designed to test each explanation individually and should identify if there is support for both explanations or if either dominates.

We augment our tests for changes in information risk or firm-specific uncertainty using two additional measures. The first is implied volatility, a measure of expected stock volatility based on option prices. Implied volatility is a proxy for total risk, including both systematic and idiosyncratic risk, allowing us to evaluate dimensions of risk that are not captured by the standard market factors. The second is bid-ask spread. While spreads are partially driven by the market maker's inventory holding costs and order processing costs, one of the key factors driving spreads is the market maker's risk of facing a privately informed investor. Thus bid-ask spread is positively related to information risk (Copeland and Galai [1983], Glosten and Milgrom [1985]).

Finally, we examine several post-restatement-announcement events and actions by firms to determine what may lead to a decrease in information risk and firm-specific uncertainty. This analysis is exploratory, and includes events such as subsequent earnings announcements, CEO changes, and changes to press release frequency and length and conference call frequency.

3. Data

3.1 RESTATEMENTS DATA

As a pre-test, we first conducted searches of Factiva data for 40 restatements identified in GAO and Audit Analytics data. The first announcement of the restatement was almost always a press release in PR Newswire or BusinessWire. In a few cases the announcement appeared in Dow Jones News Service instead. Based on our pre-test, we construct our primary database to include hand-collected restatements data from PR Newswire, Business Wire, and Dow Jones

News Service. We search for articles with variants of the words "restate," "revise," or "amend" in the headline or lead paragraph as well as in the same paragraph as variants of the words "income," "profit," "earnings," "revenues," or "sales," for NYSE firms from 1993 through 2002.[4] This yields 5295 press releases from the two newswires and 3638 articles from Dow Jones News Service. All articles on NYSE firms were read in their entirety. We coded all press releases and similar articles that contained a restatement announcement for a collection of variables, including the cause for the restatement and certain keywords. See the Appendix for an example press release. If press releases are made on different days as new information about a restatement becomes available, then the different days' press releases are coded separately.[5]

We identify a total of 534 restatement announcements.[6] 113 of the announcements are combined with earnings announcements and the rest, 421, are separate. 419 (78%) include some reference to restatement or accounting problems in the headline. Examining only restatements with announcements featured in Dow Jones or newswires is likely to capture only significant restatement events, as is our goal. This idea is consistent with a recent paper: Files, Swanson, and Tse [2008] find that the significance of returns around a restatement is related to the prominence with which the restatement announcement is featured in the press.

Table 1 Panel A shows restatements by year and stated cause for the full sample. The number

[4] We hand collect our data because many restatements in GAO are inconsequential and many of the restatements that we locate are missing in Audit Analytics. Furthermore, while we limit our sample to NYSE firms for data-collection purposes, doing so is likely to mitigate any results we find since NYSE firms are larger, and more stable. Finally, we end our sample in 2002 to avoid the effects of Sarbanes Oxley.

[5] Results are robust to including only the first press release pertaining to a given restatement, and estimates of statistical significance throughout the paper allow for within-firm correlations.

[6] To compare these numbers with publicly available restatement databases, we examine the number of restatements identified in the GAO database and Audit Analytics for NYSE firms. Audit Analytics identifies 65 restatements for NYSE companies for the period from February 1, 2001 through the end of 2002. In comparison to these 65 restatements, we find 187 restatement announcements pertaining to 147 unique firms during the same period. The GAO database identifies 272 NYSE restatements for 1997 through June 2002. We find 347 restatement announcements pertaining to 265 unique firms for 1997 through June 2002. While we identify roughly the same number of restatements as the GAO database, we appear to capture fewer technical restatements, and more non-technical restatements.

of restatements climbs from 1995 through 2002 (1993 and 1994 have a large number of restatements tied to SFAS 106 and SFAS 109).[7] Another trend is noticeable: The percentage of articles mentioning fraud, irregularity, or an investigation as causes increases dramatically from 2 to 8% in the early period (1993-1996) to between 7 and 32% in the late period (post-1996).[8]

We also categorize restatements as negative, positive, or mixed. A restatement is categorized as negative (positive) if the restatement is income decreasing (increasing), or, if income neutral, asset or equity decreasing (increasing). The restatement is mixed if negative and positive changes offset each other, such as a move of income across periods, or if there is not enough information to determine positive/negative. As can be seen in Table 2, 58.8% of the restatements are negative, with an average 3-day announcement window return of -3.08%, significant at the 1% level. While the return to positive restatements is insignificant (1.22%, t = 1.17), it is significantly higher than the returns around negative and mixed restatements at the 1% and 10% levels respectively. In the remainder of the paper we focus on negative restatements. Srinivasan [2005] documents that income-decreasing restatements are followed by more negative announcement-period returns, more lawsuits, more CEO departures and more auditor changes than income-increasing restatements. Focusing on this subsample is consistent with prior literature and with our goal of measuring the long-run impact of significant restatement events.

In addition, we exclude "technical restatements" that are driven by changes in accounting rules or interpretations. The 33 negative restatements in the rule-change category have an insignificant average event period (-1, 1) return of -0.82%, compared to -3.08% for the other 281

[7] The FASB's Statement of Accounting Standard (SFAS) No. 106, implemented in December 1992 for most firms, requires all companies providing post-employment benefits to recognize the future costs of benefits in advance. SFAS 109 relates to accounting for deferred taxes. Under SFAS 109, a current or deferred tax liability or asset is recognized for the current or deferred tax consequences of all events that have been recognized in the financial statements or tax returns, measured on the basis of enacted tax law.

[8] Many of the restatements categorized under "other" are related to litigation settlements or court rulings. At least one is the result of a subsidiary restating and at least one is because a certain stock was reclassified as preferred stock. Another example is a restatement due to an FDA ruling that affected previously reported revenues.

negative restatements. Finally, we require that the security of the restatement firm is NYSE common stock with active trading around the earnings announcement. We drop stocks that had fewer than 0.26% of shares outstanding traded in the three-day window around the restatement announcement, the 10% with the lowest trading volume. This restriction serves two purposes: It ensures that the securities are sufficiently liquid for the returns values to be meaningful and ensures that the market perceives the restatement announcement to be an informative event.

In Table 1 Panel B, we show causes for the primary sample; negative non-technical restatements with active common stock trading around the announcement. The distribution of causes for negative restatements differs from the distribution for all restatements as the categories of "Error," "Voluntary Change in Accounting Method," "Fraud, Irregularity, Investigation or Review" and "Other" tend to have more negative restatements than other categories.[9]

Finally, Table 3 presents descriptive statistics for the 238 restatements in the main sample. The table presents firm size (measured as total assets), sales, cash flow, net income, book-to-market ratio and price-to-earnings ratio. The table also presents statistics for all NYSE common stock firms for the year 1998, the middle year in our sample period, as a benchmark. The restatement firms are smaller than the average NYSE firm, with average total assets of 7,748 million dollars for the restatement firms comparing to 27,250 for the NYSE firms. However median size differs by less: roughly 50%. Similarly, sales, cash flow and net income are lower for the restatement firms. Proportional to total assets, the restatement firms produce a higher level of sales and lower net income. While the restatement firms are somewhat smaller than the average NYSE firm, they are of a significant size and exhibit fairly standard valuation ratios.

[9] Because we examine returns around restatement announcements, and particularly because most firms have December fiscal year-ends, we check whether restatement announcements are clustered in a particular month. We find no strong pattern. For example, while 26 of the 238 announcements fall in February, 31 fall in November, 32 in August, and 28 fall in March.

3.2 MARKET REACTION DATA

We match the restatements data to two sets of market reaction data: returns and analyst earnings forecasts. We obtain market returns, raw returns and delisting data from CRSP. For our primary sample of 238 restatements, twenty-six firms delist in the first year after the restatement, eleven due to mergers. For securities that delist we use CRSP delisting returns when available (delisting returns are available for 22 of the 26 delistings, and average -0.14) and substitute a return of -0.3 when the delisting return is unavailable (4 cases), following Shumway [1997] and Shumway and Warther [1999].[10] We obtain market, size, book-to-market, and momentum factor returns from Ken French's data library, and use Compustat data to determine firm characteristics.

We use a matched-firm approach to control for pre-restatement characteristics (size, book-to-market, and return momentum). We begin by following Daniel, Grinblatt, Titman, and Wermers [1997] (DGTW) to assign restatement firms annually to 25 portfolios based on five groups of firm size and book-to-market ratio.[11] We then match within the size/book-to-market portfolio based on returns in the (-252, -22) window relative to the announcement date. We eliminate the worst 1% of matches, as in some cases even the nearest return match differs significantly (for example for one firm the nearest match has returns that differ by over 80%).[12] Abnormal returns are defined as the restatement firm's return less the matched firm's return.

In addition, we construct calendar time portfolios and conduct a Fama-French/Carhart 4-

[10] As a robustness check we substitute the worst-case return of -1 when the CRSP delisting return is unavailable, and all results are similar. Shumway [1997] and Shumway and Warther [1999] show a "delisting bias" that occurs if missing CRSP delisting returns are treated as 0. This bias has arguably been reduced due to subsequent projects by CRSP to add to historical delisting data (CRSP [2001]), reducing the number of missing values. By substituting -0.3 or -1 as the most conservative value for missing delisting returns, we address the potential bias that would result from ignoring the missing delisting returns. See also Beaver, McNichols and Price [2007] who show that tests of market efficiency are sensitive to the inclusion of delisting firm-years.

[11] The full DGTW method places securities into 125 portfolios, using prior return momentum as the third characteristic. However this momentum characteristic may not capture the full extent of negative pre-restatement returns, both because the characteristic portfolios are constructed once per year and restatement firms may experience unusually negative returns.

[12] Alternatively, we eliminate the worst 5% of matches and results are similar.

factor abnormal return analysis on these portfolio returns, to control for realized post-event risk factor loadings rather than pre-event characteristics or factor loadings. We construct value-weighted portfolios, rebalanced daily, based on restatement announcement dates. For example, to capture returns occurring in the (64, 126) window, we add securities to the portfolio at the start of day 64, and remove them at the end of day 126.[13] We then estimate the following equation, using the restatement-based portfolios:

$$R_{it} - Rf_t = \alpha_i + \beta 1_i (Rm_t - Rf_t) + \beta 2_i SML_t + \beta 3_i HML_t + \beta 4_i MOM_t + \varepsilon_{it}, \quad (1)$$

where R_{it} is the return of portfolio i on day t, Rm_t is the return of the market portfolio on day t, Rf_t is the risk-free rate on day t, and *SML*, *HML*, and *MOM* are the size, book-to-market and momentum factors respectively. The estimated values of β capture the realized risk factor loadings – the effect that the given risk factor has on the post-restatement firm. The estimated value of α_i captures the remaining abnormal return.

Two additional abnormal return measures are used for robustness tests. Results are discussed briefly. First, we calculate characteristic-adjusted returns using the exact DGTW method, i.e. matching each restatement firm to one of 125 portfolios based on size, book-to-market and momentum. Second, we calculate firm-specific four factor loadings using up to five years of data ending one month before the restatement announcement (trading day -22), and use these factor loading estimates to calculate abnormal returns.

To conduct tests for investor overreaction and increased firm-specific uncertainty we use IBES Summary data for analyst forecasts of annual earnings, as we are interested in the longer-term time-trend in forecasts, rather than any specific detailed data. We focus on forecasts six months before and after the restatement announcement date, all pertaining to the same fiscal year, specifically pertaining to the first annual earnings announcement expected at least six

[13] Alternatively, we construct equally-weighted portfolios and results are similar.

months after the restatement announcement date. This ensures that all forecasts have similar horizons. Because there are general time-trends in forecasts, such as the "walk-down" in forecasts documented in Richardson, Teoh and Wysocki [2004], we use the matched sample as a benchmark. To capture analyst (and thus market) optimism or pessimism about the firm, we use normalized forecast error: average analyst forecast in a given month, minus the actual realized value of earnings for the corresponding period, normalized by share price six months before the restatement announcement (so that the normalizing price is not affected by the restatement announcement). We then focus on "abnormal" forecast error: restatement firm normalized error minus matched firm normalized error. To capture uncertainty about the firm we use the abnormal standard deviation of analyst forecasts, also normalized by share price six months prior to the restatement announcement. Zhang [2006] also uses standard deviation of analyst forecasts normalized by prior stock price to proxy for information uncertainty.

We use two alternate measures of firm-specific risk. Using option pricing formulas such as the Black-Scholes formula, we can calculate the market's expectation of stock volatility, implied by option prices. We use Ivy DB by OptionMetrics data, which begins in 1996 and includes option prices and implied volatilities. For each stock-day, we take the average of the volatilities implied by the at-the-money put and call options for the given stock. We implement several filters on the OptionMetrics data to address potential errors, following Goyal and Saretto [2007].[14] The second measure is bid-ask spread. We obtain closing bid and ask prices from CRSP. We calculate the bid-ask spread as the log of the ask price less the bid price normalized by the average of the bid and ask prices (the bid-ask midpoint). We eliminate stock-days on which the bid price is greater than the ask or the bid-ask midpoint differs from the closing price by more than 5%, to eliminate the effects of stale quotes and data errors. For both implied

[14] We thank Alessio Saretto for providing the filtered implied volatility data from Goyal and Saretto [2007].

volatility and bid-ask spread, we focus on the "abnormal" value by taking the difference between the restatement firm and matched firm, as we do for analyst forecast errors and dispersion.

3.3 Post-Restatement Events and Changes Data

We examine several post-restatement events. We obtain earnings announcement dates from Compustat. We hand collect restatement filing dates from searches of the EDGAR database for 10-Q/A and 10-K/A and from Thompson Research's SEC filing database, which contains more complete data for earlier sample years. We collect press release and conference call information from Factiva. For each restatement announcement, we download any articles occurring within one year before or after the restatement announcement, published in PR Newswire, Business Wire, or Dow Jones News Service. For each article, we extract the date of publication, the word count, source, and indicators for whether a conference call is mentioned in the title or body of the article. We exclude common Dow Jones News Service articles, such as "NYSE Most Actives" and "Earnings Surprise Summary," and attempt to capture only "press-release style" articles.[15] Finally, we collect CEO changes from Execucomp, using the becamece date variable.

4. Results

4.1 Returns

We begin by examining raw returns following restatement announcements. Figure 1 shows mean and median cumulative raw returns for a year prior to and a year following the restatement announcement, relative to day 0. Firms experience negative raw returns on average beginning

[15] Alternatively, we limit our analysis to press releases in PR Newswire and Business Wire only and find similar results.

roughly seven months before the announcement. Average returns continue to be negative for at least one month after the announcement. The negative returns appear skewed. Median returns display a similar, but dampened, pattern. Additionally, both mean and median returns begin to increase starting 1-2 months after the restatement announcement and continue to be positive for at least a year.[16] On average, it takes approximately one year for stock prices to return to the level they were roughly one to two months preceding the announcement. Median prices recover sooner, reaching the prior-year peak roughly six months after the restatement is announced.

Table 4, panel A, shows average cumulative raw returns for several windows surrounding the restatement announcement. The cumulative returns are significantly negative in both the month-long trading period leading up to the restatement announcement, and the 3-day window around the announcement, -4.80% and -3.95% respectively. Our focus is on returns for one year following the restatement announcement. Returns beginning approximately 60 trading days after the restatement announcement are significantly positive. Specifically, in the trading-day window of (64, 126), returns are a statistically significant 4.93%. We do not find significance in the 1 – 3 month period or 6-12 month period following the restatement announcement.[17]

Table 4, panel B, and Table 5, present results for abnormal returns as described in Section 3.2, to test hypothesis H1. Table 4, Panel B, shows results for matched-firm abnormal returns.

[16] These results are somewhat in contrast to those found in Scholz, 2008, who reports negative market adjusted returns in most years over the (2, 252) window following restatements. This difference may occur for several reasons, including the difference in sample period and restatement types included, the return window studied, and the sample of stocks. We use NYSE firms that tend to be larger, traded more frequently and have more information disseminated about them, relative to the universe of stocks. Thus firms in our sample may recover more quickly and more strongly from a restatement announcement. The returns we find for our sample are also somewhat different than the returns Desai et. al. 2006 find for their very specific set of firms. They find extended poor post-restatement performance for those firms that are heavily shorted in advance of the restatement.

[17] We focus on non-overlapping return windows of 3 days around the restatement, 1 month, 3 months, 6 months and 12 months after the restatement. A natural question given our results is why positive returns "start" only 3-4 months after the restatement, however they do in fact start earlier. A month-by-month analysis shows that returns in month 2, i.e. days (22, 42), are also significantly positive under most abnormal return models, while month 3, i.e. days (43, 63), exhibits insignificantly positive returns. Thus positive returns may "start" earlier than month 4, however for the combined (22, 63) window, while generally positive, they are not statistically significant.

The matched-firm abnormal returns follow a similar pattern to the raw returns. In particular, in the month preceding the restatement, returns are -4.33% (t = -2.97) and in the window of the announcement, the average abnormal return is -3.70% (t = -3.64). But we find a significantly positive return in months 3-6. Average abnormal returns during the (64, 126) day window are 4.50% (t = 1.98). Standard DGTW characteristic-adjusted returns yield similar results, with slightly more positive returns in the (22, 63) and (64, 126) periods (2.56%, t = 1.61, with p-value of 11%, and 4.96%, t = 2.60, respectively). Firm-specific 4-factor abnormal returns, calculated from pre-announcement factor loading estimates, yield similar results, with abnormal returns of 4.3% in the (64, 126) period (t = 1.87), as do 3-factor abnormal returns (i.e., controlling for market risk, size and book-to-market but not momentum): 4.6% (t = 2.08).

Given these results, we can see that the positive raw returns in the 3-6 month post-announcement window are incremental to any returns we would expect given the characteristics and risk exposure of the firms before the restatement announcements. Nonetheless, it could still be the case that the post-announcement returns are driven by a change in risk characteristics signaled by the restatement. In order to explore this possibility, we calculate Fama-French 4-factor abnormal returns for post-announcement portfolios, as described in Section 3.2. This analysis also provides a greater understanding of the economic magnitude of our results. The portfolio returns represent the return that an investor could realize if they followed this trading approach, before adjusting for transaction costs.

Table 5 presents the results. Because the portfolio returns weight events differently from a traditional event study, Panel A displays the average daily raw portfolio returns, in basis points. The pattern of returns is quite similar to the event-time raw returns shown in Table 4, with negative significant returns in the (-21, -2) and (-1, +1) windows, and positive significant returns in the (64, 126) window. Panel B displays daily portfolio returns, in basis points, net of the risk

free rate, which also shows a significantly positive return in the (64, 126) window. Panel C reports results of estimating equation (1). The coefficient estimates on Rm_t-Rf_t, SML, HML and MOM (factor loadings) are informative about changes in risk from before the restatement announcement to after. While the factor loadings on Rm_t-Rf_t, SML and HML remain similar after the restatement, the loading on MOM, the returns momentum factor, becomes significantly more negative after the restatement. The loading on MOM is -0.4585 in the (64, 126) window, but -0.1950 in the mirroring pre-restatement window (-126, -64). The two differ significantly, at the 1% level. As shown in Panel C, even after controlling for these post-restatement factor loadings, abnormal returns are significantly positive in months 3-6 following the surprise. In particular, the alpha estimate is both statistically and economically significant at 0.1075, with t = 2.38, translating to returns of 7% over the three-month window.

We conduct two important robustness tests for the portfolio-based abnormal returns. First, to ensure that the portfolio return results are not driven by days on which there are only one or two stocks in the portfolio, we estimate the same regressions restricting the sample to days on which the portfolio contains three or more securities. This eliminates 653 days for the (64, 126) portfolio. Results are similar, though the returns are slightly lower, with an alpha estimate of 0.085, t = 1.79, translating to a return of 5.5%. (Requiring at least four securities in the portfolio results in an alpha estimate of 0.098, t = 1.93.) Second, we construct equally weighted portfolios similarly to the value-weighted portfolios. Using this method, we find an alpha estimate of 0.087, t = 2.25, translating into abnormal returns of 5.6% in the (64, 126) window.

Overall, the results from Tables 4 and 5 show clear and significant positive abnormal returns for a period after the restatement announcement. We fail to find evidence of market underreaction to the negative restatement announcement. In addition, because positive returns do

not continue past six months after the restatement, we fail to find evidence of a permanent shift in priced information risk (or more generally, priced risk that is not captured by the market, size, book-to-market and momentum risk factors). However, we do find evidence consistent with both market overreaction and with a temporary increase in priced information risk.[18]

To ensure that the pattern we document is truly driven by "negative, non-rule-change" restatements, i.e. the set that we believe has the strongest future consequences and will be most likely to generate negative overreactions and increases in uncertainty about the firm, we examine whether we find a similar pattern among positive restatements or those that are caused directly by a change in accounting rules. We do not find a similar pattern among either sample.[19]

Finally, Table 6 presents returns for sub-samples of our main sample based on restatement and firm characteristics. We include DGTW characteristic-adjusted returns and firm-specific 4-factor abnormal returns in addition to raw and matched-firm abnormal returns as many of the subsamples are small and matched-firm abnormal returns provide the smallest sample. Overall, we find that the positive return pattern is quite consistent across the subsamples.[20] While we find some variation in the result depending on whether the restatement affects revenue and whether the firm is a high or low book-to-market firm, the only two partitions for which we find

[18] These results contrast with returns around both dividend omissions and asset write-offs. Michaely, Thaler, and Womack [1995] show that returns remain negative for three years after dividend omissions and Bartov, Lindahl and Ricks [1998] show that returns remain negative for two years after write-offs. However, both dividend omissions and asset write-offs are likely to occur when a firm revises its expectations of future performance downwards.

[19] Positive restatements are not related to any significant return pattern: Raw and market adjusted returns are roughly zero in magnitude for all periods from six months prior to the restatement to six months after. Raw returns are significantly positive in the (127, 252) window but market adjusted returns are statistically insignificant. Rule change restatements are followed by positive raw and market adjusted returns beginning from day 2, which are fairly steady for the year following the restatement, and statistically significant in the periods (2, 21), (22, 63) and (64, 126) for raw returns and (2, 21), (22, 63) and (127, 252) for market adjusted returns. As these results are not risk-adjusted, this suggests that the set of firms which restate due to accounting rule changes has slightly higher expected returns than the average firm in the market.

[20] As a "robustness check" of the primary return results, it is interesting to note that of the 100 sub-sample – return-measure combinations examined and displayed in Table 9, only 4 have negative return estimates. Of those 4, none are significant. And, of the 96 variations with positive returns, 61 (64% of the positive estimates and 61% of all sub-sample return estimates examined) are statistically significant.

consistent statistically significant differences are whether the SEC is involved, and whether the announcing firm has high or low institutional ownership. We describe the results below.

The return pattern we find is of similar magnitude in the years before 2000, i.e. 1993-1999, during which period the market experienced generally positive returns, and in the period of 2000-2002, during which the market experienced generally negative returns.

Post-announcement 3-6 month returns are similar whether the firm reports "fraud" as a cause or not. However SEC involvement or an SEC investigation is related to dramatically higher post-announcement returns than for the full sample. Raw returns in the 3-6 month window are 17.8% for the SEC-involvement subsample (21 observations) and 23.2% for the SEC investigation subsample (14 observations) compared to 3.1% for restatements with no mention of SEC involvement. The differences between the two SEC subsamples and the full sample are statistically significant, with t-statistics of 1.77 and 1.95 for SEC-involvement and SEC-investigation, respectively. Average announcement-period returns, (-1, +1), are not lower for the SEC-related restatement announcements, but this is driven by a few observations. Median returns are significantly lower, -0.6% for announcements with no mention of the SEC, -2.0% for those announcing some SEC involvement, and -4.1% for those announcing SEC investigations. It seems reasonable to assume that restatements with admitted SEC involvement or investigations are a more negative signal and increase uncertainty by a greater amount, but they may also prompt a stronger "overreaction" from unsophisticated investors. We also find higher post-announcement return estimates for restatements that affect revenue and those which affect more than one fiscal year, however the differences are not statistically significant.

We find mixed results for subsamples based on how the announcement is presented by the firm, specifically whether the announcement provides numerical estimates of the restatement effect and whether the restatement is mentioned in the press release headline.

We find significant variation in our results with respect to firm characteristics. The return pattern appears similar for small and large firms, however there is a consistent difference between high and low book-to-market firms, with low book-to-market firms, or "growth"/"glamour" firms, earning the higher returns during the 3-6 month window. The difference in 4-factor abnormal returns is statistically significant (t = 2.30), but the difference is insignificant using the other three return measures. We find no significant difference in announcement-window returns for low vs. high book-to-market firms. The differential post-announcement returns are consistent with Skinner and Sloan [2002], who find that the market has too high earnings expectations for growth stocks, and that negative earnings surprises largely explain the lower average returns of growth stocks. Given the apparent importance of earnings information for growth stocks, it would not be surprising if the earnings-related information environment is more important to investors in growth firms as well.

Finally, we find that returns are significantly more positive for firms with low institutional ownership than those with high institutional ownership using all four return measures. We measure institutional ownership one year before the restatement announcement to control for any pre-restatement selling which would depress stock price and potentially contribute to a post-restatement rebound. We require that at least one institution report holdings for the given firm, to ensure that we are capturing reported holdings in the 13f data. The four return measures range from 9.4% to 10.3% in the (64, 126) window for firms with less than 25% of shares owned by institutions, all statistically significant. In contrast firms with over 25% institutional ownership have average returns ranging from 1.9% to 3.2%, statistically insignificant at the 10% level. The difference between the two groups is significant using all four return measures. However we find no consistent difference in announcement-window returns between the two groups. These results are suggestive that the rebound is due to an investor overreaction, given that the post-

announcement returns are most positive among firms with less sophisticated investors. Kumar and Lee (2006) show that firms with low institutional ownership have high concentrations of retail investors, and that their stocks are more sensitive to retail investor sentiment. However these results could be due to information risk. Institutional investors may engage in more private information acquisition, and may be better able to understand the implications of a restatement for other publicly available information. Thus they may be less sensitive to changes in information risk than retail investors. If this is the case, the rebound due to a decrease in information risk might be stronger among stocks dominated by smaller investors.

Overall, our return results show significantly positive raw and abnormal returns three to six months after a restatement announcement, both for the main sample and a wide set of subsamples. However the positive post-announcement returns, in months 3-6, are strongest for the set of restatements that report SEC involvement, for low book-to-market ("growth"/"glamour") stocks, and for stocks with low institutional ownership. The consistent and statistically significant variation with respect to institutional ownership levels suggests that our results may be driven by a negative overreaction on the part of less sophisticated investors. However the return pattern and cross-sectional variation may also be driven by changes in information risk. We directly test these two explanations for the results, an "overreaction" and temporary changes in firm-specific uncertainty and information risk, in Section 4.2.

4.2 Post-Restatement Overreaction and Idiosyncratic Risk Changes

Section 4.1 documents strong and consistent evidence of positive returns after a restatement announcement, consistently statistically significant in the three to six month window, and ranging from 4-7% in magnitude. In this section, we test the overreaction and changing firm-

specific uncertainty explanations by examining analyst earnings forecasts errors and forecast dispersion, as described in Section 2. We also examine implied volatilities and bid-ask spreads as alternate measures of information risk and firm-specific uncertainty.

4.2.1. Analyst Forecast Error and Analyst Forecast Dispersion. In analyzing the relationship between analyst forecast variables and returns, we restrict the sample to observations with at least 2 analysts covering the firm from month -6 to month +6 relative to the restatement announcement, and at least 2 analysts covering the matched firm over the same time period.[21]

Figure 2 displays abnormal analyst forecast error and abnormal forecast dispersion, calculated as described in Section 3.2 for forecasts of annual earnings that are expected to be announced some time after month +6, for six months before and after the restatement announcement. Abnormal earnings forecast errors, displayed in Figure 2, are generally positive for restatement firms, both before and after the restatement announcement. The magnitude of the difference between restatement firms and the matched firms is around 0.01-0.02. This translates to a 20-40 cent earnings-per-share (EPS) difference in forecast errors for a $20 stock. However, these values are not statistically significant. Looking at the trend over time, we find a gradual decrease in relative forecast error. If analysts overreact to the restatement announcement, we would expect a dramatic decrease around the time of the restatement announcement. If analysts subsequently corrected their overreaction, we would expect an increase in the abnormal error over the months following the announcement, given that we are correcting for the general "walk-down in earnings forecasts" pattern by benchmarking with the matched sample. Instead, we see neither a particularly pronounced drop in month 0, nor an increase in the months that follow.

It is important to note that for our sample around 30% of outstanding forecasts are revised in

[21] Results are almost identical if we restrict to the subsamples with 3 or 4 analysts covering the restatement and matched firm. Results are similar but somewhat weaker if we restrict to the subsample with 8 analysts covering both firms, as the sample size is reduced to only 59 restatements.

a given month (both across the full sample of forecasts, and averaging the per-stock forecast update rate across stocks). While the rate of forecast revisions is extremely similar for the restatement and matched firms in almost all months, the two rates differ in the restatement announcement month: 41% of the outstanding forecasts are revised for the average restatement firm, while 34% of forecasts are revised for the average matched firm, with the difference of 6% being significant at the 10% level. The number of analysts covering the firms remains similar for both sets of firms: we do not find any significant increase or decrease in analyst coverage around or after the restatement announcement, or any clear pattern in coverage. Thus there is ample forecast updating to allow dispersion and mean to change; yet it is unlikely that any changes in number of analysts will impact forecast dispersion for either group.

Looking to analyst forecast dispersion, we see that the abnormal forecast dispersion is roughly zero, or slightly negative, prior to the restatement announcement, but becomes positive after the announcement, increasing in months 1 and 2, and then subsequently declining. The positive values of abnormal forecast dispersion in months 2 and 3 are statistically significant, as are the increases from month -1 to months 2 and 3 and the decreases from months 2 and 3 to month 5. The decreases from months 2 and 3 to month 6 are not statistically significant; however p-values are 12% and 13% respectively. Thus the pattern of forecast dispersion is consistent with an increase in firm-specific uncertainty around the restatement announcement, and a subsequent decline over months 3-5. Because these are month-end analyst forecast characteristics, this maps to 3.5 to 5.5 months after the restatement date, on average.

Finally, we relate returns in the (64, 126) day window after the restatement (3-6 months) with concurrent changes in abnormal forecast error and abnormal forecast dispersion. We use the change in analyst variables from month 2 to month 6, i.e. starting on average two weeks before the 3-6 month return window and ending on average two weeks after the window. Results are

displayed in Table 7. The sample size for this test is less than half of the primary sample, due to the requirements for analyst coverage of both the restatement and matched firm. Panel A presents results for raw returns, while Panel B presents results for matched-firm abnormal returns.[22] Both return measures are significantly positive over the (64, 126) window for this subsample of the data; raw returns are 6.07% while abnormal returns are 5.33%.

The second column shows the relation between abnormal change in forecast error (our proxy for average belief revision) and returns. The estimated relation is positive in both panels, but significant only for matched-firm abnormal returns. The third column shows the relation between returns and abnormal change in forecast dispersion (our proxy for changes in information risk). The coefficient on change in forecast dispersion is negative, but significant only for raw returns. Finally, we include both changes in forecast error and dispersion and find a significantly positive relation between returns and error and a significantly negative relation with dispersion.

These results are not consistent with analyst overreaction driving the positive post-announcement returns. If the positive return during the 3-6 month window were due to a correction of investors' overreactions, we would expect a positive relation between change in forecast error and concurrent returns, as we find. However, we would also expect an average increase in forecast error over the window. As seen in Figure 2, we instead see a decrease.

The results are consistent with changes in information risk driving post-announcement positive returns. The negative coefficient on change in forecast dispersion shows that it is the firms that experience the biggest drop in forecast dispersion that experience the most positive returns. In addition, since the average forecast dispersion decreases over the 3-6 month window, the change in dispersion explains a portion of the positive abnormal return over the period.

[22] Untabulated results using DGTW characteristic-adjusted returns and firm-specific 4-factor abnormal returns are similar.

Overall, the pattern of forecast errors and dispersion around the restatement, and the direct relation with post-restatement returns, suggests that the negative-then-positive return pattern is related to changes in information risk and uncertainty, rather than investor overreaction.

4.2.2. Alternate Idiosyncratic Risk Measures. Both abnormal implied volatility and abnormal bid-ask spread (the value for each restatement firm less the value for its matched firm) increase around the time of the restatement, and subsequently decrease. Mean and median abnormal implied volatilities increase over the six months preceding the restatement announcement but increase much more dramatically at the time of the restatement announcement. Abnormal implied volatility then decreases gradually over the course of the following six months. Abnormal bid-ask spreads increase in the two months preceding the restatement announcement and increase sharply on the day of the restatement itself. Spreads decrease quickly in the week after a restatement, more gradually in the 3-4 months following, and appear to be fairly steady after that.

Because both implied volatility and bid-ask spread are daily measures, we estimate the within-period "trend" in the variables to capture how they are changing over a window. For each variable, we estimate a regression of the variable on event-time-trading-day, separately for each firm-window. We take the estimated slope coefficient as the firm-period trend in the variable. In the second stage, we estimate regressions of raw and abnormal post-announcement returns on the concurrent "trend" estimated in the first step.[23] Table 8 displays results on the relation between returns in the 3-6 month window following restatement announcements and the concurrent trends in abnormal implied volatility and abnormal bid-ask spread.

The results displayed in Table 8 indicate that a reduction in implied volatilities is strongly

[23] As an alternate approach, we calculate the average value during each window, and relate abnormal returns to the change in average implied volatility (bid-ask spread) from the prior to following windows. Results are similar.

related to the concurrent positive returns during the 3-6 month window, providing further evidence that a reduction in firm-specific risk and uncertainty is an important driver of the positive returns we document in Section 4.1. However, the evidence on bid-ask spreads is mixed. The estimated relation between changes in bid-ask spreads and concurrent returns is significantly negative, however because spreads on average do not change over this interval, the negative relation does not explain the overall positive return.[24]

4.3 Post-Restatement Events and Changes

A variety of events may occur in the six months after a restatement is announced. Many of these events may reduce firm-specific uncertainty and information risk and contribute to drive positive returns. We do not attempt to find the specific events which drive changes in uncertainty and positive returns for each of our sample firms – in fact events could vary across firms, with one firm changing their board, another firm changing their communication strategy, and a third firm simply doing nothing. Thus it is unlikely we would have sufficient power to detect a relation between post-restatement positive returns and any one of these changes. However we examine a few of the most common events and changes that are likely to occur around restatements to ensure that we are not observing the results of a single event.

4.3.1. Restatement Filing. One way in which a restatement announcement can increase information risk is if there is a lag between the restatement announcement and the filing of the restatement, providing the full and final details of the restatement. However, we find that 20% of

[24] Interestingly, the relation between the post-restatement 6-month trend in spreads and the 3-6 month return is also significantly negative and appears to explain a larger portion of the positive return. For matched-firm abnormal returns the coefficient estimate is a significantly higher 12.6 for the 0-6 month trend compared to 5.2 for the 3-6 month trend, with a slightly higher R^2 of 6.8%. Because spreads decrease after the initial restatement-related increase, this may explain some of the 3-6 month positive return, however it is not clear why there would be a lag between the change in spreads and the positive returns.

our sample restatement announcements occur on or shortly after the filing date. Over one half of the restatements are filed within one month of the restatement announcement. Only 7% of all of our restatement filings, and 5% of those falling in our main sample, occur in the 3-6 month window. Thus it is unlikely that restatement filings drive our return results.[25]

4.3.2. Earnings Announcements Following Restatement Events. We ask whether the positive returns we document are concentrated around, or begin after, subsequent earnings announcements. We examine both the first quarterly earnings announcement following the restatement announcement and the quarterly announcement occurring three to six months after the restatement announcement. In untabulated results, we fail to find any concentration of returns around subsequent earnings announcements. For example, in the (-10, +10) window around earnings announcements falling within the three to six month window, we find positive returns of 1.3% on average, 30% of the return found over the (64, 126) window. However 21 trading days fall into this window, 33% of the trading days in the larger window. We also compare returns in the 10 trading days before subsequent earnings announcements with returns in the 10 trading days after the respective earnings announcement and fail to find evidence of the positive returns beginning only after earnings announcement dates. For example, over the window (-10, -1) relative to the earnings announcement date, the average raw return is 1.3% while the return after the earnings announcement, over the (1, 10) window, is lower, at -0.6%.

4.3.3. Changes to Voluntary Disclosure: Press Releases and Conference Calls. Management may respond to questions about information quality by increasing voluntary disclosure. Increased communication may decrease information risk and drive concurrent positive returns. On the other hand, an increase in the quantity of disclosure may not improve

[25] We examine returns for sub-samples of our main restatement sample based on the timing of the eventual filing (i.e. on or before the announcement, within one month, within 1-2 months, etc.) and find no significant variation. We find positive (64, 126) window raw and abnormal return estimates for each sub-sample examined.

public perception of information *quality*, and if primarily the firms struggling with high information risk increase voluntary disclosure, we may not observe a cross-sectional effect even if the increase helps these firms.

We examine the frequency and length of press releases, and the frequency of conference calls as indicated by a mention in the press release body or title, for one year before and after the restatement (excluding the (-22, +22) trading day window around the restatement to minimize the impact of communication directly related to the restatement). The number of press releases increases slightly, but insignificantly, from before to after the restatement. Both the length of press releases and the frequency of conference call mentions increase significantly. For example, 3-6 months before restatement announcements the average press release is 606 words while 3-6 months after it is 684 words, a statistically significant 13% increase.[26] Fifty percent of restatement firms increase the average length of their press releases while 36% decrease. For conference calls, 6.7% of firms increase the number of conference calls while 3.4% decrease, with 28 firms beginning conference calls and 20 firms stopping. We also find a significant increase in the number of press releases mentioning conference calls in the title, suggesting that firms are attempting to advertise their conference calls more prominently.

While firms do seem to modify their communications strategies, we do not observe a cross-sectional relation between change in communications and returns. We examine returns for sub-samples of firms based on change in press release frequency, length, conference call frequency, and conference call use, as well as the correlation between (64, 126) window returns and changes in press release and conference call use. We fail to find consistent evidence that increased

[26] Over our sample period there is a general increase in the length of press releases. We compare the length of press releases made by positive, neutral and rule-change restatements and find a statistically significant increase in the length of our main sample firms' press releases, relative to the positive, neutral and rule-change restatement firms. The increase in benchmarked press release length remains significant for 6 months after the restatement.

voluntary disclosure correlates positively with returns. Differences in returns often shift sign depending on the measure of abnormal return examined. However we do find a negative relation between the change in press release length and post-restatement-announcement returns. Investors may perceive longer press releases to be more opaque rather than more informative. Overall, restatement firms increase the length (though not the frequency) of their press releases and their mentions of conference calls, however this does not drive the positive returns we document.

4.3.4. CEO Changes. We examine the relation between CEO turnover and the positive post-restatement returns we document. Among the 178 firms in our main sample with ExecuComp data, 36, or 20%, change CEOs within one year following the restatement announcement, with one additional firm announcing a CEO change concurrently with the restatement. An additional 23 firms change CEOs in the second year. 21 firms change CEOs within 6 months of the restatement announcement and 10 within 3 months. However we find little relation between a CEO change in the first three or six months and post-restatement returns. In contrast, firms that change CEOs in the 6-12 months after the restatement announcement tend to be firms with particularly poor 3-6 month returns. Thus it appears that CEOs appointed post-restatement-announcement have a similar effect on returns in the 3-6 months after the restatement, while more poorly performing firms are more likely to replace their CEO in the months that follow.

In contrast, the 37 firms with CEOs appointed in the year prior to the restatement experience significantly more negative returns at the time of the restatement announcement than firms with CEOs with at least one year tenure (-5.8% vs. -1.7% for abnormal returns) and more positive returns in the 2-3 and 3-6 month windows (9.0% vs. 0.1% for 2-3 months, 10.1% vs. 3.9% for 3-6 months), though the post-restatement differences are not statistically significant.[27] The 3-6

[27] The return differences are near zero for the 1 month before the restatement, the one month after the restatement and 6-12 months after the restatement.

month post-restatement-announcement return is significantly positive even for the sub-sample with CEOs with over one year tenure, however the differences we find suggest that changes in uncertainty may be higher for a new CEO. This is consistent with a recent working paper by Gordan et. al. (2008) who find that greater management credibility accumulated prior to the restatement lessens the negative market reaction surrounding the restatement.

4.3.5. Summary. We find dramatic variation in the actions taken post-restatement (increasing vs. decreasing press release frequency and length, changing CEO, etc.), however none of these changes is associated with concurrent 3-6 month returns in the cross-section. Given the research design, we cannot separate the effects of selection, i.e. the reasons that firms decide to make their changes, and the effects of those changes themselves. However it is clear that the robust information risk and return effect we document in Sections 4.1 and 4.2 is not the result of any single event among those examined.

5. Conclusion

We provide evidence that despite significant negative returns in the month preceding a negative earnings restatement announcement and in the 3-day announcement window, restatement firms experience significantly positive returns in the 3-6 months after a restatement announcement. These positive abnormal returns are statistically significant and consistently above 4% over the three-month window using a variety of methods to control for expected returns and risk factors, and are significant for a variety of subsamples based on firm and restatement characteristics, subsequent events, and time periods. Although the positive post-announcement returns are stronger for firms with low institutional ownership, we fail to find support for investor overreaction to the negative news when directly testing two possible

explanations for the return effect. Linking restatement data to analyst forecast data, we provide evidence that the return pattern is driven by changes in information risk and/or firm-specific uncertainty, measured using forecast dispersion, rather than by overall investor overreaction, measured using forecast errors. We find that the positive returns three-to-six months after the restatement are also strongly related to concurrent decreases in implied volatility, an alternate measure of firm-specific risk and uncertainty. The positive returns are strongest for restatements involving the SEC and for growth firms, and may be somewhat stronger for revenue-related restatements and multi-year restatements than others, however return estimates are positive in almost all subsamples examined.

While the specific events occurring at each firm may vary, and will sometimes include previously researched events such as management and board changes and litigation, there is a strong average affect across restatement firms that firm-specific uncertainty and information risk decrease in the months following a restatement announcement, and firms experience significantly positive abnormal returns. It is important for managers to know this is possible to achieve, for investors to account for this possibility when deciding how to design their portfolio, and for litigators and judges involved in post-restatement lawsuits to be aware that the announcement-date returns likely overstate the total negative effect of the restatement, particularly if a firm takes actions to decrease information risk post-restatement. This paper also provides evidence that changes in information risk affect returns, complementing the existing literature on the relation between information risk and returns.

Appendix

Example of a News Release:

Oil-Dri to Restate Prior Quarters, Revises Earnings Estimate for Fiscal 2000

CHICAGO, July 24 /PRNewswire/ - Oil-Dri Corporation of America (NYSE: ODC) announced today that reported financial results for each of the first three quarters of its fiscal year ending July 31, 2000, will be restated, reducing income by $0.23 per fully diluted share for the nine months ended April 30, 2000.

At senior management's request, Oil-Dri's auditors and counsel have reviewed certain accounting matters and reported the results of their review to the Audit Committee of the Board of Directors. The report indicated that the company had not recognized the impact on pricing and promotional allowances caused when a customer changed from buying directly from Oil-Dri to purchasing through wholesalers. This required reduction of revenues by $624,000 in the second quarter and $176,000 in the third quarter. Additionally, a review of trade spending showed that the company's accruals for marketing expenses should be increased, resulting in increased expenses of $350,000 for each of the quarters, a total of $1,050,000 for the nine-month period.

As a result, fully diluted earnings per share have been reduced by $0.04 in the first quarter ended October 31, 1999, $0.12 in the second quarter ended January 31, 2000, and $0.07 in the third quarter ended April 30, 2000.

The company intends to file amended quarterly statements with the Securities and Exchange Commission.

“I am very disappointed in the need to restate our earnings,” said Dan Jaffee, President and Chief Executive Officer. “However, we believe that the control and accounting issues related to these matters have now been dealt with at all levels. With the restatement and the external cost pressures we continue to experience, we anticipate that earnings for the year will be between $0.47 and $0.57 per fully diluted share before the $0.15 pre-tax charge taken in the second quarter.

“Revenues in the first two months of the fourth quarter have been strong,” continued Jaffee. “We have taken aggressive steps to improve our efficiencies and lower our costs, and while these initiatives have not been able to completely offset dramatic cost increases in fiscal 2000, we anticipate that they will help improve profitability in the new fiscal year, beginning August 1, 2000.”

This release contains certain forward-looking statements regarding the company's expected performance for future periods and actual results for such periods may materially differ. Such forward-looking statements are subject to uncertainties, which include, but are not limited to, competitive factors in the consumer market; the level of success of new products; changes in planting activity and overall agricultural demand; changes in market conditions and the overall economy, and other factors detailed from time to time in the company's annual report and other reports filed with the Securities and Exchange Commission.

Oil-Dri Corporation of America is the world's largest manufacturer of cat litter and a leading supplier of specialty products for industrial, automotive, agricultural and fluids purification markets.

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TABLE 1

Restatements by Year and Stated Cause

Panel A. Full Database

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total	%
New Accounting Standard or Interpretation	32	4	2	1	1	6	5	3	19	2	75	14.04%
Voluntary Change in Accounting Method	3	14	4	7	9	20	32	11	24	36	160	29.96%
Error	7	2	4	1	3	9	14	4	14	25	83	15.54%
Fraud, Irregularity, Investigation or Review	8	2	0	2	7	11	11	15	17	32	105	19.66%
Change in Estimates	2	2	1	1	2	1	4	3	1	3	20	3.75%
No Cause or Explanation Provided	8	3	1	6	4	10	14	8	8	15	77	14.42%
Other	6	2	5	9	5	13	15	11	11	25	102	19.10%
Total Restatement Press Releases, Any Cause	54	26	17	24	27	56	79	54	82	115	534	

Panel B. Main Sample

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total	%
Voluntary Change in Accounting Method	1	4	2	2	3	13	13	5	9	17	69	28.99%
Error	5	2	2	1	0	8	6	4	7	15	50	21.01%
Fraud, Irregularity, Investigation or Review	7	2	0	2	6	7	10	7	10	20	71	29.83%
Change in Estimates	0	2	0	0	1	0	0	2	0	1	6	2.52%
No Cause or Explanation Provided	5	3	0	2	2	2	6	5	5	5	35	14.71%
Other	3	1	4	0	2	9	5	8	10	18	60	25.21%
Total Restatement Press Releases, Any Cause	16	12	8	6	12	30	32	26	35	61	238	

This table presents the distribution of restatement announcements across the sample years of 1993 through 2002, and over the reported cause of the restatement. Single announcements can have multiple causes if multiple causes are claimed in the restatement announcement. The "Total" column shows the total number of restatement announcements claiming the given cause, over the full sample period. The "Total Restatement Press Releases, Any Cause" row presents the total number of restatement announcements in the given year. The "%" column is the percentage of all restatements which report the given cause as one of the causes for the particular restatement. Panel A shows the number of restatements in each category including all restatement announcements in the full database, while Panel B shows the number of restatements in each category limiting to the primary sample of negative restatement announcements with non-rule-change causes.

TABLE 2

Restatement Counts and Event Period Returns, by Restatement Direction

	Number of Restatements	Event-Period Cumulative Return	t-statistic
Negative Change	314	-0.0308	-3.65***
Mixed	145	-0.0157	-1.64*
Positive Change	75	0.0122	1.17

This table presents the number of restatements and average cumulative raw return, including any delisting returns, over the announcement event period of event days -1 through 1, for three subsets of the full restatement database: "negative change," "mixed," and "positive change," defined based on the effects of the restatement on prior financial results. Standard errors are robust to heteroskedasticity and arbitrary within-firm correlations. The symbols *, **, and *** denote statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

TABLE 3

Descriptive Statistics

	Main Sample		NYSE, 1998	
	Mean	Median	Mean	Median
Size (Total Assets)	7,748	1,622	27,250	3,010
Sales	6,168	1,105	8,708	1,959
Cash Flow	453	96	1,149	226
Net Income	125	23	723	125
Book to Market Ratio	0.57	0.50	0.09	0.46
Price to Earnings Ratio	41.97	18.45	33.3	17.7
Observations	238		2,393	

This table presents descriptive statistics for the main sample of restatement announcement firms, for negative restatement announcements from 1993 through 2002 with non-rule-change causes, and for a benchmark sample of New York Stock Exchange (NYSE) securities, as of 1998 (the middle year in the restatement sample). Size (total assets), Sales, Cash Flow and Net Income are all as reported on the most recent annual report, and book to market ratio is calculated by comparing size with market capitalization. Price to earnings ratio compares stock price to earnings per share, for the subsample of firms with positive earnings.

TABLE 4

Average Returns Around Negative Restatement Announcements

Panel A. Raw returns

	(-21, -2)	(-1, +1)	(2, 21)	(22, 63)	(64, 126)	(127, 252)
Cumulative raw return	-0.0480***	-0.0395***	-0.0102	0.0229	0.0493**	0.0171
T-stat	-3.21	-3.58	-0.70	1.35	2.38	0.60
Observations	238	238	238	234	230	226

Panel B. Matched-firm abnormal returns

	(-21, -2)	(-1, +1)	(2, 21)	(22, 63)	(64, 126)	(127, 252)
Mean	-0.0433***	-0.0370***	0.0054	0.0252	0.0450**	-0.0232
T-stat	-2.97	-3.64	0.36	1.21	1.98	-0.72
Observations	200	200	200	198	194	192

This table presents cumulative raw returns and abnormal returns around restatement announcements. The sample is limited to negative restatement announcements with non-rule-change causes. Delisting returns are included if a security delists. The sample contains 238 restatement announcements. Panel A presents cumulative raw returns. Panel B presents abnormal returns, calculated by subtracting the return of a matched firm from the restatement firm's return. The matched firms are drawn from NYSE common stock in the same DGTW size/book-to-market portfolio, matching among that group based on which firm has the closest returns in the (-252, -22) period before the restatement announcement. T-statistics are given below averages. Standard errors are robust to heteroskedasticity and arbitrary within-firm correlations. The symbols *, **, and *** denote statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

TABLE 5

Calendar-time Portfolio Returns Around Negative Restatement Announcements

Panel A. Portfolio raw return in Event Window

	(-21, -2)	(-1, +1)	(2, 21)	(22, 63)	(64, 126)	(127, 252)
Mean	-0.2567***	-1.1945***	0.0012	-0.0420	0.1341***	-0.0145
T-stat	-2.76	-3.36	0.01	-0.74	2.68	-0.40
Observations	1,720	547	1,718	2,216	2,402	2,631

Panel B. Portfolio Excess Return in Event Window

	(-21, -2)	(-1, +1)	(2, 21)	(22, 63)	(64, 126)	(127, 252)
Mean	-0.2730***	-1.2101***	-0.0150	-0.0583	0.1179**	-0.0305
T-stat	-2.93	-3.40	-0.16	-1.02	2.36	-0.83
Observations	1,720	547	1,718	2,216	2,402	2,631

Panel C. Dept. Variable: Event Window Portfolio Return

	(-21, -2)	(-1, +1)	(2, 21)	(22, 63)	(64, 126)	(127, 252)
Mkt - Rf	1.2827***	0.4367	1.0196***	1.2480***	1.0301***	0.8736***
	10.60	1.00	8.54	17.90	16.30	20.70
SMB	0.5722***	0.5444	0.5362***	0.2578***	0.2016**	0.1145**
	3.55	0.87	3.24	2.68	2.34	2.01
HML	0.5676***	0.4770	0.5031**	0.5721***	0.4361***	0.0189
	2.90	0.66	2.55	4.95	4.14	0.27
Mom	-0.0441	-0.4294	-0.4024***	-0.3715***	-0.4585***	-0.5175***
	-0.46	-1.22	-4.11	-6.45	-8.73	-14.20
Alpha	-0.2864***	-1.2458***	0.0002	-0.0629	0.1075**	-0.0346
	-3.22	-3.46	0.00	-1.24	2.38	-1.14
Observations	1,720	547	1,718	2,216	2,402	2,631
R^2	0.0976	0.0057	0.0748	0.2117	0.1911	0.3188

This table presents calendar-time portfolio returns for portfolios formed around negative restatement announcements with non-rule-change causes. Portfolios are created by purchasing a stock at the start of the first day of the given window (noted in event-time trading days), holding the stock through the window, and selling it at the end of the last day of the window. Portfolios are value-weighted across firms. Panel A displays raw portfolio returns. Panel B displays portfolio returns net of the risk free rate. Panel C reports results of ordinary least squares regressions with net portfolio returns as the dependent variable. MktMinRf, SML, HML, and Mom represent the market excess return, size, book-to-market and momentum factors respectively. T-statistics are given below coefficient estimates. Standard errors are robust to heteroskedasticity and arbitrary within-firm correlations. The symbols*, **, and ***, indicate significance at the 0.10, 0.05 and 0.01 levels respectively.

TABLE 6

Post-Restatement 3-6 Month Returns, by Restatement and Firm Characteristics

	N	Raw Returns	Matched-Firm	Characteristic-Adjusted	4-Factor
Full Main Sample	230	**0.0444**	**0.0450**	**0.0496**	**0.0430**
Before 2000	117	**0.049**	0.0422	**0.061**	**0.0535**
2000-2002	113	**0.0396**	**0.0483**	**0.0367**	0.032
Stated Cause					
Fraud/Irregularity/Investigation Identified as a Cause	170	**0.0480**	**0.0570**	**0.0500**	**0.0433**
Fraud/Irregularity/Investigation Not Identified as a Cause	60	0.0342	0.0096	0.0483	0.0421
Voluntary Change in Method Identified as a Cause	163	**0.0362**	**0.0466**	**0.0504**	**0.0432**
Voluntary Change in Method Not Identified as a Cause	67	**0.0643**	0.0411	**0.0476**	0.0426
Investigations and SEC involvement					
No Investigation Mentioned	195	**0.0463**	**0.0501**	**0.0465**	**0.0401**
Investigation Mentioned	35	0.0340	0.0161	**0.0664**	0.0601
No Mention of SEC Involvement	209	**0.0310**	**0.0427**	**0.0399**	**0.0310**
SEC Involvement of Some Type	21	**0.1782**	0.0651	**0.1381**	**0.1610**
SEC Investigation	14	**0.2315**	0.1063	**0.2099**	**0.2322**
Restatement Effects					
No Revenue Effect Stated	190	**0.0384**	**0.0475**	**0.0474**	**0.0351**
Revenue Affected	40	0.0731	0.0322	0.0603	0.0825
Only One Fiscal Year Affected	157	0.0234	**0.0413**	**0.0418**	0.0288
More Than One Fiscal Year Affected	73	**0.0896**	0.0536	**0.0676**	**0.0735**
Announcement Characteristics					
No Numbers Provided	19	-0.0277	**0.0885**	0.0061	-0.0163
Some Numbers Provided	211	**0.0509**	**0.0414**	**0.0538**	**0.0478**
Announcement Headline Does Not Mention Restatement	41	0.0175	-0.0423	0.0213	0.0032
Announcement Headline Does Mention Restatement	189	**0.0503**	**0.0636**	**0.0559**	**0.0518**
Firm Characteristics					
Small Firms: Below Median MV	117	**0.0623**	**0.0471**	**0.0610**	0.0320
Large Firms: Above Median MV	113	0.0259	0.0427	0.0375	**0.0547**
"Growth"/"Glamour": Below Median Book-to-Market	122	**0.0533**	**0.0549**	**0.0717**	**0.0835**
"Value": Above Median Book-To-Market	104	0.0230	0.0333	0.0225	-0.0186
Low Institutional Ownership: 25% or less	91	**0.1027**	**0.0943**	**0.0944**	**0.0989**
High Institutional Ownership: over 25%	127	0.0259	0.0269	0.0186	0.0322

This table presents post-restatement-announcement raw and abnormal returns, over the trading days (64, 128) after the announcement, i.e. three to six months after a restatement announcement. Each row presents the post-announcement returns for the particular sub-sample. “Full Main Sample” is provided as a benchmark, and consists of negative restatement announcements with non-rule-change causes. Each row below consists of the subset of Full Main Sample which satisfies the given criteria. Before 2000 and 2000-2002 consist of the restatement announcements which happened during the given years. Stated Cause sub-samples describe subsamples of announcements in which the announcement provides or does

not provide the given cause as one of the factors leading to the restatement. Investigations and SEC Involvement captures the type of investigation or SEC involvement described in the restatement announcement. Restatement Effects describes the predicted effect of the restatement that is described in the announcement, i.e. whether revenue will be affected, and the number of periods affected by the restatement. Announcement characteristics describes further characteristics of the restatement announcement – in particular whether number estimates (including ranges) for the magnitude of the restatement effects are provided or not, and whether the announcement headline includes a mention of the restatement. Finally, firm characteristics subsamples contain the subsample of restatement announcements whose firms have above or below median market value or book-to-market ratio, when compared against the other restatement announcement firms in the sample. For the partition based on institutional ownership we require at least 1 institutional holding reported in CDA/Spectrum 13-f data, and partition firms with at most 25% institutional ownership from firms with over 25% ownership.

"Raw Returns" presents cumulative raw returns, "Matched-Firm" presents cumulative abnormal returns where the returns on a firm matched on size, book-to-market, and pre-announcement-date returns are subtracted from restatement firm returns, "Characteristic-adjusted" presents cumulative abnormal returns calculated using the DGTW size/book-to-market/momentum matched portfolio method, and "4-factor" presents abnormal returns calculated using restatement-specific factor loading estimates calculated over a five year window ending 1 month before the restatement announcement. Standard errors are robust to heteroskedasticity and arbitrary within-firm correlation. Returns which are significant at the 10% level using a 1-tailed test for positive returns are shown in bold.

TABLE 7

Analyst Forecast Properties Around Negative Restatement Announcements

Panel A. Raw returns

Abnormal change in forecast error		1.0936		1.2760**
		1.25		2.12
Abnormal change in forecast dispersion			-6.1499**	-6.3701***
			-2.33	-2.98
Constant	0.0607**	0.0634**	0.0485*	0.0513**
	2.3	2.35	1.96	2.06
Observations	109	109	109	109
R^2	0	0.0167	0.0877	0.1104

Panel B. Matched-firm abnormal returns

Abnormal change in forecast error		3.8301***		3.9793***
		2.79		2.78
Abnormal change in forecast dispersion			-4.5281	-5.2149***
			-1.59	-3.31
Constant	0.0533*	0.0629**	0.0444	0.0530*
	1.77	2.18	1.42	1.87
Observations	109	109	109	109
R^2	0	0.1569	0.0364	0.205

This table presents results from regressions of returns on analyst forecast properties. The dependent variables are, in Panel A, cumulative raw returns over the (64, 126) trading day window after restatement announcements and, in Panel B, matched-firm abnormal returns over the (64, 126) trading day window, calculated by subtracting the returns of a firm matched by size, book-to-market and pre-announcement-date returns from the restatement firm returns. The analyst forecast variables are abnormal measures where the value for the matched firm is subtracted from the value for the restatement firm. Forecast error is the difference between the earnings per share forecast and the final realization of earnings per share, normalized by share price six months prior to the restatement announcement. Forecast dispersion is the standard deviation of forecasts normalized by share price six months prior to the announcement. The change in each value is calculated from month 2 to 6, where month 0 is the first I/B/E/S summary file report date after the restatement announcement date. Thus the change is calculated on average over the window of 2.5 to 6.5 months after the restatement announcement. The sample is restricted to firms with at least two analysts covering the restatement firm and matched firm for the year surrounding the restatement. T-statistics are given below coefficient estimates. Standard errors are robust to heteroskedasticity and arbitrary within-firm correlations. The symbols *, **, and ***, indicate significance at the 0.10, 0.05 and 0.01 levels respectively.

TABLE 8

Implied Volatilities and Bid-Ask Spreads Around Negative Restatement Announcements

Panel A. Raw returns

Abnormal change in implied volatility		-39.4443***		
		-4.07		
Abnormal change in bid-ask spread				-4.8920***
				-2.93
Constant	0.0890***	0.0597**	0.0561***	0.0561***
	2.87	2.05	2.92	2.96
Observations	95	95	136	136
R^2	0	0.1618	0	0.0714

Panel B. Matched-firm abnormal returns

Abnormal change in implied volatility		-57.1834***		
		-5.35		
Abnormal change in bid-ask spread				-5.1896***
				-2.71
Constant	0.1004***	0.0580*	0.0490**	0.0491**
	2.94	1.88	1.98	2
Observations	95	95	136	136
R^2	0	0.2874	0	0.058

This table presents results from regressions of returns on changes in implied volatilities and bid-ask spreads. The dependent variables are, in Panel A, cumulative raw returns over the (64, 126) trading day window after restatement announcements and, in Panel B, matched-firm abnormal returns over the (64, 126) trading day window, calculated by subtracting the returns of a firm matched by size, book-to-market and pre-announcement-date returns from the restatement firm returns. The independent variables are estimated in a set of first-stage regressions. Abnormal change in implied volatility (bid-ask spread) is calculated by estimating firm-specific regressions of abnormal implied volatility (abnormal bid-ask spread) on an indicator for the event-time trading-day in the window (64, 126). We define the abnormal change in implied volatility (abnormal change in bid-ask spread) to be the coefficient estimate on event-time trading-day. Abnormal implied volatility is the difference between the restatement firm's implied volatility based on at-the-money put and call options and the implied volatility of the restatement firm's matched firm. Abnormal bid-ask spread is the difference between the log bid-ask spread (log[(ask-bid)/((ask+bid)/2)]) of the restatement firm and the log bid-ask spread of the matched firm. T-statistics are given below coefficient estimates. Standard errors are robust to heteroskedasticity and arbitrary within-firm correlations. The symbols *, **, and ***, indicate significance at the 0.10, 0.05 and 0.01 levels respectively.

FIGURE 1

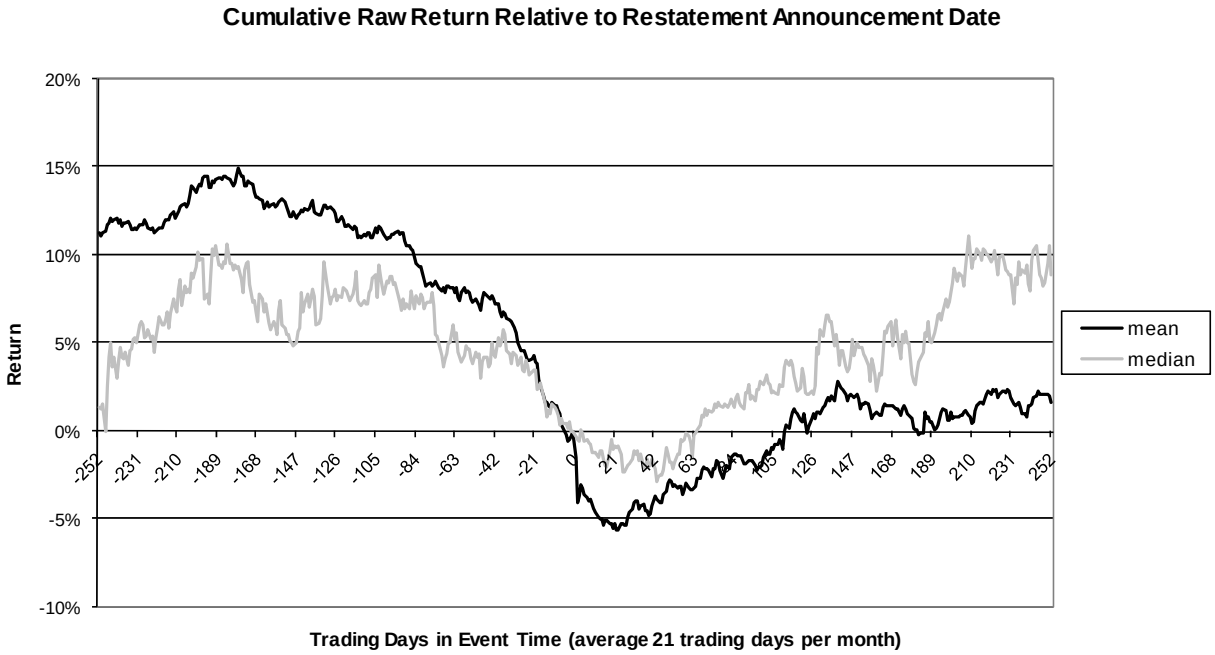

Figure 1 graphs cumulative raw returns (plotted on the Y-axis) around announcements of earnings restatements, over trading days -252 through +252 surrounding the announcement date (day 0). The sample contains 238 negative restatement announcements from 1993 through 2002, for firms with actively traded NYSE common stock, and excludes restatements driven by accounting rule or interpretation changes.

FIGURE 2

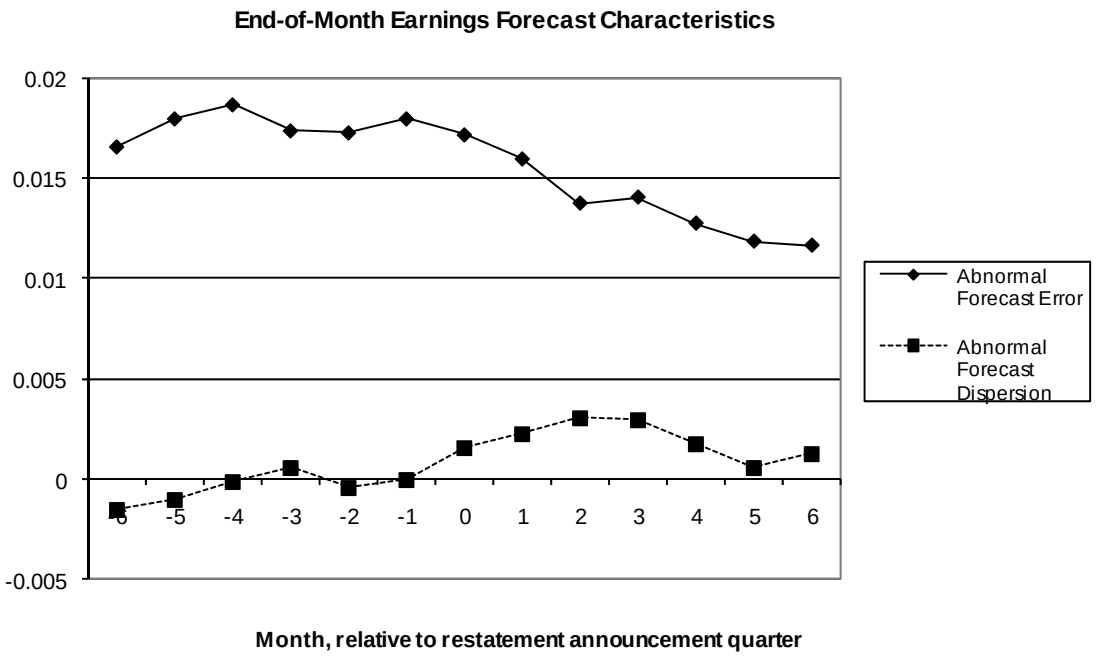

Figure 2 graphs month-end abnormal forecast error and forecast dispersion for restatement firms in the months surrounding restatement announcements, for six months before and after the announcement date. Month 0 is the month in which the restatement announcement occurs. Forecast error is measured as average forecast minus realized EPS value, normalized by share price six months prior to the restatement announcement date. Forecast dispersion is measured as standard deviation of forecasts, normalized by share price six months prior to the restatement announcement date. For both variables, abnormal values are the difference between the variable value for the restatement firm compared to the value for a matched firm, matched on size, book-to-market and prior returns.